Appendix A

Previous Plans and Studies

MEMO

Date: September 28, 2019
Pages: 22 inc. this page
Regarding: **Luling Transportation Study – Previous Plans and Studies**

1.1 Introduction

This document presents a literature review of previous plans and studies with relevance to the Luling Transportation Study. Sources included the TxDOT Unified Transportation Program, Statewide Transportation Improvement Program, CAMPO four-year Transportation Improvement Program, Luling Capital Projects list, TxDOT Letting Schedule, Caldwell County Transportation Plan, and CAMPO 2040 Regional Plan. The 2009 Austin Area Freight Transportation Study, 2016 Texas Rail Plan Update and the FHWA Freight Analysis Framework (FAF) Version 4 were also reviewed to identify existing and anticipated freight trends for cargo rail and trucks for the study area.

1.2 TxDOT Unified Transportation Program

The TxDOT Unified Transportation Program (UTP) is used as a 10-year plan for transportation project development. The UTP is approved annually by the Texas Transportation Commission authorizing projects for construction, development, and planning including projects such as highways, aviation, and public transportation. It is important to note that TxDOT may decide not to implement the project at any point during the project development process.

The TxDOT Austin District **Table 1** summarizes the projects programmed for the 2019 UTP for an area including Caldwell County and Luling. The project ranking assigned by the UTP is based on strategic plan goals, performance visions, and performance measures. Tier 1 represents top 33% of Project Scores, Tier 2 represents the middle 33% of project scores, and Tier 3 represents the bottom 34% project scores.

Table 1: Projects from 2019 Unified Transportation Program – TxDOT Austin District

County	Road	From	To	CSJ	Description	Programmed Construction Funding[1]	Project Ranking (Tiers)
Caldwell	SH-21	Hays County Line	Bastrop County Line	0471-04-030	Provide two passing lanes for urban connectivity	$1,950,000	1
Caldwell	FM-110	SH 80	SH 21	3545-03-003	Construct two new lanes and shoulders	$25,575,300	3
Guadalupe	IH 10	US 90A	SH 130	0535-01-074	Expand from 4 lanes to 6 lanes expressway	$200,000,000	1
Guadalupe	SH 123	Cordova Lane	IH 10	0366-02-089	Expand from 2 lanes to 4 lanes with center left turn lane	$16,200,000	3
Guadalupe	IH 35	Guadalupe County Line	FM 3009	0016-06-047	Expand from 8 lanes to 14 lanes / add 6 new express lanes including 2 HOV special lanes	$75,000,000	1
Bexar County	IH 10	Graytown Road	Guadalupe / Bexar County Line	0025-02-215	Expand from 4 lane to 6 lane Expressway	$154,000,000	1
Bastrop	SH-21	Caldwell County Line	SH 71	0471-05-038	Provide two passing lanes for urban connectivity	$7,529,000	1
Hays	SH-21	SH 80	Caldwell County Line	0471-02-070	Provide two passing lanes for urban connectivity	$8,505,400	1

Source: http://ftp.dot.state.tx.us

1. UTP Approved Funding.

1.3 Statewide Transportation Improvement Program

The 2019-2022 Statewide Transportation Improvement Program Draft (STIP) is a 4-year capital improvement plan for multi-modal transportation projects. The STIP is approved every two years by the United States Department of Transportation (USDOT), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA). The STIP identifies projects, programs, and services to be constructed or implemented within a four-year period.

Table 2 summarizes the projects included in the draft of the 2019-2022 Statewide Transportation Improvement Program.

Table 2: Projects from 2019-2022 Statewide Transportation Improvement Program

County	Road	From	To	CSJ	Description	YOE Cost[1]	Description (Year/Phase/Type)
Guadalupe	FM 466	Eastwood Drive	Eastwood Drive	0216-03-034	Intersection Operational Improvements	$850,000	2023/ Rural DA Projects
Caldwell	Lockhart	Plum Creek Wetland Preserve Community Trail	Plum Creek Wetland Preserve Community Trail	2222-19-010	New 1-mile, Multi-use concrete trail with signs, kiosks, benches, pet waste stations and trash receptacles.	$200,000	2019/ Construction/Texas Parks and Wildlife Projects
Guadalupe	Schertz	Schertz on Woodland Oak Drive	Savannah Drive & Live Oak Road	0915-17-065	Construct sidewalks, bike lanes and off-road trails	$1,158,266	2019/ Construction/ Highway Projects
Guadalupe	Cibolo	FM 1103	IH 10	0915-46-047	Construct Cibolo Parkway toll road on new location.	$125,000,000	2019/ Construction/ Highway Projects

County	Road	From	To	CSJ	Description	YOE Cost[1]	Description (Year/Phase/Type)
Guadalupe	FM 1103	Comal C/L	Rodeo Way	1268-02-027	Expand to 4 lanes with medians, turn lanes, sidewalks and bike lanes	$22,500,000	2020/ Construction/ Highway Projects
Guadalupe	FM 725	Comal / Guadalupe County Line	Zipp Road	0215-09-029	Expand from 2 to 4 lanes with median, sidewalks and bike lanes	$10,600,000	2022/ Construction/ Highway Projects
Guadalupe	Seguin SH 46	Rudeloff Road	Huber Road	0915-46-045	Expand from 2 to 4 lanes with center turn lane, bicycle and pedestrian facilities	$6,316,658	2021/ Construction/ Highway Projects
Guadalupe	Seguin/ Walnut Springs Trail	Seguin from Vaughan Bridge	Max Starcke Park East	0915-46-046	Extend Walnut Springs multi use trail, including retaining walls, guard rails and below grade crossing.	$1,206,888	Construction/ Highway Projects
Caldwell	SH 80	CR 266	0.215 Miles East of CR 266	0286-02-034	Install left turn lanes	$750,000	2019/ Engineering & Construction /CAMPO Highway Projects

Source: http://ftp.dot.state.tx.us/pub/txdot-info/tpp/stip/2019-2022/highway.pdf

1. Year of Expenditure Cost (YOE): The costs of the phases of work indicated on the Transportation Improvement Program page.

Table 3 summarizes the projects included in the 2017-2020 Statewide Transportation Improvement Program.

Table 3: Projects from 2017-2020 Statewide Transportation Improvement Program for Several Counties

County	Road	From	To	CSJ	Description	YOE Cost[1]	Description (Year/Phase/Type)
Guadalupe	Seguin	Community Park	N Vaughn and San Antonio Ave	0915-46-043	Construct sidewalks alongside and within the New Community Park	$1,206,888	Construction /Highway Project
Guadalupe	Seguin (Tor Drive)	SH 123 (Business)	SH 123 (Bypass)	0915-46-042	Widen roadway and add a continuous left turn lane, bike lanes and sidewalks	$3,439,837	Construction /Highway Project
Guadalupe	FM 1103	Comal C/L	Rodeo Way	1268-02-027	Expand to 4 lanes with medians, turn lanes, sidewalks and bike lanes	$22,500,000	2020/ Construction/ Highway Projects
Guadalupe	IH 35	Bexar / Guadalupe County Line	Guadalupe / Comal County Line	0016-06-047	Expand from 8 to 12 lane expy thru FM 3009 and 6 to 10 lane expy from FM 3009	$259,546,500	Construction /Highway Project
Caldwell	Luling	Various	Various	0914-22-070	Alternatives Analysis for Relief Routes	$225,000	Engineering / Highway Project - CAMPO
Caldwell	SH 21	0.114 Miles W of FM 2001	Caldwell County Line	0471-02-069	Repair, level up and widen and overlay	$4,647,150	Construction / Highway Project - CAMPO

County	Road	From	To	CSJ	Description	YOE Cost[1]	Description (Year/Phase/Type)
Caldwell	SH 80	CR 266	0.215 Miles East of CR 266	0286-02-034	Install left turn lane	$750,000	Construction & Engineering / Highway Project - CAMPO
Caldwell	SH 21	Hays County Line	Bastrop County Line	0471-04-030	Provide super two passing lanes	$4,200,000	Construction / Highway Project – CAMPO/ Removed from TIP in February 2017.
Caldwell	SH 80	SH 21	FM 1984	0286-01-058	Complete gap in shoulder for bicycle travel	$5,000,000	Construction / Highway Project - CAMPO
Guadalupe	San Antonio	Lombrano Street	Laredo Street	0915-12-595	Extend the Alazan Creek section of the Greenway Trail System	$6,000,000	Construction / Highway Project
Guadalupe	Cibolo	FM 1103	IH10 E	0915-46-901	Construct toll road on new location within the City of Cibolo	$125,000,000	Construction / Highway Project
Guadalupe	Seguin/ Walnut Springs Trail	Seguin from Vaughan Bridge	Max Starcke Park East	0915-46-046	Extend Walnut Springs multi use trail, including retaining walls, guard rails and below grade crossing.	$2,801,246	Construction/ Highway Projects
Caldwell	Lockhart	SH 142	Clear Fork Street	0000-01-117	Engineering for 4 lane Roadway	$200,000	Engineering/ Highway Project

Source: http://ftp.dot.state.tx.us/pub/txdot-info/tpp/stip/2017-2020/highway.pdf

1. Year of Expenditure Cost (YOE): The costs of the phases of work indicated on the Transportation Improvement Program page.

1.4 TxDOT Letting Schedule

The latest TxDOT letting schedule for the Austin District was updated on August 27, 2018. Letting schedules are intended to provide a view of the planned construction contracts during the fiscal year. **Table 4** summarizes the TxDOT letting schedule for the fiscal year 2018. The projects include in the letting schedule are for Caldwell, Guadalupe and Gonzales counties.

Table 4: Projects from TxDOT Letting Schedule (FY 2018)

County	Road	CSJ	Letting Date	Contract Cost	Description
Caldwell	US 183	0153-01-014	August 2018	$449,531	Pavement Repair and Resurfacing
Caldwell	SH 80	0286-03-017	August 2018	$5,597,086	Level-up, full depth repair
Caldwell	US 183	0153-01-013	December 2017	$2,032,885	Intersection Improvement
Caldwell	IH 10	0535-03-25	June 2018	$3,586,581	Base repair, seal coat, overlay and pavement marking
Caldwell	VA	0914-22-070	August 2018	$225,000	Luling Relief Route Study
Guadalupe	IH 10	0535-02-046	June 2018	$18,238,398	Base Repair, sealcoat, overlay and pavement markings
Guadalupe	SH 123	0366-02-090	November 2017	$795,581	Install signal and construct intersection operational
Guadalupe	FM 78	0025-10-094	October 2017	$600,898	Install intersection flashing beacon and safety lighting
Guadalupe	IH 10	0535-02-048	Jan 2018	$3,614,844	Construct weigh station with weigh in motion ramps

County	Road	CSJ	Letting Date	Contract Cost	Description
Gonzales County	CR	0913-22-047	April 2018	$829,776	Rehabilitate Existing Bridge
Gonzales County	SH 80	0287-03-031	April 2018	$1,316,127	Safety Treat Fixed Objects
Gonzales County	US 90A	0025-05-021	August 2018	$2,061,460	Safety Treat Fixed Objects
Gonzales County	US 183	0153-02-040	August 2018	$6,760,342	Pavement Repair and Resurfacing
Gonzales County	US 90	0026-01-027	March 2018	$2,940,046	Pavement Repair and Resurfacing
Gonzales County	US 87	0143-06-027	September 2017	$17,927,226	Construct super two lanes
Gonzales County	US 183	0153-02-043	June 2018	$2,348,902	Bridge Repair
Gonzales County	SH 97	0025-07-064	November 2017	$6,210,792	Seal Coat

Table 5 summarizes the TxDOT letting schedule for the fiscal year 2019.

Table 5: Projects from TxDOT Letting Schedule (FY 2019)

County	Road	CSJ	Letting Date	Contract Cost	Description
Caldwell	VA	0914-22-061	May 2019	$2,120,648	Caldwell County STPMM Set - Aside
Caldwell	SH 21	0471-04-030	August 2019	$9,479,000	Provide Super 2 Passing Lanes

County	Road	CSJ	Letting Date	Contract Cost	Description
Guadalupe	VA	0915-46-046	May 2019	$2,801,246	Extend Walnut Springs Multi Use Trail – Including retaining walls
Guadalupe	FM 1044	2021-02-018	August 2019	$450,000	Install Preempted Traffic Signal on FM 1044 at UPRR DOT 742
Guadalupe	BS 123 B	0366-12-030	May 2019	$1,090,820	Improve Traffic Signal
Guadalupe	FM 78	0025-10-092	November 2018	$7,854,130	Spot base repair, overlay and pavement markings
Guadalupe	CS	0915-46-050	July 2019	$0	Construct sidewalks, bike lanes and off-road trails
Guadalupe	US 90 A	0025-03-098	July 2019	$2,824,313	Overhead flashing beacon
Gonzales	FM 77	0687-01-013	January 2019	$1,832,712	Replace Bridge and Approaches
Gonzales	Cr	0913-22-046	May 2019	$420,059	Replace Bridge and Approaches
Gonzales	FM 443	0839-01-014	September 2018	$1,570,396	Replace Bridge and Approaches
Gonzales	FM 108	0715-01-022	June 2019	$11,703,307	Safety Treat Fixed Object
Gonzales	FM 794	1133-02-031	August 2019	$0	2017 Railroad Replanking Program
Gonzales	FM 108	0715-01-014	November 2018	$2,210,730	Replace Bridge and Approaches
Gonzales	SH 97	0025-07-065	November 2018	$6,191,806	Seal Coat

Table 6 summarizes the TxDOT letting schedule for the fiscal year 2019.

Table 6: Projects from TxDOT Letting Schedule (FY 2020)

County	Road	CSJ	Letting Date	Contract Cost	Description
Caldwell	FM 2984	3006-01-007	October 2019	$1,900,000	Widen, repair and seal coat
Caldwell	US 183	0152-03-063	January 2020	$3,465,000	Level-up, full depth repair and overlay
Guadalupe	FM 1103	1268-02-029	February 2020	$1,500,000	Spot base repair, overlay and pavement markings
Guadalupe	CS	0915-46-048	August 2020	$0	Install Cantilevers at UPRR DOT 742 634V (Schertz Pkwy)
Guadalupe	IH 35	0016-06-047	May 2020	$720,000,000	Expand from 8-lane to 14-lane by adding 6 new Express Lanes
Guadalupe	SH 123	0366-02-093	October 2019	$1,382,455	Base repair, sealcoat, overlay and pavement markings
Gonzales	FM 1116	0573-04-017	April 2020	$3,750,000	Rehabilitate Roadway
Gonzales	CR	0913-22-049	April 2020	$675,000	Replace Bridge and Approaches
Gonzales	FM 108	0715-01-019	April 2020	$3,900,000	Replace Bridge and Approaches

1.5 CAMPO four-year Transportation Improvement Program

The 2019-2022 Transportation Improvement Program (TIP) is a list of federal funded projects that are in the process of begin construction. The TIP is updated and approved every two years. Highway projects that are listed are federally funded by Federal Highway Administration (FHWA), Texas Department of Transportation and regional or local sponsors.

Table 7 summarizes the projects listed in the CAMPO 2019-2022 Transportation Improvement Program. All the projects correspond to the 2019 or 2020 fiscal years.

Table 7: Projects from CAMPO 2019-2022 Transportation Improvement Program (TIP)

County	Road	From	To	CSJ	Description / Phase	YOE Cost	Sponsor
Caldwell	FM 110	SH 80	SH 21	3545-03-003	Construct two lanes and shoulders / Engineering & Construction	$5,884,100	Hays County / TxDOT
Caldwell	FM 110	Hays County Line	SH 80	3545-03-004	Construct two lanes and shoulders / Preliminary Engineering, ROW and Construction	$2,000,000	Hays County / TxDOT
Caldwell	SH 80	CR 266	0.215 Miles East of CR 266	0286-02-034	Install Left Turn Lane / Engineering & Construction	$750,000	Hays County
Hays / Caldwell	SH 80	SH 21	FM 1984	0286-01-058	Complete gap in shoulder for bicycle travel/ Construction & Engineering	$5,000,000	TxDOT

Source: https://www.campotexas.org/resources/

Appendix A of the 2019-2022 CAMPO Transportation Improvement Programs shows a list of grouped projects. Grouped projects are not listed individually and usually are grouped by function, work type or geographic area. They are eleven grouped categories such as: Preliminary Engineering, Right or Way

Acquisition, Preventive Maintenance and Rehabilitation, Bridge Replacement and Rehabilitation, Railroad Grade Separation, Safety, Landscaping, Intelligent Transportation System Deployment, Bicycle and Pedestrian, Safety Rest Areas and Truck Weigh Stations and Transit Improvements and Programs.

Table 8 summarizes a list of grouped projects from the 2019-2022 CAMPO Transportation Improvement Programs. All the projects listed in this table correspond to the 2019 fiscal year.

Table 8: Grouped Projects from CAMPO 2019-2022 Transportation Improvement Program (TIP)

County	Road	From	To	CSJ	Description / Phase	Total Cost	Sponsor
Caldwell	FM 150/ Yarrington*	SH 21	SH 130	31-00033-00 (MPO ID)	Design and Engineering for 7-Mile Extension of FM	$121,933,935	Caldwell County
Caldwell	FM 86	At FM 713		0571-02-036	Install Intersection Flashing Beacon	$76,944	TxDOT
Caldwell	SH 142	SH 80	FM 2720	0384-01-023	Profile Pavement Markings	$158,037	TxDOT
Caldwell	SH 80	FM 20	US 183	0286-03-017	Seal Coat	$1,046,000	TxDOT
Caldwell	SH 80	West of FM 20	FM 20	0286-02-033	Seal Coat	$40,000	TxDOT

Source: https://www.campotexas.org/resources/

*The Preliminary Engineering was approved for this project on May 7, 2018 with a funding award of $1,725,000.

1.6 CAMPO 2040 Regional Transportation Plan

The CAMPO 2040 Regional Transportation Plan was adopted on May 11, 2015 and includes Bastrop, Burnet, Caldwell, Hays, Travis and Williamson Counties. The Capital Area Metropolitan Planning Organization (CAMPO) approves federal transportation funds within the region and coordinates transportation planning efforts within their regional cities and counties.

The Chapter 5 “Action Plan and Projects” presents several recommendations for Luling and the surrounding counties. **Table 9** summarizes the recommended projects from this Plan.

Table 9: Projects from CAMPO 2040 Regional Transportation Plan

County	Sponsor	Location	Project /Description	Let Year	YOE Cost (Millions)	Funding Source
Caldwell	Caldwell	SH 21	Hays County Line to SH 130 / Widen to 4 lanes	2025	$14.9	Local
Caldwell	Caldwell	SH 80	FM 1979 to SH 130 / Widen to 4 lanes	2025	$55.9	Local
Caldwell	Caldwell	SH 80	County Line Road to FM 1979 / Widen to 6 lanes with raised median	2035	$100.4	Regional
Caldwell	Caldwell	SH 142	SH 80 Yarrington Road Extension / Widen to 4 lanes	2025	$40.3	Local
Caldwell	Caldwell	SH 142	Yarrington Road Extension to FM 150 Extension / Widen to 4 lanes	2025	$40.4	Local
Caldwell	Caldwell	SH 142	FM 150 Extension to SH 130 / Convert to 4 Lanes Major Arterial Divided	2025	$8.8	Local
Caldwell	Lockhart	FM 2001 Expansion	0.14 miles south of SH 142 to Silent Valley Road / Northward Extension of City Line Road	2040	$1.2	Local
Caldwell	Lockhart	City Line Road	Extend City Line Road from Clear Fork Street to FM 20 / Construct New Roadway	2035	$7.8	Local
Caldwell	Lockhart	City Line Road	Extend City Line Road from FM 20 to US 183/ Construct New 4 Lanes Arterial	2035	$5.6	Local
Caldwell	Lockhart	City Line Road	SH 142 to Clear Fork Road/ Rehab and widen to 4 Lanes	2035	$3.6	Local
Caldwell	Lockhart	CR 214 / Graham Road	Connect CR 215 with US 183 via CR 214 / Alternate to New Roadway 85	2035	$5.6	Local
Caldwell	Lockhart	East MLK Jr Industrial Blvd	Extend E MLK Jr Industrial Blvd with FM 1322 / New 4 Lane Major Arterial Undivided	2040	$2.2	Local

County	Sponsor	Location	Project /Description	Let Year	YOE Cost (Millions)	Funding Source
Caldwell	Lockhart	North Mockingbird Lane	Extend Mockingbird Lane to Silent Valley Road / New 4 Lane Major Arterial Undivided	2040	$10.8	Local
Caldwell	Lockhart	New Roadway 30	US 183 at Westwood Dr and FM 86 as alternative to FM 1322 in flood events / Proposed alternative to FM 1322	2035	$11.7	Local
Caldwell	Lockhart	New Roadway 34	FM 1322 to CR 203 / Construct New Roadway	2035	$3.8	Local
Caldwell	Lockhart	New Roadway 46	CR 215 to CR 213/Robin Ranch Road / Construct New Roadway	2035	$3.5	Local
Caldwell	Lockhart	New Roadway 47	CR 221 to SH 130 at Plum Creek U-turn Bridge / Construct New Roadway	2035	$10.9	Local
Caldwell	Lockhart	San Jacinto Street	FM 20 to MLK Jr Industrial Blvd/ Construct New Roadway	2035	$3.3	Local
Caldwell	Caldwell		Arterial Street Improvement Program	-	$8.9	Local
Lockhart	Caldwell		Arterial Street Improvement Program	-	$6.6	Local
Caldwell	CARTS	Caldwell County	Fixed Routes to connect cities in Caldwell County	2029	$5.1	Regional
Caldwell / Travis	CARTS	Lockhart to Austin	Intercity Express Bus / Lockhart Express	2035	$6.5	Regional
Caldwell / Hays	CARTS	Lockhart to San Marcos	Intercity Express Bus / San Marcos Express	2035	$4.3	Regional
Caldwell	CARTS	Luling to Lockhart	Intercity Express Bus / Luling Express	2023	$1.3	Regional
Caldwell / Hays	CARTS	Luling to San Marcos	Intercity Express Bus	2030	$3.6	Regional

County	Sponsor	Location	Project /Description	Let Year	YOE Cost (Millions)	Funding Source
Caldwell	CARTS	Luling to Lockhart	Intercity Express Bus / Luling Express	2023	$1.3	Regional
Caldwell	CARTS	Lockhart	Intermodal Facility – Lockhart Park and Ride	2035	$8.7	Regional
Caldwell	CARTS	Lockhart / Luling	Intermodal Facility to serve Lockhart / Luling Area	2021	$0.9	Regional
Caldwell	Caldwell	FM 2001 / Silent Valley Road	SH 21 / Realign and widen shoulders	2035	$25.5	Grouped Projects / Not Guarantee Implementation

Several projects in the Caldwell County were not part of the fiscally constrained portion of the plan since they lack allocated funds and sponsors. The list includes the construction of a new 4-lane divided highway called the Luling East Relief Route, the widening to 4 lanes of the SH 80 from CR 111 to Political Road in the Luling City Limits.

Other projects in the Caldwell County that are fiscally constrained are:

- SH 142 from FM 150 Extension to SH 130 – Widen to 4 lanes
- FM 20 at US 183 – Realign intersection to eliminate a traffic signal
- FM 20 from US 183 to Bastrop County Line – Widen to 4 lanes
- FM 150 Extension from SH 21 to SH 142 - Construct 4 lanes roadway
- FM 2720 & FM 2001 from SH 21 along FM 2720, then to FM 2001 along County View Road to US 183 – Provide 4 lanes as a continuation of the proposed Kyle Pkwy Extension in Hays County
- New Roadway 84 from NE Lockhart bypass – Construct new 4 lanes arterial highway between SH 130 and FM 20.
- New Roadway 93 from FM 2001 to US 183 intersection at FM 20- Construct new 4 lanes arterial
- Yarrington Road Extension from SH 21 to SH 130 at Black Ankle Road – Construct new 4-lane divided highway.

1.7 Luling Master Plan

The City of Luling Master Plan was adopted in 2012. The Luling Master Plan is a tool to help in the planning for future growth of the City of Luling. This Plan includes a section for Land Use, Housing, Economic Development, Street and Drainage, Water, Wastewater and recommendations for capital improvements.

The Economic Development section indicates as an example the impact of the completion of highway 130. The City of Luling has an intersection at Highway 130 and SH 80. This intersection could potentially be a catalyst for new commercial, residential and industrial developments for the City of Luling.

The Economic Development section also states that CAMPO projects an increase in traffic congestion on SH 80 between the cities of Luling and San Marcos and increase in delays on segments of US 183 from Lockhart to IH-10. They also projected an increase in trade and freight traffic along Central Texas. The Master Plans recommends initiating a process towards generating a Transportation Thoroughfare Study for the long-tern welfare of the community and the assessment and evaluation of the viability for a future bypass around the City of Luling.

A Central Business District (CBD) Analysis performed by this Plan identified segmented sidewalks along the CBD, lack of crossings at some intersections, parking issues during lunch time between Magnolia and Laurel Street, and trends that indicates higher volumes of traffic due to increasing population in the region. The plan recommends adding crosswalks, sidewalks or pedestrian walkways and a tram system for the CBD.

The recommended capital improvements consisted of a needs list for the years 2012, 2013, 2014, 2015, 2016 and 2017. Improvements such as seal coat, rehabilitation and resurfacing of pavement, resurfacing with curb and gutter and widening for several streets were the main recommended improvements.

1.8 Caldwell County Transportation Plan

The Caldwell County Transportation Plan was adopted in March 2013. The Plan was a collaboration between Caldwell County and the Capital Area Metropolitan Planning Organization (CAMPO). The main transportation need established in this study includes improving the mobility, connectivity and maintenance of local and state roads within the County.

The Coldwell County Roadway network consist of the following main roadways:

- IH 10 provides access between San Antonio and Houston. It runs near the southern side of the county.
- US 183 provides access between Luling and Lockhart and extends north into Austin. It runs in the middle of the county from north to south.
- SH 80 provides access between San Marcos and Luling. It traverses through the southwest side of the county.
- SH 142 provides access between Martindale and Lockhart through the western side of the county.
- FM 20 provides access between Lockhart and Bastrop
- FM 86 provides access between Luling and FM 20.

An existing condition analysis for the year 2010 indicated that most of their roadway system operated within acceptable level of service (C or better). Only SH 21 in Mustang Ridge and US 183 in Luling, operated at LOS D. For forecast year 2035, the demand on several roadway sections exceeded capacity – SH 80, SH 142, SH 21, FM 2720 and some sections of US 183 and FM 2001.

The crash analysis was performed with data from 2009 to 2011. The frequency of the crashes stayed stable or slightly decrease over the study period. Most of the crashes reported were property damage only (more than 60%). More than half of the crashes reported were located on US and State Highways. US 183 had the highest number of crashes in the county (397 crashes).

MEMO

Luling Transportation Study – Previous Plans and Studies

The proposed transportation improvements included in the Caldwell County Transportation Plan are provided in the bullet lists below. The proposed timeframe of most of the existing roadways improvements are long term. Near term improvement projects are ***italicized and bolded***.

Existing Road Number / Limits / Improvement/ Jurisdiction / Estimated Cost (Millions)

- SH 80/ County Line Road to FM 1979/ Widen to 6 lane w/raised median/ TxDOT / $45.83
- SH 142 / SH 130 to Hummingbird Road / Widen to four lanes / TxDOT / $6.09
- SH 80 / CR 111/Political Rd to Luling City Limit / Widen to four lanes / TxDOT / $18.51
- FM 20 / US 183 to SH 80 / Add paved shoulders / TxDOT / $57.16
- FM 20 / Realign FM 20 at US 183 intersection / Realign FM 20 to eliminate a traffic signal /TxDOT and Lockhart / $0.36
- FM 20 / US 183 to Bastrop County Line / Widen to four lanes /TxDOT / $92.70
- FM 2720 & FM 2001 /SH 21 along FM 2720, then to FM 2001 along County View Rd to US 183 / Provide 4 lanes as continuation of the proposed Kyle Pkwy Extension in Hays County / TxDOT / $44.92
- FM 20 / US 183 to Bastrop County Line / Add paved shoulders / TxDOT / $17.91
- CR 103 / NW River Road SH 80 near FM 1984 to Main Street / Upgrade two lane road to current standards / Martindale/ $17.35
- City Line Road / SH 142 to Clear Fork Road / Rehab and widen to 4 lanes / Lockhart / $6.98
- SH 80 / W. Ridge Road to Political Road (CR 111) / Widen to four lanes / TxDOT /$39.01
- FM 2001 / Silent Valley Road / Widen shoulder and realign at SH 21 Realign at SH 21 intersection and widen shoulders / TxDOT / $11.67
- CR 103 / SE River Road Main Street to FM 1977 / Upgrade two lane road to current standard and pave gravel portion / Martindale & County / $16.75
- SH 142 / SH 80 to Yarrington Road Extension / Widen to four lanes / TxDOT / $27.71
- FM 20 / FM 20 and Westbrook Intersection / Address safety issues including sight distance problem / County or TxDOT / $0.85
- SH 142 / FM 150 Extension to SH 130 / Widen to four lanes / TxDOT / $13.15
- CR 218 (Boggy Creek Road) / 0.5 mi N of SH 130 to SH 130 / Upgrade and pave road / County / $0.44
- CR 309 / US 183 to FM 2984, begin Luling West Relief Route Alternative / Upgrade to 4-lane divided / County / $0.72
- CR 643 / CR 643 / Upgrade and pave road / County / $3.76
- ***CR 215 Old Fentress Road (Westwood Road) / SH 130 to US 183 (Combines Project Map IDs***

  44, 50 and 85) / Surface and widen to four lanes / County / $4.89
- SH 21 / East of SH 130 to Bastrop County Line / Widen to four lanes / TxDOT / $30.88
- CR 218 (Boggy Creek Road) / SH 130, southwest to Project Map ID 56 / Upgrade and pave road County / $5.59
- SH 21 / Hays County Line west of Mustang Ridge to existing 4-lane section / Widen to four lanes / TxDOT / $10.18

- ***CR 215 (Old Fentress Road) / SH 130 to FM 20 / Improve and add surface / County / $0.58***
- ***CR 215 (Westwood Road) / CR 215 to US 183 / Long term planned, existing, upgrade, paved / County / $1.18***
- ***CR 215 & CR 214 (Old Fentress Road/ Westwood Road/ Graham Road) / SH 130 to US 183 via new location between CR 215 and CR 214 / Surface and widen to four lanes; partial new location / County / $6.30***
- SH 21 / FM 2001 to Caldwell/Hays County Line / Widen to four lanes / TxDOT / $16.63
- SH 142 / Yarrington Road Extension to FM 150 Extension / Widen to four lanes / TxDOT / $27.74
- ***CR 2125 / FM 20 to US 183 / Long-term Planned, Existing, upgrade, Paved / County / $3.13***
- CR 244 (Spoke Hollow Road) / CR 110, Long Rd. to CR 111 and Political Rd / Upgrade and pave road / County / $1.02
- CR 107 (Dickerson Road) / SH 80 to CR 109 & CR 109A (Tower Rd/ Black Ankle Rd intersection) / Upgrade to 2-lane paved road / County / $13.18
- CR 179 & CR 164 (Hommanville Trail/ Barth Road / Tumbleweed Trail/ Old Colony Line Road) /US 183 & SH 130 to FM 20 / Upgrade and pave road with new at-grade RR crossing / TxDOT / $15.15
- SH 21 / East of SH 130 to Bastrop / Add shoulders / TxDOT / $9.71
- CR 178 /FM 1854 to CR 179/ Improve and add surface/ County / $1.63
- CR 203 (Shady Hollow Road) / FM 20 to Old McMahan Rd / Upgrade and add surface / County / $0.66
- SH 21 / Hays to east 3,170 ft / Add shoulders / TxDOT / $1.26
- CR 151 (Sandy Fork Road) / SH 304 to proposed Project Map ID 2 / Improve and add surface / County / $6.83
- CR 221 & CR 222 (Schulke Road) / SH 21 to Rolling Ridge Rd / Upgrade and pave road / County / $16.17
- CR 235 (County View Road) / FM 2720 and FM 2001 / Realign CR between FM 2720 and FM 2001, possibly redesignate as FM 2720 / County / $0.64
- MLK Industrial Blvd / US 183 to FM 1322 / Add striping and redesignate as FM 1322 / Lockhart $0.33
- FM 2720 / Cottonwood Trail to Bobwhite Road / Proposed realignment of curves / TxDOT / $3.91
- CR 111 (Political Road) / SH 80 to FM 20 / Upgrade to 2-lane paved road / County / $10.28
- CR 139 (Harwood Road/ Tenney Creek Road/ Smith Farm Road Gonzalez) / County Line to Pearl Trail / Realignment of existing road / County / $6.69
- CR 150 (Kirk Corners) / FM 1386 to Gonzalez County Line (then to SH 304) / Realignment of existing road, add surface / County/ $8.66
- CR 160 (Old Colony Line Road) / FM 20 to FM 713 / Proposed realignment / County /$8.11 17
- CR 222 (Schulke Road) / CR 221, Rolling Ridge Road to SH 130 / Upgrade and pave road / County / $2.04
- SH 80 /SH 80 at Prairie Lea / Add two-way left-turn lane in Prairie Lea / TxDOT / $3.79
- FM 671 / FM 671 & FM 2984 / Reconfigure & Reconstruct intersection / TxDOT / $0.11

- FM 86 / FM 86 and FM 713 intersection / Realignment for safety / TxDOT / $0.61
- CR 172 (County Line Road) / FM 1854 at Lytton Road to Bastrop and Bastrop CR 250 from to FM 812 / Upgrade and realignment / County / $5.02
- CR 198 / Fox Lane & Young Lane / CR 197 to FM 86 / Proposed realignment and add surface / County / $6.95
- CR 197 (Young Lane) / FM 1322, east to Project Map No. 25 / Upgrade roadway / County / $7.83
- CR 253 / Extend FM 3158 along CR 253 to FM 86 / Rehab pavement / TxDOT / $0.27

New Road Number / Limits / Improvement/ Jurisdiction / Estimated Cost (Millions)

- CR 109 & New Location (Yarrington Road Extension) / SH 21 to SH 130 at Black Ankle Road / Proposed 4-lane divided highway / County / $61.25
- FM 150 Extension / SH 21 to SH 142 / Construct 4-lane roadway in phases with participation by developer / Developer & County / $38.07
- City Line Road / Extend City Line Rd from Clear Fork St to FM 20 / Proposed new roadway / Lockhart / $3.56
- No Name / From FM 2001, US 183 intersection to FM 20 / Proposed 4-lane arterial between US 183 at FM 2001 and FM 20 (NE Lockhart Loop option) / Lockhart / $44.99
- No Name / FM 20 and CR 186 & Old Kelley Rd to FM 1322 at Center Point Rd / Proposed new roadway / County & Lockhart / $2.44
- No Name / From Project Map ID 96, approx. 2 miles south of FM 20 to Shady Hollow Rd / Proposed new roadway / County & Lockhart / $1.96
- CR 220 / Extend CR 220 to FM 1322 / Proposed new roadway / County /$1.49
- No Name / US 183 at Westwood Dr and FM 86 as alternative to FM 1322 in flood events / Proposed alternative to FM 1322 / County / $5.38
- No Name / FM 1322 at Center Point Rd to US 183 and Old Luling Rd / Proposed new roadway / County & Lockhart / $4.39
- Mockingbird Lane / Extend Mockingbird Lane north to Horseshoe Rd / Proposed new roadway / Lockhart / $4.06
- No Name / FM 1322 at Lay Rd to FM 20, Blackjack St / Proposed new roadway / Lockhart / $0.86
- ***San Jacinto Street / FM 20 to MLK Jr. Industrial Blvd / Proposed new roadway / Lockhart / $1.51***
- US 183 / Luling West Relief Route Alternative / Proposed 4-lane divided highway (not preferred conceptual alternative) / To Be Determine / $66.99
- ***FM 110 /Guadalupe County Line to Hays County Line / Proposed 4-lane divided highway / County & San Marcos / $23.32***
- No Name / US 183 at Graham Rd to FM 1322 and Young Ln / Proposed new roadway / County / $6.98
- US 183 / Luling East Relief Route Alternative / Proposed 4-lane divided highway / To Be Determine / $71.81
- SH 80 /SH 80 bypass at Prairie Lea / Proposed 4-lane divided highway / TxDOT & County / $6.92

- CR 214 (Graham Road) / Connect CR 215 to US 183 via CR 214 / Alternate to Project Map ID. 85 (Included in Project Map ID 50-B on Existing Roadway list) / County / $2.59
- City Line Road / Extend City Line Rd south and southeast from FM 20 to and along MLK Jr. Industrial Blvd. to US 183 / Proposed 4-lane arterial / Lockhart / $7.45
- No Name / NE Lockhart bypass / Proposed 4-lane divided highway between SH 130 and FM 20 / To Be Determine / $46.16
- No Name / New location connection between CR 221 and SH 130 at Plum Creek U-turn bridge / Proposed new roadway / County / $5.00
- No Name / New road between FM 1322 and CR 203 / Proposed new roadway / County / $1.77
- No Name / New location connection between CR 215 and CR 213 and Robin Ranch Rd / Proposed new roadway / County / $1.60
- No Name / From FM 2001, Silent Valley Rd to SH 142 at City Line Road / Proposed new roadway / Lockhart / $5.42
- No Name / SH 142 near intersection with Project Map ID 68 to CR 218 / Proposed new roadway / County / $5.50
- CR 161 (Sand Hill Road) / FM 713 to end of road, and extend on new location to the intersection of Project Map IDs 1 and 2 / Reconstruct and extend on new location / County / $1.48
- No Name / FM 713 at Pine Gap Road to Extension of Sandy Fork Road / Construct road generally along property lines / County / $2.61
- CR 126 & CR 115 (Acorn Road and Bugtussle Lane) / FM 20 to FM 671 / Improve and realign portions of road / County / $3.56
- CR 145 (Vine Hill Road) FM 3158 to Pearl Trail / Pave and extend on new location / County /$5.69
- CR 313 (Boulder Lane) / FM 3158 to Red Sand Trail, then on new location to Sandy Fork Road / Rehab and pave road, realign / County / $3.86
- No Name / FM 2001 at CR 227, Rocky Road to Schuelke Rd / New roadway connecting FM 2001 to SH 130 / County /$5.84

Within Luling, the Plan provides a map showing two potential new road projects or alternative alignment ideas for a relief route for US 183. These two alternatives are listed above as long-range projects and are included in **Table 7**.

County maintenance projects were prioritized based on pavement condition, crash history, environmental and connectivity. The list of maintenance needs only identifies county roads with poor or very poor conditions. The maintenance projects near Luling that are prioritized by the county are as follows:

Road Name / Surface Type / Estimate cost of Maintenance (Millions)

- CR 309 (Bridle Path Road) / CHIP / $0.62
- CR 133 (Ivy Switch Road) / CHIP / $0.31
- CR 132 (Derrick Road) / CHIP / $0.46
- CR 136 (Arrow Lane) / CHIP / $0.31
- CR 137 (Sunflower Trail) / CHIP / $1.93
- CR 130 (Soda Springs Road) / CHIP / $1.65
- CR 130 (Soda Springs Road) / CHIP / $0.52

- CR 128 (Salt Flat Road) / CHIP / $1.10
- CR 138 (Mc Neal Creek Road) / CHIP / $0.72
- N Hackberry Street / CHIP / $0.20
- CR 129 (Pumper Road) / UNPAVED / $0.32
- CR 122 (Austin Road) / CHIP HOTMIX/ $0.99
- CR 130 (Soda Springs Road) / CHIP / $2.06
- CR 130 (Soda Springs Road) / CHIP / $0.51
- CR 128 (Salt Flat Road) / CHIP / $0.67
- CR 135 A (Southern Way) / CHIP / $0.46
- CR 248 (Treetop Lane) / UNPAVED / $0.77
- CR 248 (Treetop Lane) / CHIP HOTMIX / $0.41
- CR 282 (Water Street) / UNPAVED / $0.17
- CR 302 (Mc Neal Road) / CHIP / $0.66
- CR 139-A (Lost Road) / UNPAVED / $0.41

1.9 Austin Area Freight Transportation Study

The Austin Area Freight Transportation Study was conducted by TxDOT, CAMPO, and the Greater Austin Chamber of Commerce (GACC). The scope of the study was to compile data on freight issues and needs within the Austin Area. The document summarizes the movement of freight by means of road, rail, and air along with estimated tonnage, major origin and destination locations, and future estimated growth percentages. Financial statistics are also provided in terms of economic development and costs of freight improvement plans.

Some key information provided by the Austin Area Freight Study is highlighted below:

Trucked Freight

- From 2003 Transearch data estimates, **freight movement** in CAMPO study area increases from 2003 to 2035
    - Freight with origin and destination inside the study area grew from 18.2 million tons to 34.3 million tons
    - Freight with origin within study area and destination outside grew from 38.3 to 82.8 million tons
    - Freight with origin outside study area and destination within grew from 37.3 to 77.4 million tons
- Nearly 93% of freight by tonnage in 2003 was trucked
- In 2003, the highest intra-regional exports from Caldwell County went to Bastrop County; 34,444 tons/1554 trucks of gravel or sand
- In 2003, the highest intra-regional imports to Caldwell County came from Travis County; 26,854 tons/1212 trucks of gravel or sand
- For future year 2035, the highest intra-regional exports from Caldwell County went to Bastrop County; 48,556 tons/ 2191 trucks of gravel or sand
- For future year 2035, the highest intra-regional imports to Caldwell County came from Travis County; 62,070 tons/ 2,801 trucks of gravel or sand
- CAMPO's intra-state freight movement stayed mostly within CAMPO study area

Rail Freight

- CAMPO study area's exports by rail will increase by 51.1% and imports by rail will increase by 43.6% in 2035
- In 2006, 35-60 million tons/mile were carried by rail through Guadalupe, Gonzales, and Caldwell Counties

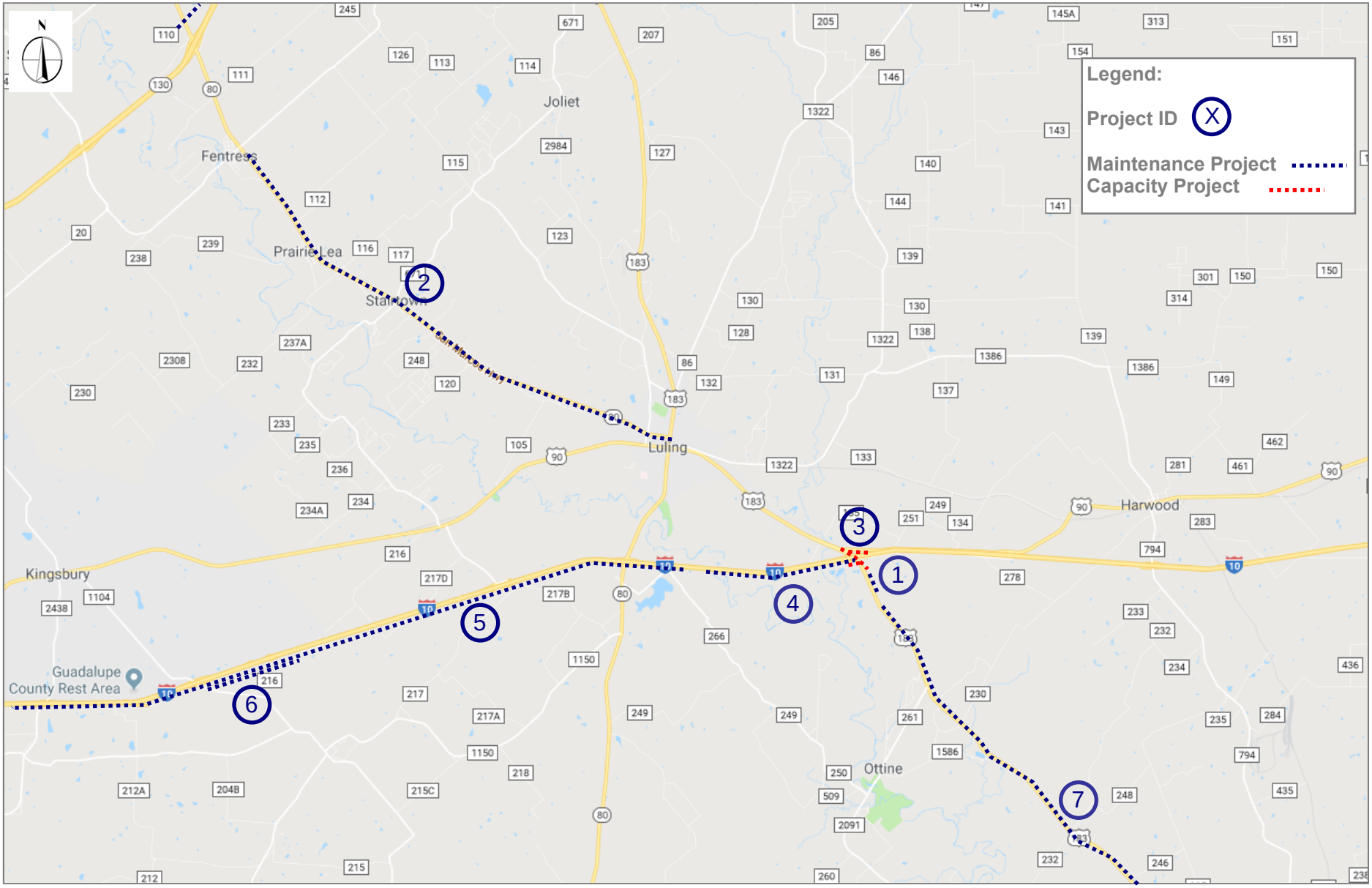
1.10 2016 Texas Rail Plan Update

The Texas Rail Plan is a report detailing the state of the Texas Rail System and potential improvements for passenger and freight rail. Some key pieces of information from the 2016 Texas Rail Plan are listed below:

- 20% of state-wide freight movement in 2014 was by rail
- Estimated to still account for 20% of freight in 2040, but with a 90% increase in rail tonnage
- Through-rail traffic projected to be the largest rail movement by 2040 at 276.1 million tons/ 36% of total rail movement
- Greatest increases in freight movement expected to fall on BNSF lines travel out/into Texas but increases also expected on various Union Pacific lines traveling within Texas; notably to/from Caldwell County.
- Current issues regarding slow average speeds are mostly due to capacity-constrained network

1.11 FHWA Freight Analysis Framework (FAF) Version 4

The Freight Analysis Framework (FAF) is a database produced by the FHWA in cooperation with the Bureau of Transportation Statistics (BTS). Compiling data from a variety of sources, the FAF allows users to sort and analyze data on freight movement. Statistics provided includes estimates for tonnage by regions of origin and destination, cargo type, and mode based on the most recent Commodity Flow Survey (CFS), which was done in 2012. Estimates are available for several years including future projection year 2045. The FAF does not have the geographic resolution to provide freight movement data specific to the Luling area.



Google Maps, 2018

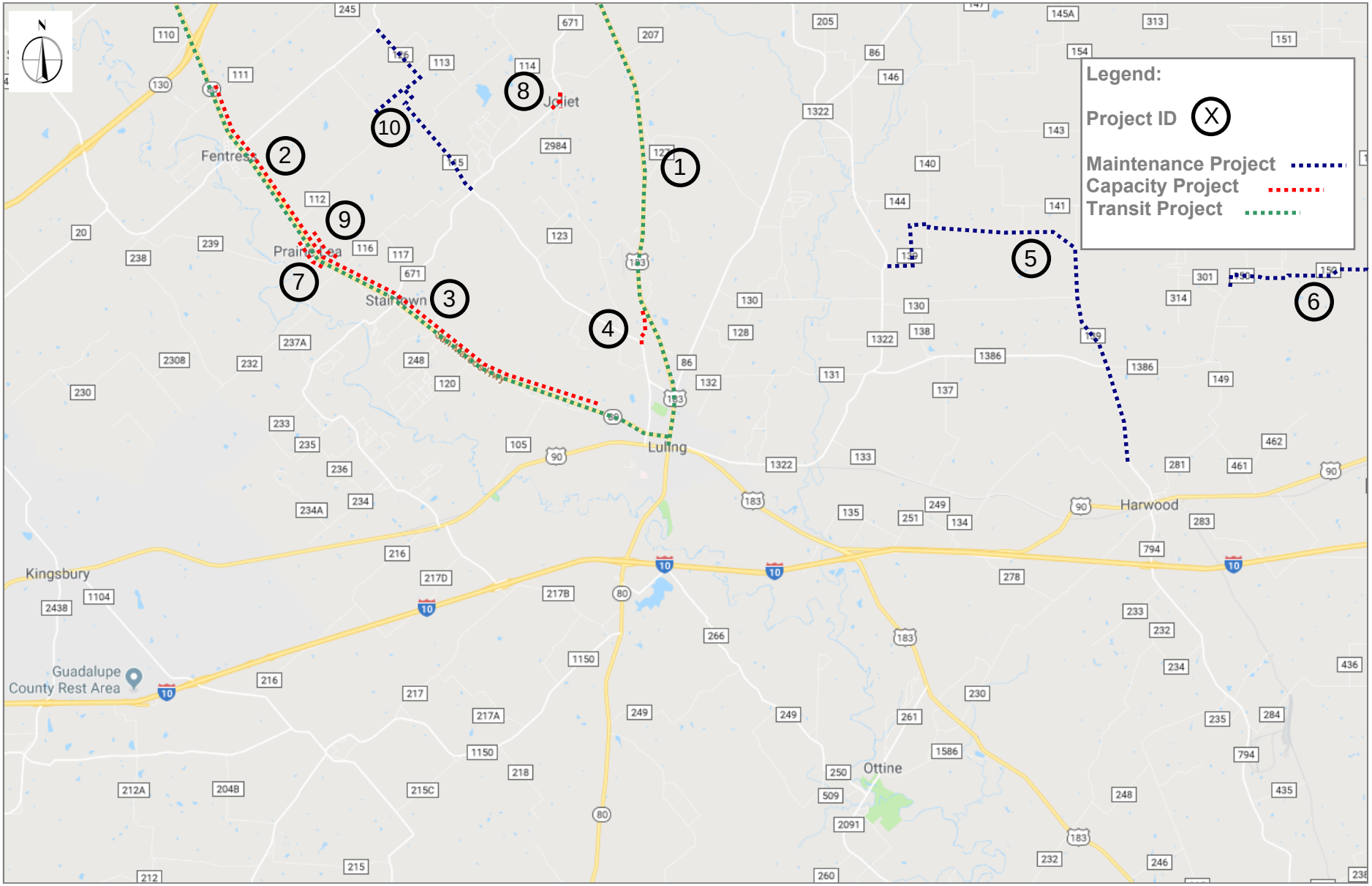
Figure 1A

Funded Transportation Projects near the City of Luling

Project ID	County	Road	CSJ	Letting Date	Contract Cost	Description
1	Caldwell	US 183	0153-01-014	August 2018	$449,531	Pavement Repair and Resurfacing
2	Caldwell	SH 80	0286-03-017	August 2018	$5,597,086	Level-up, full depth repair
3	Caldwell	US 183	0153-01-013	December 2017	$2,032,885	Intersection Improvement
4	Caldwell	IH 10	0535-03-25	June 2018	$3,586,581	Base repair, seal coat, overlay and pavement marking
5	Guadalupe	IH 10	0535-02-046	June 2018	$18,238,398	Base Repair, sealcoat, overlay and pavement markings
6	Guadalupe	IH 10	0535-02-048	Jan 2018	$3,614,844	Construct weigh station with weigh in motion ramps
7	Gonzales County	US 183	0153-02-040	August 2018	$6,760,342	Pavement Repair and Resurfacing

Figure 1B

Funded Transportation Projects near the City of Luling



Google Maps, 2018

Figure 2A

Unfunded Transportation Projects near the City of Luling

MAKING COMPLEX EASY

Project ID	County	Road	Reference	Sponsor	Estimated Cost	Description / Location
1	Caldwell	US 183	CAMPO 2040 RTP	CARTS	$1,300,000 / $900,000	Intercity Express Bus - Luling Express (Luling to Lockhart) / Intermodal Facility Luling Area
2	Caldwell / Hays	SH 80	CAMPO 2040 RTP	CARTS	$3,600,000	Intercity Express Bus –/ Luling to San Marcos
3	Caldwell	SH 80	Caldwell County Transportation Plan	TxDOT	$18,510,000	Widen to four lanes / CR 111 to Luling City Limits
4	Caldwell	CR 309	Caldwell County Transportation Plan	County	$720,000	Upgrade to 4-lanes / US 183 to FM 2984
5	Caldwell	CR 139	Caldwell County Transportation Plan	County	$6,690,000	Realignment of Existing Road / County Line to Pearl Trail
6	Caldwell	CR 150	Caldwell County Transportation Plan	County	$3,614,844	Realignment of Existing Road / FM 1386 to SH 304
7	Caldwell	SH 80	Caldwell County Transportation Plan	TxDOT	$3,790,000	Add two-way left turn to Prairie Lea
8	Caldwell	FM 671	Caldwell County Transportation Plan	TxDOT	$110,000	Reconfigure Intersection / FM 671 and FM 2984
9	Caldwell	SH 80	Caldwell County Transportation Plan	TxDOT & County	$6,920,000	SH 80 Bypass thru Prairie Lea (Proposed 4-lane divided highway)
10	Caldwell	CR 126 & CR 115	Caldwell County Transportation Plan	County	$3,560,000	Improve and Realign portions of road

Table 2B

Unfunded Transportation Projects near the City of Luling

Appendix B

Local and Regional Demographics

Demographic Summary
Source: United States Census Bureau

Luling, Texas	2010	2011	2012	2013	2014	2015	2016	2017	2018
POPULATION (PEP)*	5,411	5,505	5,530	5,604	5,659	5,701	5,814	5,919	5954
POPULATION (ACS)**	5,411	5,514	5,517	5,523	5,569	5,624	5,679	5,709	n/a
Male	2,533	2,317	2,364	2,601	2,540	2,484	2,727	2,761	n/a
Female	2,878	3,197	3,153	2,922	3,029	3,140	2,952	2,948	n/a
Median Age	35.5	36.5	40.6	42.5	41.2	45.3	40.3	40.6	n/a
18 years and over	3,933	3,958	4,105	4,227	4,344	4,574	4,425	4,442	n/a
65 years and over	903	983	993	1,075	1,143	1,220	1,176	1,216	n/a
RACE (ACS)*									
White	3,829	3,469	4,139	3,887	4,401	4,679	4,626	4,155	n/a
Black	462	585	717	639	458	494	557	505	n/a
American Indian and Alaska Native	20	301	0	8	10	12	11	16	n/a
Asian	26	0	0	0	0	0	0	24	n/a
Native Hawaiian and Other Pacific Islander	1	0	0	0	0	6	10	12	n/a
Some other race / two or more races	1,073	1,159	661	989	700	433	475	997	n/a
HISPANIC OR LATINO HERITAGE (ACS)*									
Hispanic or Lations (of any race)	2,846	2,632	2,364	2,308	2,455	2,310	2,589	2,934	n/a
Not Hispanic or Latino	2,565	2,882	3,153	2,315	3,114	3,314	3,090	2,775	n/a
TOTAL HOUSING UNITS (ACS)*	2,115	2,485	2,540	2,444	2,161	2,303	2,232	2,278	n/a

Caldwell County, Texas	2010	2011	2012	2013	2014	2015	2016	2017	2018
POPULATION (PEP)*	38,066	38,472	38,690	39,215	39,721	40,442	41,169	42,425	43247
POPULATION (ACS)**	38,066	37,795	38,152	38,465	38,870	39,347	39,848	40,544	n/a
Male	19,180	19,043	19,218	19,360	19,610	19,907	20,019	20,563	n/a
Female	18,886	18,752	18,934	19,105	19,260	19,440	19,829	19,981	n/a
Median Age	34.8	34.5	35.1	35.6	35.4	35.6	35.6	35.8	n/a
18 years and over	28,008	27,838	28,127	28,656	29,111	29,697	30,162	30,771	n/a
65 years and over	4,510	4,445	4,647	4,809	4,925	5,064	5,288	5,362	n/a
RACE (ACS)*									
White	28,865	24,650	26,476	27,228	28,186	29,001	30,425	31,538	n/a
Black	2,585	2,705	2,776	2,743	2,728	2,785	2,844	2,665	n/a
American Indian and Alaska Native	305	494	254	458	305	235	184	358	n/a
Asian	357	75	61	73	78	80	60	412	n/a
Native Hawaiian and Other Pacific Islander	13	4	4	16	10	27	19	23	n/a
Some other race / two or more races	5,941	9,867	8,581	7,947	7,563	7,219	6,316	5,548	n/a
HISPANIC OR LATINO HERITAGE (ACS)*									
Hispanic or Lations (of any race)	17,922	17,589	18,041	18,386	18,846	19,320	19,853	20,537	n/a
Not Hispanic or Latino	20,144	20,206	20,111	20,079	20,024	20,027	19,995	20,007	n/a
TOTAL HOUSING UNITS (ACS)*	13,759	13,684	13,714	13,734	13,813	13,864	13,971	14,260	n/a

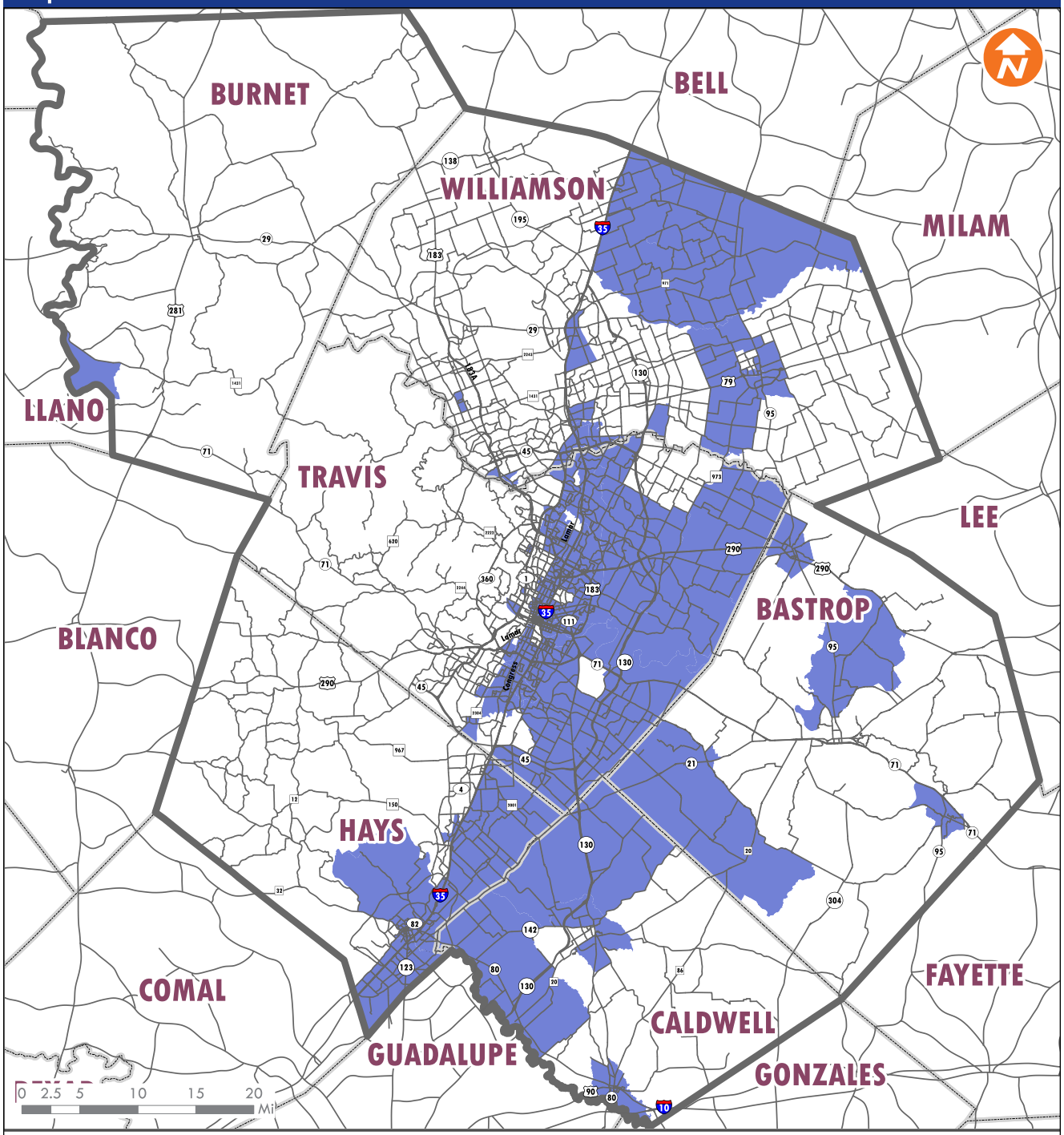
Austin-Round Rock MSA, Texas	2010	2011	2012	2013	2014	2015	2016	2017	2018
POPULATION (PEP)*	1,716,309	1,780,605	1,834,926	1,883,901	1,943,409	2,002,591	2,062,211	2,115,230	2,168,316
POPULATION (ACS)**	1,716,309	1,681,167	1,731,777	1,782,032	1,835,016	1,889,094	1,942,615	2,000,590	n/a

* 2010 data is a count from the 2010 Census. All subsequent years are estimates from the Population Estimates Program (PEP).

** 2010 data is a count from the 2010 Census. All subsequent years are estimates from the American Community Survey (ACS) program.

2040 PLAN
GET INVOLVED – GET MOVING

Map 34: Environmental Justice Areas



This map was developed by CAMPO for the purpose of aiding in regional transportation planning decisions and is not warranted for any other use. CAMPO makes no guarantee regarding its accuracy or completeness. If you would like to receive the GIS layers found on this map send your request to: campo@campotexas.org.
Data Source: Census Bureau

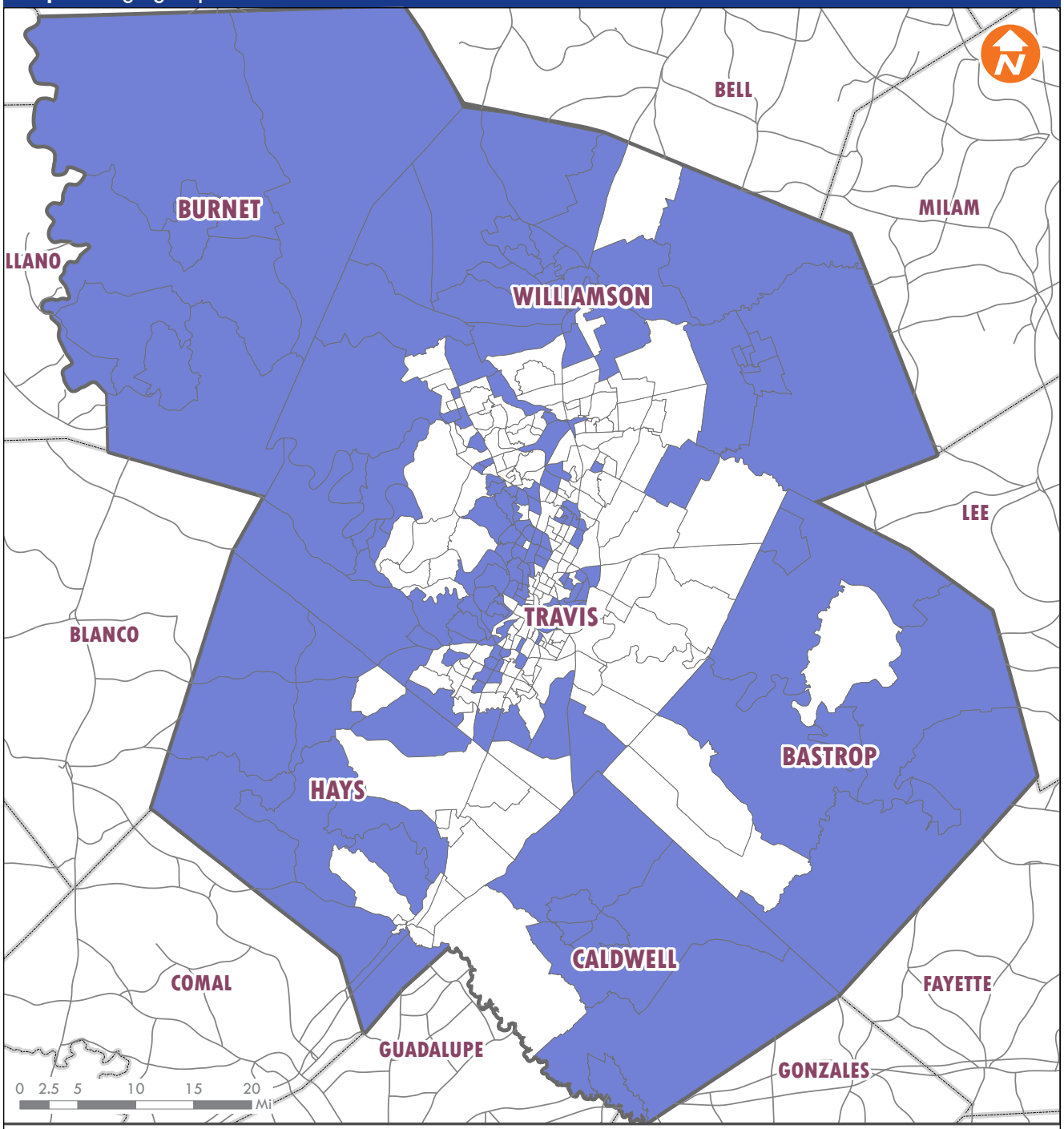
Author: GSG
Document Path: H:\Maps\2040 Plan Maps\Public Review Maps\Environmental Justice Areas.mxd

Environmental Justice Category

- EJ Area
- Non-EJ Area

2040 PLAN
GET INVOLVED – GET MOVING

Map 37: Aging Population



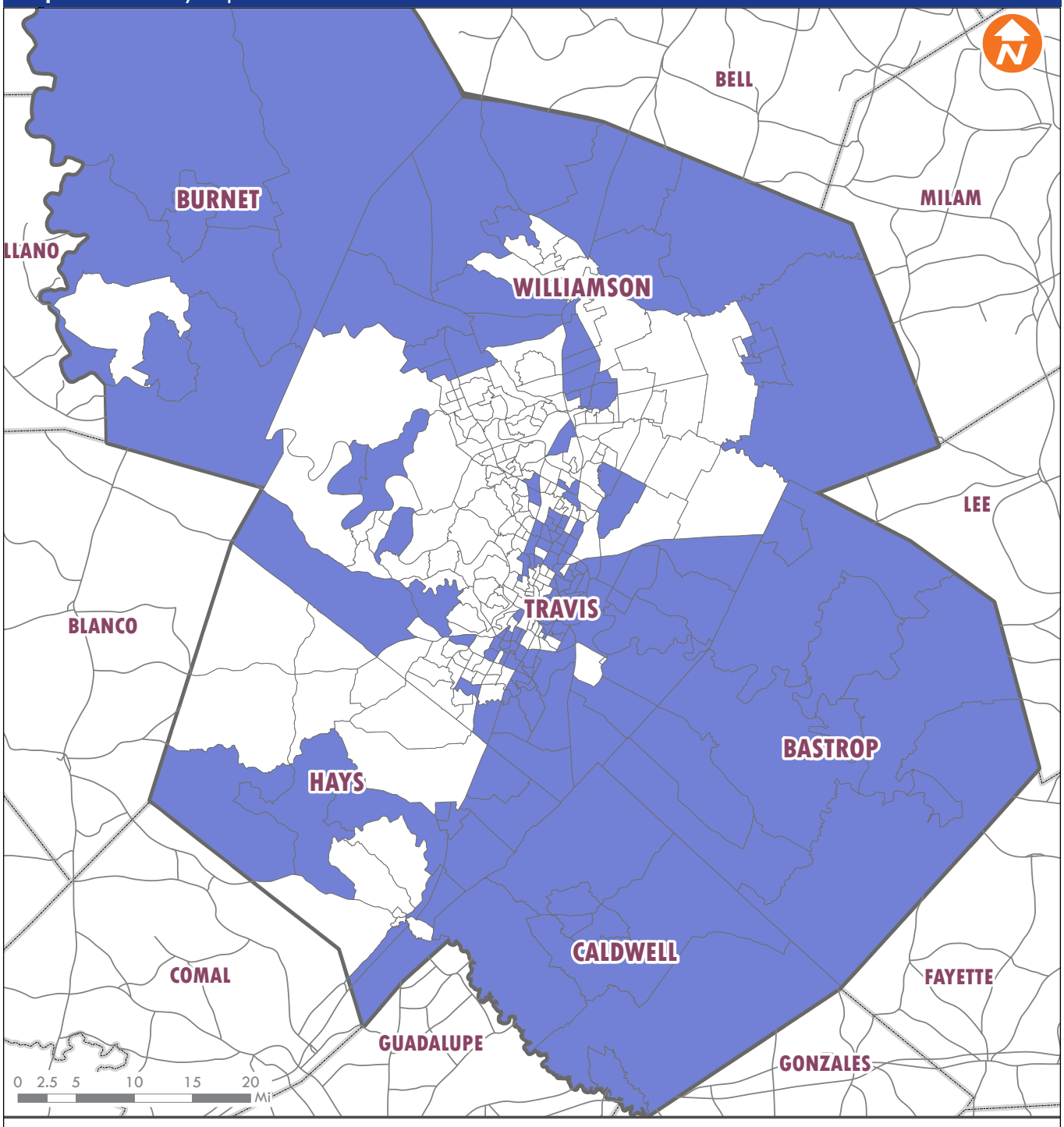
This map was developed by CAMPO for the purpose of aiding in regional transportation planning decisions and is not warranted for any other use. CAMPO makes no guarantee regarding its accuracy or completeness. If you would like to receive the GIS layers found on this map send your request to: campo@campotexas.org.
Data Source: Census
Author: GSG
Document Path: H:\Maps\2040 Plan Maps\Public Review Maps\Aging Population.mxd

Aging Population as Percent of Total Population

- > 9%
- <= 9%

2040 PLAN
GET INVOLVED – GET MOVING

Map 38: Disability Population



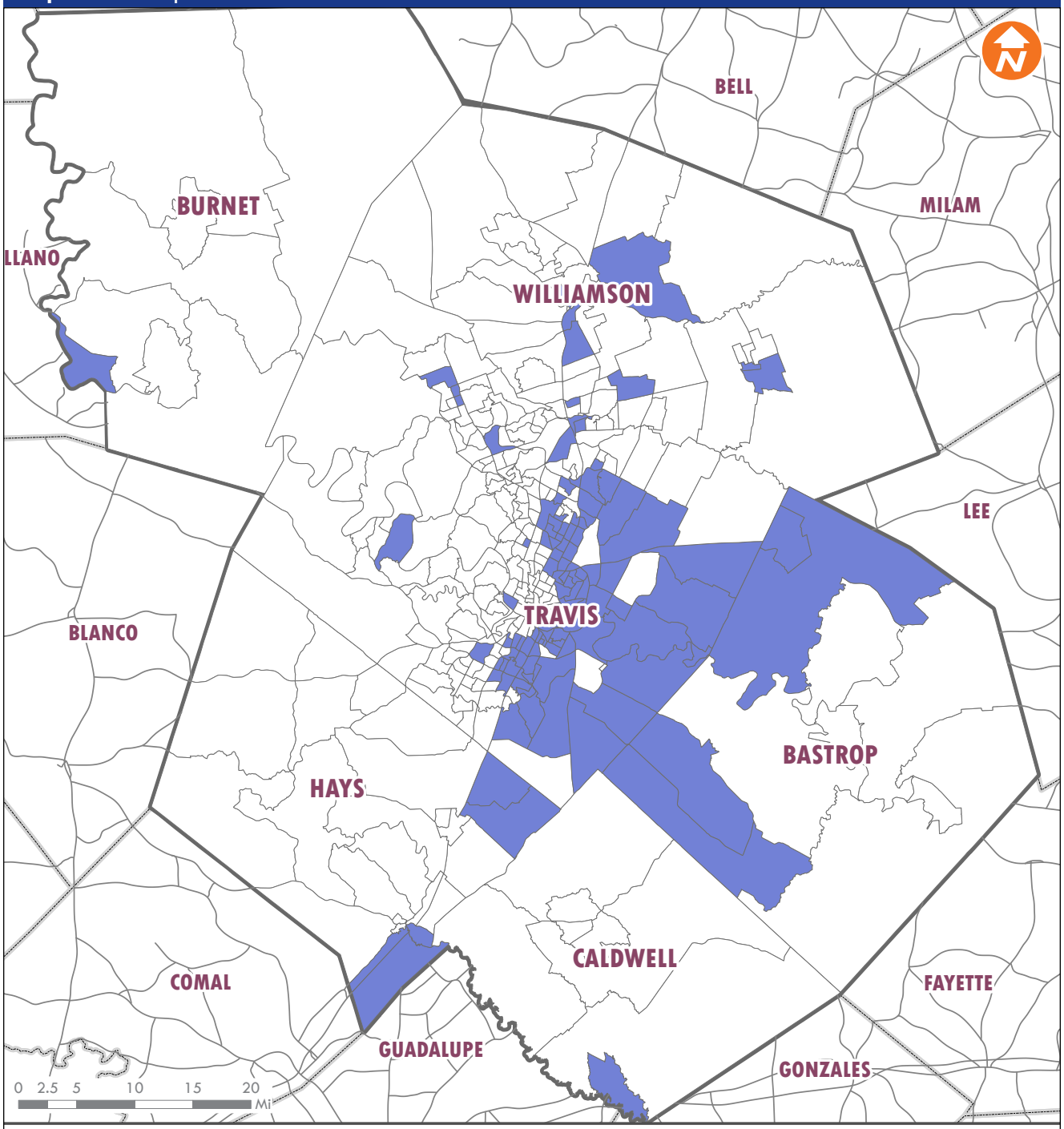
This map was developed by CAMPO for the purpose of aiding in regional transportation planning decisions and is not warranted for any other use. CAMPO makes no guarantee regarding its accuracy or completeness. If you would like to receive the GIS layers found on this map send your request to: campo@campotexas.org.
Data Source: Census

Disability Population as Percent of Total Population

>15%

2040 PLAN
GET INVOLVED – GET MOVING

Map 39: LEP Population



This map was developed by CAMPO for the purpose of aiding in regional transportation planning decisions and is not warranted for any other use. CAMPO makes no guarantee regarding its accuracy or completeness. If you would like to receive the GIS layers found on this map send your request to: campo@campotexas.org.
Data Source: Census

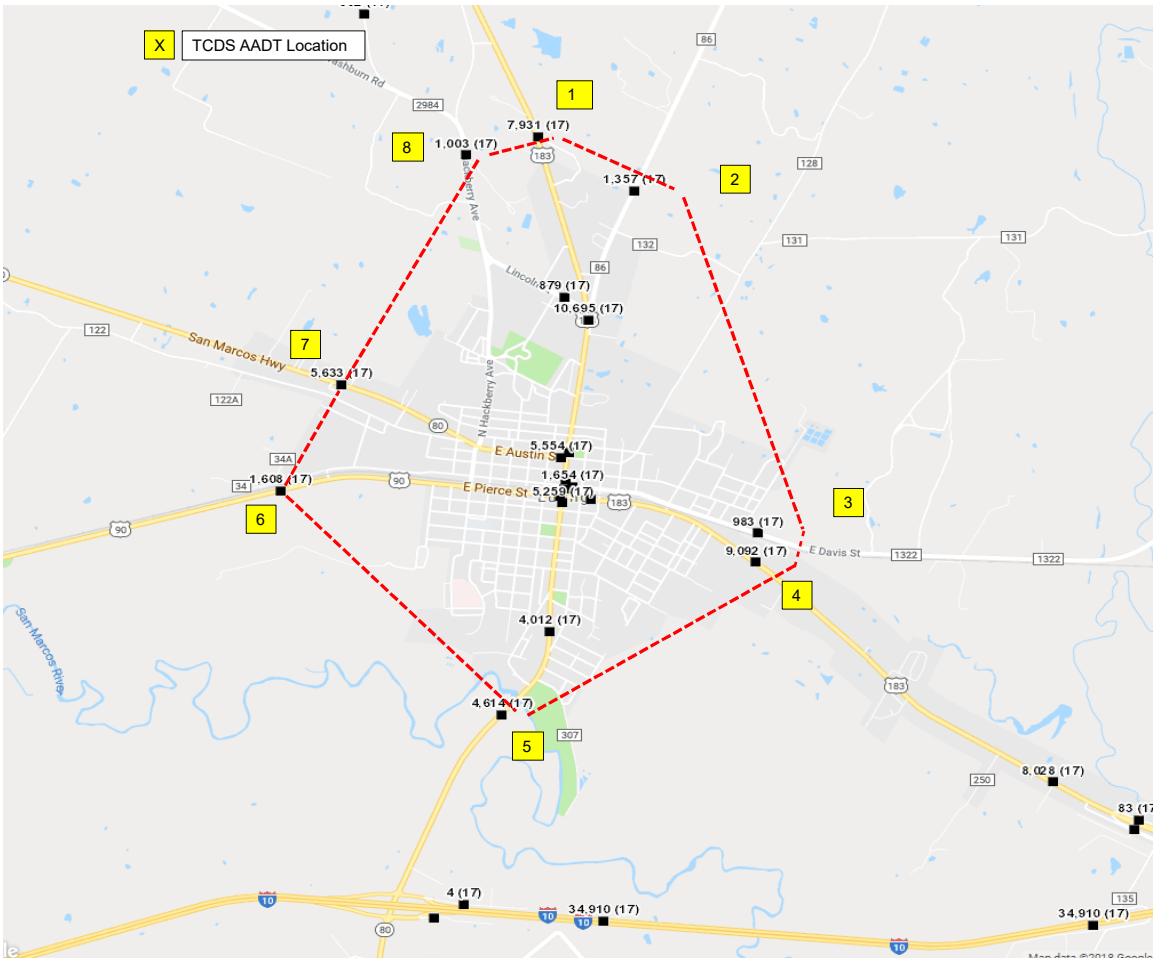
Author: GSG
Document Path: H:\Maps\2040 Plan Maps\Public Review Maps\LEP Population.mxd

Limited English Proficiency Percent

- > 10.8%
- <= 10.8%

Appendix C

Traffic Counts



AADT By Location

ID	Location	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1	US 183 north of FM 86	6000	6700	6100	6300	6900	6800	6950	7700	8000	6500	6800	7100	6800	7400	7521	6633	7426	7491	7931
2	FM 86 north of US 183/Lincoln Stree	1000	1000	1000	1200	1100	970	1050	1500	1400	1200	1100	1250	1250	1700	1459	1378	1428	1189	1357
3	FM 1322 east of Willow Ave	1050	840	910	980	880	990	1000	1050	1100	980	900	880	890	1000	923	898	918	991	938
4	US 183 east of Blanco Ave	7600	7900	6900	7600	7200	8100	8550	8500	8200	7300	7400	8200	7800	9700	12300	10245	11597	10777	9092
5	SH 80 south of San Marcos River	3800	4200	4300	4400	5000	4400	4600	4700	4700	4000	4000	4100	5300	5000	5153	4601	4825	5313	4614
6	US 90 west of Davis Street	2400	2400	2100	2300	2200	4900	5000	4900	5000	4000	3600	3600	3800	2100	1949	1753	2298	2034	1608
7	SH 80 west of Wall Street	4600	4900	4400	4500	4300	5300	6140	5700	5500	4900	4700	5000	4600	5900	8488	6367	5389	6237	5633
8	Hackberry Avenue north of Lincoln S	820	930	860	870	790	780	790	940	950	1000	960	930	830	830	1027	771	783	1119	1003

ID	Location	2017 AADT	SB/EB	NB/WB	% BC	Tot BC
1	US 183 north of FM 86	7931	4075	3856	8.4%	663
2	FM 86 north of US 183/Lincoln Stree	1357	679	678	15.8%	215
3	FM 1322 east of Willow Ave	938	469	469	9.1%	85
4	US 183 east of Blanco Ave	9092	4511	4581	15.2%	1383
5	SH 80 south of San Marcos River	4614	2334	2281	4.9%	226
6	US 90 west of Davis Street	1608	804	804	26.7%	429
7	SH 80 west of Wall Street	5633	2817	2816	19.7%	1111
8	Hackberry Avenue north of Lincoln S	1003	502	501	8.6%	86

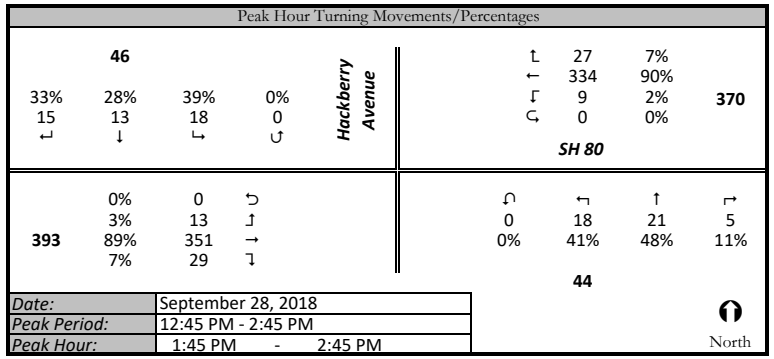
TCDS = Traffic Count Database System (maintained by TxDOT)
AADT = Average Annual Daily Traffic
SB = southbound
NB = northbound
EB = eastbound
WB = westbound
BC = business/commercial traffic (medium and heavy trucks)

Table 1. Turning Movement Counts for SH 80 at Hackberry Avenue

OFF Peak Period

Location:	SH 80 at Hackberry Avenue
City & State:	Caldwell County, Texas
North-South street:	Hackberry Avenue
East-West street:	SH 80
Peak Period:	12:45 PM - 2:45 PM
Date Collected:	September 28, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 28, 2018
Peak Period:	12:45 PM - 2:45 PM
Peak Hour:	1:45 PM - 2:45 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
	Movement	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
12:45 PM	*1:00 PM*	0	3	3	0	0	80	7	0	8	3	2	0	2	100	7	0
1:00 PM	*1:15 PM*	1	5	1	0	1	84	2	0	6	2	1	0	3	88	4	0
1:15 PM	*1:30 PM*	4	5	6	0	0	76	6	0	4	4	2	0	5	90	10	0
1:30 PM	*1:45 PM*	9	5	2	0	2	71	6	0	7	4	1	0	2	92	5	0
1:45 PM	*2:00 PM*	5	4	4	0	2	76	6	0	5	3	1	0	4	93	6	0
2:00 PM	*2:15 PM*	4	2	3	0	1	77	6	0	3	7	2	0	3	71	5	0
2:15 PM	*2:30 PM*	4	1	7	0	2	89	6	0	7	7	1	0	3	94	12	0
2:30 PM	*2:45 PM*	5	6	1	0	4	92	9	0	3	4	1	0	3	93	6	0
Total		32	31	27	0	12	645	48	0	43	34	11	0	25	721	55	0
Peak Hour Total		18	13	15	0	9	334	27	0	18	21	5	0	13	351	29	0
Peak Turn Percent		39%	28%	33%	0%	2%	90%	7%	0%	41%	48%	11%	0%	3%	89%	7%	0%
Peak Approach Total		46				370				44				393			

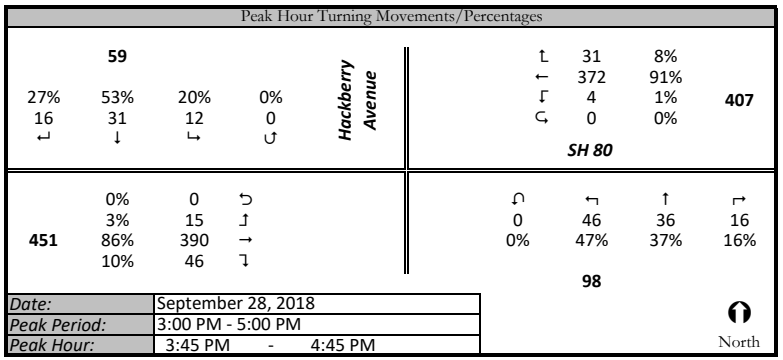
Peak Hour:	1:45 PM	-	2:45 PM
Peak 15 Minutes:	2:15 PM	-	2:30 PM
Peak Hour Factor (PHF):	0.92		

Table 2. Turning Movement Counts for SH 80 at Hackberry Avenue

PM Peak Period

Location:	SH 80 at Hackberry Avenue
City & State:	Caldwell County, Texas
North-South street:	Hackberry Avenue
East-West street:	SH 80
Peak Period:	3:00 PM - 5:00 PM
Date Collected:	September 28, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 28, 2018
Peak Period:	3:00 PM - 5:00 PM
Peak Hour:	3:45 PM - 4:45 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
Movement		*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
3:00 PM	*3:15 PM*	2	9	6	0	2	76	6	0	6	1	2	0	1	83	12	0
3:15 PM	*3:30 PM*	4	9	5	0	4	72	10	0	3	5	2	0	1	82	14	0
3:30 PM	*3:45 PM*	1	11	4	0	8	68	4	0	5	6	5	0	2	90	19	0
3:45 PM	*4:00 PM*	6	8	3	0	2	71	6	0	10	7	5	0	2	94	16	0
4:00 PM	*4:15 PM*	0	7	6	0	0	105	13	0	18	17	5	0	6	89	11	0
4:15 PM	*4:30 PM*	0	5	2	0	2	99	4	0	13	6	3	0	2	103	8	0
4:30 PM	*4:45 PM*	6	11	5	0	0	97	8	0	5	6	3	0	5	104	11	0
4:45 PM	*5:00 PM*	0	6	6	0	0	70	8	0	11	8	2	0	5	66	17	0
Total		19	66	37	0	18	658	59	0	71	56	27	0	24	711	108	0
Peak Hour Total		12	31	16	0	4	372	31	0	46	36	16	0	15	390	46	0
Peak Turn Percent		20%	53%	27%	0%	1%	91%	8%	0%	47%	37%	16%	0%	3%	86%	10%	0%
Peak Approach Total		59				407				98				451			

Peak Hour:	3:45 PM	-	4:45 PM
Peak 15 Minutes:	4:00 PM	-	4:15 PM
Peak Hour Factor (PHF):	0.92		

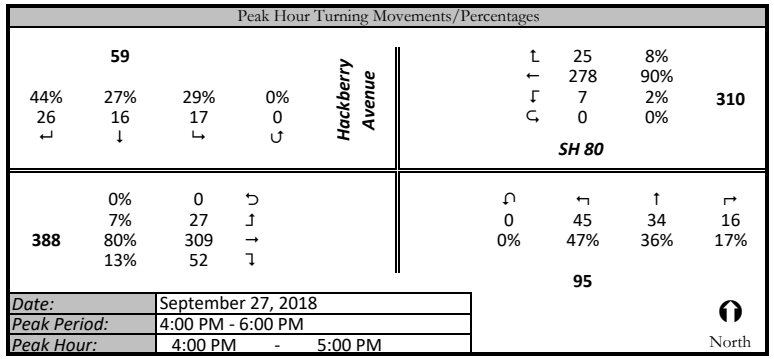
MAKING COMPLEX EASY

Table 3. Turning Movement Counts for SH 80 at Hackberry Avenue

PM Peak Period

Location:	SH 80 at Hackberry Avenue
City & State:	Caldwell County, Texas
North-South street:	Hackberry Avenue
East-West street:	SH 80
Peak Period:	4:00 PM - 6:00 PM
Date Collected:	September 27, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 27, 2018
Peak Period:	4:00 PM - 6:00 PM
Peak Hour:	4:00 PM - 5:00 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
Movement		*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
4:00 PM	*4:15 PM*	6	4	6	0	1	69	9	0	12	14	7	0	6	89	18	0
4:15 PM	*4:30 PM*	4	6	6	0	3	82	7	0	8	5	5	0	8	73	10	0
4:30 PM	*4:45 PM*	3	4	4	0	3	62	5	0	12	11	2	0	6	66	11	0
4:45 PM	*5:00 PM*	4	2	10	0	0	65	4	0	13	4	2	0	7	81	13	0
5:00 PM	*5:15 PM*	1	6	8	0	0	71	3	0	9	4	2	0	3	61	10	0
5:15 PM	*5:30 PM*	2	5	7	0	0	57	4	0	11	2	4	0	6	81	11	0
5:30 PM	*5:45 PM*	2	7	2	0	0	61	9	0	8	8	4	0	6	77	7	0
5:45 PM	*6:00 PM*	7	10	6	0	0	63	4	0	7	2	5	0	4	80	13	0
Total		29	44	49	0	7	530	45	0	80	50	31	0	46	608	93	0
Peak Hour Total		17	16	26	0	7	278	25	0	45	34	16	0	27	309	52	0
Peak Turn Percent		29%	27%	44%	0%	2%	90%	8%	0%	47%	36%	17%	0%	7%	80%	13%	0%
Peak Approach Total		59				310				95				388			

Peak Hour:	4:00 PM	-	5:00 PM
Peak 15 Minutes:	4:00 PM	-	4:15 PM
Peak Hour Factor (PHF):	0.88		

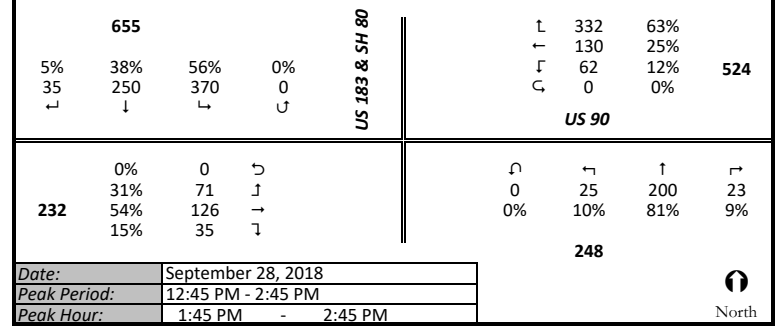
MAKING COMPLEX EASY

Table 4. Turning Movement Counts for US 183 & SH 80 & US 90

OFF Peak Period

Location:	US 183 & SH 80 & US 90
City & State:	Caldwell County, Texas
North-South street:	US 183 & SH 80
East-West street:	US 90
Peak Period:	12:45 PM - 2:45 PM
Date Collected:	September 28, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 28, 2018
Peak Period:	12:45 PM - 2:45 PM
Peak Hour:	1:45 PM - 2:45 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
Movement		*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
12:45 PM	*1:00 PM*	102	46	8	0	14	31	67	0	3	54	5	0	15	30	7	0
1:00 PM	*1:15 PM*	86	56	13	0	14	41	84	0	5	44	12	0	24	34	11	0
1:15 PM	*1:30 PM*	94	60	9	0	12	35	76	0	4	48	16	0	19	31	9	0
1:30 PM	*1:45 PM*	99	61	14	0	23	20	80	0	6	56	11	0	16	32	10	0
1:45 PM	*2:00 PM*	79	63	9	0	17	29	70	0	5	46	10	0	9	31	6	0
2:00 PM	*2:15 PM*	111	58	14	0	19	35	79	0	7	46	5	0	18	37	6	0
2:15 PM	*2:30 PM*	82	60	7	0	13	33	84	0	6	54	3	0	26	34	11	0
2:30 PM	*2:45 PM*	98	69	5	0	13	33	99	0	7	54	5	0	18	24	12	0
Total		751	473	79	0	125	257	639	0	43	402	67	0	145	253	72	0
Peak Hour Total		370	250	35	0	62	130	332	0	25	200	23	0	71	126	35	0
Peak Turn Percent		56%	38%	5%	0%	12%	25%	63%	0%	10%	81%	9%	0%	31%	54%	15%	0%
Peak Approach Total		655				524				248				232			

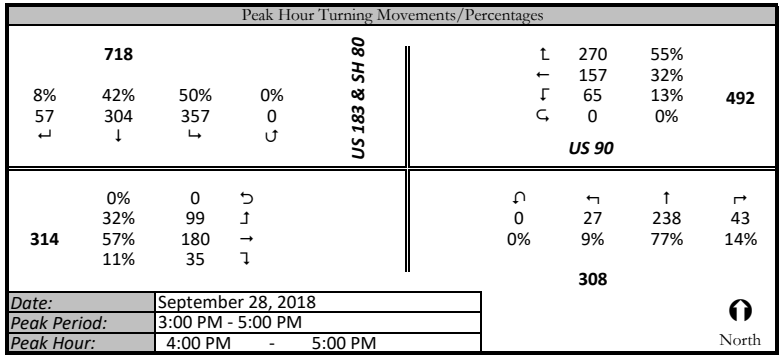
Peak Hour:	1:45 PM	-	2:45 PM
Peak 15 Minutes:	2:30 PM	-	2:45 PM
Peak Hour Factor (PHF):	0.95		

Table 5. Turning Movement Counts for US 183 & SH 80 & US 90

PM Peak Period

Location:	US 183 & SH 80 & US 90
City & State:	Caldwell County, Texas
North-South street:	US 183 & SH 80
East-West street:	US 90
Peak Period:	3:00 PM - 5:00 PM
Date Collected:	September 28, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 28, 2018
Peak Period:	3:00 PM - 5:00 PM
Peak Hour:	4:00 PM - 5:00 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
	Movement	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
3:00 PM	*3:15 PM*	51	48	7	0	8	31	68	0	5	50	4	0	10	26	11	0
3:15 PM	*3:30 PM*	96	69	20	0	17	34	73	0	8	55	4	0	12	27	7	0
3:30 PM	*3:45 PM*	74	52	11	0	7	45	84	0	5	53	5	0	12	41	9	0
3:45 PM	*4:00 PM*	78	58	9	0	8	54	55	0	8	43	7	0	16	35	9	0
4:00 PM	*4:15 PM*	96	82	15	0	16	38	65	0	10	45	6	0	28	59	12	0
4:15 PM	*4:30 PM*	85	74	13	0	11	40	72	0	5	71	9	0	25	52	5	0
4:30 PM	*4:45 PM*	91	83	15	0	20	33	71	0	8	58	11	0	27	29	10	0
4:45 PM	*5:00 PM*	85	65	14	0	18	46	62	0	4	64	17	0	19	40	8	0
Total		656	531	104	0	105	321	550	0	53	439	63	0	149	309	71	0
Peak Hour Total		357	304	57	0	65	157	270	0	27	238	43	0	99	180	35	0
Peak Turn Percent		50%	42%	8%	0%	13%	32%	55%	0%	9%	77%	14%	0%	32%	57%	11%	0%
Peak Approach Total		718				492				308				314			

Peak Hour:	4:00 PM	-	5:00 PM
Peak 15 Minutes:	4:00 PM	-	4:15 PM
Peak Hour Factor (PHF):	0.97		

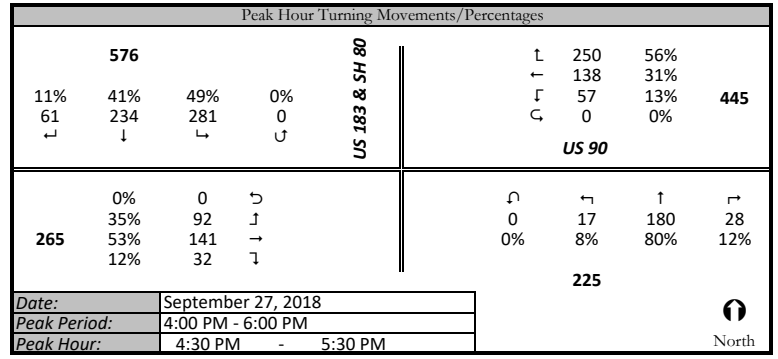
MAKING COMPLEX EASY

Table 6. Turning Movement Counts for US 183 & SH 80 & US 90

PM Peak Period

Location:	US 183 & SH 80 & US 90
City & State:	Caldwell County, Texas
North-South street:	US 183 & SH 80
East-West street:	US 90
Peak Period:	4:00 PM - 6:00 PM
Date Collected:	September 27, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 27, 2018
Peak Period:	4:00 PM - 6:00 PM
Peak Hour:	4:30 PM - 5:30 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
	Movement	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
4:00 PM	*4:15 PM*	86	42	15	0	10	31	54	0	3	48	6	0	26	58	2	0
4:15 PM	*4:30 PM*	57	52	10	0	11	30	60	0	7	36	3	0	27	49	9	0
4:30 PM	*4:45 PM*	82	70	19	0	18	30	62	0	8	34	6	0	20	26	8	0
4:45 PM	*5:00 PM*	69	57	16	0	10	34	57	0	3	46	2	0	27	38	9	0
5:00 PM	*5:15 PM*	64	50	12	0	16	41	62	0	2	52	11	0	22	42	8	0
5:15 PM	*5:30 PM*	66	57	14	0	13	33	69	0	4	48	9	0	23	35	7	0
5:30 PM	*5:45 PM*	81	60	17	0	14	31	47	0	4	53	9	0	18	36	9	0
5:45 PM	*6:00 PM*	70	43	16	0	8	39	65	0	3	38	9	0	14	29	10	0
Total		575	431	119	0	100	269	476	0	34	355	55	0	177	313	62	0
Peak Hour Total		281	234	61	0	57	138	250	0	17	180	28	0	92	141	32	0
Peak Turn Percent		49%	41%	11%	0%	13%	31%	56%	0%	8%	80%	12%	0%	35%	53%	12%	0%
Peak Approach Total		576				445				225				265			

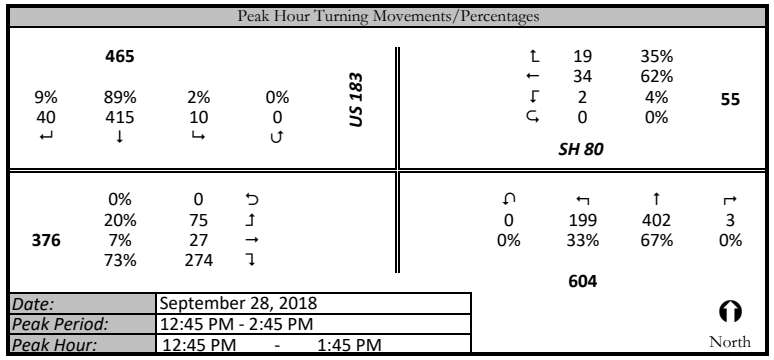
Peak Hour:	4:30 PM	-	5:30 PM
Peak 15 Minutes:	4:30 PM	-	4:45 PM
Peak Hour Factor (PHF):	0.99		

Table 7. Turning Movement Counts for US 183 & SH 80

OFF Peak Period

Location:	US 183 & SH 80
City & State:	Caldwell County, Texas
North-South street:	US 183
East-West street:	SH 80
Peak Period:	12:45 PM - 2:45 PM
Date Collected:	September 28, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 28, 2018
Peak Period:	12:45 PM - 2:45 PM
Peak Hour:	12:45 PM - 1:45 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
Movement		*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
12:45 PM	*1:00 PM*	5	87	8	0	0	12	7	0	54	102	0	0	14	9	75	0
1:00 PM	*1:15 PM*	2	103	14	0	1	7	2	0	47	102	0	0	17	7	51	0
1:15 PM	*1:30 PM*	1	112	7	0	1	10	5	0	52	89	1	0	26	5	74	0
1:30 PM	*1:45 PM*	2	113	11	0	0	5	5	0	46	109	2	0	18	6	74	0
1:45 PM	*2:00 PM*	7	114	5	0	0	5	4	0	51	89	0	0	11	4	64	0
2:00 PM	*2:15 PM*	2	123	11	0	2	7	6	0	51	93	0	0	13	5	55	0
2:15 PM	*2:30 PM*	2	128	10	0	1	6	5	0	54	90	2	0	18	7	59	0
2:30 PM	*2:45 PM*	0	113	7	0	1	5	3	0	74	109	1	0	14	5	57	0
Total		21	893	73	0	6	57	37	0	429	783	6	0	131	48	509	0
Peak Hour Total		10	415	40	0	2	34	19	0	199	402	3	0	75	27	274	0
Peak Turn Percent		2%	89%	9%	0%	4%	62%	35%	0%	33%	67%	0%	0%	20%	7%	73%	0%
Peak Approach Total		465				55				604				376			

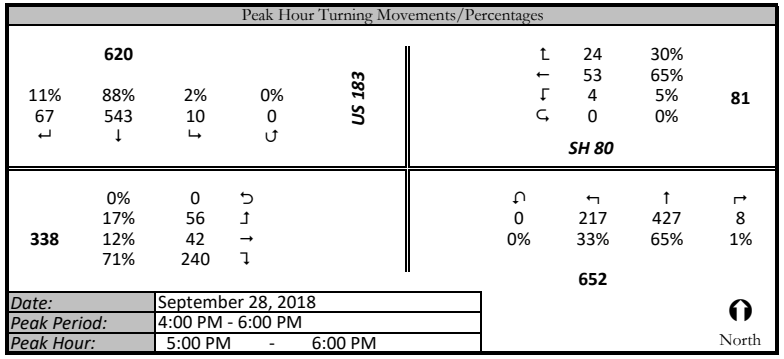
Peak Hour:	12:45 PM	-	1:45 PM
Peak 15 Minutes:	1:30 PM	-	1:45 PM
Peak Hour Factor (PHF):	0.96		

Table 8. Turning Movement Counts for US 183 & SH 80

PM Peak Period

Location:	US 183 & SH 80
City & State:	Caldwell County, Texas
North-South street:	US 183
East-West street:	SH 80
Peak Period:	4:00 PM - 6:00 PM
Date Collected:	September 28, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 28, 2018
Peak Period:	4:00 PM - 6:00 PM
Peak Hour:	5:00 PM - 6:00 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
	Movement	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
4:00 PM	*4:15 PM*	7	143	11	0	3	24	9	0	40	97	0	0	28	12	51	0
4:15 PM	*4:30 PM*	6	129	10	0	2	17	7	0	56	115	2	0	21	6	53	0
4:30 PM	*4:45 PM*	2	140	9	0	0	16	14	0	54	120	1	0	17	8	63	0
4:45 PM	*5:00 PM*	4	147	10	0	0	6	7	0	52	87	0	0	15	9	48	0
5:00 PM	*5:15 PM*	3	125	14	0	0	19	8	0	54	117	0	0	17	10	48	0
5:15 PM	*5:30 PM*	3	125	30	0	2	11	9	0	46	105	3	0	13	14	65	0
5:30 PM	*5:45 PM*	2	135	12	0	1	6	4	0	63	111	2	0	7	10	69	0
5:45 PM	*6:00 PM*	2	158	11	0	1	17	3	0	54	94	3	0	19	8	58	0
Total		29	1102	107	0	9	116	61	0	419	846	11	0	137	77	455	0
Peak Hour Total		10	543	67	0	4	53	24	0	217	427	8	0	56	42	240	0
Peak Turn Percent		2%	88%	11%	0%	5%	65%	30%	0%	33%	65%	1%	0%	17%	12%	71%	0%
Peak Approach Total		620				81				652				338			

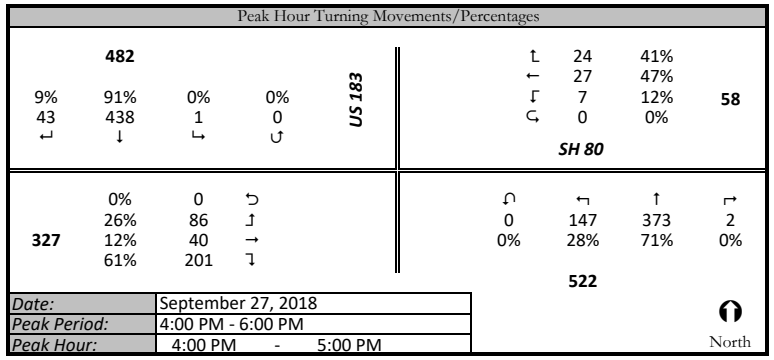
Peak Hour:	5:00 PM	-	6:00 PM
Peak 15 Minutes:	4:30 PM	-	4:45 PM
Peak Hour Factor (PHF):	0.99		

Table 9. Turning Movement Counts for US 183 & SH 80

PM Peak Period

Location:	US 183 & SH 80
City & State:	Caldwell County, Texas
North-South street:	US 183
East-West street:	SH 80
Peak Period:	4:00 PM - 6:00 PM
Date Collected:	September 27, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 27, 2018
Peak Period:	4:00 PM - 6:00 PM
Peak Hour:	4:00 PM - 5:00 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
Movement		*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
4:00 PM	*4:15 PM*	0	101	7	0	4	5	7	0	31	96	1	0	28	15	51	0
4:15 PM	*4:30 PM*	1	106	20	0	3	7	3	0	44	86	0	0	18	10	49	0
4:30 PM	*4:45 PM*	0	124	7	0	0	9	9	0	35	96	1	0	12	7	48	0
4:45 PM	*5:00 PM*	0	107	9	0	0	6	5	0	37	95	0	0	28	8	53	0
5:00 PM	*5:15 PM*	2	103	14	0	1	7	6	0	40	89	2	0	17	4	48	0
5:15 PM	*5:30 PM*	0	114	15	0	0	7	5	0	30	107	0	0	19	8	44	0
5:30 PM	*5:45 PM*	1	136	6	0	0	9	7	0	40	72	1	0	18	3	52	0
5:45 PM	*6:00 PM*	3	94	9	0	2	8	3	0	45	77	2	0	11	6	50	0
Total		7	885	87	0	10	58	45	0	302	718	7	0	151	61	395	0
Peak Hour Total		1	438	43	0	7	27	24	0	147	373	2	0	86	40	201	0
Peak Turn Percent		0%	91%	9%	0%	12%	47%	41%	0%	28%	71%	0%	0%	26%	12%	61%	0%
Peak Approach Total		482				58				522				327			

Peak Hour:	4:00 PM	-	5:00 PM
Peak 15 Minutes:	5:15 PM	-	5:30 PM
Peak Hour Factor (PHF):	1.00		

Table 10. Turning Movement Counts for US 183 & SH 86

OFF Peak Period

Location:	US 183 & SH 86
City & State:	Caldwell County, Texas
North-South street:	US 183
East-West street:	SH 86
Peak Period:	12:45 PM - 2:45 PM
Date Collected:	September 28, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages

	434								
1%	96%	3%	0%			10	9%		
4	418	12	0	***US 183***		5	5%		
↰	↓	↱	↺			94	86%	**109**	
					↺	0	0%		
						SH 86			
	0%	0	↺						
	13%	3	↴			0	12	370	77
24	13%	3	→			0%	3%	81%	17%
	75%	18	↴						
						459			

Date:	September 28, 2018
Peak Period:	12:45 PM - 2:45 PM
Peak Hour:	1:30 PM - 2:30 PM

North

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
Movement		*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
12:45 PM	*1:00 PM*	3	84	1	0	11	0	1	0	5	95	23	0	2	1	3	0
1:00 PM	*1:15 PM*	3	93	2	0	20	3	2	0	6	91	18	0	3	2	5	0
1:15 PM	*1:30 PM*	3	96	2	0	19	2	2	0	2	85	24	0	2	2	9	0
1:30 PM	*1:45 PM*	5	102	2	0	15	1	2	0	4	104	20	0	2	0	6	0
1:45 PM	*2:00 PM*	4	108	0	0	29	0	3	0	1	88	20	0	1	0	2	0
2:00 PM	*2:15 PM*	1	103	0	0	22	1	2	0	4	78	23	0	0	2	5	0
2:15 PM	*2:30 PM*	2	105	2	0	28	3	3	0	3	100	14	0	0	1	5	0
2:30 PM	*2:45 PM*	1	102	1	0	13	0	2	0	3	89	27	0	3	2	4	0
Total		22	793	10	0	157	10	17	0	28	730	169	0	13	10	39	0
Peak Hour Total		12	418	4	0	94	5	10	0	12	370	77	0	3	3	18	0
Peak Turn Percent		3%	96%	1%	0%	86%	5%	9%	0%	3%	81%	17%	0%	13%	13%	75%	0%
Peak Approach Total		434				109				459				24			

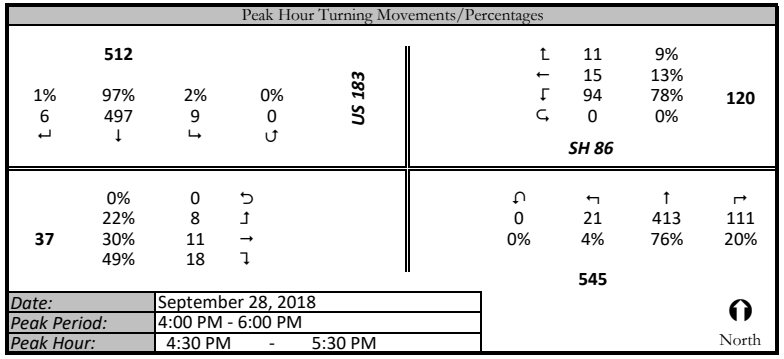
Peak Hour:	1:30 PM	-	2:30 PM
Peak 15 Minutes:	2:15 PM	-	2:30 PM
Peak Hour Factor (PHF):	0.96		

Table 11. Turning Movement Counts for US 183 & SH 86

PM Peak Period

Location:	US 183 & SH 86
City & State:	Caldwell County, Texas
North-South street:	US 183
East-West street:	SH 86
Peak Period:	4:00 PM - 6:00 PM
Date Collected:	September 28, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 28, 2018
Peak Period:	4:00 PM - 6:00 PM
Peak Hour:	4:30 PM - 5:30 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
	Movement	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
4:00 PM	*4:15 PM*	2	125	1	0	22	2	2	0	5	99	23	0	1	3	6	0
4:15 PM	*4:30 PM*	4	123	1	0	23	2	3	0	7	100	31	0	2	1	2	0
4:30 PM	*4:45 PM*	1	113	1	0	19	3	3	0	9	123	29	0	2	2	9	0
4:45 PM	*5:00 PM*	4	142	1	0	18	6	2	0	2	86	21	0	1	2	4	0
5:00 PM	*5:15 PM*	3	118	1	0	33	3	3	0	7	98	33	0	4	4	3	0
5:15 PM	*5:30 PM*	1	124	3	0	24	3	3	0	3	106	28	0	1	3	2	0
5:30 PM	*5:45 PM*	2	113	4	0	25	2	1	0	8	76	26	0	1	1	7	0
5:45 PM	*6:00 PM*	3	148	2	0	32	1	0	0	6	84	28	0	1	2	2	0
Total		20	1006	14	0	196	22	17	0	47	772	219	0	13	18	35	0
Peak Hour Total		9	497	6	0	94	15	11	0	21	413	111	0	8	11	18	0
Peak Turn Percent		2%	97%	1%	0%	78%	13%	9%	0%	4%	76%	20%	0%	22%	30%	49%	0%
Peak Approach Total		512				120				545				37			

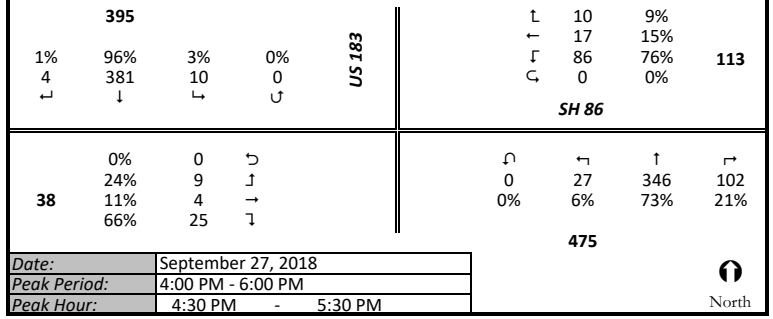
Peak Hour:	4:30 PM	-	5:30 PM
Peak 15 Minutes:	4:30 PM	-	4:45 PM
Peak Hour Factor (PHF):	0.97		

Table 12. Turning Movement Counts for US 183 & SH 86

PM Peak Period

Location:	US 183 & SH 86
City & State:	Caldwell County, Texas
North-South street:	US 183
East-West street:	SH 86
Peak Period:	4:00 PM - 6:00 PM
Date Collected:	September 27, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 27, 2018
Peak Period:	4:00 PM - 6:00 PM
Peak Hour:	4:30 PM - 5:30 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
Movement		*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
4:00 PM	*4:15 PM*	3	70	3	0	24	3	1	0	7	85	26	0	1	2	11	0
4:15 PM	*4:30 PM*	2	94	0	0	24	1	6	0	2	89	27	0	2	1	6	0
4:30 PM	*4:45 PM*	4	109	3	0	19	5	3	0	7	82	22	0	1	1	3	0
4:45 PM	*5:00 PM*	4	87	0	0	23	1	0	0	7	95	28	0	2	1	5	0
5:00 PM	*5:15 PM*	1	86	0	0	22	6	3	0	5	80	24	0	4	2	10	0
5:15 PM	*5:30 PM*	1	99	1	0	22	5	4	0	8	89	28	0	2	0	7	0
5:30 PM	*5:45 PM*	0	104	2	0	26	1	1	0	7	79	13	0	0	1	7	0
5:45 PM	*6:00 PM*	3	80	1	0	17	3	3	0	5	66	16	0	1	0	5	0
Total		18	729	10	0	177	25	21	0	48	665	184	0	13	8	54	0
Peak Hour Total		10	381	4	0	86	17	10	0	27	346	102	0	9	4	25	0
Peak Turn Percent		3%	96%	1%	0%	76%	15%	9%	0%	6%	73%	21%	0%	24%	11%	66%	0%
Peak Approach Total		395				113				475				38			

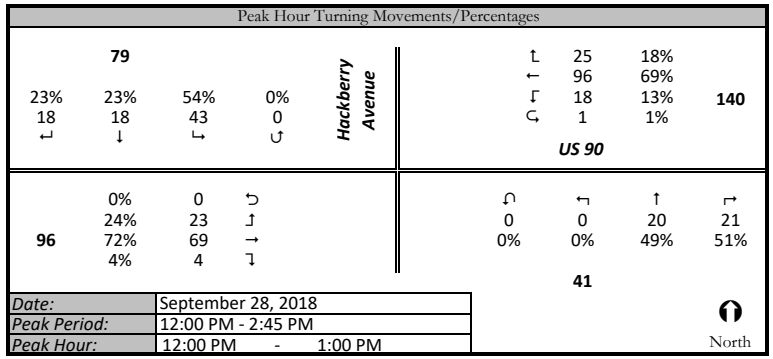
Peak Hour:	4:30 PM	-	5:30 PM
Peak 15 Minutes:	5:15 PM	-	5:30 PM
Peak Hour Factor (PHF):	0.96		

Table 13. Turning Movement Counts for US 90 at Hackberry Avenue

OFF Peak Period

Location:	US 90 at Hackberry Avenue
City & State:	Caldwell County, Texas
North-South street:	Hackberry Avenue
East-West street:	US 90
Peak Period:	12:00 PM - 2:45 PM
Date Collected:	September 28, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
Movement		*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
12:00 PM	*12:15 PM*	10	6	3	0	4	25	8	1	0	2	3	0	7	21	1	0
12:15 PM	*12:30 PM*	12	9	5	0	3	23	6	0	0	6	2	0	6	15	0	0
12:30 PM	*12:45 PM*	8	3	5	0	7	20	4	0	0	8	11	0	4	22	2	0
12:45 PM	*1:00 PM*	13	0	5	0	4	28	7	0	0	4	5	0	6	11	1	0
1:00 PM	*1:15 PM*	9	9	2	0	6	20	6	0	0	5	5	0	4	20	0	0
1:15 PM	*1:30 PM*	12	2	4	0	1	22	7	1	0	1	2	0	3	20	1	0
1:30 PM	*1:45 PM*	7	4	0	0	3	14	5	0	0	8	3	0	4	14	0	0
1:45 PM	*2:00 PM*	10	4	3	0	1	14	9	0	0	1	1	0	1	15	1	0
Total		81	37	27	0	29	166	52	2	0	35	32	0	35	138	6	0
Peak Hour Total		43	18	18	0	18	96	25	1	0	20	21	0	23	69	4	0
Peak Turn Percent		54%	23%	23%	0%	13%	69%	18%	1%	0%	49%	51%	0%	24%	72%	4%	0%
Peak Approach Total		79				140				41				96			

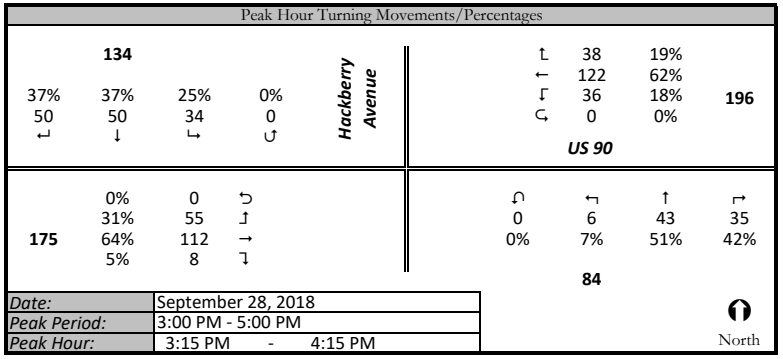
Peak Hour:	12:00 PM	-	1:00 PM
Peak 15 Minutes:	12:30 PM	-	12:45 PM
Peak Hour Factor (PHF):	0.95		

Table 14. Turning Movement Counts for US 90 at Hackberry Avenue

PM Peak Period

Location:	US 90 at Hackberry Avenue
City & State:	Caldwell County, Texas
North-South street:	Hackberry Avenue
East-West street:	US 90
Peak Period:	3:00 PM - 5:00 PM
Date Collected:	September 28, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages



Date:	September 28, 2018
Peak Period:	3:00 PM - 5:00 PM
Peak Hour:	3:15 PM - 4:15 PM

Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
	Movement	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
3:00 PM	*3:15 PM*	12	4	10	0	3	22	10	0	2	0	4	0	4	22	0	0
3:15 PM	*3:30 PM*	5	15	14	0	8	33	8	0	1	6	0	0	2	18	1	0
3:30 PM	*3:45 PM*	6	13	22	0	7	33	6	0	1	4	5	0	18	33	4	0
3:45 PM	*4:00 PM*	11	13	10	0	9	17	10	0	3	8	12	0	9	25	2	0
4:00 PM	*4:15 PM*	12	9	4	0	12	39	14	0	1	25	18	0	26	36	1	0
4:15 PM	*4:30 PM*	8	5	8	0	2	26	10	0	1	16	4	0	8	23	0	0
4:30 PM	*4:45 PM*	9	9	5	0	2	26	14	0	2	6	5	0	6	20	0	0
4:45 PM	*5:00 PM*	19	5	7	0	5	24	9	0	0	11	5	0	4	28	0	0
Total		82	73	80	0	48	220	81	0	11	76	53	0	77	205	8	0
Peak Hour Total		34	50	50	0	36	122	38	0	6	43	35	0	55	112	8	0
Peak Turn Percent		25%	37%	37%	0%	18%	62%	19%	0%	7%	51%	42%	0%	31%	64%	5%	0%
Peak Approach Total		134				196				84				175			

Peak Hour:	3:15 PM	-	4:15 PM
Peak 15 Minutes:	4:00 PM	-	4:15 PM
Peak Hour Factor (PHF):	0.75		

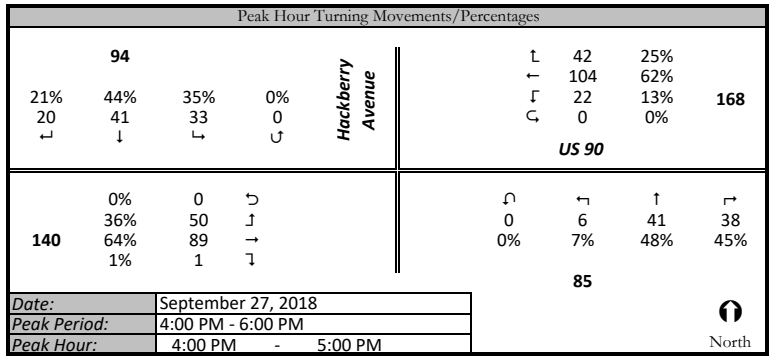
MAKING COMPLEX EASY

Table 15. Turning Movement Counts for Us 90 at Hackberry Avenue

PM Peak Period

Location:	Us 90 at Hackberry Avenue
City & State:	Caldwell County, Texas
North-South street:	Hackberry Avenue
East-West street:	US 90
Peak Period:	4:00 PM - 6:00 PM
Date Collected:	September 27, 2018
Collected by:	CJ Hensch & Associate

Peak Hour Turning Movements/Percentages

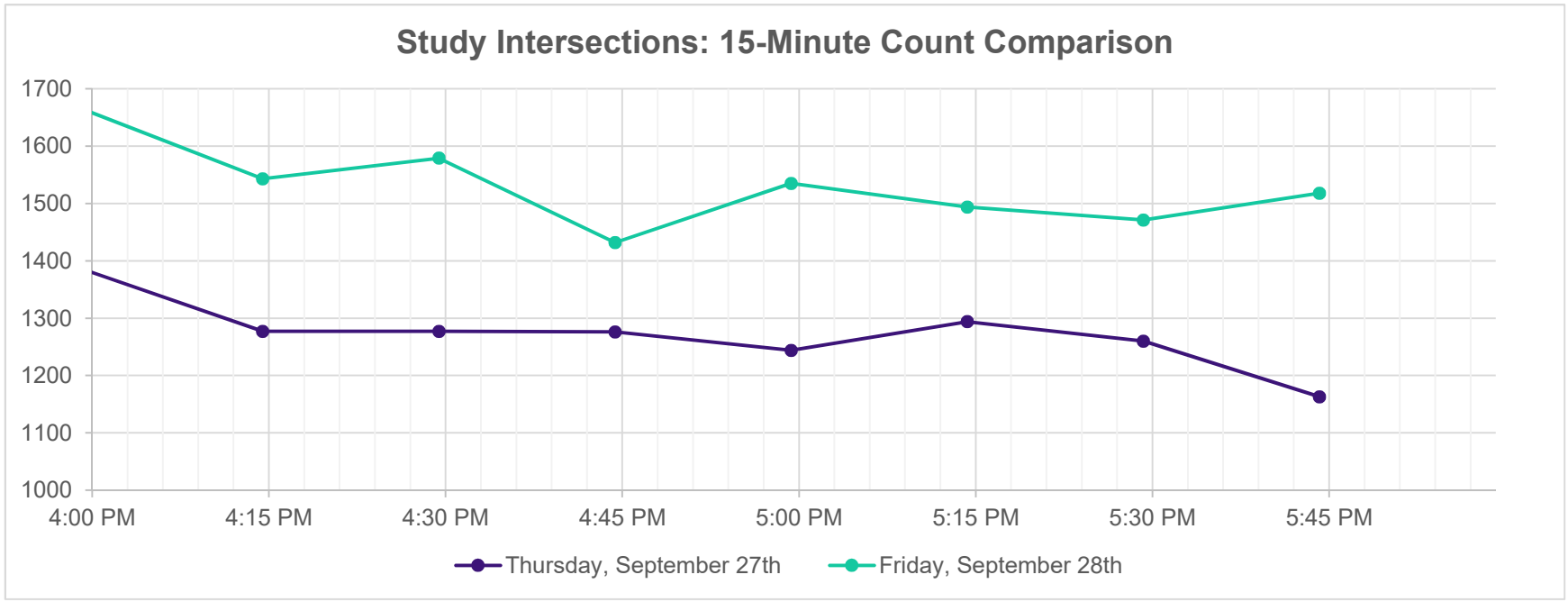


Time		*Southbound*				*Westbound*				*Northbound*				*Eastbound*			
Movement		*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*	*left*	*thru*	*right*	*u-turn*
4:00 PM	*4:15 PM*	9	19	5	0	9	31	12	0	4	21	24	0	23	22	0	0
4:15 PM	*4:30 PM*	8	6	8	0	6	27	11	0	1	5	5	0	12	19	0	0
4:30 PM	*4:45 PM*	7	10	1	0	4	22	13	0	1	6	5	0	9	19	1	0
4:45 PM	*5:00 PM*	9	6	6	0	3	24	6	0	0	9	4	0	6	29	0	0
5:00 PM	*5:15 PM*	16	5	3	0	5	23	14	0	0	5	4	0	5	28	0	0
5:15 PM	*5:30 PM*	7	9	1	0	11	25	11	0	0	9	7	0	2	28	1	0
5:30 PM	*5:45 PM*	10	3	2	0	6	26	7	0	3	8	7	0	5	27	0	0
5:45 PM	*6:00 PM*	17	9	4	0	13	22	10	0	0	6	2	0	4	20	1	0
Total		83	67	30	0	57	200	84	0	9	69	58	0	66	192	3	0
Peak Hour Total		33	41	20	0	22	104	42	0	6	41	38	0	50	89	1	0
Peak Turn Percent		35%	44%	21%	0%	13%	62%	25%	0%	7%	48%	45%	0%	36%	64%	1%	0%
Peak Approach Total		94				168				85				140			

Peak Hour:	4:00 PM	-	5:00 PM
Peak 15 Minutes:	4:00 PM	-	4:15 PM
Peak Hour Factor (PHF):	0.68		

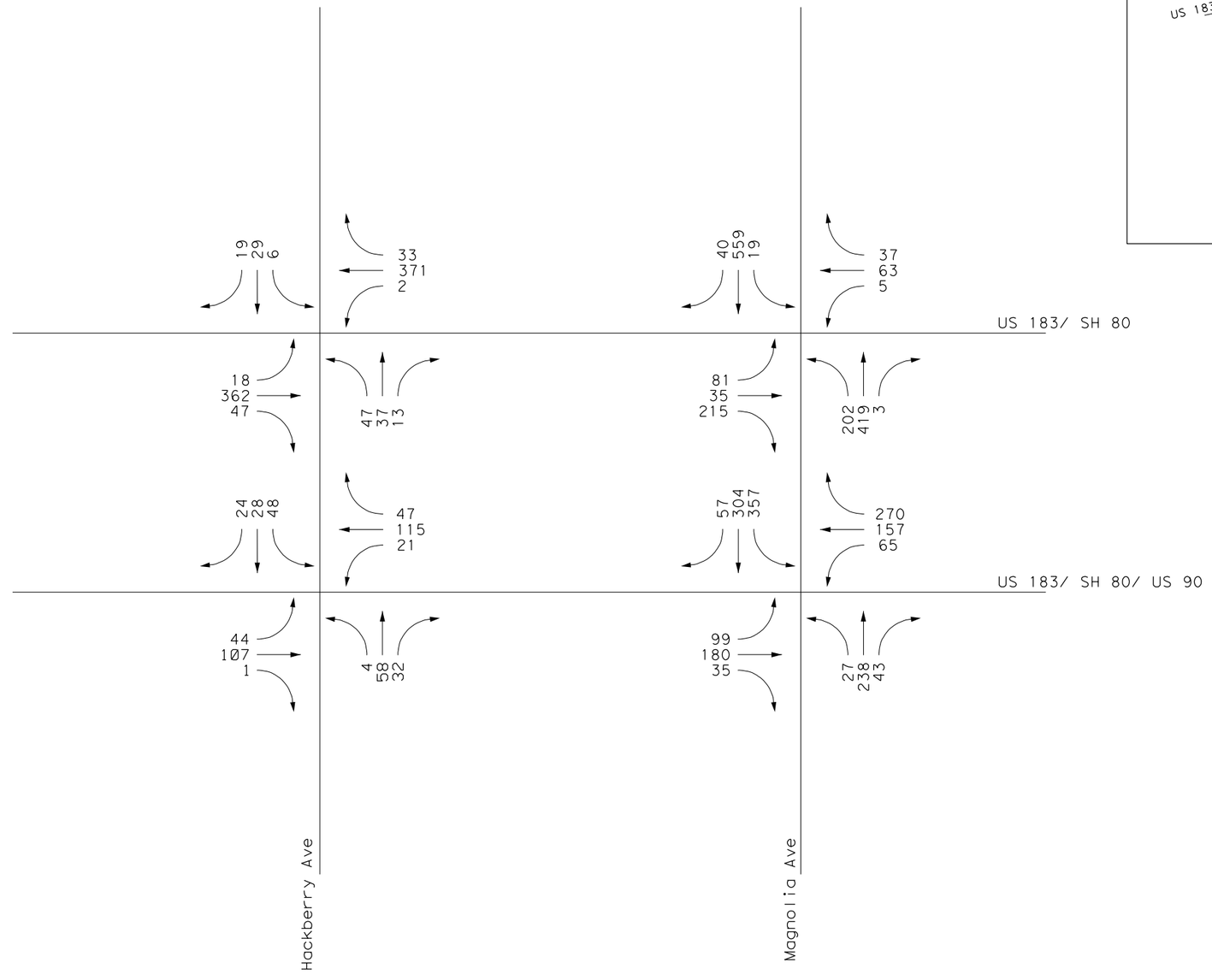
Project	Luling Transportation Study
Location	Caldwell County
Date Collected	9/27/2018 - 9/28/2018

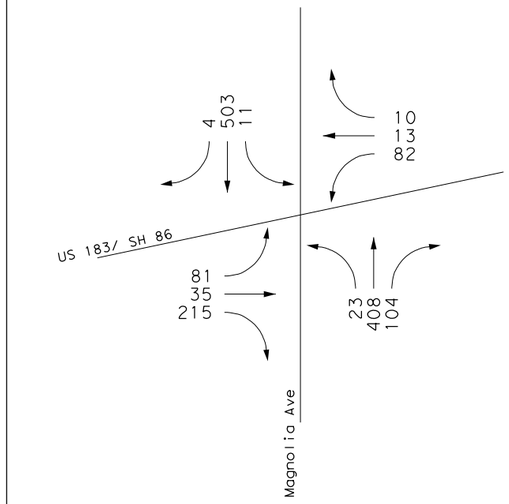
Period Start	Thursday, September 27th						Friday, September 28th					
	SH 80 at Hackberry Avenue	US 183 & SH 80 & US 90	US 183 & SH 80	US 183 & SH 86	US 90 at Hackberry Avenue	Total (15-minutes)	SH 80 at Hackberry Avenue	US 183 & SH 80 & US 90	US 183 & SH 80	US 183 & SH 86	US 90 at Hackberry Avenue	Total (15-minutes)
16:00	241	381	346	236	179	1383	277	472	425	291	197	1662
16:15	217	351	347	254	108	1277	247	462	424	299	111	1543
16:30	189	383	348	259	98	1277	261	456	444	314	104	1579
16:45	205	368	348	253	102	1276	199	442	385	289	117	1432
17:00	178	382	333	243	108	1244	253	446	415	310	111	1535
17:15	190	378	349	266	111	1294	249	420	426	301	98	1494
17:30	191	379	345	241	104	1260	245	459	422	266	79	1471
17:45	201	344	310	200	108	1163	240	421	428	309	120	1518



LEGEND

XXX PM Peak Hour





rps
Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

LINE DIAGRAM
2018 FRIDAY PM PEAK HOUR

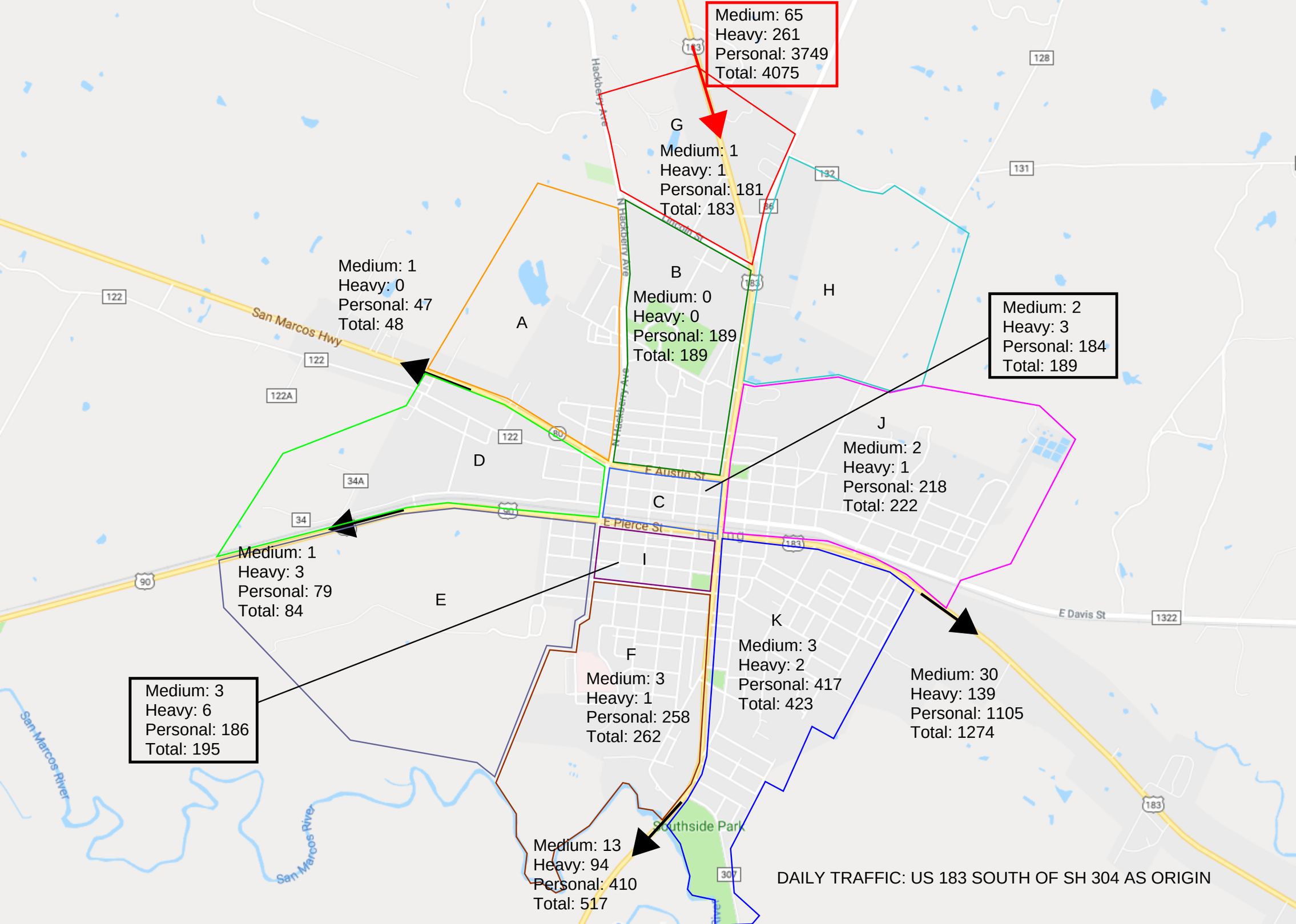
Luling Transportation Study

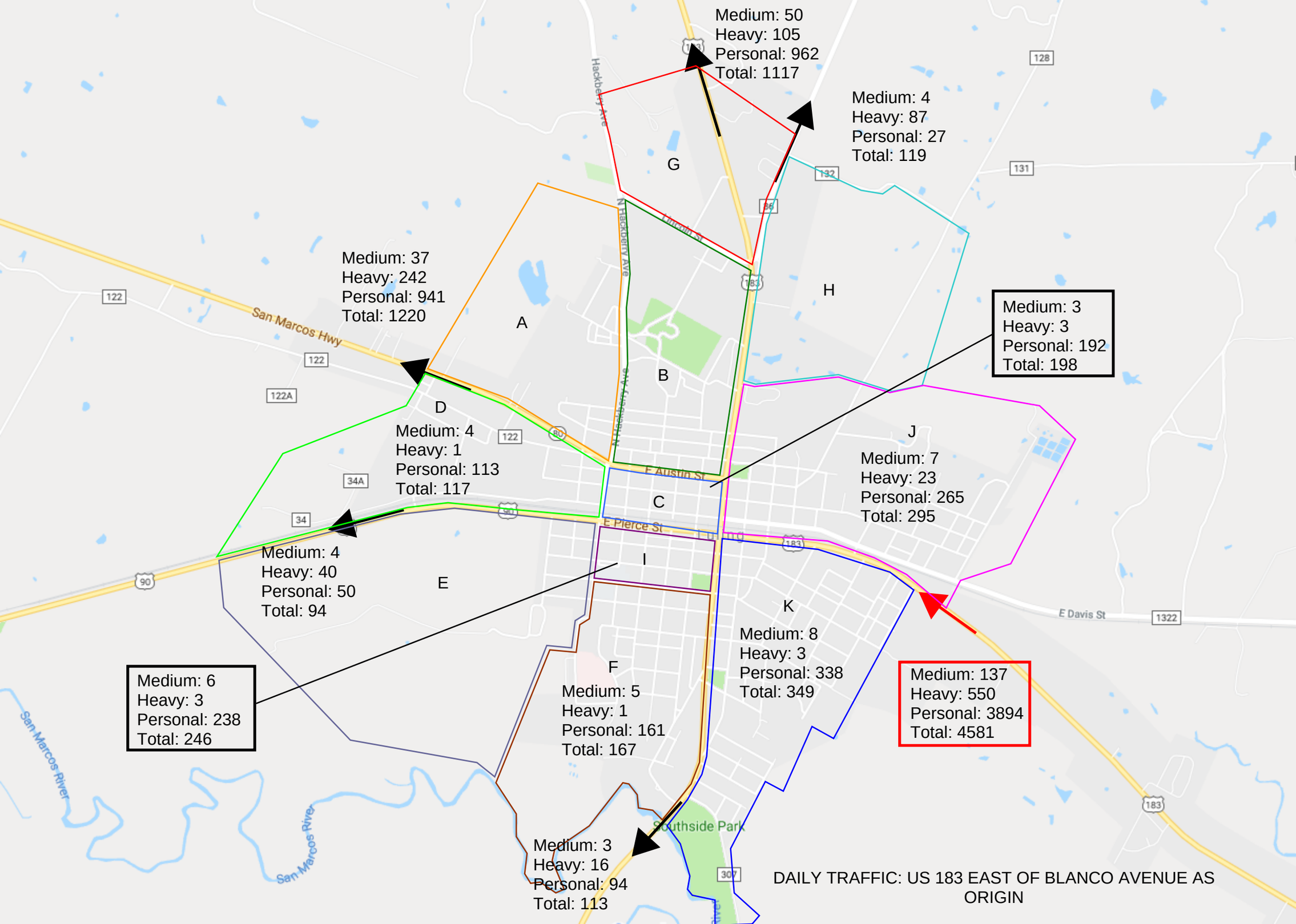
RPS Proj. No: 007757	Exhibit C-1
Scale: NTS	
Date: JANUARY 2019	

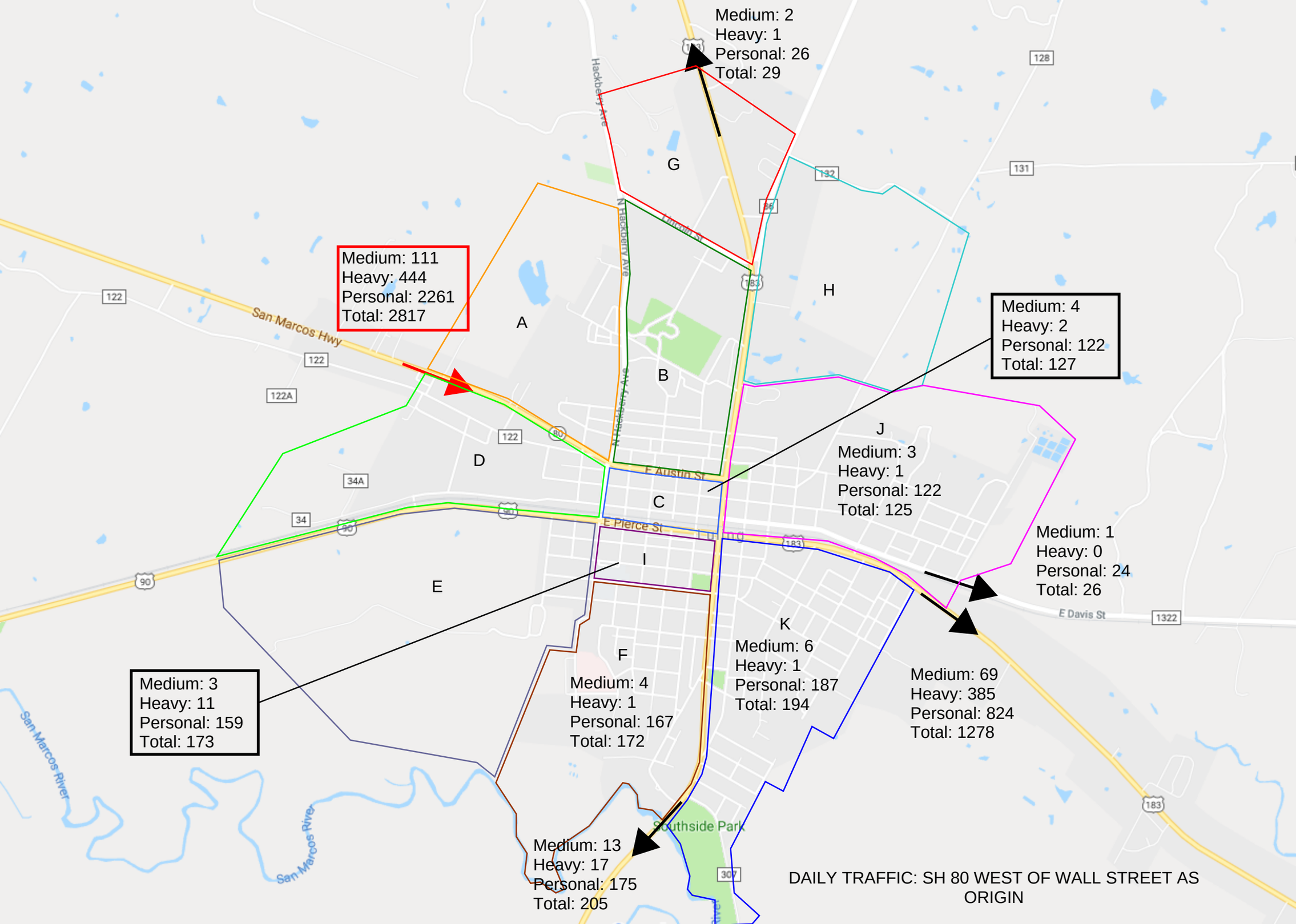
2/15/2019 11:59:08 AM
G:\007757 Luling Relief Route Study\07.00 CADD\Luling_Line Diagram Peak Hours.dgn

Appendix D

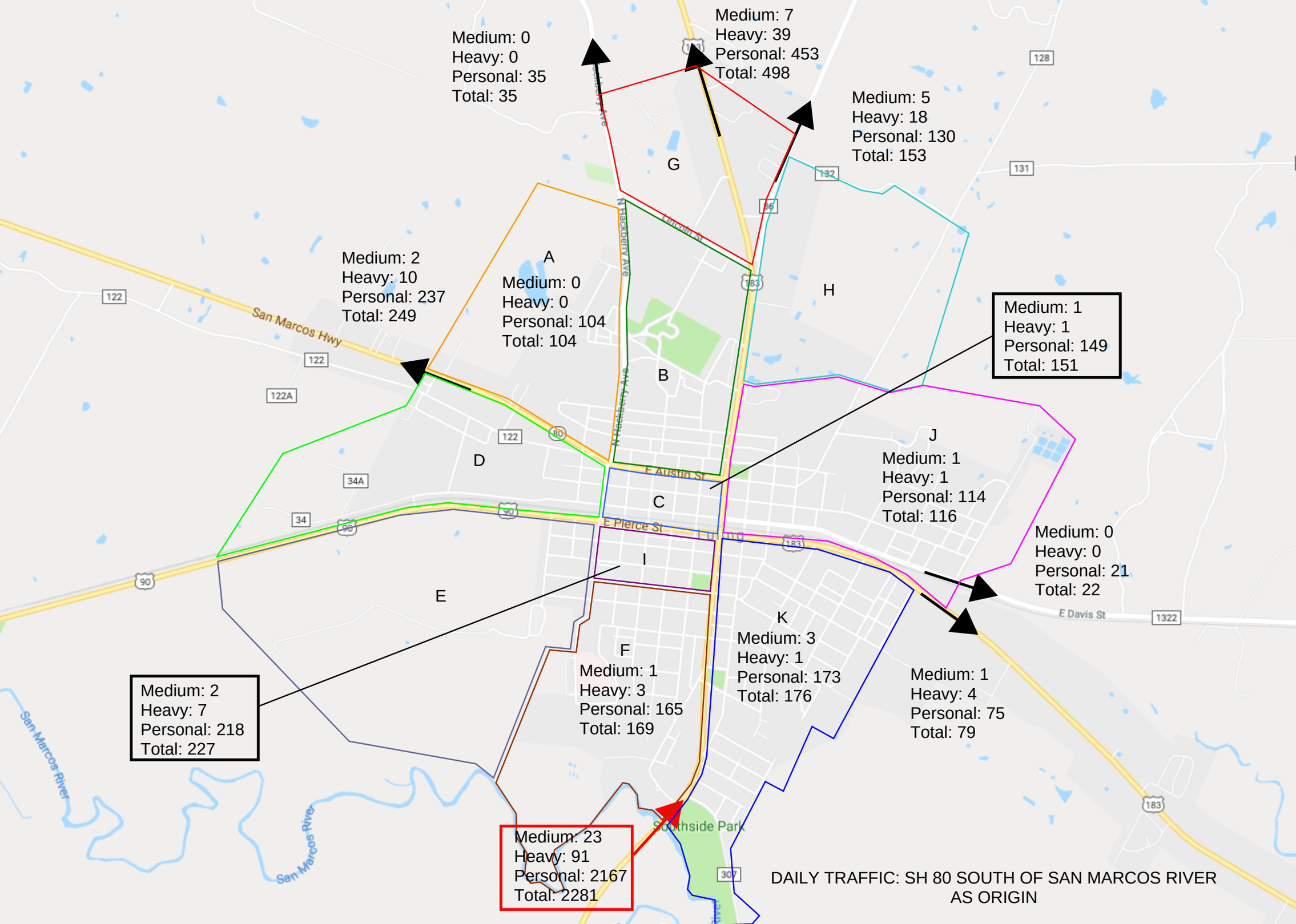
Travel Pattern Data


Medium: 65
Heavy: 261
Personal: 3749
Total: 4075
G
Medium: 1
Heavy: 1
Personal: 181
Total: 183
Medium: 1
Heavy: 0
Personal: 47
Total: 48
A
B
Medium: 0
Heavy: 0
Personal: 189
Total: 189
H
Medium: 2
Heavy: 3
Personal: 184
Total: 189
J
Medium: 2
Heavy: 1
Personal: 218
Total: 222
D
C
I
Medium: 1
Heavy: 3
Personal: 79
Total: 84
E
Medium: 3
Heavy: 6
Personal: 186
Total: 195
F
Medium: 3
Heavy: 1
Personal: 258
Total: 262
K
Medium: 3
Heavy: 2
Personal: 417
Total: 423
Medium: 30
Heavy: 139
Personal: 1105
Total: 1274
Medium: 13
Heavy: 94
Personal: 410
Total: 517
San Marcos Hwy
N Hackberry Ave
Hackberry Ave
Duncan St
E Austin St
E Pierce St
E Davis St
Southside Park
San Marcos River
DAILY TRAFFIC: US 183 SOUTH OF SH 304 AS ORIGIN

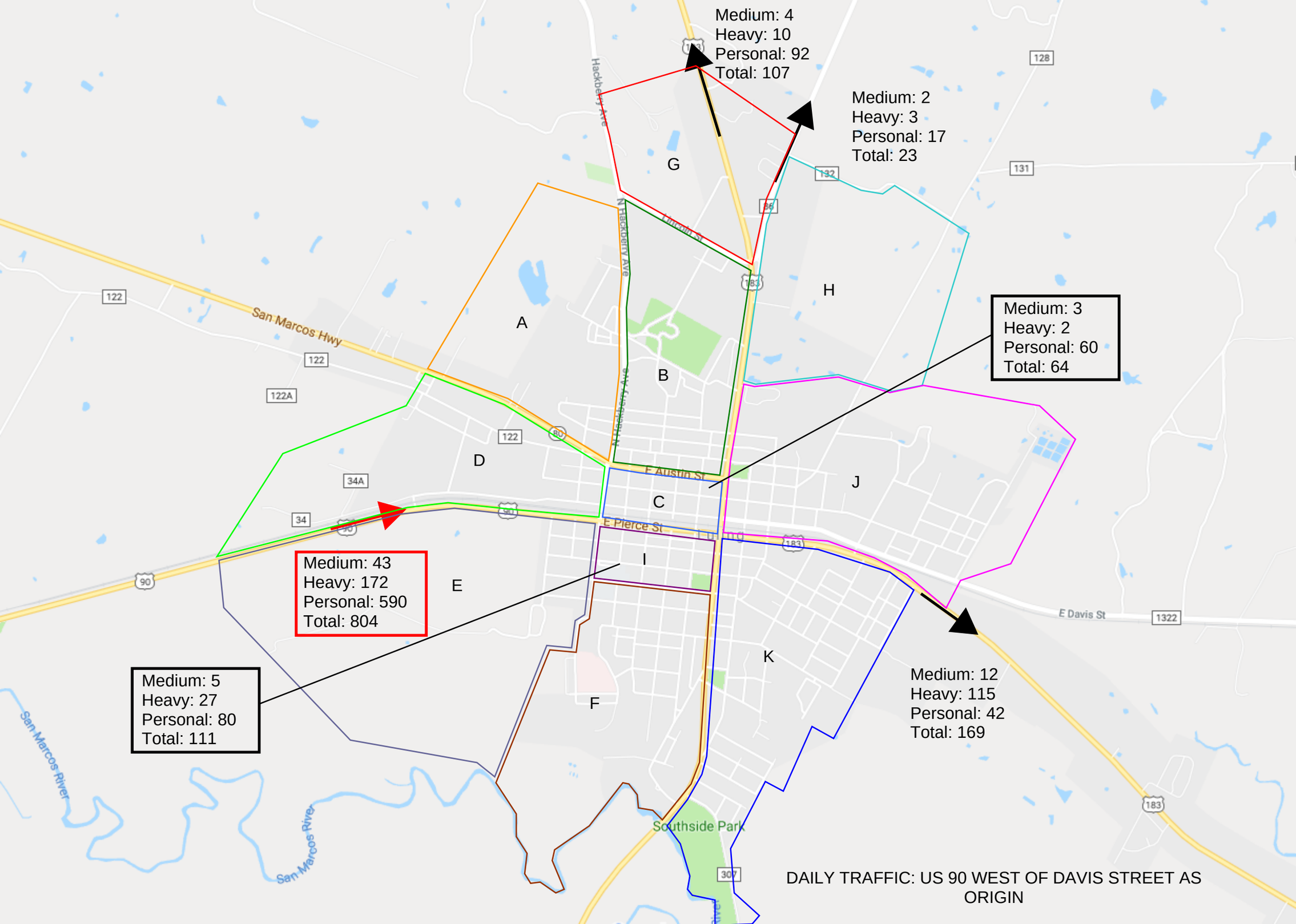

Medium: 50
Heavy: 105
Personal: 962
Total: 1117
Medium: 4
Heavy: 87
Personal: 27
Total: 119
G
H
Medium: 37
Heavy: 242
Personal: 941
Total: 1220
A
B
Medium: 3
Heavy: 3
Personal: 192
Total: 198
D
Medium: 4
Heavy: 1
Personal: 113
Total: 117
J
Medium: 7
Heavy: 23
Personal: 265
Total: 295
C
I
Medium: 4
Heavy: 40
Personal: 50
Total: 94
E
K
Medium: 8
Heavy: 3
Personal: 338
Total: 349
Medium: 6
Heavy: 3
Personal: 238
Total: 246
F
Medium: 5
Heavy: 1
Personal: 161
Total: 167
Medium: 137
Heavy: 550
Personal: 3894
Total: 4581
Medium: 3
Heavy: 16
Personal: 94
Total: 113
San Marcos Hwy
E Austin St
E Pierce St
E Davis St
N Hackberry Ave
Hackberry Ave
Duncan St
Southside Park
San Marcos River
DAILY TRAFFIC: US 183 EAST OF BLANCO AVENUE AS ORIGIN



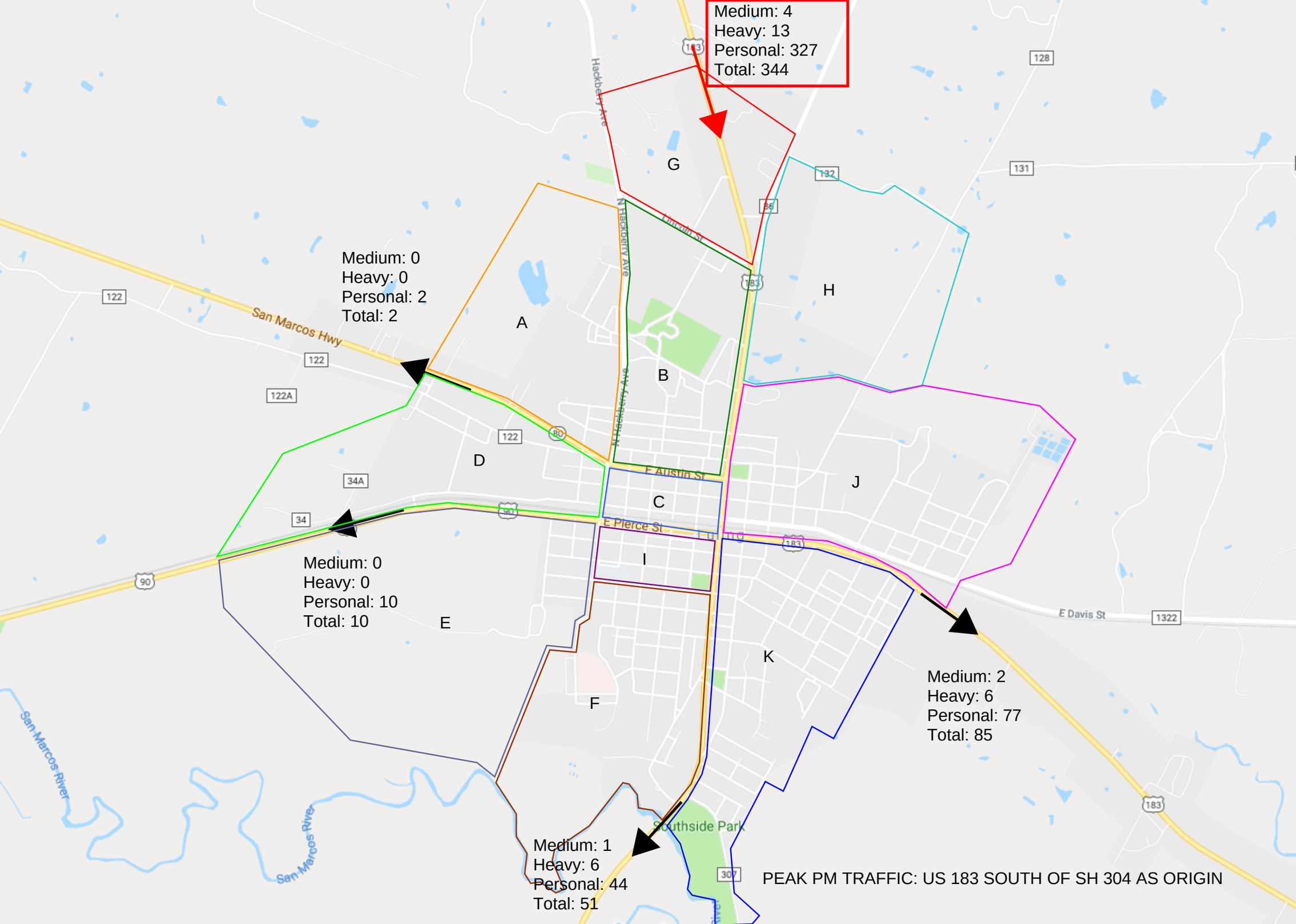
DAILY TRAFFIC: SH 80 WEST OF WALL STREET AS ORIGIN

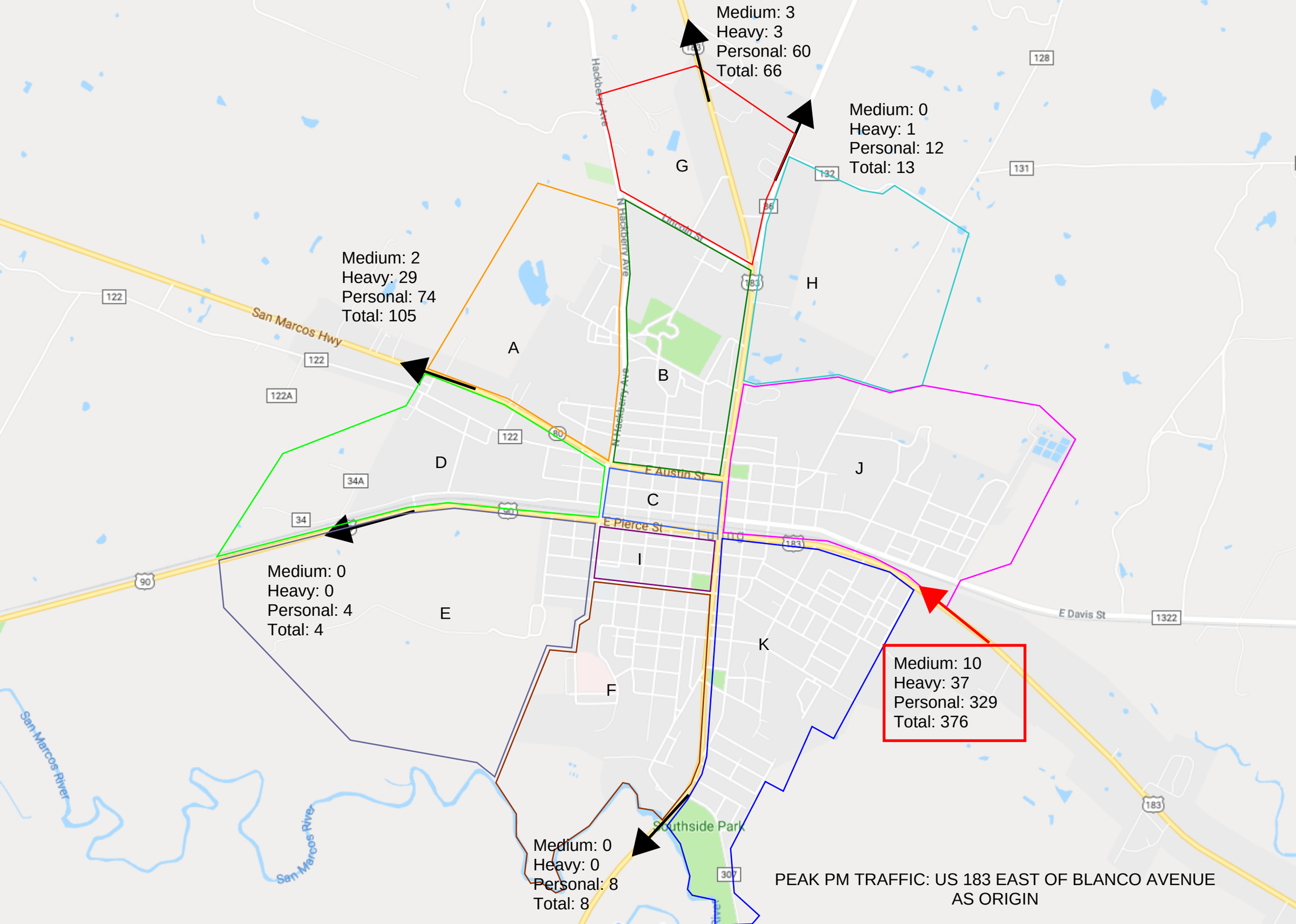


DAILY TRAFFIC: SH 80 SOUTH OF SAN MARCOS RIVER AS ORIGIN

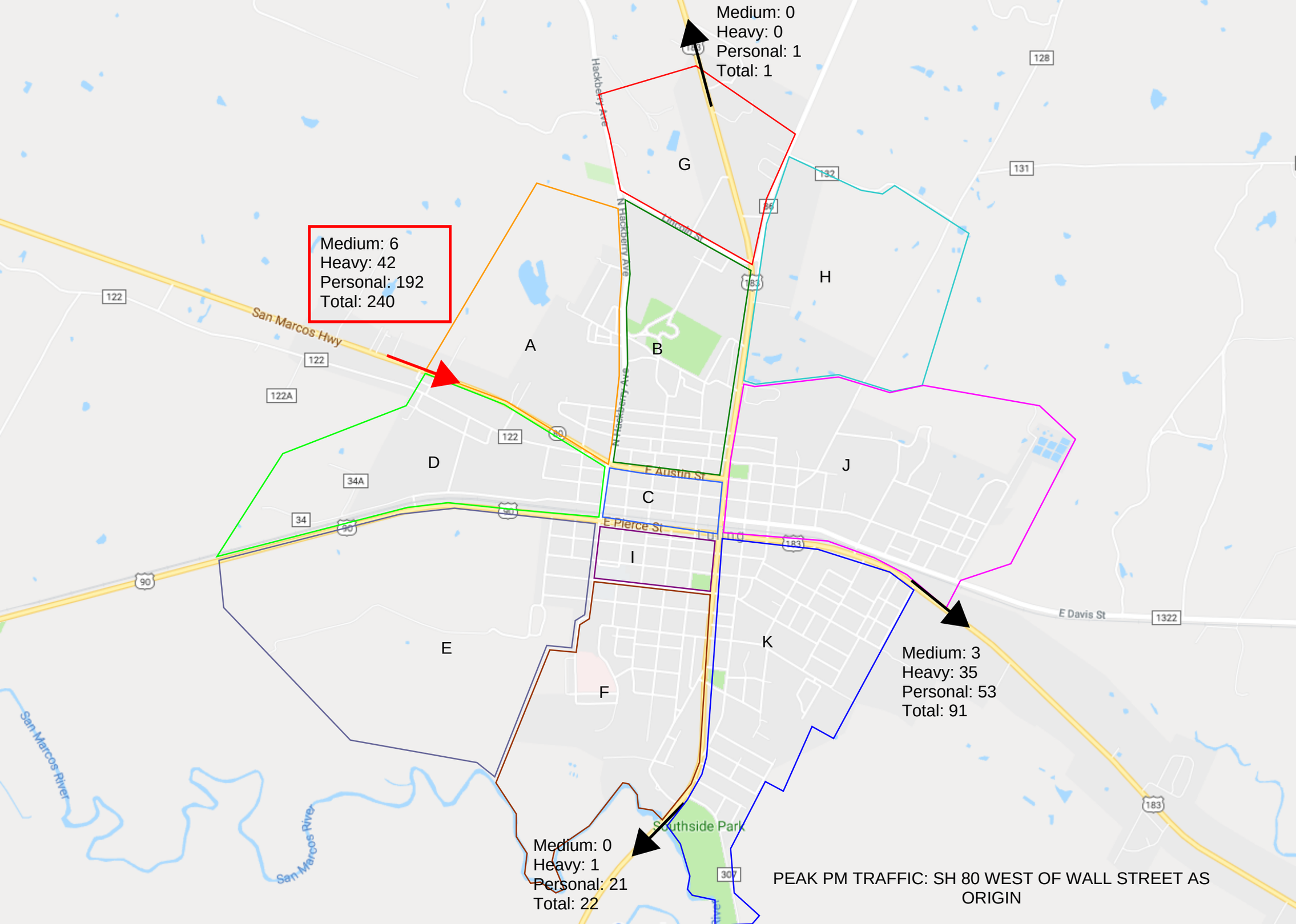


DAILY TRAFFIC: US 90 WEST OF DAVIS STREET AS ORIGIN

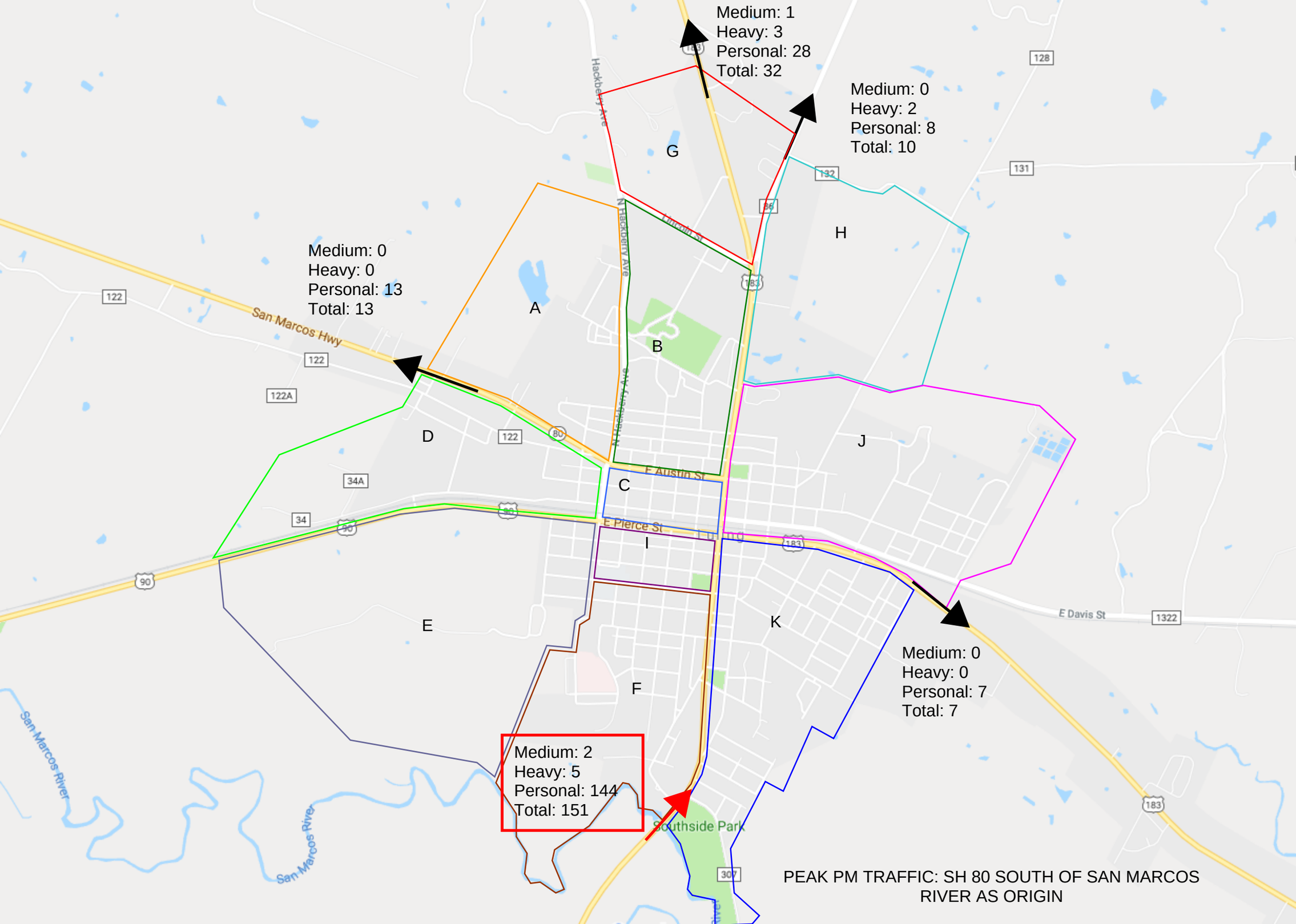

Medium: 4
Heavy: 13
Personal: 327
Total: 344
Medium: 0
Heavy: 0
Personal: 2
Total: 2
Medium: 0
Heavy: 0
Personal: 10
Total: 10
Medium: 2
Heavy: 6
Personal: 77
Total: 85
Medium: 1
Heavy: 6
Personal: 44
Total: 51
A
B
C
D
E
F
G
H
I
J
K
San Marcos Hwy
N Hackberry Ave
Hackberry Ave
Lincoln St
E Austin St
E Pierce St
E Davis St
Southside Park
San Marcos River
PEAK PM TRAFFIC: US 183 SOUTH OF SH 304 AS ORIGIN

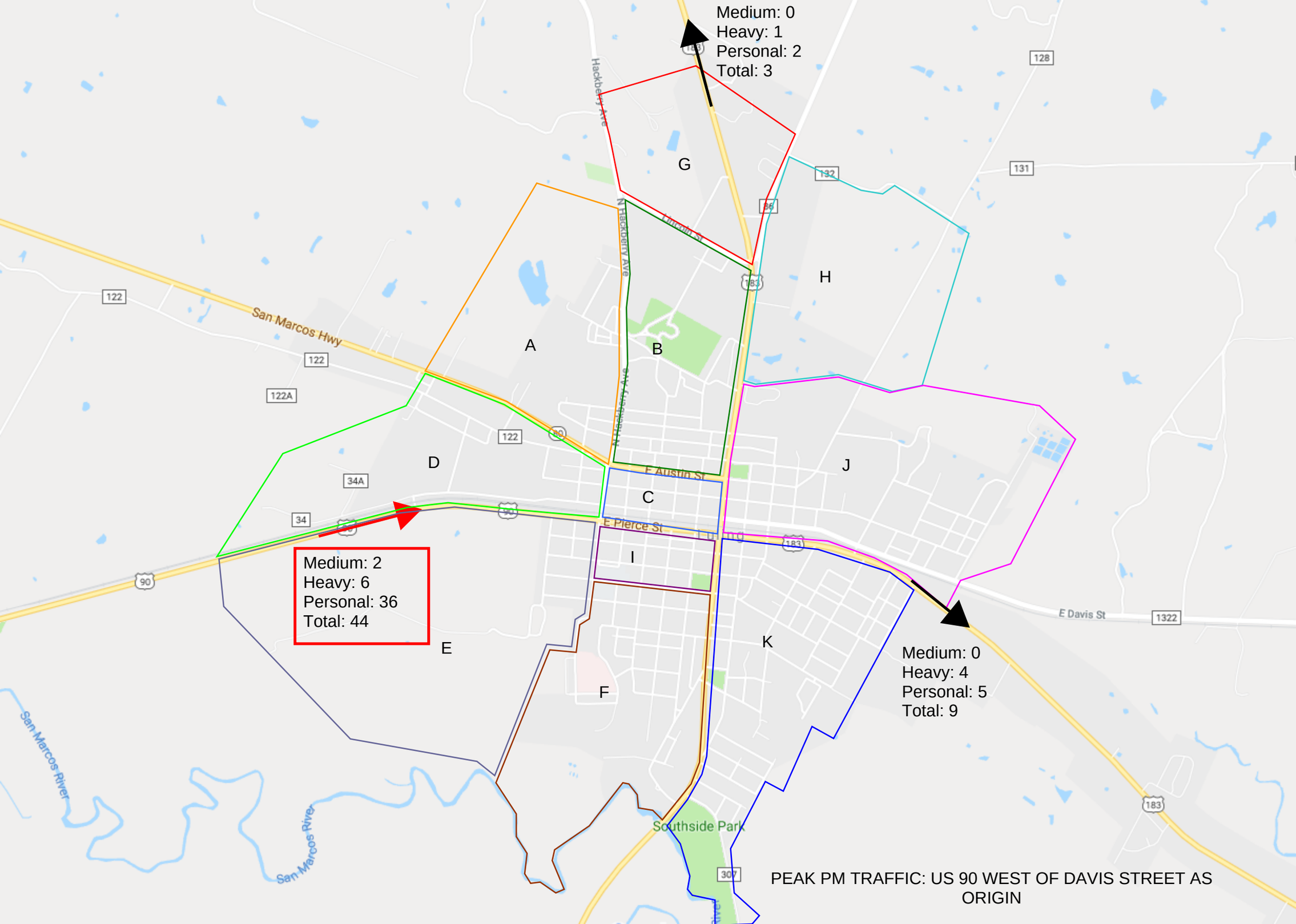


PEAK PM TRAFFIC: US 183 EAST OF BLANCO AVENUE AS ORIGIN



PEAK PM TRAFFIC: SH 80 WEST OF WALL STREET AS ORIGIN


Medium: 1
Heavy: 3
Personal: 28
Total: 32
Medium: 0
Heavy: 2
Personal: 8
Total: 10
Medium: 0
Heavy: 0
Personal: 13
Total: 13
Medium: 0
Heavy: 0
Personal: 7
Total: 7
Medium: 2
Heavy: 5
Personal: 144
Total: 151
A
B
C
D
E
F
G
H
I
J
K
San Marcos Hwy
E Austin St
E Pierce St
E Davis St
N Hackberry Ave
Hackberry Ave
Duncan St
Southside Park
San Marcos River
PEAK PM TRAFFIC: SH 80 SOUTH OF SAN MARCOS RIVER AS ORIGIN


Medium: 0
Heavy: 1
Personal: 2
Total: 3
G
H
A
B
D
J
C
I
E
F
K
Medium: 2
Heavy: 6
Personal: 36
Total: 44
Medium: 0
Heavy: 4
Personal: 5
Total: 9
San Marcos Hwy
N Hackberry Ave
Hackberry Ave
Lincoln St
E Austin St
E Pierce St
E Davis St
Southside Park
San Marcos River
122
122A
34A
34
90
183
132
131
128
1322
307
PEAK PM TRAFFIC: US 90 WEST OF DAVIS STREET AS ORIGIN

Origin: US 183 south of SH 309	Average Friday volume			
Destinations	Medium	Heavy	Personal	Total
FM 86 north of Derrick Rd	1	3	2	6
FM 1322 east of Willow Ave	0	3	17	20
US 183 east of Blanco Ave	34	169	1400	1603
SH 80 south of San Marcos River	14	117	506	637
US 90 west of Davis Street	1	3	87	91
SH 80 west of Wall St	1	0	22	23
Hackberry Ave north of Lincoln St	0	0	0	0
West Central	1	1	114	116
Northwest	0	0	65	65
CBD North	2	4	286	292
CBD South	3	3	263	269
North Central	1	0	164	165
Northeast	0	1	12	13
East Central	3	4	241	248
Southeast	3	2	444	449
South Central	5	1	328	334
Southwest	0	0	74	74
North Industrial	1	2	281	284
Totals	70	313	4306	4689
AADT Totals	65	261	3749	4075

Origin: US 183 east of Blanco Ave	Average Friday volume			
Destinations	Medium	Heavy	Personal	Total
US 183 south of SH 309	56	138	985	1179
FM 86 north of Derrick Rd	5	84	23	112
FM 1322 east of Willow Ave	1	0	10	11
SH 80 south of San Marcos River	6	47	207	260
US 90 west of Davis Street	6	47	67	120
SH 80 west of Wall St	41	282	1365	1688
Hackberry Ave north of Lincoln St	1	0	17	18
West Central	4	1	140	145
Northwest	0	0	31	31
CBD North	3	4	278	285
CBD South	7	2	255	264
North Central	0	0	117	117
Northeast	0	8	8	16
East Central	8	26	338	372
Southeast	8	4	503	515
South Central	6	1	236	243
Southwest	0	0	92	92
North Industrial	2	10	75	87
Totals	154	654	4747	5555
AADT Totals	137	550	3894	4581

Origin: US 90 west of Davis Street	Average Friday volume			
Destinations	Medium	Heavy	Personal	Total
US 183 south of SH 309	6	17	134	157
FM 86 north of Derrick Rd	2	2	22	26
FM 1322 east of Willow Ave	1	1	20	22
US 183 east of Blanco Ave	14	119	67	200
SH 80 south of San Marcos River	2	3	15	20
SH 80 west of Wall St	2	4	10	16
Hackberry Ave north of Lincoln St	1	0	10	11
West Central	1	1	25	27
Northwest	0	0	12	12
CBD North	4	3	60	67
CBD South	9	26	67	102
North Central	0	0	45	45
Northeast	0	2	0	2
East Central	2	3	75	80
Southeast	2	2	42	46
South Central	1	5	37	43
Southwest	0	1	15	16
North Industrial	0	0	15	15
Totals	47	189	671	907
AADT Totals	43	172	590	804

Origin: SH 80 south of San Marcos River

Destinations	Average Friday volume Medium	Heavy	Personal	Total
US 183 south of SH 309	8	51	458	517
FM 86 north of Derrick Rd	7	24	152	183
FM 1322 east of Willow Ave	0	1	19	20
US 183 east of Blanco Ave	1	8	106	115
US 90 west of Davis Street	0	1	11	12
SH 80 west of Wall St	2	16	370	388
Hackberry Ave north of Lincoln St	0	0	29	29
West Central	0	1	61	62
Northwest	0	0	16	16
CBD North	1	1	176	178
CBD South	3	11	240	254
North Central	0	1	27	28
Northeast	0	3	16	19
East Central	1	2	96	99
Southeast	3	1	152	156
South Central	1	2	168	171
Southwest	1	0	48	49
North Industrial	0	0	21	21
Totals	28	123	2166	2317
AADT Totals	23	91	2167	2281

Origin: SH 80 west of Wall St

Destinations	Average Friday volume Medium	Heavy	Personal	Total
US 183 south of SH 309	3	1	18	22
FM 86 north of Derrick Rd	2	2	15	19
FM 1322 east of Willow Ave	1	0	32	33
US 183 east of Blanco Ave	76	452	892	1420
SH 80 south of San Marcos River	16	20	250	286
US 90 west of Davis Street	0	1	10	11
Hackberry Ave north of Lincoln St	0	0	2	2
West Central	3	11	104	118
Northwest	1	0	71	72
CBD North	6	3	144	153
CBD South	4	10	175	189
North Central	1	0	45	46
Northeast	0	0	0	0
East Central	3	0	146	149
Southeast	6	2	217	225
South Central	5	1	187	193
Southwest	0	0	42	42
North Industrial	1	0	37	38
Totals	128	503	2387	3018
AADT Totals	111	444	2261	2817

Origin: Hackberry Ave north of Lincoln St	Average Friday volume			
Destinations	Medium	Heavy	Personal	Total
US 183 south of SH 309	0	0	32	32
FM 86 north of Derrick Rd	1	0	0	1
FM 1322 east of Willow Ave	0	0	14	14
US 183 east of Blanco Ave	1	17	14	32
SH 80 south of San Marcos River	1	11	25	37
US 90 west of Davis Street	0	6	0	6
SH 80 west of Wall St	0	0	11	11
West Central	0	0	18	18
Northwest	0	0	35	35
CBD North	0	0	46	46
CBD South	0	0	98	98
North Central	0	0	14	14
Northeast	0	6	0	6
East Central	0	0	32	32
Southeast	1	0	63	64
South Central	0	0	39	39
Southwest	0	0	14	14
North Industrial	0	0	35	35
Totals	4	40	490	534

Origin: FM 86 north of Derrick Rd	Average Friday volume			
Destinations	Medium	Heavy	Personal	Total
US 183 south of SH 309	1	2	24	27
FM 1322 east of Willow Ave	0	0	0	0
US 183 east of Blanco Ave	4	60	80	144
SH 80 south of San Marcos River	8	25	236	269
US 90 west of Davis Street	1	1	32	34
SH 80 west of Wall St	1	0	40	41
Hackberry Ave north of Lincoln St	0	0	0	0
West Central	0	0	0	0
Northwest	0	0	12	12
CBD North	1	0	16	17
CBD South	1	3	16	20
North Central	0	0	16	16
Northeast	0	1	0	1
East Central	0	0	20	20
Southeast	1	0	116	117
South Central	0	0	16	16
Southwest	0	0	12	12
North Industrial	0	2	32	34
Totals	18	94	668	780

Origin: FM 1322 east of Willow Ave	Average Friday volume			
Destinations	Medium	Heavy	Personal	Total
US 183 south of SH 309	1	20	25	46
FM 86 north of Derrick Rd	0	0	0	0
US 183 east of Blanco Ave	2	5	74	81
SH 80 south of San Marcos River	3	7	39	49
US 90 west of Davis Street	1	7	18	26
SH 80 west of Wall St	0	3	56	59
Hackberry Ave north of Lincoln St	0	0	0	0
West Central	0	0	0	0
Northwest	0	0	7	7
CBD North	0	3	35	38
CBD South	1	0	53	54
North Central	0	0	4	4
Northeast	0	0	0	0
East Central	0	10	42	52
Southeast	1	0	81	82
South Central	0	0	35	35
Southwest	0	0	7	7
North Industrial	0	0	0	0
Totals	9	55	476	540

Average Friday Travel Times

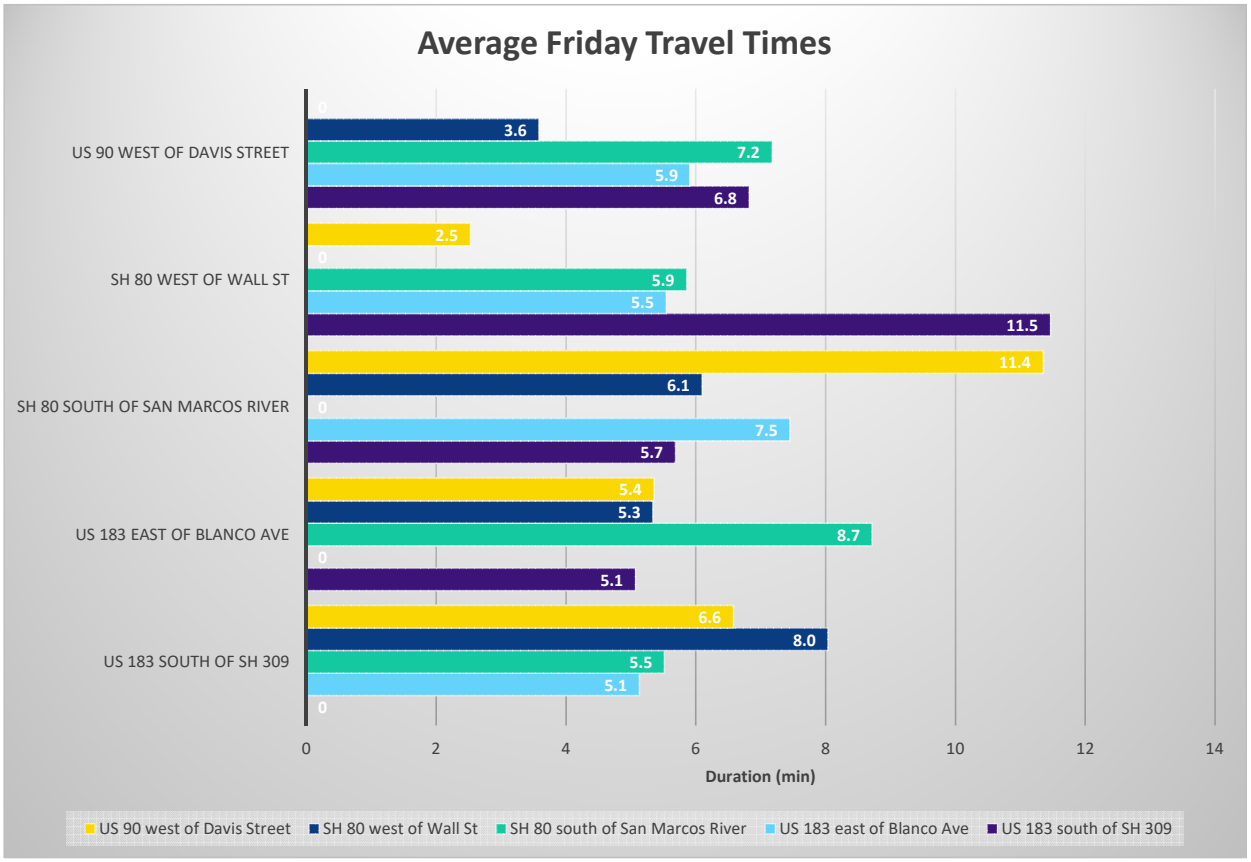
Duration (min)

Total Vehicles

	US 183 south of SH		US 183 east of Blanco		SH 80 south of San		SH 80 west of Wall St		US 90 west of Davis	
	All Day	Peak PM	All Day	Peak PM	All Day	Peak PM	All Day	Peak PM	All Day	Peak PM
US 183 south of SH 309	-	-	5.1	5.2	5.7	6.4	11.5	9.0	6.8	7.5
US 183 east of Blanco Ave	5.1	5.6	-	-	7.5	7.9	5.5	5.6	5.9	6.7
SH 80 south of San Marcos River	5.5	5.7	8.7	5.8	-	-	5.9	6.2	7.2	1.3
SH 80 west of Wall St	8.0	6.4	5.3	5.3	6.1	7.6	-	-	3.6	3.6
US 90 west of Davis Street	6.6	5.3	5.4	5.7	11.4	4.7	2.5	2.6	-	-

Heavy Vehicles

	US 183 south of SH		US 183 east of Blanco		SH 80 south of San		SH 80 west of Wall St		US 90 west of Davis	
	All Day	Peak PM	All Day	Peak PM	All Day	Peak PM	All Day	Peak PM	All Day	Peak PM
US 183 south of SH 309	-	-	5.0	5.5	6.1	6.9	20.0	20.0	6.4	8.9
US 183 east of Blanco Ave	5.3	5.8	-	-	9.2	4.9	5.4	5.6	5.0	4.5
SH 80 south of San Marcos River	5.2	5.6	9.8	4.0	-	-	5.9	6.6	6.5	4.0
SH 80 west of Wall St	4.4		5.6	5.7	5.4	6.3	-	-	4.5	8.2
US 90 west of Davis Street	7.4	5.3	5.3	6.2	13.4	5.2	1.7		-	-



Type of Travel	Vehicle Weight	Origin Zone ID	Origin Zone Name	Destination Zone ID	Destination Zone Name	Day Type	Day Part	O-D Traffic (StL Index)	Origin Zone Traffic (StL Index)	Destination Zone Traffic (StL Index)	Avg Trip Duration (sec)
Commercial	Medium	11	US 183 south of SH 309	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	253	32	294
Commercial	Medium	11	US 183 south of SH 309	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	109	253	306	349
Commercial	Medium	11	US 183 south of SH 309	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	50	253	144	327
Commercial	Medium	11	US 183 south of SH 309	72	SH 80 west of Wall St	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	253	191	705
Commercial	Medium	11	US 183 south of SH 309	1001	West Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	253	56	295
Commercial	Medium	11	US 183 south of SH 309	1003	CBD North	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	253	44	168
Commercial	Medium	11	US 183 south of SH 309	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	9	253	74	302
Commercial	Medium	11	US 183 south of SH 309	1005	North Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	253	12	564
Commercial	Medium	11	US 183 south of SH 309	1006	Northeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	253	6	152
Commercial	Medium	11	US 183 south of SH 309	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	9	253	65	177
Commercial	Medium	11	US 183 south of SH 309	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	253	115	372
Commercial	Medium	11	US 183 south of SH 309	1009	South Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	35	253	162	344
Commercial	Medium	11	US 183 south of SH 309	1010	Southwest	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	253	26	297
Commercial	Medium	21	FM 86 north of Derrick Rd	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	65	306	356
Commercial	Medium	21	FM 86 north of Derrick Rd	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	32	65	144	356
Commercial	Medium	21	FM 86 north of Derrick Rd	72	SH 80 west of Wall St	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	65	191	393
Commercial	Medium	21	FM 86 north of Derrick Rd	1003	CBD North	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	65	44	515
Commercial	Medium	21	FM 86 north of Derrick Rd	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	65	74	194
Commercial	Medium	21	FM 86 north of Derrick Rd	1010	Southwest	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	15	65	26	478
Commercial	Medium	31	FM 1322 east of Willow Ave	12	US 183 south of SH 309	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	15	491	201
Commercial	Medium	31	FM 1322 east of Willow Ave	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	15	306	47
Commercial	Medium	31	FM 1322 east of Willow Ave	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	15	144	290
Commercial	Medium	31	FM 1322 east of Willow Ave	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	15	115	144
Commercial	Medium	41	US 183 east of Blanco Ave	12	US 183 south of SH 309	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	153	500	491	338
Commercial	Medium	41	US 183 east of Blanco Ave	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	21	500	106	259
Commercial	Medium	41	US 183 east of Blanco Ave	62	US 90 west of Davis Street	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	12	500	44	293
Commercial	Medium	41	US 183 east of Blanco Ave	72	SH 80 west of Wall St	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	115	500	191	321
Commercial	Medium	41	US 183 east of Blanco Ave	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	9	500	24	705
Commercial	Medium	41	US 183 east of Blanco Ave	1001	West Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	41	500	56	399
Commercial	Medium	41	US 183 east of Blanco Ave	1003	CBD North	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	21	500	44	224
Commercial	Medium	41	US 183 east of Blanco Ave	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	21	500	74	365
Commercial	Medium	41	US 183 east of Blanco Ave	1005	North Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	500	12	392
Commercial	Medium	41	US 183 east of Blanco Ave	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	500	65	154
Commercial	Medium	41	US 183 east of Blanco Ave	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	29	500	115	276
Commercial	Medium	41	US 183 east of Blanco Ave	1009	South Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	65	500	162	354
Commercial	Medium	41	US 183 east of Blanco Ave	1011	North Industrial	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	500	15	290
Commercial	Medium	51	SH 80 south of San Marcos River	12	US 183 south of SH 309	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	182	350	491	332
Commercial	Medium	51	SH 80 south of San Marcos River	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	71	350	106	423
Commercial	Medium	51	SH 80 south of San Marcos River	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	12	350	32	292
Commercial	Medium	51	SH 80 south of San Marcos River	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	9	350	306	606
Commercial	Medium	51	SH 80 south of San Marcos River	62	US 90 west of Davis Street	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	350	44	264
Commercial	Medium	51	SH 80 south of San Marcos River	72	SH 80 west of Wall St	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	15	350	191	648
Commercial	Medium	51	SH 80 south of San Marcos River	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	21	350	74	155
Commercial	Medium	51	SH 80 south of San Marcos River	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	9	350	65	230
Commercial	Medium	51	SH 80 south of San Marcos River	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	18	350	115	347
Commercial	Medium	51	SH 80 south of San Marcos River	1009	South Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	350	162	162
Commercial	Medium	51	SH 80 south of San Marcos River	1010	Southwest	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	350	26	557
Commercial	Medium	61	US 90 west of Davis Street	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	24	106	379
Commercial	Medium	61	US 90 west of Davis Street	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	24	306	532
Commercial	Medium	61	US 90 west of Davis Street	1001	West Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	24	56	474
Commercial	Medium	61	US 90 west of Davis Street	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	9	24	65	287
Commercial	Medium	61	US 90 west of Davis Street	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	24	115	275
Commercial	Medium	71	SH 80 west of Wall St	12	US 183 south of SH 309	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	171	491	295
Commercial	Medium	71	SH 80 west of Wall St	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	171	32	300
Commercial	Medium	71	SH 80 west of Wall St	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	85	171	306	303
Commercial	Medium	71	SH 80 west of Wall St	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	18	171	144	322
Commercial	Medium	71	SH 80 west of Wall St	62	US 90 west of Davis Street	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	171	44	158
Commercial	Medium	71	SH 80 west of Wall St	1001	West Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	171	56	451
Commercial	Medium	71	SH 80 west of Wall St	1002	Northwest	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	171	3	129

Commercial	Medium	71	SH 80 west of Wall St	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	171	74	602
Commercial	Medium	71	SH 80 west of Wall St	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	171	65	225
Commercial	Medium	71	SH 80 west of Wall St	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	15	171	115	429
Commercial	Medium	71	SH 80 west of Wall St	1009	South Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	15	171	162	449
Commercial	Medium	71	SH 80 west of Wall St	1011	North Industrial	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	171	15	299
Commercial	Medium	81	Hackberry Ave north of Lincoln St	1001	West Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	12	56	236
Commercial	Medium	81	Hackberry Ave north of Lincoln St	1003	CBD North	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	12	44	315
Commercial	Medium	81	Hackberry Ave north of Lincoln St	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	12	115	960
Commercial	Heavy	11	US 183 south of SH 309	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	94	223	865	354
Commercial	Heavy	11	US 183 south of SH 309	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	119	223	247	311
Commercial	Heavy	11	US 183 south of SH 309	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	223	64	1177
Commercial	Heavy	11	US 183 south of SH 309	1011	North Industrial	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	223	5	42
Commercial	Heavy	21	FM 86 north of Derrick Rd	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	45	119	865	453
Commercial	Heavy	21	FM 86 north of Derrick Rd	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	69	119	247	359
Commercial	Heavy	21	FM 86 north of Derrick Rd	1006	Northeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	119	25	493
Commercial	Heavy	41	US 183 east of Blanco Ave	12	US 183 south of SH 309	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	35	1113	272	338
Commercial	Heavy	41	US 183 east of Blanco Ave	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	10	1113	104	229
Commercial	Heavy	41	US 183 east of Blanco Ave	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	10	1113	247	279
Commercial	Heavy	41	US 183 east of Blanco Ave	72	SH 80 west of Wall St	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	964	1113	1098	337
Commercial	Heavy	41	US 183 east of Blanco Ave	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	1113	54	342
Commercial	Heavy	41	US 183 east of Blanco Ave	1006	Northeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	10	1113	25	587
Commercial	Heavy	41	US 183 east of Blanco Ave	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	54	1113	64	435
Commercial	Heavy	51	SH 80 south of San Marcos River	12	US 183 south of SH 309	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	129	257	272	329
Commercial	Heavy	51	SH 80 south of San Marcos River	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	89	257	104	303
Commercial	Heavy	51	SH 80 south of San Marcos River	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	257	15	243
Commercial	Heavy	51	SH 80 south of San Marcos River	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	257	865	280
Commercial	Heavy	51	SH 80 south of San Marcos River	72	SH 80 west of Wall St	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	10	257	1098	324
Commercial	Heavy	51	SH 80 south of San Marcos River	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	257	54	201
Commercial	Heavy	51	SH 80 south of San Marcos River	1005	North Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	257	5	447
Commercial	Heavy	51	SH 80 south of San Marcos River	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	257	64	554
Commercial	Heavy	61	US 90 west of Davis Street	12	US 183 south of SH 309	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	20	64	272	327
Commercial	Heavy	61	US 90 west of Davis Street	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	30	64	865	251
Commercial	Heavy	61	US 90 west of Davis Street	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	15	64	54	343
Commercial	Heavy	71	SH 80 west of Wall St	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	514	613	865	344
Commercial	Heavy	71	SH 80 west of Wall St	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	20	613	247	287
Commercial	Heavy	71	SH 80 west of Wall St	1001	West Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	10	613	15	103
Commercial	Heavy	71	SH 80 west of Wall St	1003	CBD North	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	613	10	166
Commercial	Heavy	71	SH 80 west of Wall St	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	30	613	54	553
Commercial	Heavy	71	SH 80 west of Wall St	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	613	64	390
Personal		11	US 183 south of SH 309	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	46	183	191	312
Personal		11	US 183 south of SH 309	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	26	183	103	332
Personal		11	US 183 south of SH 309	62	US 90 west of Davis Street	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	4	183	29	392
Personal		11	US 183 south of SH 309	72	SH 80 west of Wall St	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	183	138	314
Personal		11	US 183 south of SH 309	1001	West Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	183	57	536
Personal		11	US 183 south of SH 309	1002	Northwest	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	4	183	70	286
Personal		11	US 183 south of SH 309	1003	CBD North	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	183	96	605
Personal		11	US 183 south of SH 309	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	14	183	123	662
Personal		11	US 183 south of SH 309	1005	North Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	183	51	221
Personal		11	US 183 south of SH 309	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	14	183	123	602
Personal		11	US 183 south of SH 309	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	17	183	217	524
Personal		11	US 183 south of SH 309	1009	South Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	19	183	125	541
Personal		11	US 183 south of SH 309	1010	Southwest	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	183	24	377
Personal		11	US 183 south of SH 309	1011	North Industrial	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	183	27	210
Personal		21	FM 86 north of Derrick Rd	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	4	12	103	336
Personal		21	FM 86 north of Derrick Rd	72	SH 80 west of Wall St	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	2	12	138	522
Personal		21	FM 86 north of Derrick Rd	1003	CBD North	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	12	96	187
Personal		21	FM 86 north of Derrick Rd	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	2	12	217	391
Personal		31	FM 1322 east of Willow Ave	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	2	6	103	226
Personal		31	FM 1322 east of Willow Ave	1003	CBD North	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	6	96	704
Personal		31	FM 1322 east of Willow Ave	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	6	123	643
Personal		31	FM 1322 east of Willow Ave	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	6	123	365
Personal		31	FM 1322 east of Willow Ave	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	0	6	217	775

Personal		41	US 183 east of Blanco Ave	12	US 183 south of SH 309	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	34	211	105	286
Personal		41	US 183 east of Blanco Ave	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	211	10	262
Personal		41	US 183 east of Blanco Ave	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	211	11	50
Personal		41	US 183 east of Blanco Ave	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	211	103	437
Personal		41	US 183 east of Blanco Ave	62	US 90 west of Davis Street	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	211	29	304
Personal		41	US 183 east of Blanco Ave	72	SH 80 west of Wall St	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	59	211	138	326
Personal		41	US 183 east of Blanco Ave	1001	West Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	211	57	403
Personal		41	US 183 east of Blanco Ave	1002	Northwest	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	211	70	507
Personal		41	US 183 east of Blanco Ave	1003	CBD North	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	16	211	96	336
Personal		41	US 183 east of Blanco Ave	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	8	211	123	586
Personal		41	US 183 east of Blanco Ave	1005	North Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	7	211	51	620
Personal		41	US 183 east of Blanco Ave	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	26	211	123	603
Personal		41	US 183 east of Blanco Ave	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	18	211	217	505
Personal		41	US 183 east of Blanco Ave	1009	South Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	4	211	125	713
Personal		41	US 183 east of Blanco Ave	1010	Southwest	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	211	24	244
Personal		41	US 183 east of Blanco Ave	1011	North Industrial	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	211	27	357
Personal		51	SH 80 south of San Marcos River	12	US 183 south of SH 309	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	58	105	398
Personal		51	SH 80 south of San Marcos River	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	58	10	173
Personal		51	SH 80 south of San Marcos River	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	5	58	191	640
Personal		51	SH 80 south of San Marcos River	72	SH 80 west of Wall St	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	10	58	138	537
Personal		51	SH 80 south of San Marcos River	1001	West Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	58	57	868
Personal		51	SH 80 south of San Marcos River	1003	CBD North	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	11	58	96	445
Personal		51	SH 80 south of San Marcos River	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	6	58	123	698
Personal		51	SH 80 south of San Marcos River	1005	North Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	58	51	360
Personal		51	SH 80 south of San Marcos River	1006	Northeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	2	58	4	504
Personal		51	SH 80 south of San Marcos River	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	4	58	123	821
Personal		51	SH 80 south of San Marcos River	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	58	217	815
Personal		51	SH 80 south of San Marcos River	1009	South Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	58	125	580
Personal		51	SH 80 south of San Marcos River	1010	Southwest	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	2	58	24	1298
Personal		51	SH 80 south of San Marcos River	1011	North Industrial	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	58	27	433
Personal		61	US 90 west of Davis Street	12	US 183 south of SH 309	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	2	15	105	411
Personal		61	US 90 west of Davis Street	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	15	191	606
Personal		61	US 90 west of Davis Street	1001	West Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	15	57	572
Personal		61	US 90 west of Davis Street	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	15	123	381
Personal		61	US 90 west of Davis Street	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	15	217	571
Personal		61	US 90 west of Davis Street	1009	South Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	15	125	280
Personal		61	US 90 west of Davis Street	1011	North Industrial	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	15	27	585
Personal		71	SH 80 west of Wall St	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	2	165	11	263
Personal		71	SH 80 west of Wall St	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	54	165	191	337
Personal		71	SH 80 west of Wall St	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	15	165	103	332
Personal		71	SH 80 west of Wall St	62	US 90 west of Davis Street	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	165	29	318
Personal		71	SH 80 west of Wall St	1001	West Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	2	165	57	257
Personal		71	SH 80 west of Wall St	1002	Northwest	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	17	165	70	838
Personal		71	SH 80 west of Wall St	1003	CBD North	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	3	165	96	464
Personal		71	SH 80 west of Wall St	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	13	165	123	520
Personal		71	SH 80 west of Wall St	1005	North Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	165	51	312
Personal		71	SH 80 west of Wall St	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	11	165	123	455
Personal		71	SH 80 west of Wall St	1008	Southeast	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	18	165	217	777
Personal		71	SH 80 west of Wall St	1009	South Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	16	165	125	557
Personal		81	Hackberry Ave north of Lincoln St	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	14	11	502
Personal		81	Hackberry Ave north of Lincoln St	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	14	103	635
Personal		81	Hackberry Ave north of Lincoln St	1002	Northwest	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	14	70	435
Personal		81	Hackberry Ave north of Lincoln St	1004	CBD South	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	4	14	123	493
Personal		81	Hackberry Ave north of Lincoln St	1005	North Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	2	14	51	197
Personal		81	Hackberry Ave north of Lincoln St	1007	East Central	2: Average Friday (F-F)	5: Focused Peak PM (5pm-6pm)	1	14	123	845
Commercial	Medium	11	US 183 south of SH 309	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	109	5221	1703	159
Commercial	Medium	11	US 183 south of SH 309	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	26	5221	285	270
Commercial	Medium	11	US 183 south of SH 309	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	2500	5221	6742	295
Commercial	Medium	11	US 183 south of SH 309	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	1038	5221	3594	315
Commercial	Medium	11	US 183 south of SH 309	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	82	5221	782	309
Commercial	Medium	11	US 183 south of SH 309	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	44	5221	2953	470
Commercial	Medium	11	US 183 south of SH 309	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	50	5221	597	655

Commercial	Medium	11	US 183 south of SH 309	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	9	5221	62	342
Commercial	Medium	11	US 183 south of SH 309	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	165	5221	991	259
Commercial	Medium	11	US 183 south of SH 309	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	194	5221	1594	366
Commercial	Medium	11	US 183 south of SH 309	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	38	5221	162	419
Commercial	Medium	11	US 183 south of SH 309	1006	Northeast	2: Average Friday (F-F)	0: All Day (12am-12am)	6	5221	47	166
Commercial	Medium	11	US 183 south of SH 309	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	188	5221	1153	263
Commercial	Medium	11	US 183 south of SH 309	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	209	5221	1927	458
Commercial	Medium	11	US 183 south of SH 309	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	332	5221	1065	409
Commercial	Medium	11	US 183 south of SH 309	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	12	5221	262	343
Commercial	Medium	11	US 183 south of SH 309	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	47	5221	332	223
Commercial	Medium	21	FM 86 north of Derrick Rd	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	62	1121	5391	150
Commercial	Medium	21	FM 86 north of Derrick Rd	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	229	1121	6742	318
Commercial	Medium	21	FM 86 north of Derrick Rd	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	406	1121	3594	365
Commercial	Medium	21	FM 86 north of Derrick Rd	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	38	1121	782	361
Commercial	Medium	21	FM 86 north of Derrick Rd	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	26	1121	2953	313
Commercial	Medium	21	FM 86 north of Derrick Rd	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	0: All Day (12am-12am)	3	1121	268	135
Commercial	Medium	21	FM 86 north of Derrick Rd	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	15	1121	597	352
Commercial	Medium	21	FM 86 north of Derrick Rd	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	38	1121	991	348
Commercial	Medium	21	FM 86 north of Derrick Rd	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	76	1121	1594	300
Commercial	Medium	21	FM 86 north of Derrick Rd	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	18	1121	1153	279
Commercial	Medium	21	FM 86 north of Derrick Rd	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	44	1121	1927	386
Commercial	Medium	21	FM 86 north of Derrick Rd	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	15	1121	1065	436
Commercial	Medium	21	FM 86 north of Derrick Rd	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	24	1121	262	513
Commercial	Medium	21	FM 86 north of Derrick Rd	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	9	1121	332	185
Commercial	Medium	31	FM 1322 east of Willow Ave	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	26	324	5391	428
Commercial	Medium	31	FM 1322 east of Willow Ave	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	50	324	6742	78
Commercial	Medium	31	FM 1322 east of Willow Ave	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	88	324	3594	353
Commercial	Medium	31	FM 1322 east of Willow Ave	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	41	324	782	340
Commercial	Medium	31	FM 1322 east of Willow Ave	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	9	324	2953	261
Commercial	Medium	31	FM 1322 east of Willow Ave	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	3	324	597	300
Commercial	Medium	31	FM 1322 east of Willow Ave	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	6	324	991	153
Commercial	Medium	31	FM 1322 east of Willow Ave	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	38	324	1594	417
Commercial	Medium	31	FM 1322 east of Willow Ave	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	9	324	1153	140
Commercial	Medium	31	FM 1322 east of Willow Ave	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	29	324	1927	301
Commercial	Medium	31	FM 1322 east of Willow Ave	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	3	324	1065	216
Commercial	Medium	31	FM 1322 east of Willow Ave	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	9	324	262	420
Commercial	Medium	41	US 183 east of Blanco Ave	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	2368	6556	5391	297
Commercial	Medium	41	US 183 east of Blanco Ave	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	197	6556	1703	296
Commercial	Medium	41	US 183 east of Blanco Ave	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	47	6556	285	32
Commercial	Medium	41	US 183 east of Blanco Ave	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	229	6556	3594	552
Commercial	Medium	41	US 183 east of Blanco Ave	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	244	6556	782	340
Commercial	Medium	41	US 183 east of Blanco Ave	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	1697	6556	2953	306
Commercial	Medium	41	US 183 east of Blanco Ave	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	0: All Day (12am-12am)	38	6556	268	442
Commercial	Medium	41	US 183 east of Blanco Ave	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	174	6556	597	379
Commercial	Medium	41	US 183 east of Blanco Ave	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	9	6556	62	410
Commercial	Medium	41	US 183 east of Blanco Ave	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	115	6556	991	281
Commercial	Medium	41	US 183 east of Blanco Ave	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	282	6556	1594	293
Commercial	Medium	41	US 183 east of Blanco Ave	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	18	6556	162	259
Commercial	Medium	41	US 183 east of Blanco Ave	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	388	6556	1153	189
Commercial	Medium	41	US 183 east of Blanco Ave	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	338	6556	1927	224
Commercial	Medium	41	US 183 east of Blanco Ave	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	241	6556	1065	344
Commercial	Medium	41	US 183 east of Blanco Ave	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	15	6556	262	542
Commercial	Medium	41	US 183 east of Blanco Ave	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	91	6556	332	312
Commercial	Medium	51	SH 80 south of San Marcos River	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	1179	4027	5391	330
Commercial	Medium	51	SH 80 south of San Marcos River	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	909	4027	1703	387
Commercial	Medium	51	SH 80 south of San Marcos River	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	32	4027	285	270
Commercial	Medium	51	SH 80 south of San Marcos River	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	141	4027	6742	366
Commercial	Medium	51	SH 80 south of San Marcos River	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	38	4027	782	366
Commercial	Medium	51	SH 80 south of San Marcos River	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	268	4027	2953	393
Commercial	Medium	51	SH 80 south of San Marcos River	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	0: All Day (12am-12am)	35	4027	268	397
Commercial	Medium	51	SH 80 south of San Marcos River	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	50	4027	597	445
Commercial	Medium	51	SH 80 south of San Marcos River	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	3	4027	62	282

Commercial	Medium	51	SH 80 south of San Marcos River	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	88	4027	991	376
Commercial	Medium	51	SH 80 south of San Marcos River	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	388	4027	1594	286
Commercial	Medium	51	SH 80 south of San Marcos River	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	12	4027	162	325
Commercial	Medium	51	SH 80 south of San Marcos River	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	88	4027	1153	372
Commercial	Medium	51	SH 80 south of San Marcos River	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	441	4027	1927	243
Commercial	Medium	51	SH 80 south of San Marcos River	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	118	4027	1065	296
Commercial	Medium	51	SH 80 south of San Marcos River	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	85	4027	262	301
Commercial	Medium	51	SH 80 south of San Marcos River	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	21	4027	332	512
Commercial	Medium	61	US 90 west of Davis Street	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	88	700	5391	438
Commercial	Medium	61	US 90 west of Davis Street	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	21	700	1703	354
Commercial	Medium	61	US 90 west of Davis Street	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	15	700	285	599
Commercial	Medium	61	US 90 west of Davis Street	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	171	700	6742	279
Commercial	Medium	61	US 90 west of Davis Street	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	24	700	3594	353
Commercial	Medium	61	US 90 west of Davis Street	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	29	700	2953	197
Commercial	Medium	61	US 90 west of Davis Street	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	0: All Day (12am-12am)	12	700	268	651
Commercial	Medium	61	US 90 west of Davis Street	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	35	700	597	344
Commercial	Medium	61	US 90 west of Davis Street	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	53	700	991	231
Commercial	Medium	61	US 90 west of Davis Street	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	126	700	1594	245
Commercial	Medium	61	US 90 west of Davis Street	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	44	700	1153	396
Commercial	Medium	61	US 90 west of Davis Street	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	32	700	1927	287
Commercial	Medium	61	US 90 west of Davis Street	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	21	700	1065	416
Commercial	Medium	61	US 90 west of Davis Street	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	3	700	262	81
Commercial	Medium	61	US 90 west of Davis Street	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	9	700	332	380
Commercial	Medium	71	SH 80 west of Wall St	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	76	3303	5391	481
Commercial	Medium	71	SH 80 west of Wall St	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	41	3303	1703	275
Commercial	Medium	71	SH 80 west of Wall St	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	32	3303	285	322
Commercial	Medium	71	SH 80 west of Wall St	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	1918	3303	6742	302
Commercial	Medium	71	SH 80 west of Wall St	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	441	3303	3594	339
Commercial	Medium	71	SH 80 west of Wall St	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	18	3303	782	212
Commercial	Medium	71	SH 80 west of Wall St	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	94	3303	597	131
Commercial	Medium	71	SH 80 west of Wall St	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	21	3303	62	157
Commercial	Medium	71	SH 80 west of Wall St	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	138	3303	991	305
Commercial	Medium	71	SH 80 west of Wall St	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	97	3303	1594	415
Commercial	Medium	71	SH 80 west of Wall St	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	15	3303	162	348
Commercial	Medium	71	SH 80 west of Wall St	1006	Northeast	2: Average Friday (F-F)	0: All Day (12am-12am)	9	3303	47	320
Commercial	Medium	71	SH 80 west of Wall St	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	71	3303	1153	397
Commercial	Medium	71	SH 80 west of Wall St	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	156	3303	1927	463
Commercial	Medium	71	SH 80 west of Wall St	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	129	3303	1065	412
Commercial	Medium	71	SH 80 west of Wall St	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	12	3303	262	464
Commercial	Medium	71	SH 80 west of Wall St	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	21	3303	332	423
Commercial	Medium	81	Hackberry Ave north of Lincoln St	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	15	256	5391	195
Commercial	Medium	81	Hackberry Ave north of Lincoln St	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	29	256	1703	225
Commercial	Medium	81	Hackberry Ave north of Lincoln St	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	29	256	6742	431
Commercial	Medium	81	Hackberry Ave north of Lincoln St	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	32	256	3594	497
Commercial	Medium	81	Hackberry Ave north of Lincoln St	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	6	256	782	384
Commercial	Medium	81	Hackberry Ave north of Lincoln St	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	9	256	597	245
Commercial	Medium	81	Hackberry Ave north of Lincoln St	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	15	256	991	348
Commercial	Medium	81	Hackberry Ave north of Lincoln St	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	15	256	1594	369
Commercial	Medium	81	Hackberry Ave north of Lincoln St	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	3	256	162	N/A
Commercial	Medium	81	Hackberry Ave north of Lincoln St	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	3	256	1153	255
Commercial	Medium	81	Hackberry Ave north of Lincoln St	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	35	256	1927	611
Commercial	Medium	81	Hackberry Ave north of Lincoln St	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	3	256	1065	635
Commercial	Medium	81	Hackberry Ave north of Lincoln St	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	6	256	332	259
Commercial	Heavy	11	US 183 south of SH 309	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	54	5553	3234	153
Commercial	Heavy	11	US 183 south of SH 309	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	54	5553	104	328
Commercial	Heavy	11	US 183 south of SH 309	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	3016	5553	16332	316
Commercial	Heavy	11	US 183 south of SH 309	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	1943	5553	4935	319
Commercial	Heavy	11	US 183 south of SH 309	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	54	5553	1449	329
Commercial	Heavy	11	US 183 south of SH 309	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	5	5553	8480	261
Commercial	Heavy	11	US 183 south of SH 309	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	15	5553	267	1257
Commercial	Heavy	11	US 183 south of SH 309	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	5	5553	15	315
Commercial	Heavy	11	US 183 south of SH 309	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	54	5553	341	371

Commercial	Heavy	11	US 183 south of SH 309	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	54	5553	979	564
Commercial	Heavy	11	US 183 south of SH 309	1006	Northeast	2: Average Friday (F-F)	0: All Day (12am-12am)	5	5553	514	164
Commercial	Heavy	11	US 183 south of SH 309	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	74	5553	944	401
Commercial	Heavy	11	US 183 south of SH 309	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	40	5553	410	445
Commercial	Heavy	11	US 183 south of SH 309	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	10	5553	247	387
Commercial	Heavy	11	US 183 south of SH 309	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	35	5553	687	186
Commercial	Heavy	21	FM 86 north of Derrick Rd	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	49	3244	5988	156
Commercial	Heavy	21	FM 86 north of Derrick Rd	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	2141	3244	16332	401
Commercial	Heavy	21	FM 86 north of Derrick Rd	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	791	3244	4935	330
Commercial	Heavy	21	FM 86 north of Derrick Rd	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	15	3244	1449	462
Commercial	Heavy	21	FM 86 north of Derrick Rd	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	15	3244	8480	206
Commercial	Heavy	21	FM 86 north of Derrick Rd	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	79	3244	979	301
Commercial	Heavy	21	FM 86 north of Derrick Rd	1006	Northeast	2: Average Friday (F-F)	0: All Day (12am-12am)	45	3244	514	506
Commercial	Heavy	21	FM 86 north of Derrick Rd	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	10	3244	410	643
Commercial	Heavy	21	FM 86 north of Derrick Rd	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	69	3244	687	905
Commercial	Heavy	31	FM 1322 east of Willow Ave	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	25	89	5988	265
Commercial	Heavy	31	FM 1322 east of Willow Ave	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	10	89	16332	N/A
Commercial	Heavy	31	FM 1322 east of Willow Ave	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	10	89	4935	1049
Commercial	Heavy	31	FM 1322 east of Willow Ave	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	10	89	1449	901
Commercial	Heavy	31	FM 1322 east of Willow Ave	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	5	89	341	333
Commercial	Heavy	31	FM 1322 east of Willow Ave	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	20	89	944	243
Commercial	Heavy	41	US 183 east of Blanco Ave	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	3288	16431	5988	300
Commercial	Heavy	41	US 183 east of Blanco Ave	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	2126	16431	3234	305
Commercial	Heavy	41	US 183 east of Blanco Ave	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	1147	16431	4935	599
Commercial	Heavy	41	US 183 east of Blanco Ave	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	1088	16431	1449	318
Commercial	Heavy	41	US 183 east of Blanco Ave	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	7036	16431	8480	333
Commercial	Heavy	41	US 183 east of Blanco Ave	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	0: All Day (12am-12am)	5	16431	30	322
Commercial	Heavy	41	US 183 east of Blanco Ave	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	30	16431	267	831
Commercial	Heavy	41	US 183 east of Blanco Ave	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	109	16431	341	484
Commercial	Heavy	41	US 183 east of Blanco Ave	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	69	16431	979	610
Commercial	Heavy	41	US 183 east of Blanco Ave	1006	Northeast	2: Average Friday (F-F)	0: All Day (12am-12am)	183	16431	514	672
Commercial	Heavy	41	US 183 east of Blanco Ave	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	692	16431	944	495
Commercial	Heavy	41	US 183 east of Blanco Ave	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	79	16431	410	339
Commercial	Heavy	41	US 183 east of Blanco Ave	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	35	16431	247	295
Commercial	Heavy	41	US 183 east of Blanco Ave	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	287	16431	687	905
Commercial	Heavy	51	SH 80 south of San Marcos River	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	1765	4386	5988	359
Commercial	Heavy	51	SH 80 south of San Marcos River	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	821	4386	3234	350
Commercial	Heavy	51	SH 80 south of San Marcos River	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	15	4386	104	344
Commercial	Heavy	51	SH 80 south of San Marcos River	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	252	4386	16332	552
Commercial	Heavy	51	SH 80 south of San Marcos River	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	49	4386	1449	736
Commercial	Heavy	51	SH 80 south of San Marcos River	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	534	4386	8480	317
Commercial	Heavy	51	SH 80 south of San Marcos River	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	0: All Day (12am-12am)	5	4386	30	470
Commercial	Heavy	51	SH 80 south of San Marcos River	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	25	4386	267	740
Commercial	Heavy	51	SH 80 south of San Marcos River	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	40	4386	341	405
Commercial	Heavy	51	SH 80 south of San Marcos River	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	376	4386	979	492
Commercial	Heavy	51	SH 80 south of San Marcos River	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	20	4386	40	349
Commercial	Heavy	51	SH 80 south of San Marcos River	1006	Northeast	2: Average Friday (F-F)	0: All Day (12am-12am)	148	4386	514	567
Commercial	Heavy	51	SH 80 south of San Marcos River	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	64	4386	944	472
Commercial	Heavy	51	SH 80 south of San Marcos River	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	25	4386	410	122
Commercial	Heavy	51	SH 80 south of San Marcos River	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	54	4386	247	447
Commercial	Heavy	51	SH 80 south of San Marcos River	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	5	4386	687	634
Commercial	Heavy	61	US 90 west of Davis Street	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	114	1295	5988	454
Commercial	Heavy	61	US 90 west of Davis Street	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	15	1295	3234	343
Commercial	Heavy	61	US 90 west of Davis Street	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	5	1295	104	317
Commercial	Heavy	61	US 90 west of Davis Street	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	786	1295	16332	299
Commercial	Heavy	61	US 90 west of Davis Street	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	20	1295	4935	392
Commercial	Heavy	61	US 90 west of Davis Street	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	25	1295	8480	271
Commercial	Heavy	61	US 90 west of Davis Street	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	10	1295	267	428
Commercial	Heavy	61	US 90 west of Davis Street	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	10	1295	341	150
Commercial	Heavy	61	US 90 west of Davis Street	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	218	1295	979	442
Commercial	Heavy	61	US 90 west of Davis Street	1006	Northeast	2: Average Friday (F-F)	0: All Day (12am-12am)	10	1295	514	340
Commercial	Heavy	61	US 90 west of Davis Street	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	15	1295	944	280

Commercial	Heavy	61	US 90 west of Davis Street	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	15	1295	410	403
Commercial	Heavy	61	US 90 west of Davis Street	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	25	1295	247	185
Commercial	Heavy	61	US 90 west of Davis Street	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	5	1295	10	236
Commercial	Heavy	71	SH 80 west of Wall St	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	10	8223	5988	1199
Commercial	Heavy	71	SH 80 west of Wall St	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	35	8223	3234	281
Commercial	Heavy	71	SH 80 west of Wall St	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	7135	8223	16332	324
Commercial	Heavy	71	SH 80 west of Wall St	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	336	8223	4935	374
Commercial	Heavy	71	SH 80 west of Wall St	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	10	8223	1449	101
Commercial	Heavy	71	SH 80 west of Wall St	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	153	8223	267	99
Commercial	Heavy	71	SH 80 west of Wall St	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	69	8223	341	286
Commercial	Heavy	71	SH 80 west of Wall St	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	163	8223	979	395
Commercial	Heavy	71	SH 80 west of Wall St	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	5	8223	944	390
Commercial	Heavy	71	SH 80 west of Wall St	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	25	8223	410	494
Commercial	Heavy	71	SH 80 west of Wall St	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	20	8223	247	518
Commercial	Heavy	81	Hackberry Ave north of Lincoln St	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	15	30	16332	358
Commercial	Heavy	81	Hackberry Ave north of Lincoln St	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	10	30	4935	371
Commercial	Heavy	81	Hackberry Ave north of Lincoln St	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	5	30	1449	385
Personal		11	US 183 south of SH 309	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	2	1979	182	123
Personal		11	US 183 south of SH 309	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	9	1979	171	390
Personal		11	US 183 south of SH 309	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	610	1979	2724	314
Personal		11	US 183 south of SH 309	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	225	1979	1191	380
Personal		11	US 183 south of SH 309	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	36	1979	270	428
Personal		11	US 183 south of SH 309	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	15	1979	1876	541
Personal		11	US 183 south of SH 309	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	0: All Day (12am-12am)	1	1979	130	N/A
Personal		11	US 183 south of SH 309	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	46	1979	852	731
Personal		11	US 183 south of SH 309	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	26	1979	600	536
Personal		11	US 183 south of SH 309	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	108	1979	1235	499
Personal		11	US 183 south of SH 309	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	110	1979	1557	610
Personal		11	US 183 south of SH 309	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	57	1979	765	653
Personal		11	US 183 south of SH 309	1006	Northeast	2: Average Friday (F-F)	0: All Day (12am-12am)	5	1979	67	662
Personal		11	US 183 south of SH 309	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	102	1979	1384	524
Personal		11	US 183 south of SH 309	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	202	1979	2662	601
Personal		11	US 183 south of SH 309	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	140	1979	1641	614
Personal		11	US 183 south of SH 309	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	27	1979	584	679
Personal		11	US 183 south of SH 309	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	102	1979	620	385
Personal		21	FM 86 north of Derrick Rd	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	5	177	1800	N/A
Personal		21	FM 86 north of Derrick Rd	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	3	177	171	824
Personal		21	FM 86 north of Derrick Rd	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	19	177	2724	468
Personal		21	FM 86 north of Derrick Rd	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	58	177	1191	394
Personal		21	FM 86 north of Derrick Rd	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	9	177	270	750
Personal		21	FM 86 north of Derrick Rd	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	8	177	1876	441
Personal		21	FM 86 north of Derrick Rd	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	2	177	600	880
Personal		21	FM 86 north of Derrick Rd	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	5	177	1235	351
Personal		21	FM 86 north of Derrick Rd	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	5	177	1557	752
Personal		21	FM 86 north of Derrick Rd	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	3	177	765	376
Personal		21	FM 86 north of Derrick Rd	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	4	177	1384	534
Personal		21	FM 86 north of Derrick Rd	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	25	177	2662	679
Personal		21	FM 86 north of Derrick Rd	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	5	177	1641	856
Personal		21	FM 86 north of Derrick Rd	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	4	177	584	859
Personal		21	FM 86 north of Derrick Rd	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	6	177	620	669
Personal		31	FM 1322 east of Willow Ave	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	6	148	1800	384
Personal		31	FM 1322 east of Willow Ave	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	21	148	2724	33
Personal		31	FM 1322 east of Willow Ave	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	11	148	1191	450
Personal		31	FM 1322 east of Willow Ave	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	4	148	270	626
Personal		31	FM 1322 east of Willow Ave	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	14	148	1876	771
Personal		31	FM 1322 east of Willow Ave	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	1	148	600	209
Personal		31	FM 1322 east of Willow Ave	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	16	148	1235	521
Personal		31	FM 1322 east of Willow Ave	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	17	148	1557	553
Personal		31	FM 1322 east of Willow Ave	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	1	148	765	638
Personal		31	FM 1322 east of Willow Ave	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	11	148	1384	574
Personal		31	FM 1322 east of Willow Ave	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	21	148	2662	443
Personal		31	FM 1322 east of Willow Ave	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	11	148	1641	642

Personal	31	FM 1322 east of Willow Ave	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	3	148	584	512
Personal	41	US 183 east of Blanco Ave	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	519	2644	1800	303
Personal	41	US 183 east of Blanco Ave	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	11	2644	182	301
Personal	41	US 183 east of Blanco Ave	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	5	2644	171	50
Personal	41	US 183 east of Blanco Ave	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	92	2644	1191	444
Personal	41	US 183 east of Blanco Ave	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	33	2644	270	402
Personal	41	US 183 east of Blanco Ave	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	705	2644	1876	313
Personal	41	US 183 east of Blanco Ave	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	0: All Day (12am-12am)	8	2644	130	414
Personal	41	US 183 east of Blanco Ave	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	78	2644	852	533
Personal	41	US 183 east of Blanco Ave	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	15	2644	600	544
Personal	41	US 183 east of Blanco Ave	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	143	2644	1235	514
Personal	41	US 183 east of Blanco Ave	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	122	2644	1557	618
Personal	41	US 183 east of Blanco Ave	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	63	2644	765	486
Personal	41	US 183 east of Blanco Ave	1006	Northeast	2: Average Friday (F-F)	0: All Day (12am-12am)	4	2644	67	582
Personal	41	US 183 east of Blanco Ave	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	169	2644	1384	464
Personal	41	US 183 east of Blanco Ave	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	261	2644	2662	418
Personal	41	US 183 east of Blanco Ave	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	125	2644	1641	652
Personal	41	US 183 east of Blanco Ave	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	49	2644	584	571
Personal	41	US 183 east of Blanco Ave	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	42	2644	620	553
Personal	51	SH 80 south of San Marcos River	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	191	913	1800	376
Personal	51	SH 80 south of San Marcos River	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	62	913	182	376
Personal	51	SH 80 south of San Marcos River	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	9	913	171	400
Personal	51	SH 80 south of San Marcos River	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	48	913	2724	438
Personal	51	SH 80 south of San Marcos River	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	5	913	270	860
Personal	51	SH 80 south of San Marcos River	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	136	913	1876	378
Personal	51	SH 80 south of San Marcos River	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	0: All Day (12am-12am)	13	913	130	560
Personal	51	SH 80 south of San Marcos River	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	20	913	852	760
Personal	51	SH 80 south of San Marcos River	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	5	913	600	393
Personal	51	SH 80 south of San Marcos River	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	73	913	1235	567
Personal	51	SH 80 south of San Marcos River	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	84	913	1557	659
Personal	51	SH 80 south of San Marcos River	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	15	913	765	536
Personal	51	SH 80 south of San Marcos River	1006	Northeast	2: Average Friday (F-F)	0: All Day (12am-12am)	5	913	67	469
Personal	51	SH 80 south of San Marcos River	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	34	913	1384	546
Personal	51	SH 80 south of San Marcos River	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	62	913	2662	571
Personal	51	SH 80 south of San Marcos River	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	65	913	1641	370
Personal	51	SH 80 south of San Marcos River	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	16	913	584	605
Personal	51	SH 80 south of San Marcos River	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	11	913	620	805
Personal	61	US 90 west of Davis Street	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	53	291	1800	395
Personal	61	US 90 west of Davis Street	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	9	291	182	345
Personal	61	US 90 west of Davis Street	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	8	291	171	216
Personal	61	US 90 west of Davis Street	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	28	291	2724	474
Personal	61	US 90 west of Davis Street	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	5	291	1191	423
Personal	61	US 90 west of Davis Street	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	7	291	1876	340
Personal	61	US 90 west of Davis Street	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	0: All Day (12am-12am)	5	291	130	646
Personal	61	US 90 west of Davis Street	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	11	291	852	462
Personal	61	US 90 west of Davis Street	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	7	291	600	549
Personal	61	US 90 west of Davis Street	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	25	291	1235	500
Personal	61	US 90 west of Davis Street	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	35	291	1557	441
Personal	61	US 90 west of Davis Street	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	16	291	765	599
Personal	61	US 90 west of Davis Street	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	31	291	1384	735
Personal	61	US 90 west of Davis Street	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	17	291	2662	574
Personal	61	US 90 west of Davis Street	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	14	291	1641	481
Personal	61	US 90 west of Davis Street	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	9	291	584	590
Personal	61	US 90 west of Davis Street	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	6	291	620	472
Personal	71	SH 80 west of Wall St	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	11	1732	1800	395
Personal	71	SH 80 west of Wall St	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	7	1732	182	359
Personal	71	SH 80 west of Wall St	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	17	1732	171	744
Personal	71	SH 80 west of Wall St	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	629	1732	2724	368
Personal	71	SH 80 west of Wall St	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	163	1732	1191	351
Personal	71	SH 80 west of Wall St	62	US 90 west of Davis Street	2: Average Friday (F-F)	0: All Day (12am-12am)	8	1732	270	221
Personal	71	SH 80 west of Wall St	82	Hackberry Ave north of Lincoln St	2: Average Friday (F-F)	0: All Day (12am-12am)	1	1732	130	365
Personal	71	SH 80 west of Wall St	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	72	1732	852	335

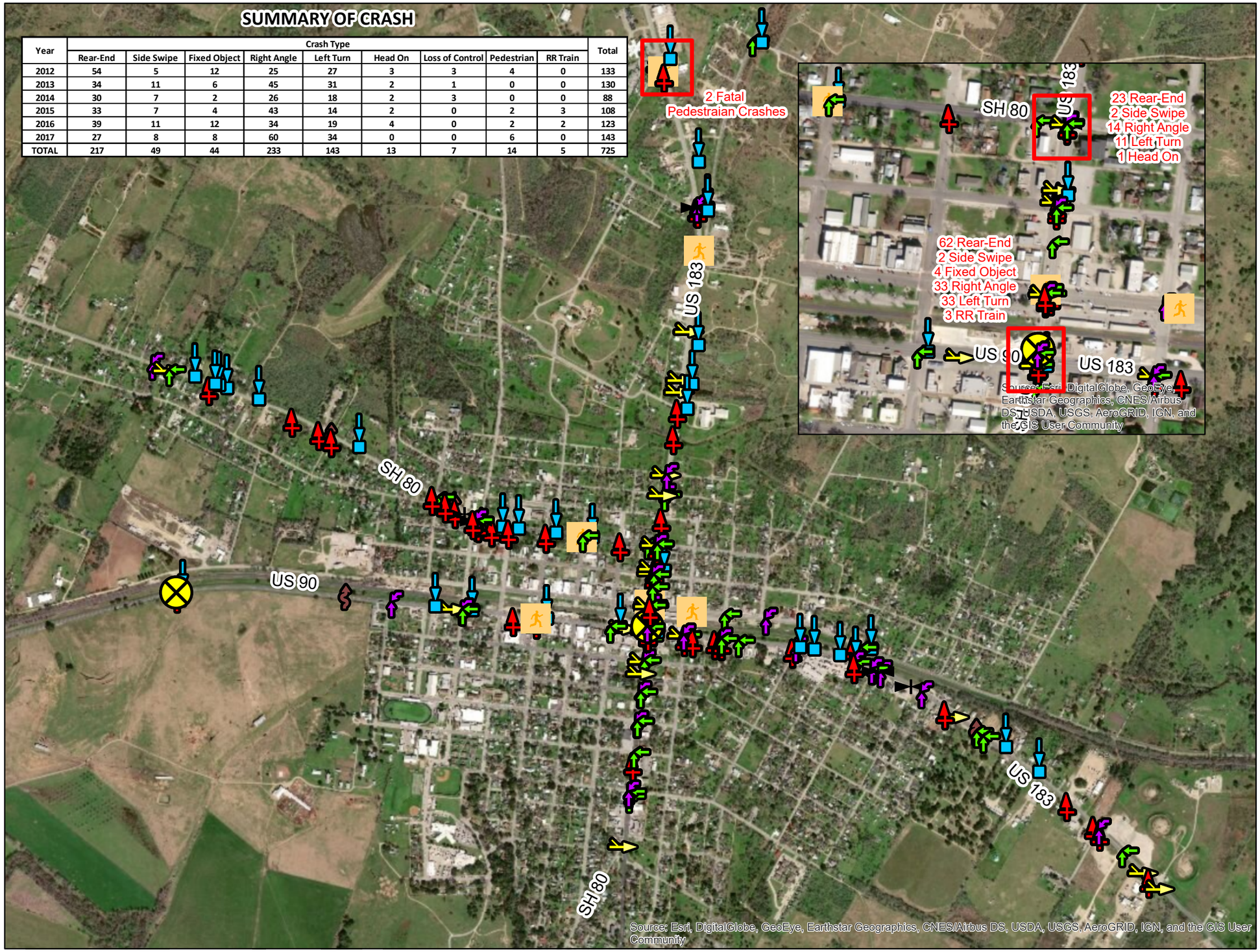
Personal	71	SH 80 west of Wall St	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	45	1732	600	520
Personal	71	SH 80 west of Wall St	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	93	1732	1235	519
Personal	71	SH 80 west of Wall St	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	108	1732	1557	688
Personal	71	SH 80 west of Wall St	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	30	1732	765	480
Personal	71	SH 80 west of Wall St	1006	Northeast	2: Average Friday (F-F)	0: All Day (12am-12am)	2	1732	67	186
Personal	71	SH 80 west of Wall St	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	98	1732	1384	571
Personal	71	SH 80 west of Wall St	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	156	1732	2662	713
Personal	71	SH 80 west of Wall St	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	118	1732	1641	573
Personal	71	SH 80 west of Wall St	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	28	1732	584	699
Personal	71	SH 80 west of Wall St	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	23	1732	620	919
Personal	81	Hackberry Ave north of Lincoln St	12	US 183 south of SH 309	2: Average Friday (F-F)	0: All Day (12am-12am)	10	153	1800	N/A
Personal	81	Hackberry Ave north of Lincoln St	22	FM 86 north of Derrick Rd	2: Average Friday (F-F)	0: All Day (12am-12am)	1	153	182	800
Personal	81	Hackberry Ave north of Lincoln St	32	FM 1322 east of Willow Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	3	153	171	990
Personal	81	Hackberry Ave north of Lincoln St	42	US 183 east of Blanco Ave	2: Average Friday (F-F)	0: All Day (12am-12am)	6	153	2724	680
Personal	81	Hackberry Ave north of Lincoln St	52	SH 80 south of San Marcos River	2: Average Friday (F-F)	0: All Day (12am-12am)	9	153	1191	545
Personal	81	Hackberry Ave north of Lincoln St	72	SH 80 west of Wall St	2: Average Friday (F-F)	0: All Day (12am-12am)	4	153	1876	382
Personal	81	Hackberry Ave north of Lincoln St	1001	West Central	2: Average Friday (F-F)	0: All Day (12am-12am)	4	153	852	338
Personal	81	Hackberry Ave north of Lincoln St	1002	Northwest	2: Average Friday (F-F)	0: All Day (12am-12am)	11	153	600	748
Personal	81	Hackberry Ave north of Lincoln St	1003	CBD North	2: Average Friday (F-F)	0: All Day (12am-12am)	11	153	1235	650
Personal	81	Hackberry Ave north of Lincoln St	1004	CBD South	2: Average Friday (F-F)	0: All Day (12am-12am)	26	153	1557	651
Personal	81	Hackberry Ave north of Lincoln St	1005	North Central	2: Average Friday (F-F)	0: All Day (12am-12am)	4	153	765	240
Personal	81	Hackberry Ave north of Lincoln St	1007	East Central	2: Average Friday (F-F)	0: All Day (12am-12am)	10	153	1384	1239
Personal	81	Hackberry Ave north of Lincoln St	1008	Southeast	2: Average Friday (F-F)	0: All Day (12am-12am)	17	153	2662	658
Personal	81	Hackberry Ave north of Lincoln St	1009	South Central	2: Average Friday (F-F)	0: All Day (12am-12am)	9	153	1641	866
Personal	81	Hackberry Ave north of Lincoln St	1010	Southwest	2: Average Friday (F-F)	0: All Day (12am-12am)	3	153	584	1469
Personal	81	Hackberry Ave north of Lincoln St	1011	North Industrial	2: Average Friday (F-F)	0: All Day (12am-12am)	10	153	620	286

Appendix E

Crash Data

SUMMARY OF CRASH

Year	Crash Type									Total
	Rear-End	Side Swipe	Fixed Object	Right Angle	Left Turn	Head On	Loss of Control	Pedestrian	RR Train	
2012	54	5	12	25	27	3	3	4	0	133
2013	34	11	6	45	31	2	1	0	0	130
2014	30	7	2	26	18	2	3	0	0	88
2015	33	7	4	43	14	2	0	2	3	108
2016	39	11	12	34	19	4	0	2	2	123
2017	27	8	8	60	34	0	0	6	0	143
TOTAL	217	49	44	233	143	13	7	14	5	725



N

Legend

Type

- Rear-End
- Side Swipe
- Fixed Object
- Right Angle
- Left Turn
- Head On
- Loss of Control
- Pedestrian
- RR Train

DRAFT

rps
Texas PE Firm Reg. #F 929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

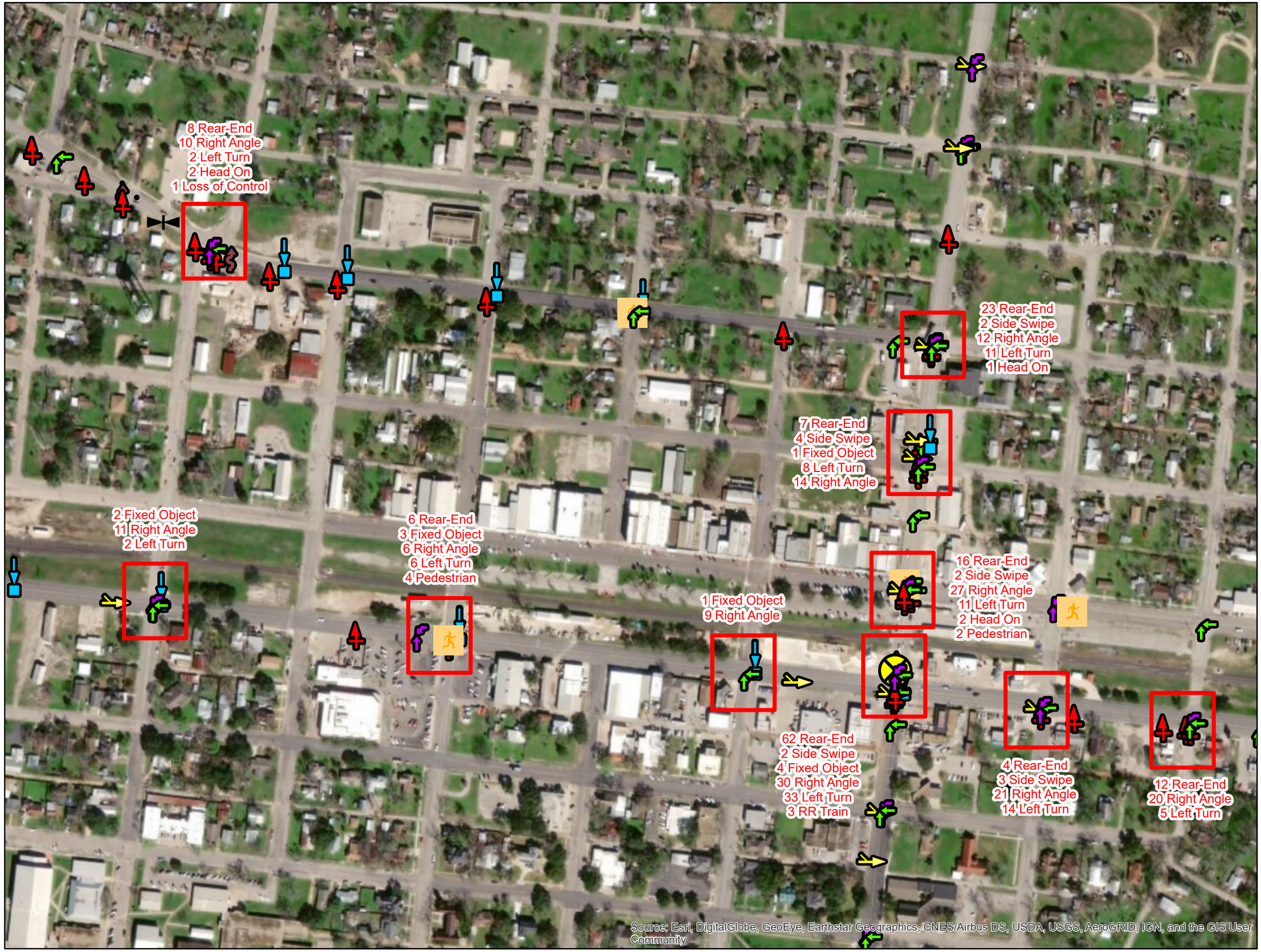
Luling Relief Route Study

SHEET 1 of 1

TXDOT AUSTIN DISTRICT
US 183/US 90/SH 80 TRAFFIC AND OPERATIONAL ANALYSIS

RPS PROJ. NO.: xxxxx	EXHIBIT 1
SCALE: 1" = 1000'	
DATE: MARCH 2018	

Path: G:\007757 Luling Relief Route Study\03.00 Technical Information\03.04 Other\CrashMaps and Figures\GIS\20190516_Crash_Exhibit_1_Luling_bbc.mxd



N

Legend

Type

- Rear-End
- Side Swipe
- Fixed Object
- Right Angle
- Left Turn
- Head On
- Loss of Control
- Pedestrian
- RR Train

DRAFT

rps
Texas PE Firm Reg. #F 929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

Luling Relief Route Study

SHEET 1 of 1

TXDOT AUSTIN DISTRICT
US 183/US 90/SH 80 TRAFFIC AND OPERATIONAL ANALYSIS

RPS PROJ. NO.: xxxxx	EXHIBIT 2
SCALE: 1" = 250'	
DATE: SEPTEMBER 2018	

Path: G:\0077757 Luling Relief Route Study\03.00 Technical Information\03.04 Other\CrashMaps and Figures\GIS\Crash_Exhibit_2_Luling.mxd

Appendix F

Public Outreach

Round One Outreach - Promotion and Materials

Flyer (English)

LULING
TRANSPORTATION STUDY

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION
CENTRAL TEXAS

Downtown Luling has experienced an increase in traffic over recent years, as the area has grown and become more popular among the local community, visitors, and through travelers. The Luling Transportation Study will:

- Evaluate current conditions in Downtown Luling
- Identify needed safety and mobility improvements
- Identify ways to accommodate through traffic
- Consider how to preserve and promote the unique character of Downtown Luling

ATTEND A PUBLIC OPEN HOUSE

Please attend a public meeting to learn more, get involved, and share your ideas.

Wednesday, December 5

4-7 p.m.

Zedler Mill
1170 S Laurel Avenue
Luling, TX 78648

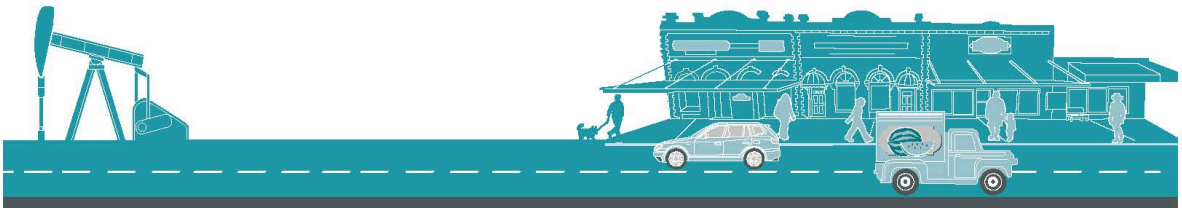
STAY INVOLVED

Receive Updates

If you are interested in receiving program updates and meeting information, please email the study team at nirav.ved@campotexas.org with "updates" in the subject line.

Share Comments and Questions

Please reach out to the study team with any questions or comments. All general comments received via email and at meetings will be included in the final report.



CONTACT

P 512.215.8225 **E** nirav.ved@campotexas.org **W** www.campotexas.org

Flyer (Spanish)

LULING
EL ESTUDIO DEL TRANSPORTE DE LULING

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION
CENTRAL TEXAS

El centro de Luling ha experimentado un aumento del tráfico en años recientes debido al crecimiento en el área y la popularidad del lugar por la comunidad local, visitantes y viajeros. El estudio del Transporte de Luling:

- Evaluará las condiciones existentes en el centro de Luling
- Identificará mejoras necesarias para la seguridad y la movilidad
- Identificará maneras de acomodar al tráfico externo
- Considerará como preservar y promover el carácter único del centro de Luling

ASISTA A UNA RECEPCIÓN PÚBLICA

Por favor asista a una recepción pública para aprender más sobre el estudio, involucrarse, y compartir sus ideas.

Miércoles, el 5 de diciembre

4-7 p.m.

Zedler Mill
1170 S Laurel Avenue
Luling, TX 78648

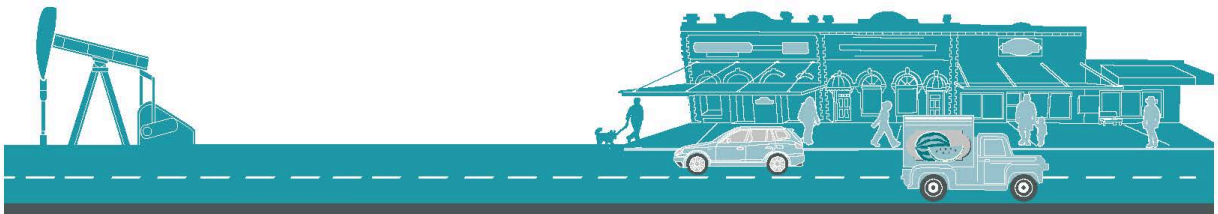
MANTÉNGASE INVOLUCRADO

Recibir Actualizaciones

Si quiere recibir actualizaciones sobre el programa e información sobre las reuniones, por favor envié un mensaje por correo electrónico al equipo del estudio a Nirav.ved@camportexas.org con "actualizaciones" en la línea de asunto.

Compartir comentarios y preguntas

Contactarse con el equipo del estudio con cualquier pregunta o comentario. Todos los comentarios recibidos por correo electrónico y entregados en las reuniones públicas serán incluidos en el reporte final.



CONTACTO

P 512.215.8225 **E** nirav.ved@campotexas.org **W** www.campotexas.org

Boards

CENTRAL TEXAS

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

Luling Transportation Study

INTRODUCTION

What is the Luling Transportation Study?

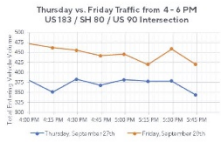
Created to address increased traffic congestion in the downtown area, the Luling Transportation Study will assess current and future transportation needs within Luling, including the potential viability of a relief route. This study will consider all existing plans, ordinances, and environmental conditions and recommend potential short, mid, and long-term improvements. This study is being conducted in coordination with the City of Luling, Caldwell County, TxDOT, and CAMPO.

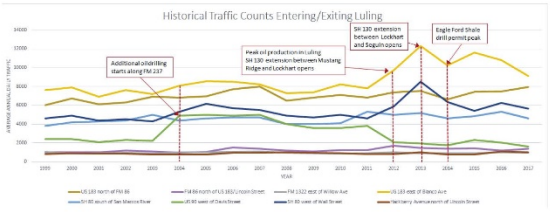
Why is traffic increasing in Luling?

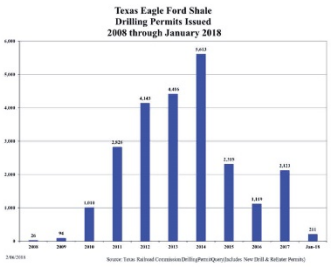
Several factors are contributing to traffic congestion in Luling – population growth as well as an increase in traffic counts, crashes, and drilling permits.

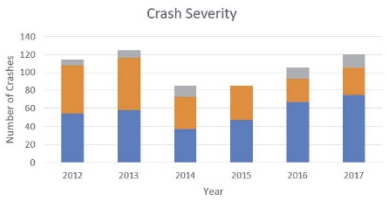
Since 2010, Luling's population has increased by almost **10%**

Source: SOIT ACS









STUDY GOALS

Identify needed safety improvements

Evaluate:
- Crash traffic data
- Intersection improvements
- Bicycle and pedestrian travel
- Railroad and crossings
- Hurricane evacuation route
- Local EMS travel

Evaluate feasibility of an alternate route for through traffic

Evaluate:
- Future impacts with and without an alternate route
- Various future growth scenarios for Luling

Enhance mobility in downtown for local and through traffic

Evaluate:
- Local travel, freight travel, and recreational through travel
- Near, mid, and long-term improvements

Identify and incorporate tools to promote the unique character of downtown and economic development opportunities

Evaluate:
- Effects on businesses
- Types and ranges of visitors to downtown Luling

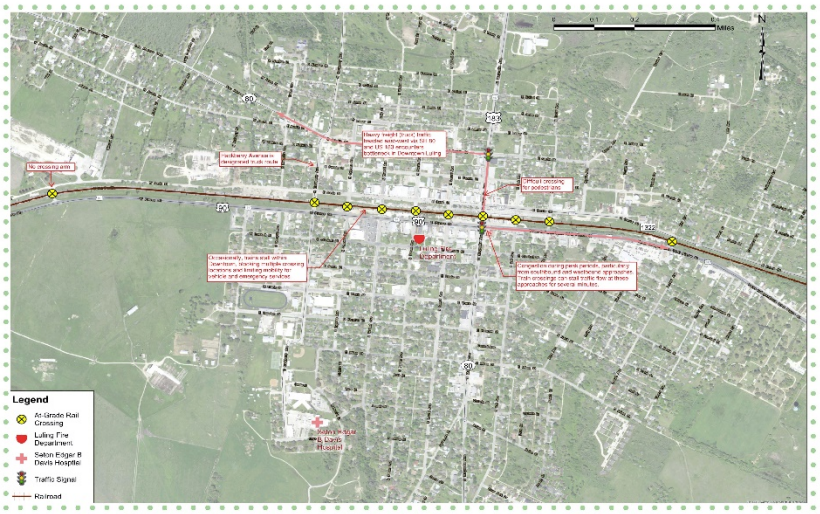
For more information regarding the Luling Transportation Study, please visit: **campotexas.org/regional-transportation-plans/**

CENTRAL TEXAS

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

Luling Transportation Study

AREAS FOR IMPROVEMENT



campotexas.org/regional-transportation-plans/

CENTRAL TEXAS

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

Luling Transportation Study

STUDY AREA

campotexas.org/regional-transportation-plans/

CENTRAL TEXAS

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

Luling Transportation Study

COMMENTS

Please email your comments about problem areas, needs, and concerns on the previous map to comments@campotexas.org

For more information regarding the Luling Transportation Study, please visit: **campotexas.org/regional-transportation-plans/**

CENTRAL TEXAS

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

Luling Transportation Study

PROCESS/NEXT STEPS

We are here

Implementation Note:
All recommendations from the study may be implemented by one project sponsor or through partnership between TxDOT, Caldwell County, and the City of Luling.

campotexas.org/regional-transportation-plans/

Survey (English)

The first survey was developed to gather public input on existing conditions and concerns and the study goals; over 250 surveys were collected. The survey was open from January 18, 2019 to February 25, 2019. Surveys were collected online and in-person at community locations.

LULING
TRANSPORTATION STUDY

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION
CENTRAL TEXAS

COMMUNITY SURVEY

Downtown Luling has experienced an increase in traffic over recent years, as the area has grown and become more popular among the local community, visitors, and through travelers.

The Luling Transportation Study will identify needed safety and mobility improvements to accommodate local and through traffic, while considering how to preserve and promote the unique character of Downtown Luling.

Please tell us about yourself and your experiences with transportation in Luling by completing the survey below **by Sunday, February 24, 2019**. Your input will help guide the outcome of the study.

1. Please share your input on transportation in Luling. How concerned are you with:

	Not concerned at all	Somewhat concerned	Very concerned	No opinion
Safety conditions	☐	☐	☐	☐
Daily traffic congestion	☐	☐	☐	☐
Traffic congestion due to weekend or through travel	☐	☐	☐	☐
Volume of freight travel	☐	☐	☐	☐
Flooding	☐	☐	☐	☐
Emergency evacuation routes	☐	☐	☐	☐
Parking availability	☐	☐	☐	☐
Walking around downtown	☐	☐	☐	☐
Preserving the character of downtown	☐	☐	☐	☐
Railroad crossings	☐	☐	☐	☐

2. What brings you to Luling? (select all that apply)

☐ I live here ☐ I work here

☐ I am visiting

Frequency of visits: _____

What zip code do you live in? _____

☐ I am passing through to another destination

Frequency of travel: _____

Destination: _____

☐ Other (please specify)_____

3. Do you agree with the study goals?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Identify needed safety improvements	☐	☐	☐	☐	☐
Enhance mobility in downtown for local and through traffic	☐	☐	☐	☐	☐
Evaluate feasibility of an alternate route for through traffic	☐	☐	☐	☐	☐
Identify opportunities to promote the unique character of downtown and economic development	☐	☐	☐	☐	☐

4. Do you have any additional comments on transportation in Luling?

_____

_____

_____

_____

_____

_____

_____

5. If you would like to receive email updates on the study, please share your email address here.

Email address:_____

Thank you for your participation. Please reach out to the project team with any questions.

CONTACT ⟩⟩⟩⟩⟩⟩⟩

P 512.215.8225 **E** nirav.ved@campotexas.org **W** www.campotexas.org

Survey (Spanish)

LULING TRANSPORTATION STUDY

CAMPO CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION CENTRAL TEXAS

ENCUESTA COMUNITARIA

El centro de Luling ha experimentado un aumento del tráfico en los últimos años debido al crecimiento en el área y la popularidad del lugar con la comunidad local, los visitantes, y los viajeros.

El Estudio del Transporte de Luling identificará las mejoras necesarias para la seguridad y la movilidad, mientras considerando como preservar y promover el carácter único del área.

Favor de contarnos sobre usted y sus experiencias con el transporte en Luling por completar la encuesta abajo **antes del domingo, 24 de febrero, 2019**. Sus comentarios ayudarán a guiar los resultados del estudio.

1. Favor de compartir sus opiniones sobre el transporte en Luling. Indique su nivel de interés con:

	No interesado	Un poco interesado	Muy interesado	No tengo opinión
Las condiciones de seguridad	☐	☐	☐	☐
Tráfico diario	☐	☐	☐	☐
La congestión en los fines de semana o debido a los viajeros	☐	☐	☐	☐
El volumen de fletes	☐	☐	☐	☐
Las inundaciones	☐	☐	☐	☐
Rutas de evacuación emergencia	☐	☐	☐	☐
La disponibilidad de estacionamiento	☐	☐	☐	☐
Andar por el centro	☐	☐	☐	☐
Preservar el carácter del centro	☐	☐	☐	☐
Las cruces del ferrocarril	☐	☐	☐	☐

2. ¿Qué le trae a Luling? (seleccione todo lo que aplique)

☐ Vivo aquí ☐ Trabajo aquí

☐ Estoy visitando

Frecuencia de visitos: _____

☐ Paso a través de Luling para llegar a otro destino

Frecuencia de viaje: _____

Destino: _____

☐ Otro (por favor especifique)_____

¿En cuál código postal vive usted? _____

3. ¿Está de acuerdo con las metas del estudio?

	Muy en desacuerdo	En desacuerdo	Neutral	De acuerdo	Muy de acuerdo
Identificar los mejoramientos necesarios para la seguridad	☐	☐	☐	☐	☐
Aumentar la movilidad para el tráfico local y el tráfico de paso	☐	☐	☐	☐	☐
Evaluar la factibilidad de una ruta alternativa para el tráfico de paso	☐	☐	☐	☐	☐
Identificar las oportunidades para promover el carácter único del centro y el desarrollo económico	☐	☐	☐	☐	☐

4. ¿Tiene algunos comentarios adicionales sobre el transporte en Luling?

_____

_____

_____

_____

_____

_____

_____

5. Si quiere recibir actualizaciones electrónicas sobre el estudio, favor de compartir su dirección de correo electrónico aquí.

Correo electrónico:_____

Gracias por su participación. Favor de contactar el equipo del estudio con cualquier pregunta.

CONTACTO ⟩⟩⟩⟩⟩⟩⟩

512.215.8225 nirav.ved@campotexas.org www.campotexas.org

Round Two Outreach - Promotion and Materials

Flyer (English)

LULING
TRANSPORTATION STUDY

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION
CENTRAL TEXAS

The Luling Transportation Study has identified safety and mobility improvements to accommodate local and through traffic, while preserving and promoting the unique character of downtown Luling.

Using community input, potential near-term improvements on Hackberry and Magnolia, and longer term improvements for a railroad overpass and additional connections have been developed. Learn more about these ideas and share your thoughts!

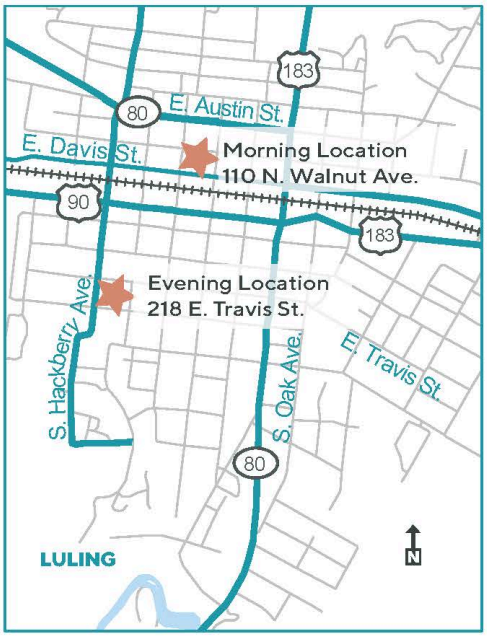
ATTEND AN OPEN HOUSE MEETING

Stop by and visit with us at your convenience!

Monday, April 15

Morning
7:30 a.m. - 1:30 p.m.
110 N. Walnut Avenue
Just around the corner from Mom's Front Porch

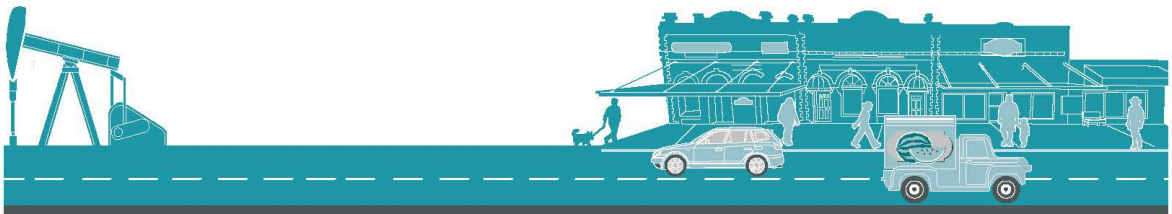
Evening
5 - 7:30 p.m.
218 E. Travis Street
Luling High School Baseball Diamond



SHARE YOUR THOUGHTS

Fill out a survey online, or stop by one of the community locations below to fill out a survey in person, through May 15:

- **Mom's Front Porch**
- **Apple Lumber**
- **Luling Oil Museum**
- **Meme's Mexican**
- **Texas Express Lube**
- **City Hall**



CONTACT

P 512.215.8225 **E** nirav.ved@campotexas.org **W** www.campotexas.org

Flyer (Spanish)

EL ESTUDIO DEL TRANSPORTE DE LULING

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION
CENTRAL TEXAS

El Estudio del Transporte de Luling ha identificado mejoras para la seguridad y la movilidad, mientras preservando y promoviendo el carácter único del centro de Luling.

Utilizando las opiniones de la comunidad, ideas para mejoramientos a corto plazo en Hackberry y Magnolia y de largo plazo para un puente elevado sobre el ferrocarril y otras conexiones se han desarrollado. ¡Revise a nuestras ideas y provea sus opiniones!

ASISTA A UNA RECEPCIÓN PÚBLICA

¡Venga y hable con nosotros a su conveniencia!

lunes, 15 de abril

mañana
7:30 a.m. - 1:30 p.m.
110 N. Walnut Avenue
A la vuelta de la esquina de Mom's Front Porch

tarde
5 - 7:30 p.m.
218 E. Travis Street
Luling High School campo de béisbol

COMPARTA SUS OPINIONES

Complete una encuesta en línea, o pase por una de las ubicaciones abajo para llenarla en persona, hasta el 15 de mayo:

- **Mom's Front Porch**
- **Apple Lumber**
- **Luling Oil Museum**
- **Meme's Mexican**
- **Texas Express Lube**
- **City Hall**

CONTACTO

P 512.215.8225 **E** nirav.ved@campotexas.org **W** www.campotexas.org

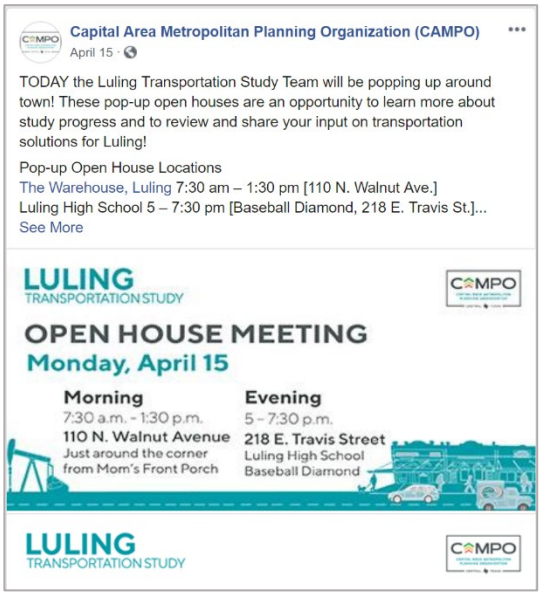
Postcard

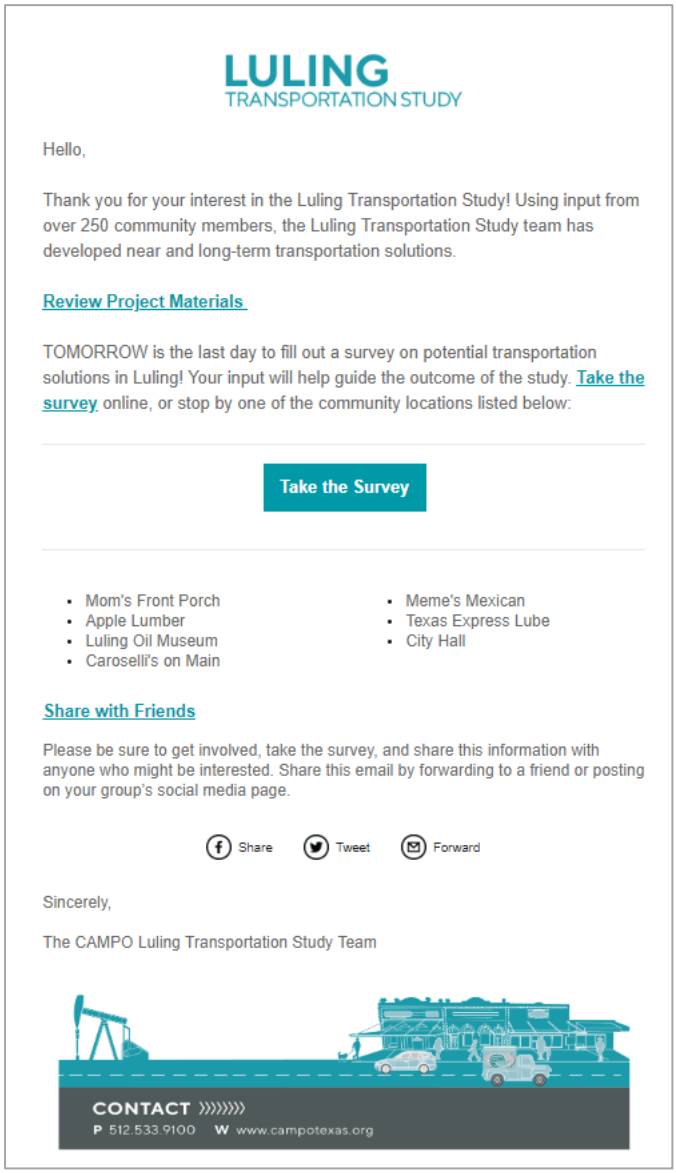
(Front)

(Back)

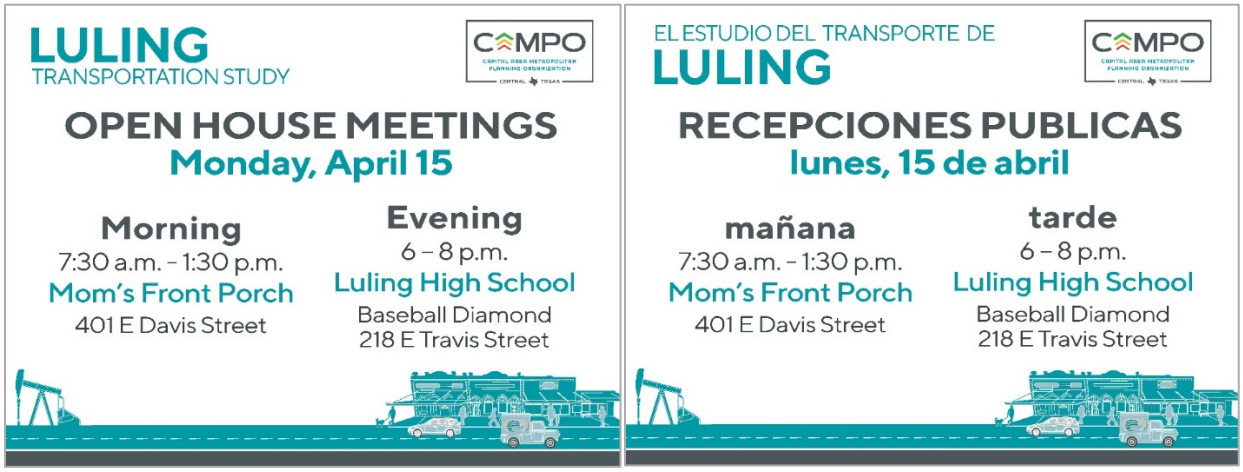
Social media/email

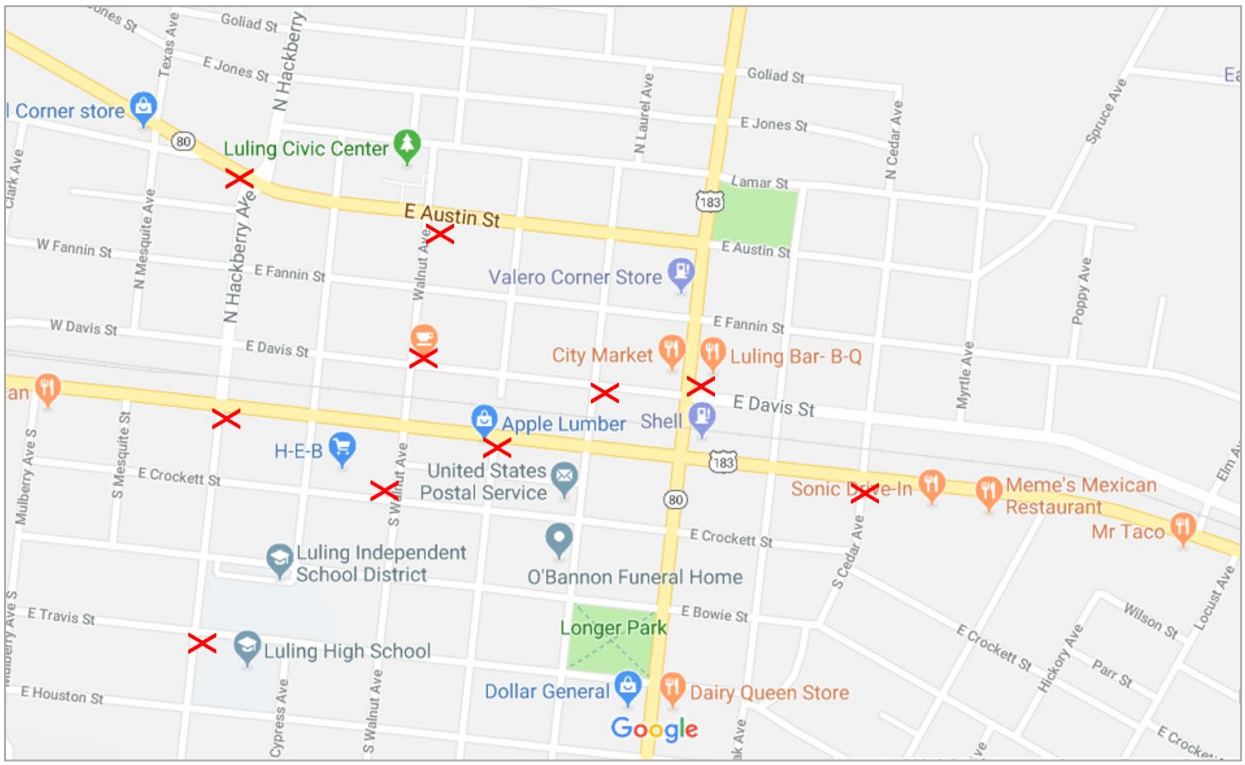
SOCIAL MEDIA POSTS/ EMAIL NOTICES & REMINDERS			
Date	Platform	English	Spanish
4/11/19	Twitter	✓	✓
4/12/19	Email – open house reminder	✓	
4/13/19	Facebook	✓	✓
4/14/19	Instagram	✓	✓
4/15/19	Twitter	✓	✓
4/15/19	Twitter	✓	✓
4/15/19	Facebook	✓	✓
4/16/19	Twitter	✓	✓
4/17/19	Email – survey reminder	✓	
4/18/19	Facebook	✓	✓
4/19/19	Instagram	✓	✓
4/23/19	Twitter	✓	✓
5/14/19	Email – final survey reminder	✓	





Yard Sign and Placement Map





Boards

CENTRAL TEXAS

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

LULING
TRANSPORTATION STUDY

WHAT IS THE LULING TRANSPORTATION STUDY?

Created to address increased traffic congestion in the downtown area, the Luling Transportation Study will assess current and future transportation needs within Luling, including the potential viability of a relief route. This study will consider all existing plans, ordinances, and environmental conditions and recommend potential short, mid, and long-term improvements. This study is being conducted in coordination with the City of Luling, Caldwell County, TxDOT, and CAMPO.

STUDY GOALS

- Identify needed safety improvements
- Enhance mobility in downtown for local and through traffic
- Evaluate feasibility of an alternate route for through traffic
- Incorporate tools to promote the unique character of downtown and economic development opportunities

PROCESS

DISCOVER
FALL 2018 -WINTER 2018/2019
Gather community input and technical information on existing conditions, such as traffic and safety data
Public Comment Period

EVALUATE
WINTER 2018/ 2019 -SPRING 2019
Continue to use community input and technical data to develop potential improvements that address local needs
Public Comment Period

REPORT
SUMMER2019
Use feedback collected on potential improvement options to finalize and report to City Council, Commisoner's Court, and CAMPO Policy Board

NEXT STEPS

- Present recommendations to Luling City Council, Caldwell County Commissioners Court, and the CAMPO Policy Board
- Include projects in CAMPO Plans
- Secure funding for near-term improvements
- Design and engineering for near-term improvements
- Coordinate with CAMPO and TxDOT to evaluate travel and consider when long-term improvements are needed

campotexas.org

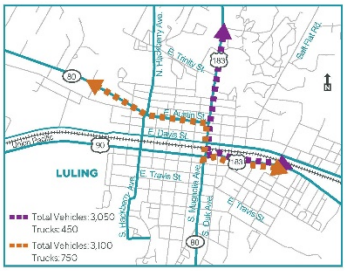
CENTRAL TEXAS

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

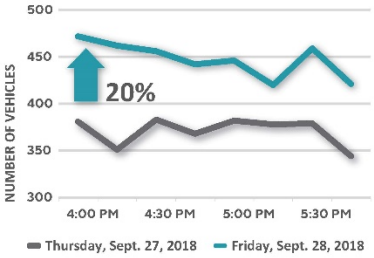
LULING
TRANSPORTATION STUDY

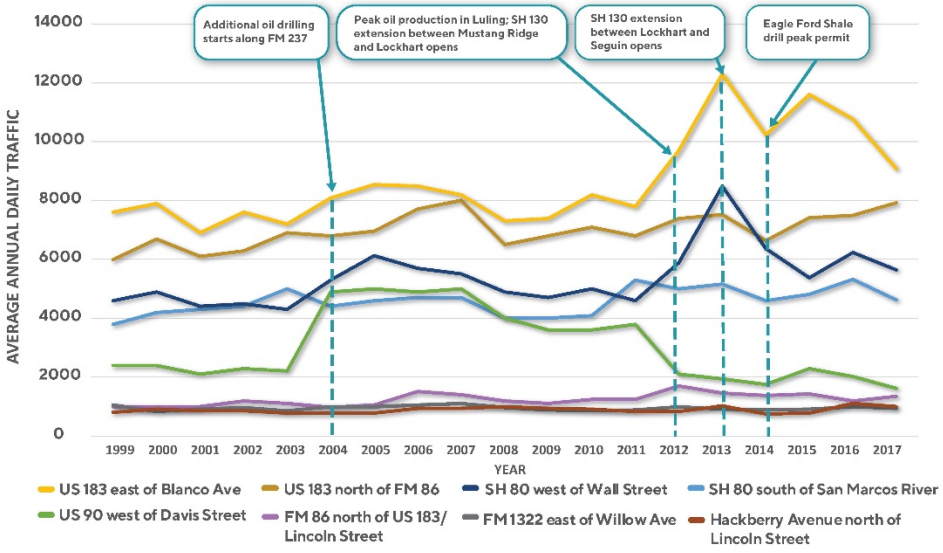
TRAFFIC DATA

2018 Average Daily Traffic Counts



Magnolia at Pierce Traffic Counts





Sources: TxDOT traffic counts 1999-2018, study team traffic counts 2018

campotexas.org

CENTRAL TEXAS

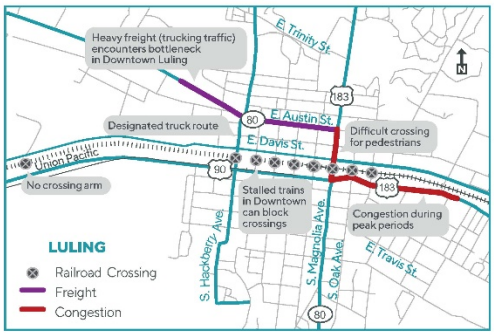
CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

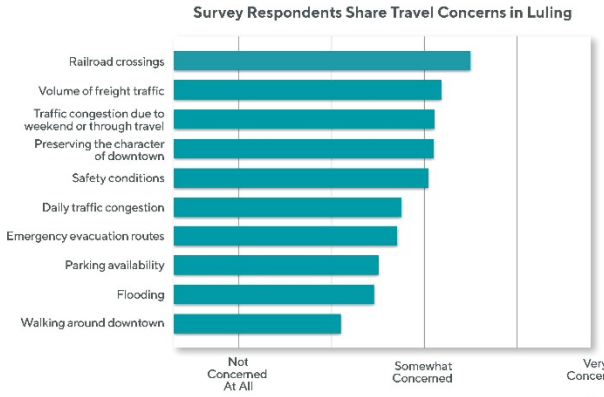
LULING
TRANSPORTATION STUDY

WHAT WE HEARD:

The study team worked with the Steering Committee, visited with members of the community, and collected 250 surveys and 100 comments during the first round of outreach to understand the community's preferences and concerns. Input received from the community helped to develop potential improvement options.

- Pavement repairs needed
- Speeding
- Railroad crossings concerns
- Walking and biking safety near schools
- More sidewalks and crosswalks needed





campotexas.org

CENTRAL TEXAS

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

LULING
TRANSPORTATION STUDY

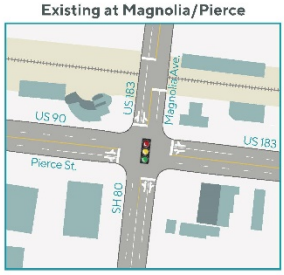
NEAR-TERM SOLUTIONS

Potential near-term improvement options could be implemented over the next 5 years by TxDOT, Caldwell County, the City of Luling, or a partnership between these agencies. Funding for potential improvements has not been identified, and the total estimated cost for all near-term improvements is $1.5 million.

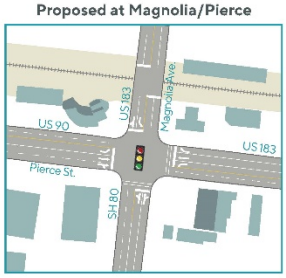
Hackberry Ave.

- Pavement repair from E. Austin St. to Pierce St.
- Additional sidewalks and crosswalks
- Changes to signal timing to improve traffic flow and directional signage for truck traffic at E. Austin St. and Pierce St. intersections

Existing at Magnolia/Pierce



Proposed at Magnolia/Pierce



Magnolia Ave.

- Changes to signal timing to improve traffic flow at E. Austin St. and Pierce St. intersections
- Modifying stop bar to allow for safer turning movements at the Pierce St. intersection
- Adding right and left turn lanes at Pierce St. intersection

Additional Improvement Opportunities

City and TxDOT could further explore:

- Safe Routes To School project
- Neighborhood traffic calming treatments
- Evaluating stop signs at Walnut/Pierce Intersection

campotexas.org

CENTRAL TEXAS

CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

LULING
TRANSPORTATION STUDY

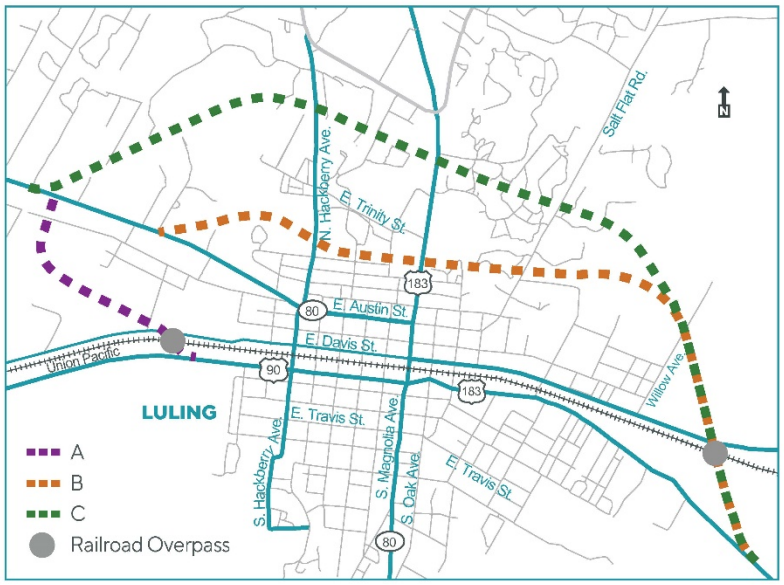
LONG-TERM SOLUTIONS

One preferred option out of the potential long-term improvements below could be implemented in the next 10 – 20 years, after undergoing extensive environmental and design processes. Funding for long-term improvements has not yet been identified.

A Alternate connection from SH 80 to US 90 west of downtown with railroad overpass.
Estimated Cost - $8 Million

B Alternate connection from SH 80 to US 183 east of downtown, located south of Salt Branch. Includes overpass of railroad and FM 1322.
Estimated Cost - $25 Million

C Alternate connection from SH 80 to US 183 east of downtown, traveling north of Salt Branch. Includes overpass of railroad and FM 1322.
Estimated Cost - $35 Million



campotexas.org

Survey (English)

The second survey was developed to gather public input on the proposed near and long-term improvements; over 150 surveys were collected. The survey was open from April 15, 2019 to May 15, 2019. Surveys were collected online and on paper at open house meetings and six community locations.

LULING
TRANSPORTATION STUDY

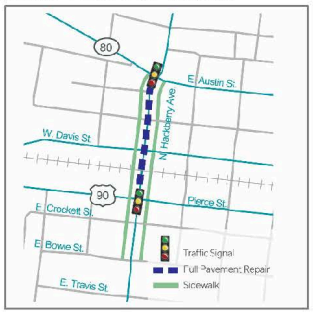
CAMPO

COMMUNITY SURVEY

The Luling Transportation Study has identified needed safety and mobility improvements to accommodate local and through traffic, while considering how to preserve and promote the unique character of Downtown Luling. Using input from over 250 community members during the first round of outreach, a set of potential near-term and long-term transportation improvement options were developed to address current and future transportation needs in Luling.

Please share your thoughts by completing the survey below **by Wednesday, May 15.** You can pick up more surveys to share with friends and leave completed surveys at **Apple Lumber**, **City Hall**, **Luling Oil Museum**, **Meme's Mexican**, **Mom's Front Porch**, or **Texas Express Lube and Auto**.

NEAR-TERM OPTIONS

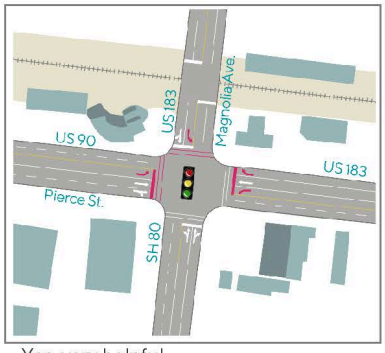


HACKBERRY AVE. IMPROVEMENTS INCLUDE:

- Pavement repair from Austin St. to Pierce St.
- Additional sidewalks and crosswalks
- Changes to signal timing to improve traffic flow and directional signage for truck traffic at E. Austin St. and Pierce St. intersections

Do you think these improvements would help make it easier and safer to get around in Luling? (circle one)

Yes, very helpful		Neutral		No, not helpful
1	2	3	4	5



MAGNOLIA AVE./PIERCE ST. INTERSECTION IMPROVEMENTS INCLUDE:
All changes are represented in magenta

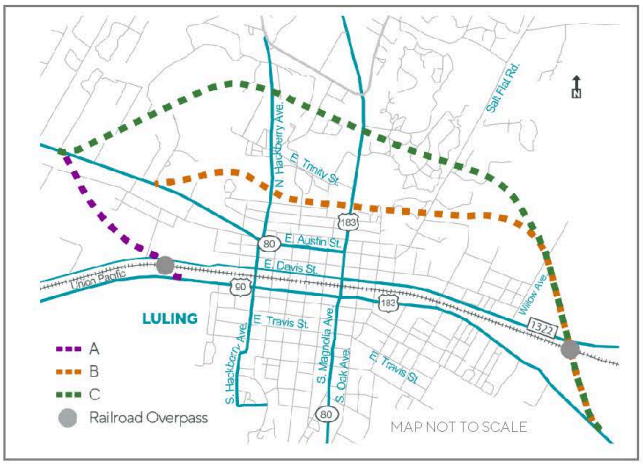
- Repaint intersection stop bars to make turning easier
- Dedicated right and left turn lanes
- Add north and west intersection crosswalks

Do you think these improvements would help make it easier and safer to get around in Luling? (circle one)

Yes, very helpful		Neutral		No, not helpful
1	2	3	4	5

LONG-TERM OPTIONS

Which of the potential options, if any, do you believe would best serve long-term transportation needs in Luling?



- ☐ **Option A:** Alternate connection from SH 80 to US 90 west of downtown with railroad overpass. Estimated cost - $8 million
- ☐ **Option B:** Southern alternate connection from SH 80 to US 183 east of downtown. Includes overpass of railroad and FM 1322. Estimated cost - $25 million
- ☐ **Option C:** Northern alternate connection from SH 80 to US 183 east of downtown, with two crossings of the Salt Branch floodplain. Includes overpass of railroad and FM 1322. Estimated cost - $35 million
- ☐ None of these

Do you have any additional comments about potential improvements?

OUTREACH AND PARTICIPATION OPPORTUNITIES (OPTIONAL)

If you would like to receive email updates on the study, please share your email address here

Email address:_____

What is your home zip code? _____

How did you hear about this survey? (select all that apply)

☐ Email ☐ Mail ☐ Social Media ☐ Survey Link Card ☐ Sign
☐ News ☐ Meeting ☐ Other:_____

How would you rate your experience participating and sharing input on this study? (circle one)

Best Experience		Neutral		Worst Experience
1	2	3	4	5

Do you have any comments about outreach and participation opportunities?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Thank you for your participation. Please reach out to the study team with any questions.

CONTACT ⟩⟩⟩⟩⟩⟩⟩

P 512.215.8225 **E** nirav.ved@campotexas.org **W** www.campotexas.org

Survey (Spanish)

LULING
TRANSPORTATION STUDY

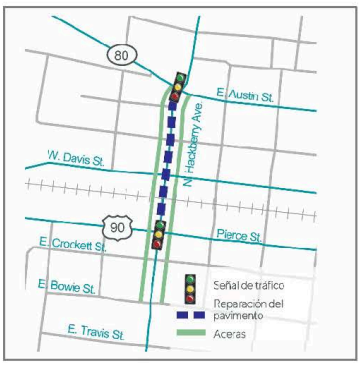
CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION
CENTRAL TEXAS

ENCUESTA COMUNITARIA

El Estudio del Transporte de Luling ha identificado mejoras para la seguridad y la movilidad, mientras preservando y promoviendo el carácter único del centro de Luling. Utilizando las sugerencias de más de 250 miembros de la comunidad durante la primera ronda de divulgación, se desarrollaron un conjunto de posibles soluciones de transporte a corto y largo plazo para abordar las necesidades de transporte actuales y futuras en Luling.

Por favor comparta sus pensamientos al completar la encuesta a continuación antes del **miércoles 15 de mayo.** Puede recoger más encuestas para compartir con amigos y dejar las encuestas completadas en **Apple Lumber**, **City Hall**, **Luling Oil Museum**, **Meme's Mexican**, **Mom's Front Porch**, o **Texas Express Lube and Auto**.

SOLUCIONES A CORTO PLAZO

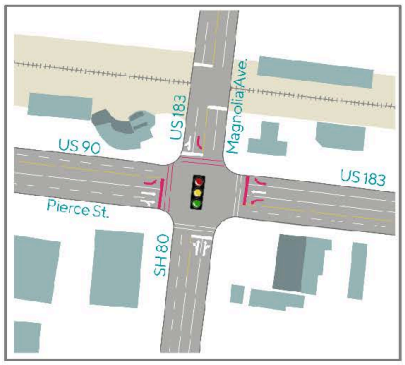


LAS MEJORAS DE HACKBERRY AVE. INCLUYEN:

- Reparación del pavimento desde Austin St. hasta Pierce St.
- Aceras y cruces adicionales
- Cambios a la temporización de señal para mejorar el flujo de tráfico y señalización direccional para el tráfico de fletes en las intersecciones de E. Austin St. y Pierce St.

¿Crees que estas mejoras ayudarían a que sea más fácil y más seguro viajar en Luling? (circule una de las opciones)

Muy útil		Neutral		No útil
1	2	3	4	5



LAS MEJORAS DE LA INTERSECCIÓN DE MAGNOLIA AVE. /PIERCE ST. INCLUYEN:

Todos los cambios se representan en magenta

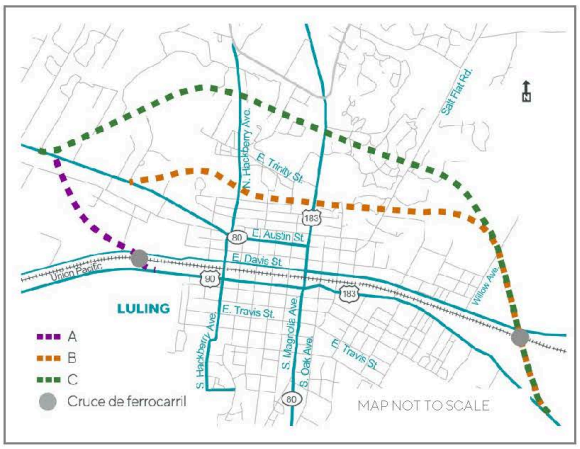
- Repintado de las barras de tope en la intersección para facilitar la vuelta
- Carriles de vuelta a la derecha y la izquierda dedicados
- Adición de cruces peatonales al norte y oeste

¿Crees que estas mejoras ayudarían a que sea más fácil y más seguro viajar en Luling? (circule una de las opciones)

Muy útil		Neutral		No útil
1	2	3	4	5

SOLUCIONES A LARGO PLAZO

¿Cuál de las opciones potenciales cree que serviría mejor a las necesidades de transporte a largo plazo en Luling?



☐ **Opción A:** Conexión alternativa de SH 80 a US 90 al oeste del centro de la ciudad con un puente sobre el ferrocarril. Costo estimado - 8 millones

☐ **Opción B:** Conexión alternativa desde SH 80 hasta a US 183 al este del centro de la ciudad. Incluye un puente sobre el ferrocarril y FM 1322. Costo estimado - 25 millones

☐ **Opción C:** Conexión alternativa desde SH 80 a US 183 al este del centro, con dos cruces de la llanura aluvial de Salt Branch. Incluye un puente sobre el ferrocarril y FM 1322. Costo estimado - 35 millones

☐ Ninguno de esas

Por favor agregue cualquier comentario adicional sobre mejoras potenciales:

OPORTUNIDADES PARA PARTICIPACIÓN (OPCIONAL)

Si desea recibir actualizaciones por correo electrónico sobre el estudio, comparta su dirección de correo electrónico aquí:

Dirección de correo electrónico:_____

¿Cuál es el código postal de tu casa? _____

¿Cómo se enteró de esta encuesta? (seleccione todas las que correspondan)

☐ Correo electrónico ☐ Correo ☐ Medios de comunicación social ☐ Tarjeta de enlace de encuesta ☐ Una señal ☐ Noticias ☐ Reunión

☐ Lista alguna otra manera:_____

¿Cómo calificaría su experiencia participando y compartiendo información sobre este estudio? (circule una opción)

Mejor experiencia		Neutral		Peor experiencia
1	2	3	4	5

Por favor comparta algún comentario sobre alcanzando la comunidad y oportunidades de participación:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Gracias por su participación. Por favor, comuníquese con el equipo de estudio si tiene alguna pregunta.

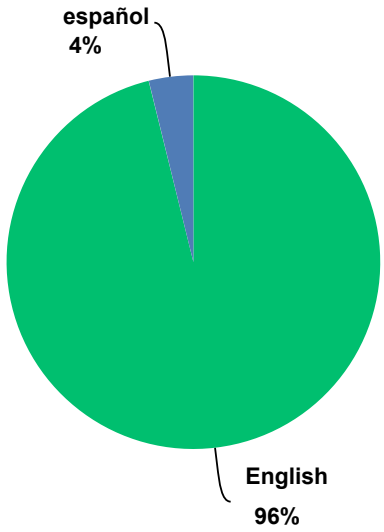
CONTACTO ⟩⟩⟩⟩⟩⟩⟩

P 512.533.9100 **W** www.campotexas.org

Survey Results - Round 1

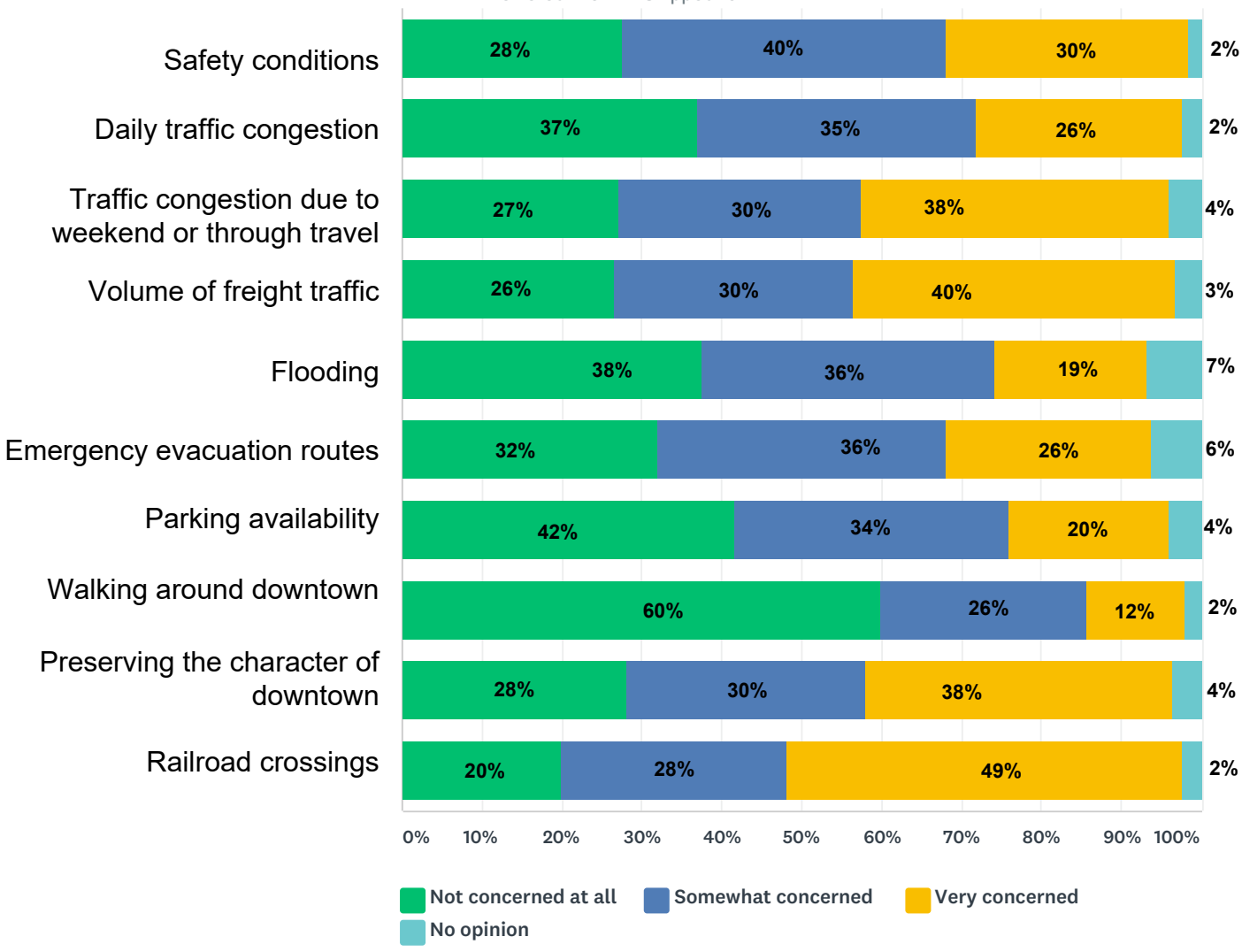
Q1 Do you prefer to respond to this survey in English or Spanish?¿Prefiere responder a esta encuesta en inglés o español?

Answered: 234 Skipped: 27



Q2 Please share your input on transportation in Luling. How concerned are you with:

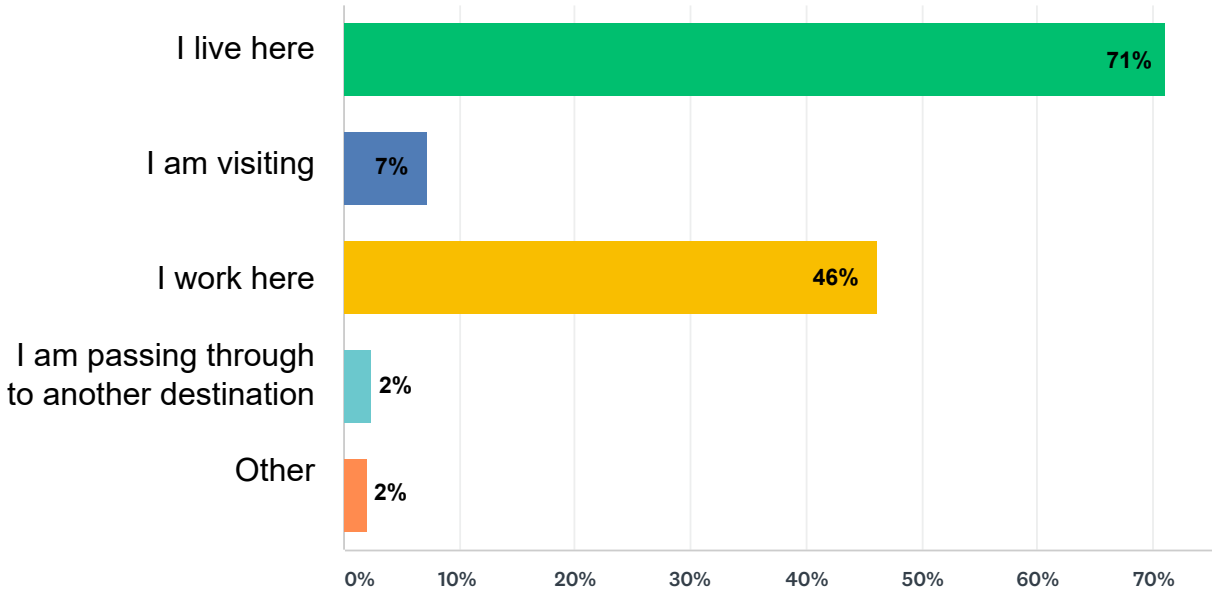
Answered: 252 Skipped: 9



	Not concerned at all	Somewhat concerned	Very concerned	No opinion
Safety conditions	28%	40%	30%	2%
Daily traffic congestion	37%	35%	26%	2%
Traffic congestion due to weekend or through travel	27%	30%	38%	4%
Volume of freight traffic	26%	30%	40%	3%
Flooding	38%	37%	19%	7%
Emergency evacuation routes	32%	36%	26%	6%
Parking availability	42%	34%	20%	4%
Walking around downtown	60%	26%	12%	2%
Preserving the character of downtown	28%	30%	38%	4%
Railroad crossings	20%	28%	49%	2%

Q3 What brings you to Luling? (select all that apply)

Answered: 249 Skipped: 12



OTHER
kids are going to school here
BBQ
78648
78648
Fiances family lives here

Q4 What brings you to Luling? (additional details)

Answered: 70 Skipped: 191

WHAT ZIP CODE DO YOU LIVE IN?

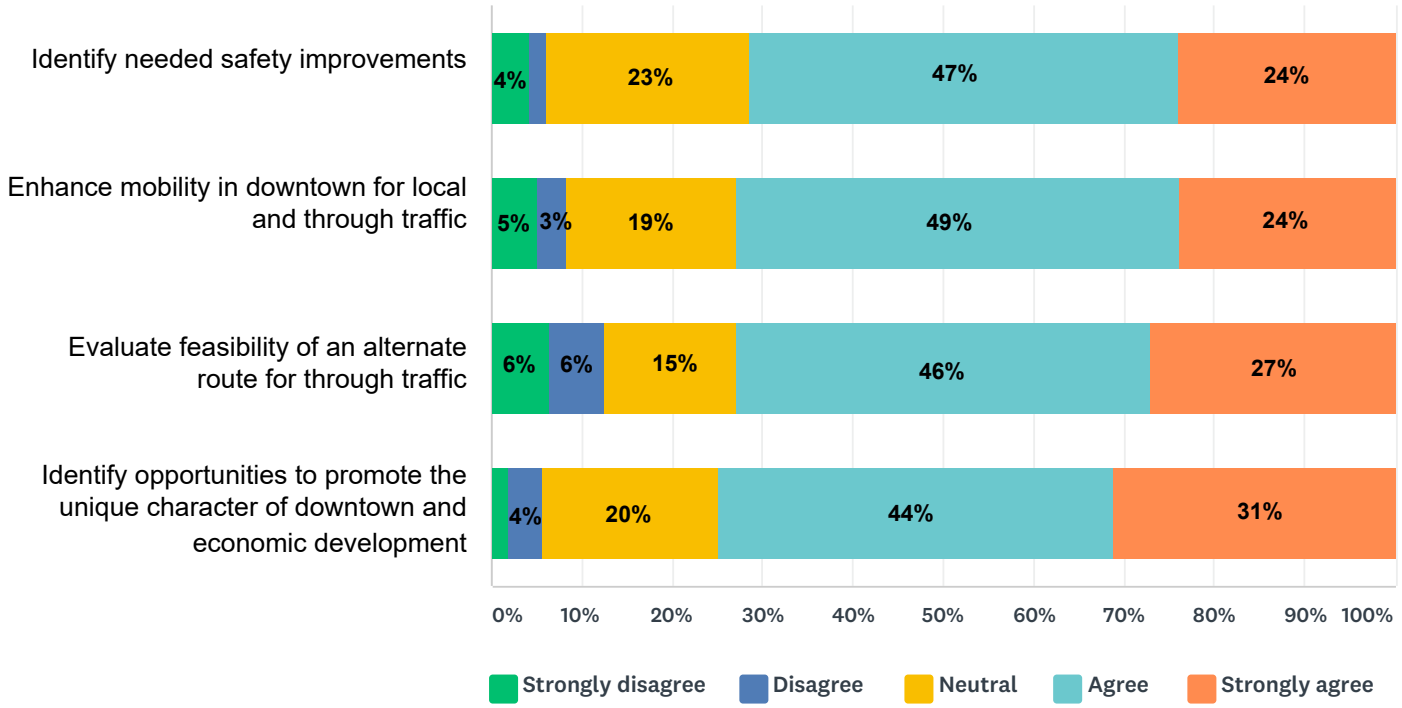
Zip Code	# of Responses
78648	8
78155	6
78629	6
78666	6
78130	4
78640	4
78644	4
78616	3
78632	3
78239	2
78612	2
78622	2
78638	2
78731	2
78744	2
77006	1
77539	1
78102	1
78109	1
78244	1
78602	1
78630	1
78660	1
78747	1
78748	1
78757	1
78759	1
78764	1

Frequency	# of Responses
Few times a week	11
5-6 days a week	19
Everyday	9
1-3 times Month	9
Every Month	1
1-2 Yearly	4

Destination	
Destination	**# of Responses**
Local Business	5
School	3
Travel	7
Other	2

Q5 Do you agree with the study goals?

Answered: 220 Skipped: 41



	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Identify needed safety improvements	4%	2%	23%	47%	24%
Enhance mobility in downtown for local and through traffic	5%	3%	19%	49%	24%
Evaluate feasibility of an alternate route for through traffic	6%	6%	15%	46%	27%
Identify opportunities to promote the unique character of downtown and economic development	2%	4%	20%	44%	31%

Q6 Do you have any additional comments on transportation in Luling?

Answered: 101 Skipped: 160

RESPONSES
road improvement needed
I feel that the students of Luling ISD need to be encouraged & controlled more in regards to the safety precautions of driving through the district. They speed. They do not get tickets and the administration does not do enough to hold them accountable.
Pedestrian crossings need push buttons
Traffic doesn't concern me. The many potholes do. Fix our streets. Traffic is good for business!!!
I believe that the road damage along where the railroad tracks are located should be fixed
It concerns me when our first responders can't get across tracks when there is a train
Specific areas of concern are on Hackberry Road between Hwy 80 & Hwy 90; it's in very poor condition and highly used by local and freight vehicles. Another area is pedestrians and traffic crossing at the intersection of Hwy 183 & Davis St. Big Positive- timed lights at 183/90 & 183/80 are excellent! Not pertaining to downtown Luling, but the 2 lane Hwy on 80 b/w Luling and San Marcos caused ridiculous and unnecessary backups. (needs to go back to 4 lanes!)
There needs to be a pedestrian crosswalk sign, markings, etc. On the intersection of Davis and Magnolia.
More school zones for kids going/leaving school- morning walker and afternoon walkers
It would be nice to have police officer watching the speed on bowie and walnut or put school zone signs. A lot of drivers speed thru and there are kids crossing or high school students driving crazy.
To have more security in school or police officers driving around so there wont be much speeding or kids fighting. Putting more school zone lights. Better streets and parking spaces.
Alternate truck route in school zone and Hackberry St. Reinforce school zone areas Maintenance on truck route roads
Bus routes should have certain intersections for them. Hackberry roads need major fixing. Possibly widening the roads, bike lane is needed. We need more crosswalk guards or patrolling from local enforcement. Speed bumps in school zones. Bring back the safety gates they used to have in school areas.
Need more sidewalks and better roads.
I was born and raised here in Luling, Tx. I love this town! But threw commercial trucks such as 18 wheelers affect our roads a lot and my car is beat up from roads being ruined from big trucks.
The information center is a waste of our tax dollars, there is never a breathing human there. We need the streets with large pot holes and road cave in's properly fixed. The streets are causing vehicle issues and accidents
There should be at least one way for people on the opposite side of the tracks from the hospital to access the hospital in case of emergency.
More sidewalks. People have to walk in the street - more crosswalks.
N/a
While attempting to preserve the "small-town feel", Luling has hindered its residents with the minimal routes available in the town. I believe that additional routes, along w/ the businesses that accompany them (gas stations/stores) would enhance the quality of life & draw increased prospects of other people moving to Luling.
My car has been vandalized in the school parking lot :(
N/a

There needs to be a pedestrian/bicycle overpass to connect the neighborhood north of the railroad to the area of the Luling schools, hospital, community health clinic, post office, & main grocery store. My main concern is solely of students crossing the main streets & railroad to get to school or walk home from school.
I am concerned about the lack of pedestrian crosswalks, especially for students needing to cross the railroad tracks walking to & from school. Also, the crosswalks, or lack thereof, are an issue when the HS releases students for lunch.
No
Time the green lights longer
To many pot holes! Austin St., Hackberry, the alley beside the old laundry mat as if you are going to turn back onto Hackberry St. Rough railroad crossings.
Roads in the neighborhood could use a touch up. Rough around the railroad tracks.
It would be nice to have the potholes in the road patched up
No
No
Any way to get around RR
None
Luling needs a more reliable dedicated public transportation with longer hours.
more reliable public transportation - getting people to doctor, grocery, pharmacy, etc. The intersection @ Magnolia + 90 carries great volume, especially when commercial traffic is mixed in with the train! What can be done to relieve this congestion?
Free or cheap transportation for those without it. An over or underpass for emergency vehicles to cross railroad tracks (Northside)
Close RR crossing on Oak Street block.
I am very satisfied with Luling citizen 30 years. Thank you Luling Elizabeth A Weeks
Signaled crosswalks @/to NW Corner E Pierce + Magnolia.
the pot holes down S. Hackberry St need help ASAP
Through traffic needs to be a primary focus. Local citizens have learned to navigate around the main streets, but there is no relief in downtown with traffic that is just trying to get through. Not much traffic is coming through to visit luling, but just to get around it. For those few that are trying to visit, our main street’s congestion issues are overwhelming. Priority should be an alternate route for through traffic and adjustment of the intersection lights at the main intersection and flow of traffic.
n/a
Just highway traffic
Not that I can think of at this time
There is a serious lack of sidewalks in the town. This is not safe for children and it does not promote fitness and healthy which is imperative for the well being of residents.
1) There is a need for sidewalks and crosswalks for children headed to and from school. 2) There is a need for a truck route or enforcement of an existing truck route for the main intersection at hwy 183 and hwy 90 & hwy 80 - and then at red light heading to San Marcos
The train crossing create some problems
I am concerned about the amount of trucks and trailers that travel hwy 80 and then turn south onto Hackberry or Magnolia to traverse through downtown Luling. The truck traffic seems to have increased in recent years. Also, these heavy trucks are damaging to the roads in our city. It would be great to have these trucks diverted to a route that bypasses our downtown area. This should relieve the congestion brought about by the trucks and pass-through traffic on weekends and holidays. Clarence J. Klekar
Back roads/potholes

Luling has no traffic problems, low taxes, and friendly people
512-731-4551
210-577-9292
I would hate to see a loop around town as it would destroy the town we moved to 10 years ago!
We moved to Luling after many trips from Houston to Kyle and liked the small-town atmosphere. A loop around the town would harm Luling. All you have to do is look around at other small towns that have died once a loop was added.
No loops
No loop around town. It will kill us
The semi traffic through town is a huge problem. But I don't know of any good answer because Luling was built with zero growth in mind.
You will kill our town with a bypass. Look at any other small town that has implemented a bypass and it results in a loss of business.
Don't build by-pass Cross walk on Davis street across hwy 183/80
More signs for I-10 Coming to Luling from East trucks should use hwy 80 to go north
1230 River Park Road is a dirt road to my home. My neighbor and I always have to get our tires changed out. Would like to get it paved.
Better streets in Luling
Different routes for oversized loads and 18 wheelers
Roads are terrible in town and around town. The amount of truck traffic is concerning. Rail road crossings are constantly having maintenance issues
Upgrading street pavement. No other suggestions
Alternate route for oversized loads to travel on
No
Too many semi trucks running lights write some citations
Gravel trucks coming from San Marcos, through downtown are a hazard and general nuisance.
A bypass will not be beneficial for the town of Luling. Travelers through our town often stop in the stores. Our businesses need the income, and tax revenue benefits our town.
customwoodworx.att.net
The place is old and needs an upgrade
Keep the traffic better than Austin, tx
Please install red lights at major busy intersections instead of way stops & stop lights
We need a bridge over the railroad tracks near the main 4-way stop. People are trapped when the train breaks down or just decides to stop in town. Can't get to schools or hospitals for anyone. Not the tracks. Heavy traffic on weekends and routed for I-10. Heavy equipment constantly driving through.
- Work on some type of second rail road system bridge) - Also all the large heavy equipment coming through town
it's not the big city traffic jam, wait a few minutes and it clears up. If it is major I 10 wreck and traffic is diverted then its a problem but just for a day.
Educate the town of the consequence of making right handed turns while an 18-wheeler is also trying to turn the same direciton
Address trains and truck traffic
Move the 18 Wheeler's out of town
-Get them to use the existing truck route on Huckleberry; upgrade Huckleberry -Safety concerns for intersection of 80/183

Construct at least one underpass or overpass route with rail line for emergency services to utilize during train stoppages.
An overpass over the railroad track
If a bypass highway is constructed Luling will become a ghost town
Traffic on weekend is very heavy and when accidents on 10 and routed through Luling is a nightmare. We catch San Marcos to Port Aransas on Spring Break another nightmare. Along with Austin to the coast. One other problem is the stop sign on Milian St. to hospital. Should not have to stop at that extra stop sign when your in emergency.
The trains are horrible and traffic out by the Buccees light backs up bad in the summer
We don’t need a. Bypass. We need alll the business we can get. Luling people don’t support businesses here
Not at this time.
A loop to bypass Luling should not be an option. Stream line the truck traffic on Pierce St to the west end of town then to Hwy 80. Create a overpass over the railroad on the west end of town. Separate the kids walking path north of the railroad from the hazardous truck route. I definitely want to be involved in any future discussions and planning to provide input. I have seen what Interstates 10 did to almost destroy the local economy, I don’t want to see it happen again.
More traffic lights on Austin and 80
looking forward to a by-pass around town to help with congestion.
I would like to see crosswalks/crossing guards for the local school children. Some, if not most have to cross at least one-three major highways to get to school. We need to focus on the safety of our children in our community.
Connect Highway 80 with US 90 west of Luling
Improve walking traffic areas for safety Main St & 183 Hwy there is no crosswalk or light. Hackberry & 90 Hwy A light for schoolchildren and crosswalk recommended. Study routes where seniors, handicap and children travel. Keep there stakeholder in-mind as you plan for change.
Train & trucking traffic creates safety concerns & traffic congestion. Can we consider a no noise ordinance for the train traffic and a reduction of the number of trains, and a possible bypass for truck traffic.
It's just very congested w/ all the 18 wheelers coming through from Hwy 80 to I-10
Consider what will happen with closing Oak Street railroad crossing. During Thump traffic is directed along Oak to 183 so people are familiar with the route.
Fix rough streets, such as Hackberry More police presence to decrease speeding vehicles!
Loss of traffic will KILL DOWNTOWN Without the traffic - our small business will die out - Due to flood zones there isn't any good place to relocate our downtown - & loss of the historic nature of our downtown would destroy attraction of tourists too! I suggest enforcing the existing truck route!
Hazmat on train 4 truck pedestrian, access from schools to 'north side' condition of R/R signals. Conditions of roads. Increased traffic due to 130. Funds being diverted to Lockhart. Overpass over railroad. I am concerned that we look at the overall needs of the area and not look at keeping city merchants busy.
Nothing, other than the fact that it gets crazy congested on Friday

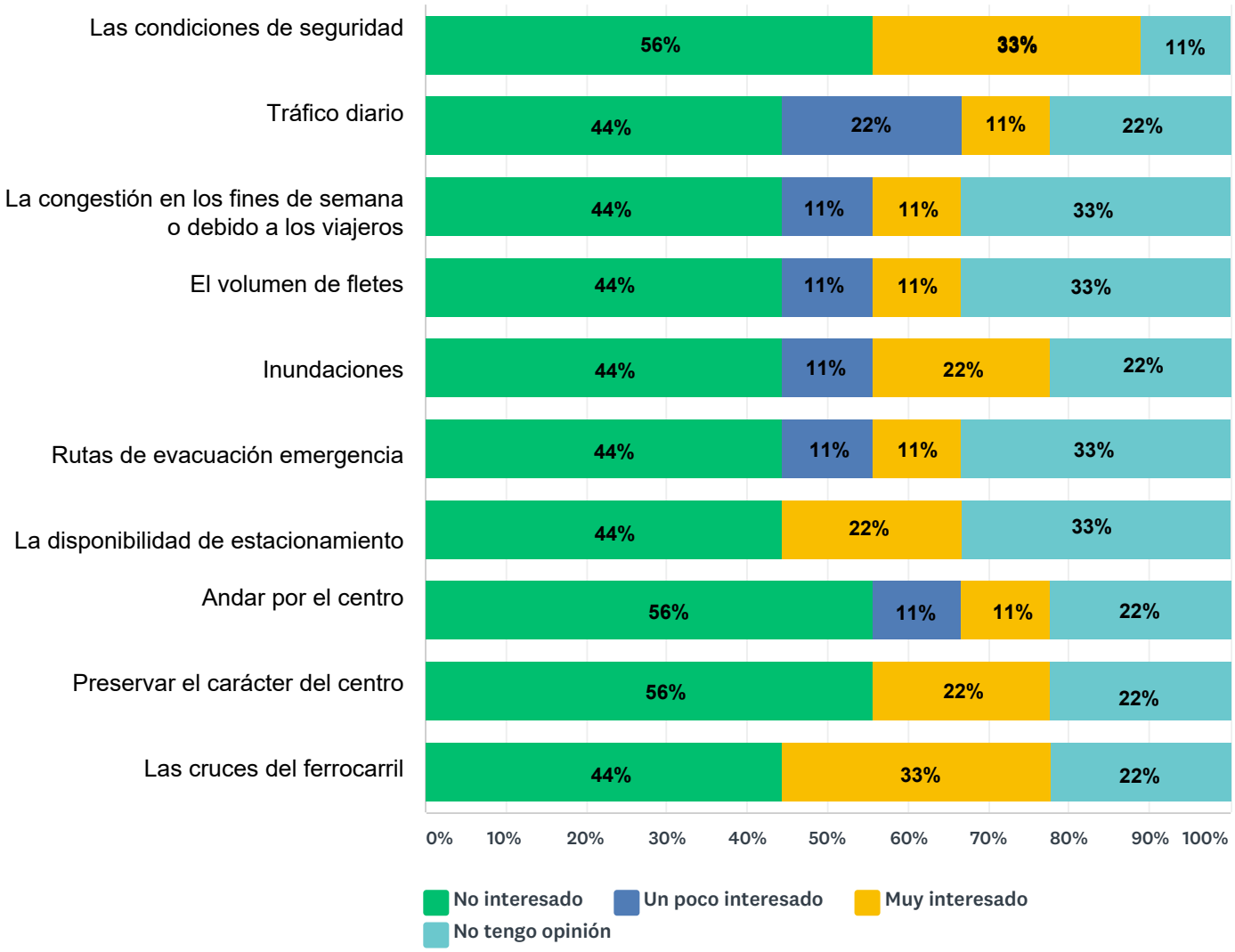
Q7 If you would like to receive email updates on the study, please share your email address here.

Answered: 70 Skipped: 191

70 email addresses received.

Q8 Favor de compartir sus opiniones sobre el transporte en Luling. Indique su nivel de interés con:

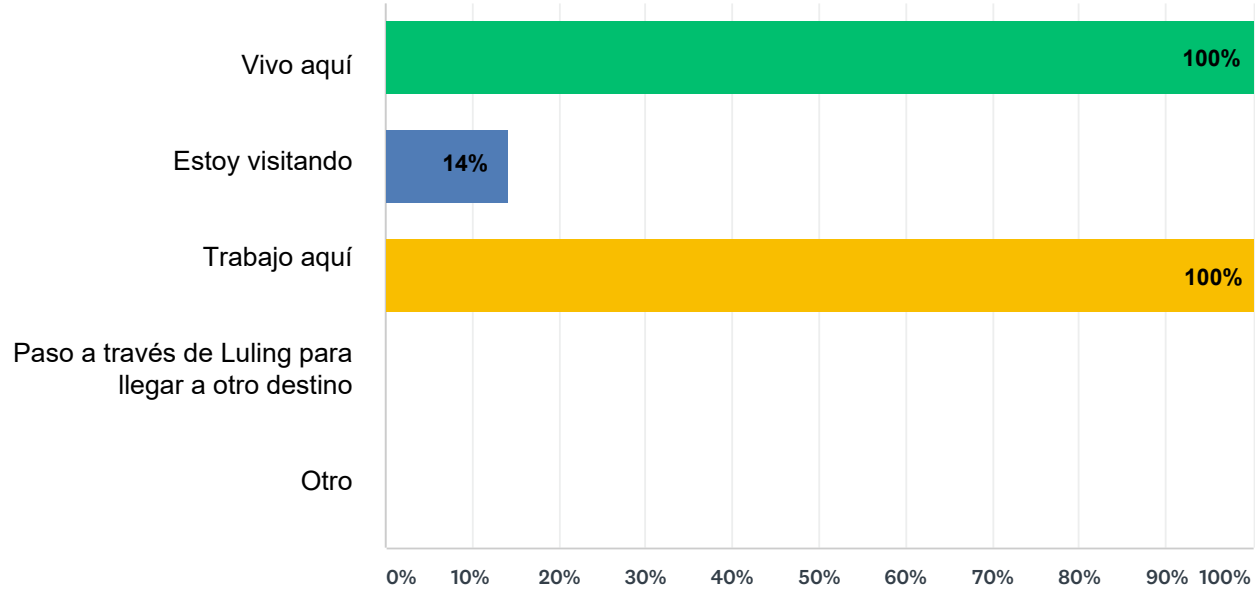
Answered: 9 Skipped: 252



	No interesado	Un poco interesado	Muy interesado	No tengo opinión
Las condiciones de seguridad	56%	0%	33%	11%
Tráfico diario	44%	22%	11%	22%
La congestión en los fines de semana o debida a los viajeros	44%	11%	11%	33%
El volumen de fletes	44%	11%	11%	33%
Inundaciones	44%	11%	22%	22%
Rutas de evacuación emergencia	44%	11%	11%	33%
La disponibilidad de estacionamiento	44%	0%	22%	33%
Andar por el centro	56%	11%	11%	22%
Preservar el carácter del centro	56%	0%	22%	22%
Las cruces del ferrocarril	44%	0%	33%	22%

Q9 Qué le trae a Luling? (seleccione todas las que apliquen)

Answered: 7 Skipped: 254

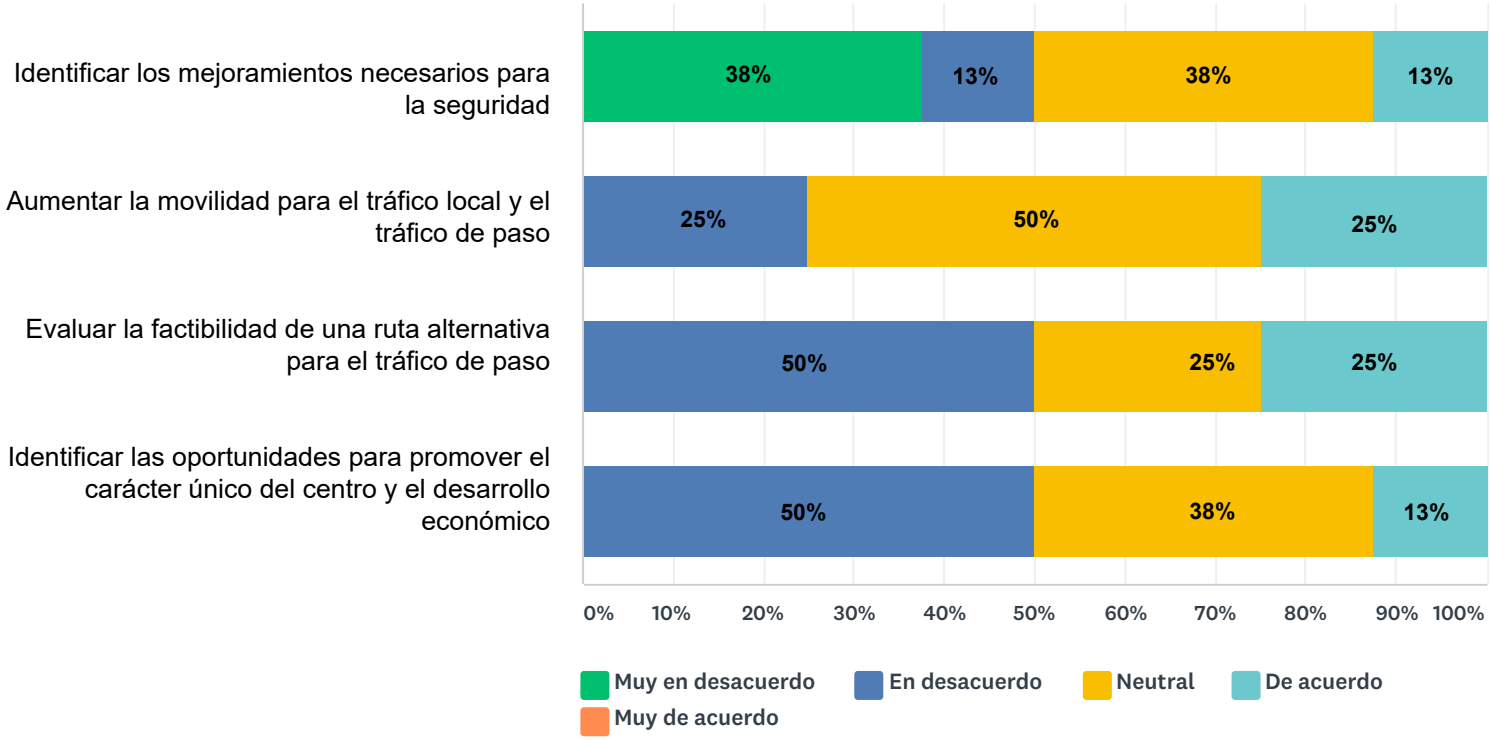


Q10 ¿Qué le trae a Luling? (detalles adicionales)

Answered: 0 Skipped: 261

Q11 ¿Está Usted de acuerdo con las metas del estudio?

Answered: 8 Skipped: 253



	Muy en desacuerdo	En desacuerdo	Neutral	De acuerdo	Muy de acuerdo
Identificar los mejoramientos necesarios para la seguridad	38%	13%	38%	13%	0%
Aumentar la movilidad para el tráfico local y el tráfico de paso	0%	25%	50%	25%	0%
Evaluar la factibilidad de una ruta alternativa para el tráfico de paso	0%	50%	25%	25%	0%
Identificar las oportunidades para promover el carácter único del centro y el desarrollo económico	0%	50%	38%	13%	0%

Q12 ¿Tiene algunos comentarios adicionales sobre el transporte en Luling?

Answered: 4 Skipped: 257

No additional comments.

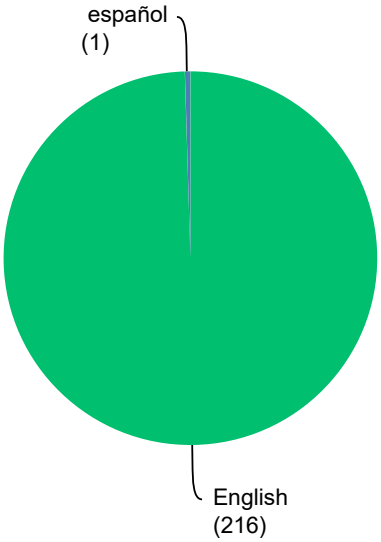
Q13 Si quiere recibir actualizaciones electrónicas sobre el estudio, favor de compartir su dirección de correo electrónico aquí.

Answered: 0 Skipped: 261

Survey Results - Round 2

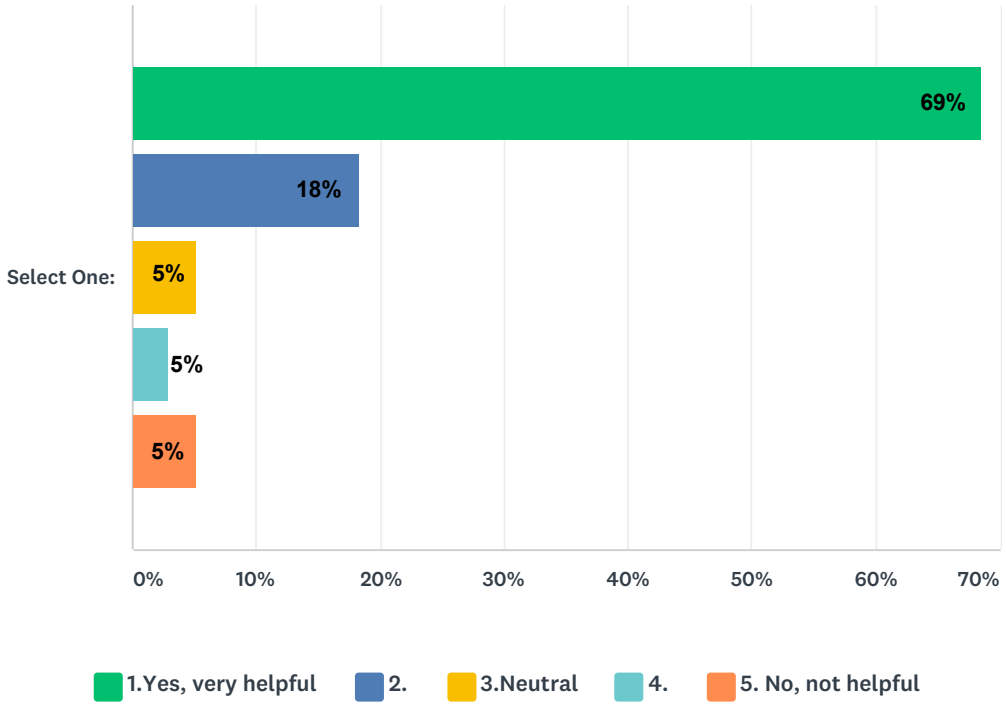
Q1 Do you prefer to respond to this survey in English or Spanish?¿Prefiere responder a esta encuesta en inglés o español?

Answered: 217 Skipped: 0



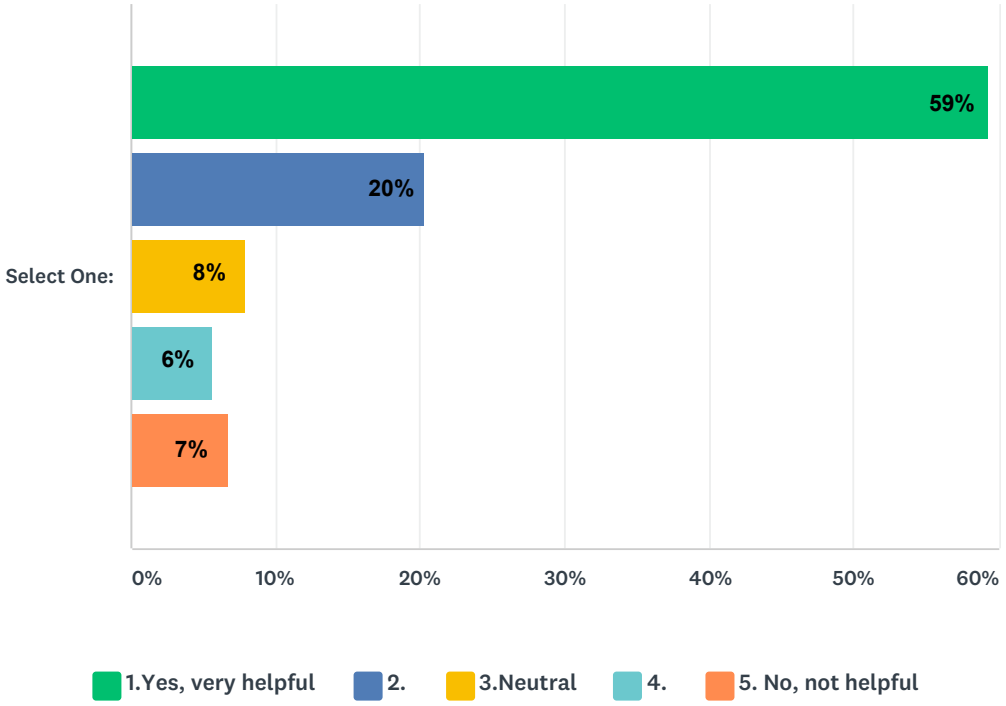
Q2 Do you think these improvements to Hackberry Ave. would help make it easier and safer to get around in Luling?

Answered: 175 Skipped: 42



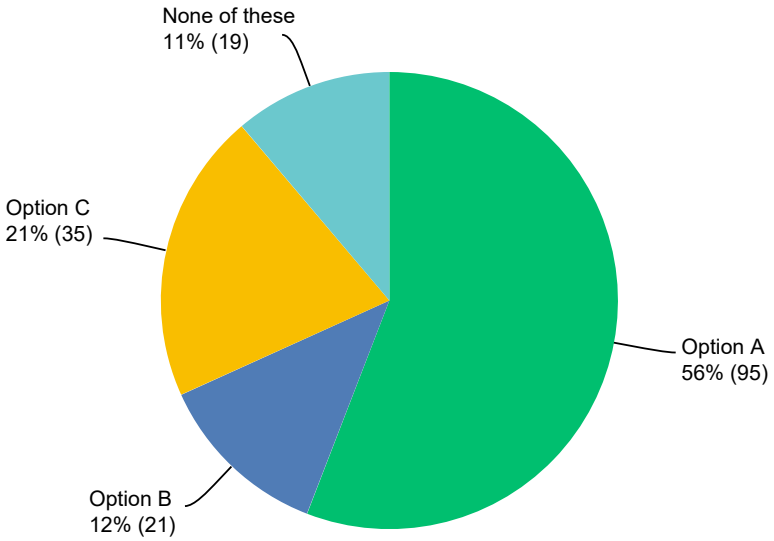
Q3 Do you think these improvements to the Magnolia Ave./ Pierce St. intersection would help make it easier and safer to get around in Luling?

Answered: 177 Skipped: 40



Q4 Which of the potential options, if any, do you believe would best serve long-term transportation needs in Luling?

Answered: 170 Skipped: 47



Q5 Do you have any additional comments about potential improvements?

Answered: 70 Skipped: 147

RESPONSES
Question 2 comment: "Where will room come from to add lanes?"
fix pot holes on streets not just fill in actually tear up street and repave very hard on cars that are lower than trucks.
none of these options sound good to me. I feel an overpass would have an impact on local business & on our beautiful countryside. Potholes need attention in many areas around town.
Let's get started ASAP!!!
Option B&C checked Option A will simply change the area of congestion to a point that will cause more impact to areas of daily travel for locals. This will be very exaggerated during school days with that traffic. Options B or C work out about the same and should improve things. Option B is cheaper- so it should probably be it!
Option A, but take out 4-way stop by the HEB.
Need option for 80 south coming north too. Traffic on south Magnolia getting tough to make left turns lots of big trucks from I-10 on 80 north to turn maybe make a loop on north and south of Magnolia.
Laurel Street from SH80 to Pierce should be kept pothole free since so much BBQ traffic uses that strip of Laurel & park RV's, trailers down Laurel to Fannin and part of Fannin. Could there be a parking lot at corner of Laurel and Fannin for city parking? Parking for City Market and Blake's..... Intersection Hwy 183 & SH 80 is HORRIBLE- a disaster waiting to happen. Pay attention there is NO right turn lane. Smith on 183. HELP!!
Needed improvements for the posted truck route from 80 to Hackberry - lots of potholes.
Bypassing Luling with Options B and C will effect business by decreasing it. Option A is most cost effective to taxpayers.
Magnolia Ave./Pierce St. Intersection notes: The turn only lane heading south between the railroad track and Pierce Street causes me safety concerns if people get caught in it and they try to change lanes in that short distance near the intersection, a dual direction lane (like at the south side) would be more appropriate. Option A: would be very helpful for spreading out traffic flow without driving it away from the business district. Options B&C would be very detrimental to Luling businesses because it would divert traffic flow around the town completely. I believe the goal should be to spread out traffic among the through lanes without diverting it away from the established business district. We depend on the traffic to support our local business.
We need to keep traffic coming through town for the business
Option A is preferable as it will affect the downtown area the least and probably affect less landowners with the alternate routes
Option A obvious choice for traffic improvement and least affect on downtown
Cheap, which is a good thing. Just the overpass it's self will help with traffic without erasing little Luling off the map (option b and c).
Many people will vote A in order to keep traffic flowing through town in order to “keep Luling alive.” However, this will only cause more traffic congestion in Luling, just in another area of town. There is a four-way-stop near HEB that would cause traffic to come to a stand-still.
Option c needs to be one big overpass from 183 to 80

The proposed changes to the 183/80/90 intersection does little or nothing. What is shown (lanes) is already present. The issue is traffic buildup and turns into Davis St from 183/80. Also, there are no adequate prior warning signs of lane choices on southbound 183. That often results in individuals being in the right lane rather than the left turn lane and traffic backed up and others having to wait for them to get a chance to change lanes. Present signs after 80 entering 183 are not prominent enough and do not give enough time to make changes for traffic, especially that of 80 which enter 183. The best change for the backup for those entering Davis St. would be to create a No Entry which would require traffic to divert. Those coming for City Market BBQ will find their way. In the meantime, we often have to wait behind someone turning across traffic into Davis St from 183 North.
Either option B or option C would work best. Option A should not be an option. Recently, there was a major accident on Interstate 10 east that caused all traffic to be detoured into Luling through 90. It took at least 20 Minutes to drive through town because of the four way stop at HEB, along with the intersection of 183 and 90. Highway 80 may not be as busy as I-10, however, traffic would not be dealt with as properly as Option B or C could.
I think that the traffic lights at hackberry would cause more traffic congestion not only with four door vehicles but also with semi trucks. Emergency vehicles would have trouble get to their destination.
5 lanes on Magnolia between Pierce Street and Austin Street.
Regarding the intersection at Pierce and magnolia at the railroad tracks. Both southbound traffic lanes should be allowed to turn left instead of only the inside lane. Most cars are turning left and it causes congestion all the way to the Austin street traffic which is waiting to turn onto magnolia.
No
Does this group have any sway on improving State Hwy. 80 between Luling and San Marcos? The road needs to be expanded to a 4 lane highway or install passing lanes like the ones on US 183 between Luling and Gonzales. Hey 80 is a very dangerous highway with an increase in truck traffic and slow drivers refusing to drive at the posted speed limit.
Option b&c will completely dissolve luling and their now struggling businesses. Option c will be a major road right by the little league fields and will be a danger to the kids. Option a isn't good because traffic will still have to sit through two lights (one being projected), but won't crush lulings economy
This needed to be done years ago! The city is not in favor because they are against any growth. The little rip off businesses want people to buy from them. It’s been a one horse town to long.
Option A is the most logical connection to help get trucks through town. The 18 wheelers cause back-ups at the main intersection and not to mention cause safety concerns. The distance between the light and the railroad is not a safe distance and I have witnessed many times they will stop on the track waiting for the light. There needs to be an overpass over the railroad track sooner rather than later. Also thank you for gathering comments from the community who has to witness the problems day in and day out
Options B & C will totally bypass Luling and lose the city revenue.
I would like to see traffic stay moving through luling. As a local business owner I benefit from traffic moving through the heart of our city.
Good job with number C
Option C is the best long term idea!!
Fix hackberry West Watkins st has low water pressure so maybe change the pipes since there are more homes added
Not necessary, we’ve been doing just fine all these years.
Yes , c should go from 183 N to 183 S & b should go from E Austin to route c
Moving the RR out of the immediate downtown area would be a major improvement in my opinion!
We should do the most responsible, lowest cost, innovative, green solution.
Railroad options are confusing.

My son had a very bad asthma attack and panic attack the train stopped on tracks at 4:00am I was frantic not knowing if I would make it to ER in time to save my 7 yr olds life this is very frustrating as a parent n human being not knowing of my baby would live or die bc of these trains every 15 minutes in this town. It's ridiculous....Ppl have lost there life's over these trains 3 family members of mine were hit and killed by them. Wake up what will it take a lawsuit against Union Pacific and the city of Luling if so I don't mind get this resolved ASAP PLS

This is a waste of money. We have been dealing with the train for years. Since the railroad was first laid. Any of these options, the money could be used towards fixing the our streets(Cypress and Hackberry get hit the most) where the 18 wheeler travel up and down all the time which causes damages to our streets. The cross way on Davis and 183 should be fixed as well. Not only can people not cross safely, but trying to pass over to Davis in front of City Market and an 18 wheeler is blocking the views to potential on coming traffic. So many accidents happen there.

I also like option A

Option A will create new congestion in an already active part of town. It will be especially bad during school days. This option will create new problems with daily traffic flow for locals. Option B and C would work out about the same except for cost. Based upon cost Option B is a better option.

Transportation offered to and from surrounding cities

Option A increases traffic in an already congested area of town (schools, H.E.B, hospital access). Options B and C will create congestion on Hwy 90 East of town without some major improvements to how the traffic coming from Hwy 80 is merged onto this alrea busy area.

The “repainting of lanes” at the intersection would do more harm than good. There is not enough traffic flow attempting to go south on 183 to create a lane for that turn on 90.

I work near the exit of Luling on hwy 80 (San Marcos hwy) and live on the other side of town, leaving Luling towards Gonzales. The most traffic issues I observe on my daily work commute are from Lockhart/San Marcos to Gonzales and then on the weekend from Gonzales to Lockhart/ San Marcos. One major way to alleviate much of that congestion is to, when traveling from San Marcos/Lockhart to Gonzales, converting both southbound lanes at the railroad to left turns, and allow only the outside lane to continue straight southbound. That way, 2 lanes are allowed to turn as opposed to only 1. This traffic is usually lined up from the intersection on the RR tracks to the Valero store, especially when there is a train.

Make 80 and 183 turn light work all the time. Not off and on when ever

Option A could improve traffic and the economy of Luling

if you bypass the downtown area the town will die. Options B and C are terrible ideas

No

Bypassing Luling altogether is a mistake. Creating a railroad bypass is gravely needed, but sending traffic away from businesses is economic suicide. I strongly urge you to consider A the only viable option.

What is the timetable, just on permitting the wetlands for any of these? While Route A may be the most feasible, getting people to use it will be similar to the Lockhart to Luling section of 130. Rt B is a nightmare -- is it bumping the Plum Creek Watershed? Rt C is excellent for those going north on 183, but to Hwy 80? Hwy 80 is obsolete now; what will it be by the time B or C is built? I would like to see something from I-10, but I am guessing crossing the river would make it totally out of the question.

-FORCE 18 wheelers coming from East I-10 to use the Hwy 80 exit - City police/ county sheriff need to enforce that as a truck route -Signage on I-10 -Repair Hackberry for 18 wheelers; put light at Hackberry; remove island at Hackberry and 80; enforce truck route usage -Do not bypass our downtown; it will damage our businesses that depend on the traffic. -Of all the "Bypass" options, option A is the best. It may even help our town to build up along 90.

I have traveled most of USA via vehicle, I have seen first hand the devastation of adding a bypass to small towns. We don't have the attractions to bring in people to town other than our "crossroads to everywhere." I honestly believe if we nail down a truck route "18 wheelers" the flow of traffic would be a lot better. Call me anytime you need additional feedback. Concerned citizen (830) 445-6818 Jeff Sandersen

-Don't do it. The town will not be able to sustain w/a bypass. -Trucks are the biggest issue w/ traffic and we need to focus on the infrastructure of existing roads to be available for them to properly navigate a truck route through town. -Extend truck route all the way through Hackberry to FM 2984 and back to Hwy 184 to help relieve congestion along Hwy 183.
Open 80 from Luling to San Marcos back to a 4 lane highway Enforce truck route.
Hwy 183 at 90 - red light - many wrecks - people speed up after light at IH10 and are confused with another light. Then they speed up on bridge and make it hazardous to turn by the houses a Plum Creek bridge. The light at Bucees causes traffic on 183 towards Luling to back up for miles at times. Also, re-open CR 243
Possibly closer to town modifying option A
Option A is best; adding option B would also help; with both it would be very good.
Of the options presented, "Option A" best completes the objective of serving Luling's long term transportation needs. "Option A" provides easy access for freight traffic to Hwy 90. It also gives a much needed railroad overpass. Most importantly, it does not completely bypass the town. Both options "B and C" would significantly decrease traffic to the point that small businesses would be forced to close. 80% of my business comes from travelers through Luling.
Option C provides a viable crossing through floodplain and connects two useful highways
Keeps traffic through downtown if wished. However - trucks still issue #C second choice - avoids residential - present and furutre #B - no - too much residential disturbance
Option B is preferable, but A is OK. TxDPS should require all North-bound trucks from IH-10 going to Austin, to use the exit off IH-10 onto SH80 - especially for oversized loads Option A will increase in town traffic congestion. More lights will be needed to get north to south town. You will still have some problem with large loads due to lights and power lines.
Lets try to take care of the street we have before we take on something else
Option "A" would preserve our local economy by keeping potential visitors seeing our business district.
More signage to I 10 from 183 to 80 S. for traffic to 10 East
As Luling and the surrounding areas grow, I feel that option C will allow us to grow safely and not have to do another big project in the near future. It will cost more but ultimately we will save money by not having to spend money again for quite a while.
The problem is the train itself. When they go through they are 95% super slow cutting off access to pass either side of the city at all crossings, causing traffic build up at every road track crossing. These crossing arms are for the most part down with zero train activity...
While Option A helps traffic avoid blockage for trains setting idle across town, we would still need 2 raise Pedestrian crossings across the tracks near N. Hackberry Ave/Pierce St and Magnolia Ave/Pierce St.. The one by N. Hackberry would prevents school kids from crawling under parked train cars or having long waits for slow moving trains while going to and from school.
There needs to be a traffic light between east davis and 183 right next to Luling bbq. Pedestrians are always trying to walk across and traffic is HEAVY there.
Leave shit alone.

Q6 If you would like to receive email updates on the study, please share your email address here:

Answered: 60 Skipped: 157

60 email addresses received.

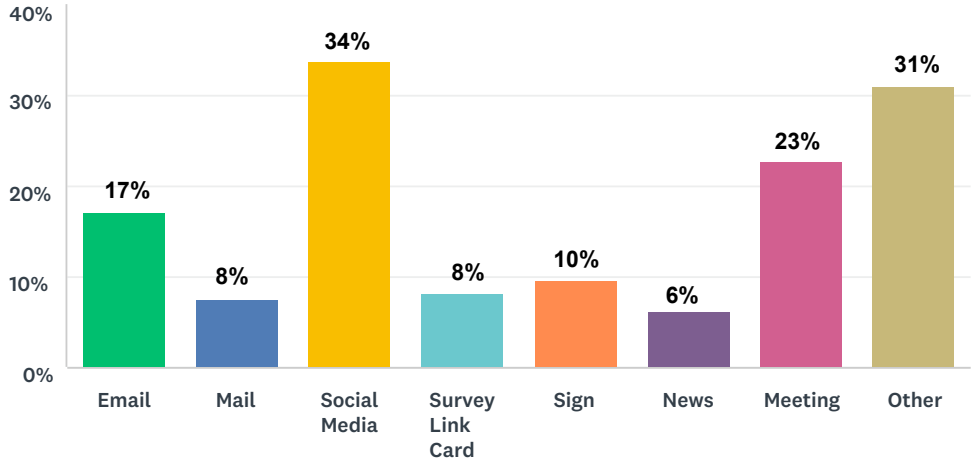
Q7 What is your home zip code?

Answered: 141 Skipped: 76

Zip Code	# of Responses
78648	114
78666	3
78638	3
78155	3
78640	2
78614	1
78130	1
77479	1
76020	1

Q8 How did you hear about this survey? (select all that apply)

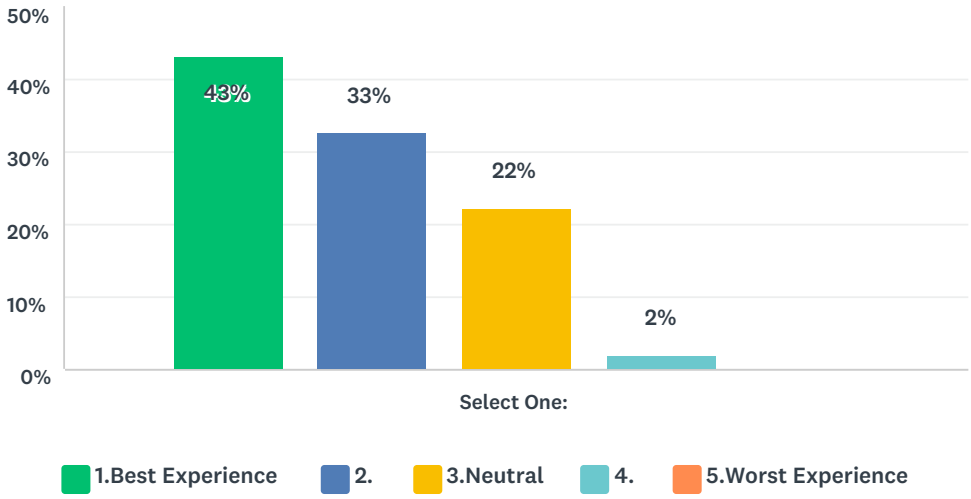
Answered: 145 Skipped: 72



Other	# of Responses
Local business	17
Word of mouth	13
Luling ISD	8
Work	4
Facebook	2
Chamber of Commerce Newsletter	1

Q9 How would you rate your experience participating and sharing input on this study?

Answered: 153 Skipped: 64



Q10 Do you have any comments about outreach and participation opportunities?

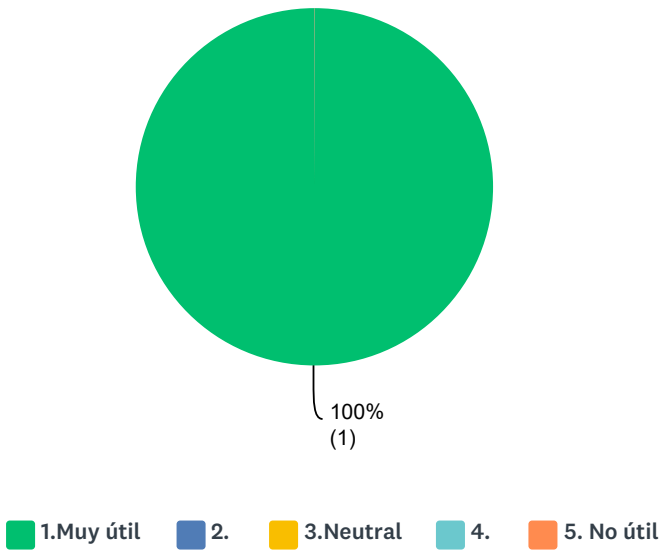
Answered: 31 Skipped: 186

RESPONSES
Thank you for community outreach for input
I don't understand what that is exactly. However several times I have been witness to our city of Luling workers in stalled vehicles at intersection. They could use upgrades and it would make for a better image.
Most of the options presented do not focus much on the real traffic problem that most locals talk about daily. There needs to be something worked out to silence train traffic and put at least one overpass in the area. Trains can block traffic for long periods of time causing major congestion.
I have lived in Luling all my life, what needs improvement is Hackberry St from Austin St to Hwy 183. In all the years here, I have never seen this stretch of street repaved only patched up.
Hackberry is in very bad condition.
1. The Hackberry Ave is ok, but all the streets off Hackberry also need improvement. 2. Big trucks need another route from 80, they ruin highways and streets and also dangerous for children. I think the most important improvement for traffic and safety for all would be an overpass over railroad tracks. 3. All the streets need improvement in Luling for safety and transportation.
Short term needs are not addressed- parking for BBQ central. The traffic turning @ SH 80 & 183 is horrific- needs immediate attention
I hope that citizen input will not be ignored.
I am "old school." I believe social media is very important for a lot of people and should be used extensively, but don't forget about those of us who avoid places like Facebook, Instagram, and the like. Please use the board paper, townhall meetings, and email mailings for important updates as well as the social media platforms.
Thanks it's great that community members get to voice their opinion. Should have more surveys.
None
I was on Commissioner Court 2011-2014 & got this study started. I would be glad to chair any group in the future. Fred Buchholtz 210-745-1904
None
No
No.
Why cant they make two turn lanes from 183/90?
I have seen advertising and multiple survey spots around town. Great job on getting word out for our community to be able to participate
None at this time.
We should think of moving people, not cars and have transit, bike lanes, sidewalks for people of all ages.
NO
Strongly agree on Hackberry St.
Continue to ask the community for their opinion. Their opinions matter. Everyone has something to say. Then make the best decision with everyone's in put.
Take time to LISTEN to people who drive these roads every day!

Wish there would be more opportunities to attend. Informational meetings were only held one day- AM and PM session.
Thanks
No
Thank you we really need these changes to help with our traffic.
-I'm not sure our input is a large part of the state's consideration. I want more info on who to talk to in person there. -Advertise through Facebook will reach more people.
Outreach team does an amazing job of outlining the objectives and goals of the project. Each member is knowledgeable about the project and are able to speak to citizens of different knowledge levels.
Thank you for letting me contribute locally
Let try to take care of our city streets first

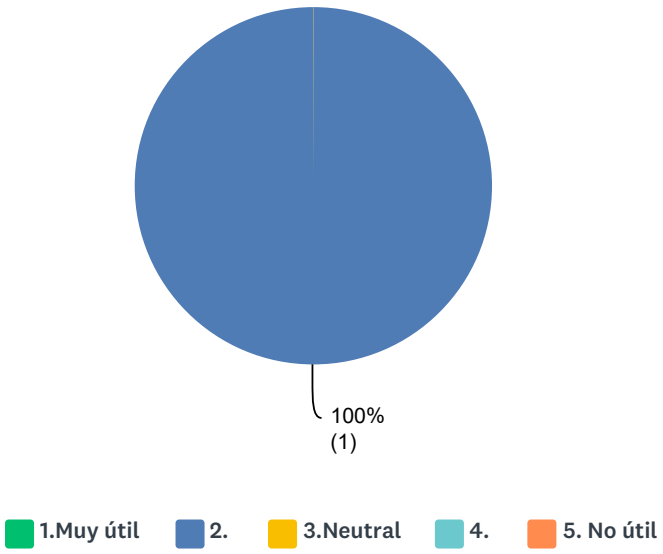
Q11 ¿Cree Ud. que estas mejoras ayudarían a que sea más fácil y más seguro viajar en Luling?

Answered: 1 Skipped: 216



Q12 ¿Cree Ud. que estas mejoras ayudarían a que sea más fácil y más seguro viajar en Luling?

Answered: 1 Skipped: 216



Q13 ¿Cuál de las opciones potenciales cree que serviría mejor a las necesidades de transporte a largo plazo en Luling?

Answered: 0 Skipped: 217

Q14 Por favor agregue cualquier comentario adicional sobre mejoras potenciales:

Answered: 1 Skipped: 216

RESPONSES
Antes de escoger una opción, creo que el criterio para seleccionar una opción es el crecimiento proyectado. Y con ello el desarrollo económico. Así que cualquier opción que considere ambos aspectos es bienvenida.

Before choosing an option, I think that the criteria for selecting an option should be projected growth. As well as economic development. Any option that considers these aspects is welcome.

Q15 Si desea recibir actualizaciones por correo electrónico sobre el estudio, comparta su dirección de correo electrónico aquí:

Answered: 1 Skipped: 216

1 email address received.

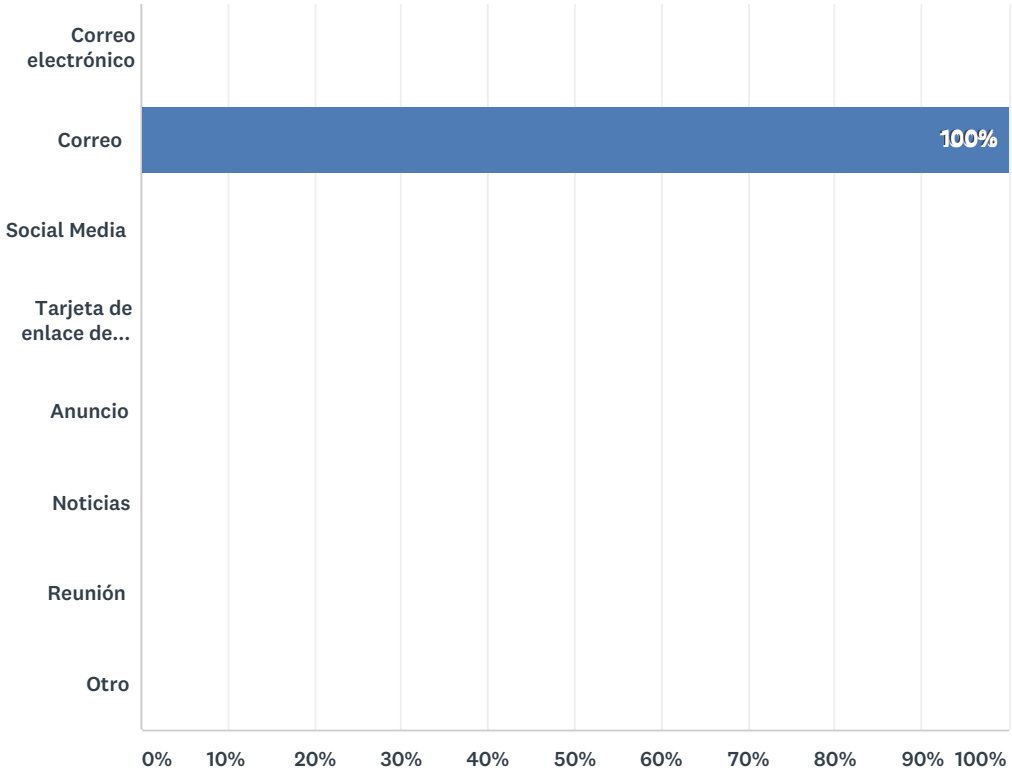
Q16 ¿Cuál es su código postal?

Answered: 1 Skipped: 216

RESPONSES
78648

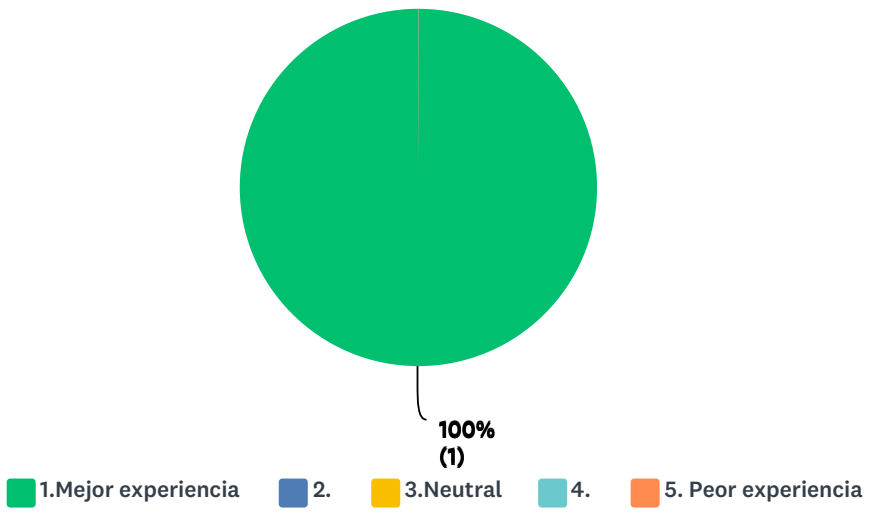
Q17 ¿Cómo se enteró de esta encuesta? (seleccione todas las que correspondan)

Answered: 1 Skipped: 216



Q18 ¿Cómo calificaría su experiencia participando y compartiendo información sobre este estudio?

Answered: 1 Skipped: 216



Q19 ¿Tiene algún comentario sobre la divulgación y oportunidades de participación?

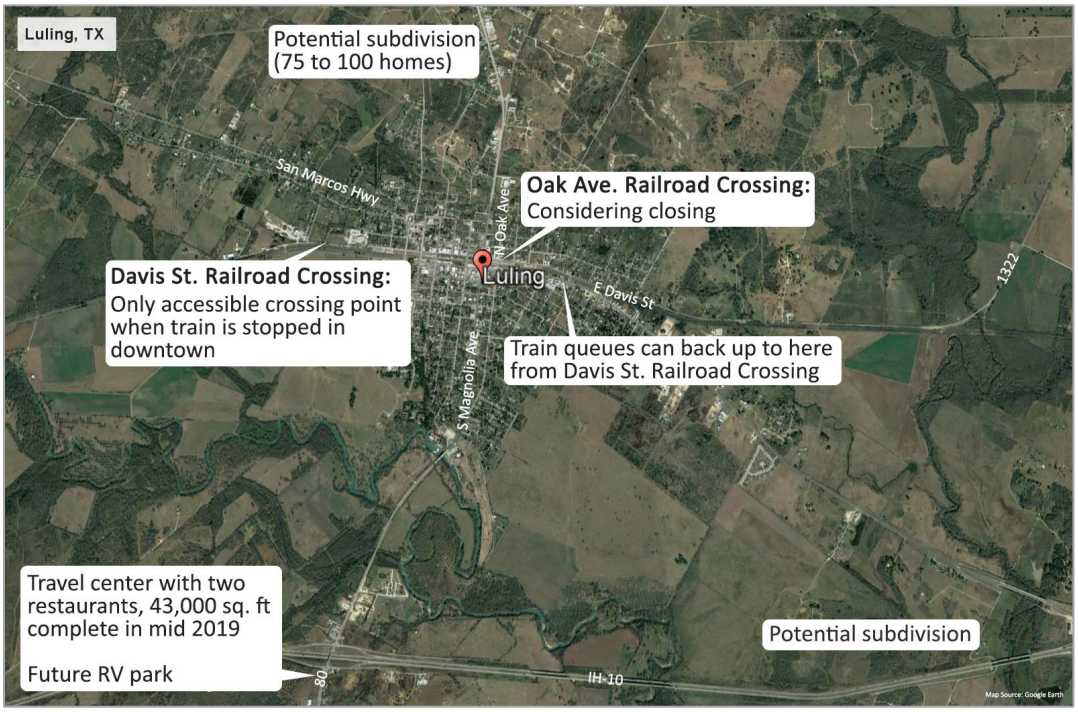
Answered: 1 Skipped: 216

RESPONSES
Siento que mejorar la seguridad del peatón es elemental. Siento que la ciudad no esta diseñada para el peatón, no existen banquetas, pases peatonales. Caminar es un reto, incluso durante los festivales. Los cruces analizados en este estudio deben incluir mejoras para el peatón.

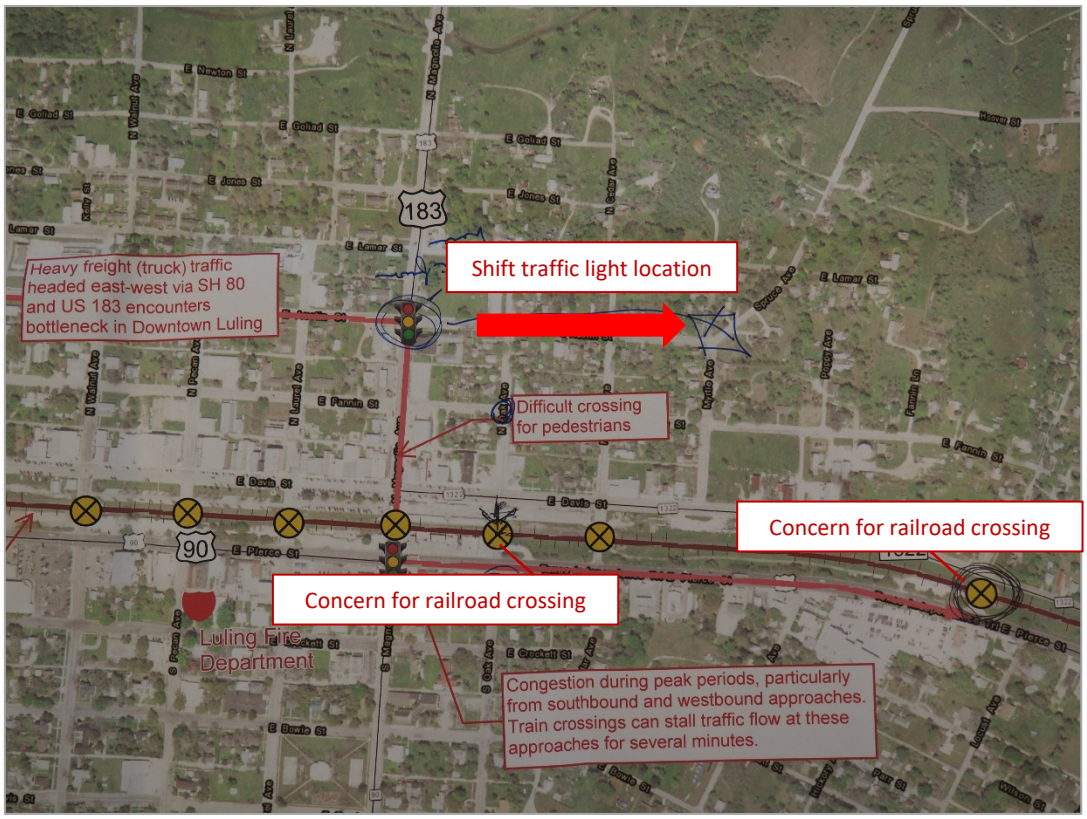
I feel that improving pedestrian safety is essential. I feel like the city is not designed for pedestrians, there are no sidewalks, crosswalks. Walking is a challenge, especially during festivals. The intersections analyzed in this study should include improvements for pedestrians.

Mapped Comments

Steering Committee Meeting – 9/18/18



Focus Group – 1/30/19

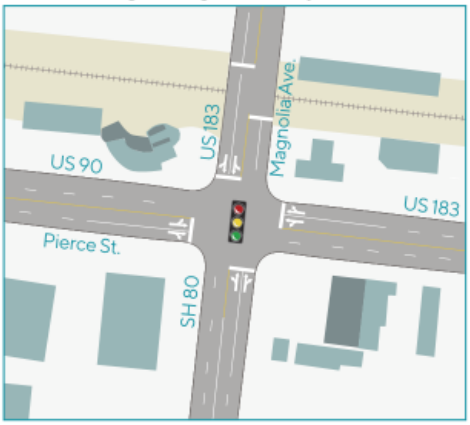


Appendix G

Cost Estimates for Potential Improvement Options

Near-Term Improvement Options – Elements and Rough Order of Magnitude

Existing at Magnolia Ave./Pierce St.



Proposed at Magnolia Ave./Pierce St.

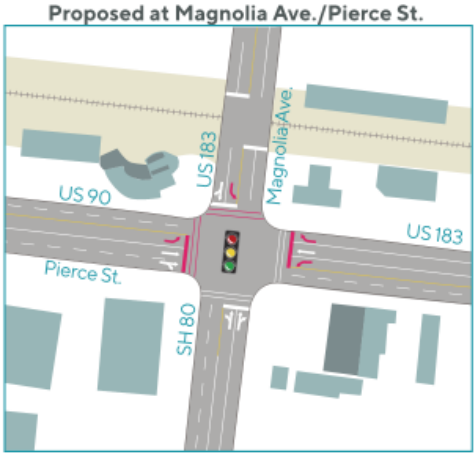


Table 1 – Near-Term Improvements Rough Order of Magnitude

#	Item	Cost Range (thousand $)
	Hackberry Improvements	
1	Two new signals at SH 80 and US 90 with controller, mast arms, striping, and curb ramps. TxDOT standards.	500
2	Repave 50,000 square feet of street (1000' long x 50' wide)- mill & overlay.	125 - 250
3	Striping for centerline and intersection approaches.	50
4	Construct 15,000 square feet of sidewalks (3000' long x 5' wide) within existing ROW.	150
5	Advance warning and truck route signage on SH 80 EB and US 90 / US 183 westbound.	25
	Subtotal	$850 - 975
	Magnolia / Pierce (US 183 / SH 80 / US 90) Improvements	
6	Restripe dedicated turn pockets and crosswalks.	30
7	Signal head modifications (eastbound and westbound approaches, only) and added crosswalk countdown timers.	20 - 70
8	250 square feet ROW on NW corner to improve WBR turn radii for large trucks (land values estimated from Caldwell Central Appraisal District).	5 - 10
9	Reconstruct 4 curb ramps with widened westbound right-turn radii.	40 – 60
10	Construct 2,500 square feet of sidewalks (500' long x 5' wide) within existing ROW.	25
11	Relocate signal mast arm and gas station sign (northeast corner).	5
	Subtotal	$125 – 200
	Additional Studies	
12	Neighborhood traffic calming study.	50
13	Safe routes to school plan.	50
14	Four-way stop-sign evaluation at Walnut Avenue / Pierce Street intersection.	5 – 15
	Subtotal	$105 – 115
	TOTAL	$1,180 – 1,290

Long-Term Improvement Options – Elements and Rough Order of Magnitude

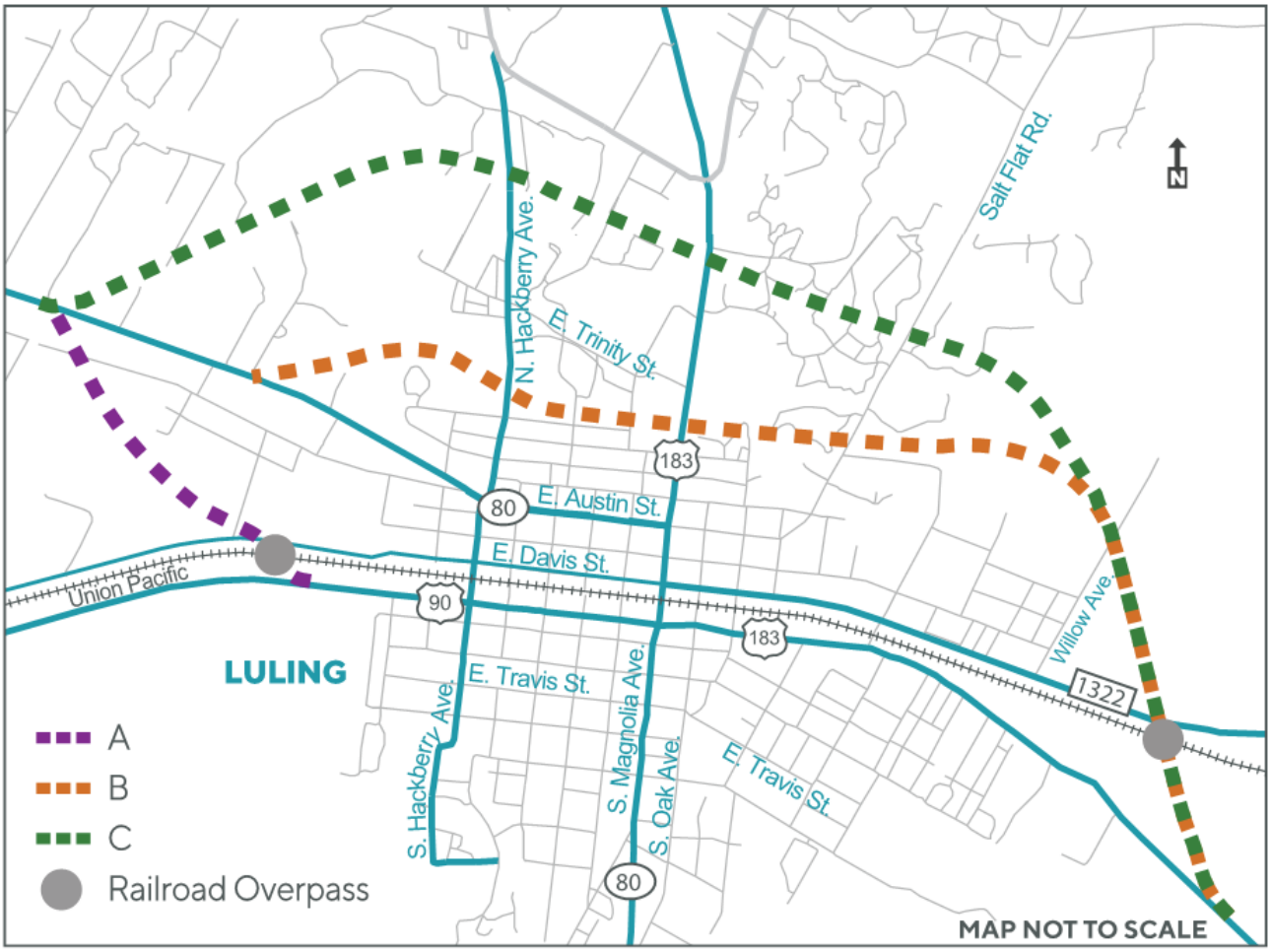


Table 2 – Option A – Rough Order of Magnitude		
#	Item	Cost Range (thousand $)
1	New two-lane roadway with approximately 100' cross-section (12' lanes, 10' shoulders, 28' clear zone/drainage each direction) – variable alignments 0.8 – 1.2 miles.	3,500 – 5,200
2	ROW, 12 – 15 acres (land values estimated from Caldwell Central Appraisal District).	850 – 1,050
3	Side-street stop-controlled intersection at new alignment intersection with SH 80, with channelized eastbound right-turn lane.	200
4	500' span bridge over Davis Street, UPRR, and US 90 (eastbound connector).	2,000 – 3,000
5	500' add lane on US 90 westbound for westbound to northbound connection; 500' drop lane on US 90 eastbound for southbound to eastbound connection.	200 - 400
6	Advance warning and truck route signage on SH 80 eastbound and US 90 / US 183 westbound.	50
	TOTAL	$6,800 – 9,900

Table 3 – Option B – Rough Order of Magnitude		
#	Item	Cost Range (thousand $)
1	New two-lane roadway with approximately 100' cross-section (12' lanes, 10' shoulders, 28' clear zone/drainage each direction) – variable alignments 3.5 – 4.0 miles.	15,000 – 17,500
2	ROW, 35 – 40 acres (land values estimated from Caldwell Central Appraisal District).	2,500 – 2,800
3	Side-street stop-controlled intersection at new alignment intersection with SH 80, with channelized eastbound-right turn lane. Includes advance warning and truck route signage.	200
4	Side-street stop-controlled intersection at new alignment intersection with Hackberry. Includes advance warning and truck route signage.	200
5	New signalized intersection at new alignment intersection with US 183 north of Austin Street. TxDOT standards. Includes advance warning and truck route signage.	500 - 1000
6	500' span bridge over FM 1322 and UPRR.	2,000 – 3,000
7	New signalized intersection at new alignment intersection with US 183 east of Blanco Avenue. TxDOT standards. Includes advance warning and truck route signage.	500
	TOTAL	$20,900 – 25,200

Table 4 – Option C – Rough Order of Magnitude		
#	Item	Cost Range (thousand $)
1	New two-lane roadway with approximately 100' cross-section (12' lanes, 10' shoulders, 28' clear zone/drainage each direction) – variable alignments 4.0 – 4.5 miles.	17,500 – 20,000
2	ROW, 40 – 45 acres (land values estimated from Caldwell Central Appraisal District).	2,800 – 3,150
3	Side-street stop-controlled intersection at new alignment intersection with SH 80, with channelized eastbound right-turn lane. Includes advance warning and truck route signage.	200
4	Side-street stop-controlled intersection at new alignment intersection with Hackberry. Includes advance warning and truck route signage.	200
5	New signalized intersection at new alignment intersection with US 183 north of Austin Street. TxDOT standards. Includes advance warning and truck route signage.	500 – 1000
6	500' span bridge over FM 1322 and UPRR	2,000 – 3,000
7	New signalized intersection at new alignment intersection with US 183 east of Blanco Avenue. TxDOT standards. Includes advance warning and truck route signage.	500
8	Two bridges over Salt Branch (assume each 500' span).	4,000 – 6,000
	TOTAL	$27,700 – 34,050

Appendix H

Performance Measure Definitions and Descriptions

MEMO

Date: November 8, 2018
Pages: 7 inc. this page
Regarding: **Performance Measures for Luling Transportation Study**

1 BACKGROUND

The City of Luling, Texas, sits at the crossroads of several major highways (US 183, US 90, and SH 80) and is bisected by a key east-west line of the Union Pacific Railroad. The highways connect with IH 10 at the City's southern extents, linking with key domestic and international freight routes.

Several years ago, Caldwell County and City officials began discussing the potential for transportation improvements to ease congestion within central Luling, prevent conflicts between vehicle and rail movement, and improve safety/comfort for downtown visitors. The Luling Transportation Study will investigate these issues, explore potential improvements, and provide recommendations for a path forward. Building a consensus on issues and improvements must include both comprehensive stakeholder outreach and technical analysis with measures of performance to test various improvements/alternatives. This memorandum proposes several performance measures for the assessment of potential transportation improvements. These measures were developed to specifically address project goals and objectives, described in the following section.

MEMO

Performance Measures for Luling Transportation Study

1 PROJECT GOALS AND OBJECTIVES

The purpose of the Luling Transportation Study is to evaluate transportation conditions and issues in Luling and to identify and prioritize needed improvements. Four specific project goals and associated objectives were defined at the project's initial Steering Committee meeting on September 18, 2018. These goals and objectives are listed below.

Goal 1: Identify needed safety improvements

- Objectives: Evaluate and consider
  - Traffic crash data
  - Pedestrian movement and safety
  - Union Pacific Railroad corridor and crossings
  - Local emergency response services and evacuation routes

Goal 2: Enhance mobility in downtown for local and through traffic

- Objectives: Evaluate and consider
  - Local travel, freight travel, and recreational through travel
  - Near- and long-term improvements
  - Ease of travelling public and emergency response to cross railroad tracks

Goal 3: Evaluate feasibility of an alternate route for through traffic and compare to solutions that improve the existing street network

- Objectives: Evaluate and consider
  - Future impacts with and without an alternate route
  - Various future growth scenarios for Luling

Goal 4: Incorporate tools to promote the unique character of downtown and economic development opportunities

- Objectives: Evaluate and consider
  - Effects on businesses
  - Types and ranges of visitors to downtown Luling

2 RECOMMENDED PERFORMANCE MEASURES

The recommended performance measures listed below have been developed to address the goals and objectives described in the previous section. These measures are primarily quantitative to provide for easy comparison between improvement options. However, for goals/objectives that are not easily quantified, either due to the complexity of contributing factors or the difficulty of obtaining descriptive data, qualitative assessment has been proposed.

Goal 1: Identify needed safety improvements

- Predicted annual crash rate
- Presence of new or improved street crossings or walking paths for pedestrians
- Provision of new grade-separated (overpass) railroad crossings
- Improvement to travel time and reliability for evacuation and emergency responders

Goal 2: Enhance mobility in downtown for local and through traffic

- Estimated daily entering traffic at Magnolia Avenue / Pierce Street intersection
- Average cross-town travel time, Friday PM peak
- Intersection level of service (LOS), Friday PM peak
- Total railroad crossing delay during Friday PM peak

Goal 3: Evaluate feasibility of an alternate route for through traffic and compare to solutions that improve the existing street network

- Planning cost estimate of each alternative including design, environmental compliance, right-of-way, and construction
- Environmental impacts in terms of network fuel consumption, Friday PM peak
- Overall environmental suitability of improvements (floodplains, land use, cultural resources, etc.)

Goal 4: Incorporate tools to promote the unique character of downtown and economic development opportunities

- Number of vehicles passing through Luling via Magnolia Avenue / Pierce Street intersection
- Improvements to pedestrian connectivity along Magnolia Avenue

Table 1 summarizes pertinent information for each performance measures, including units of measurement, proposed calculation method, and expected data sources.

Table 1. Recommended Performance Measures

Goal	Performance Measure	Unit/Ranking	Method of Calculation	Data Source
Goal 1: Identify needed safety improvements	Predicted annual crash rate	Crashes per year	Highway Safety Manual (HSM) Predictive Method	o TxDOT Crash Records Information System o HSM crash modification factors clearinghouse o TxDOT Highway Safety Improvement Manual
	Presence of new or improved street crossing or walking paths for pedestrians	o Number of protected crossings added o Linear feet of sidewalk added in central Luling	Geographic Information Systems	o City, County, and TxDOT shapefiles o Available aerial imagery
	Provision of new grade-separated (overpass) railroad crossings	Number of grade-separated crossings added	Geographic Information Systems	o City, County, and TxDOT shapefiles o Available aerial imagery
	Improvement to travel time and reliability for evacuation and emergency response travel	Acreage within 5 minute drive	Use Google maps predicted travel time and estimated delay from Synchro to develop travel shed maps	o City, County, and TxDOT shapefiles o Available aerial imagery o Google maps predicted travel time o Turning movement counts collected in September 2018 o CAMPO Travel Demand Model

Table 1. Recommended Performance Measures

Goal	Performance Measure	Unit/Ranking	Method of Calculation	Data Source
Goal 2: Enhance mobility in downtown for local and through traffic	Estimated daily traffic entering Magnolia Avenue / Pierce Street intersection (US 183 / SH 80 / US 90 intersection)	o Total entering daily traffic o Total entering daily heavy trucks	Apply growth rates from CAMPO Travel Demand Model to AADT collected by TxDOT	o TxDOT Traffic Count Database System o CAMPO Travel Demand Model
	Estimated Friday PM travel time for cross-town automobile travel, Friday PM	Minutes of travel along the following routes: o SH 80 EB from Scenic View Drive to US 183 EB at Oakview Rd o US 183 SB at FM 309 to US 183 EB at Oakview Rd o US 183 WB at Oakview Rd to SH 80 WB at Scenic View Drive o US 183 NB at Oakview Rd to US 183 NB at FM 309	Use StreetLight data to set existing baseline for travel time. Use Synchro outputs to determine increase/decrease.	o StreetLight GPS and cell phone data o Turning movement counts collected in September 2018
	Intersection level of service (LOS) and average delay for typical Friday PM peak hour conditions	o LOS (grades A – F) o Average delay per vehicle at intersection	o Synchro o Highway Capacity Manual	o Turning movement counts collected in September 2018
	Total railroad crossing delay for typical Friday condition	o Daily vehicle hours of delay at US 183 and Hackberry crossings o PM peak vehicle hours of delay at US 183 and Hackberry crossings	Use StreetLight data to set existing baseline for railroad delay. Use Synchro outputs to determine increase/decrease.	o StreetLight GPS and cell phone data o Turning movement counts collected in September 2018

Table 1. Recommended Performance Measures

Goal	Performance Measure	Unit/Ranking	Method of Calculation	Data Source
Goal 3: Evaluate feasibility of an alternate route for through traffic	Planning-level cost estimate	Million $	Generalized unit cost and quantities	o Recent unit costs for Caldwell County, City of Luling, or TxDOT Austin District o Caldwell Central Appraisal District
	Environmental impacts in terms of network fuel consumption and greenhouse gas emissions, typical Friday PM	o Gallons fuel consumed o Kilograms of carbon monoxide emitted	o Synchro o Highway Capacity Manual	o Turning movement counts collected in September 2018 o EPA Greenhouse Gas Equivalencies Calculator
	Overall environmental suitability of improvements (floodplains, land use, cultural resources, etc.)	Level of suitability 1 = low, many conflicts 2 = medium, some conflicts 3 = high, few conflicts	Qualitative, with Geographic Information Systems mapping	Shapefiles from City, County, TxDOT, FEMA, and Texas Parks and Wildlife Department (TPWD) shapefiles

Table 1. Recommended Performance Measures

Goal	Performance Measure	Unit/Ranking	Method of Calculation	Data Source

Goal 4: Promote the unique character of downtown and economic development opportunities	Average annual daily traffic (AADT) passing-through Luling via Magnolia Avenue / Pierce Street intersection	o Total AADT
		  o Pass-through
		  o Local to Luling
		o Heavy truck AADT
		  o Pass-through
		  o Local to Luling
			Apply growth rates from CAMPO Travel Demand Model to AADT collected by TxDOT. Estimate likely traffic diversion with consideration to pass-through activity levels in StreetLight data.	o TxDOT Traffic Count Database System
				o CAMPO Travel Demand Model
				o StreetLight GPS and cell phone data

	Improvement to pedestrian connectivity on Magnolia Avenue between Davis Street and Pierce Street	o Number of protected crossings added o Linear feet of sidewalk added in central Luling	Geographic Information Systems	o City, County, and TxDOT shapefiles o Available aerial imagery

Appendix I

Performance Measure Methods and Results

The following sections provide the calculation methods and assumptions for each performance measure analyzed in the Luling Transportation Study. Calculation sheets and a results summary table are included at the end of this document.

1-A. Predicted Annual Crash Rate

The Highway Safety Manual (HSM) is a guidebook published by the American Association of State Highway and Transportation Officials (AASHTO). The HSM contains methodologies and equations to predict the expected number of crashes at a given roadway location using basic geometric and traffic flow data. This predictive method allows for estimation of annual crash rates under existing and future/proposed conditions (where geometry and traffic patterns may change). A predictive method spreadsheet tool developed by AASHTO was used to estimate crash rates for the existing, near-term improvement, and the three long-term options.

Five arterial roadway segments and five intersections were included in the predictive crash analysis:

- Segments
    1. Pierce Street (US90) from Hackberry Avenue to Magnolia Avenue (US 183)
    2. Austin Street (SH80) from Hackberry Avenue to Magnolia Avenue (US 183)
    3. Hackberry Avenue from Pierce Street (US 90) to Austin Street (SH 80)
    4. Magnolia Avenue (US 183) from Pierce Street (US 90) to Austin Street (SH 80)
    5. Magnolia Avenue (US 183) from Austin Street (SH 80) to SH 86
- Intersections
    1. Pierce Street / Hackberry Avenue
    2. Austin Street / Hackberry Avenue
    3. Magnolia Avenue / Pierce Street
    4. Magnolia Avenue / Austin Street
    5. Magnolia Avenue / SH 86

Inputs for the segment analysis included AADT (**Appendix C** and **Appendix J**) and several design variables obtained from site survey, aerial imagery review, and engineering judgement – roadway type, length of segment, speed limit, and various driveway and roadside object counts. The intersection analysis used a different set of inputs – AADT, speed limit, traffic signal timing information (from TxDOT), lane configuration (site survey), and pedestrian crossing volumes (**Appendix C** traffic counts). For the future year predictive models, the AADTs were grown to year 2045 according to the low and high growth rates described in **Appendix J**.

The spreadsheet produced summaries of predicted annual crashes for all segments and intersections. The summaries for each condition (existing, near-term, and long-term options) are provided at the end of this document.

1-B. Presence of New or Improved Street Crossing or Walking Paths for Pedestrians

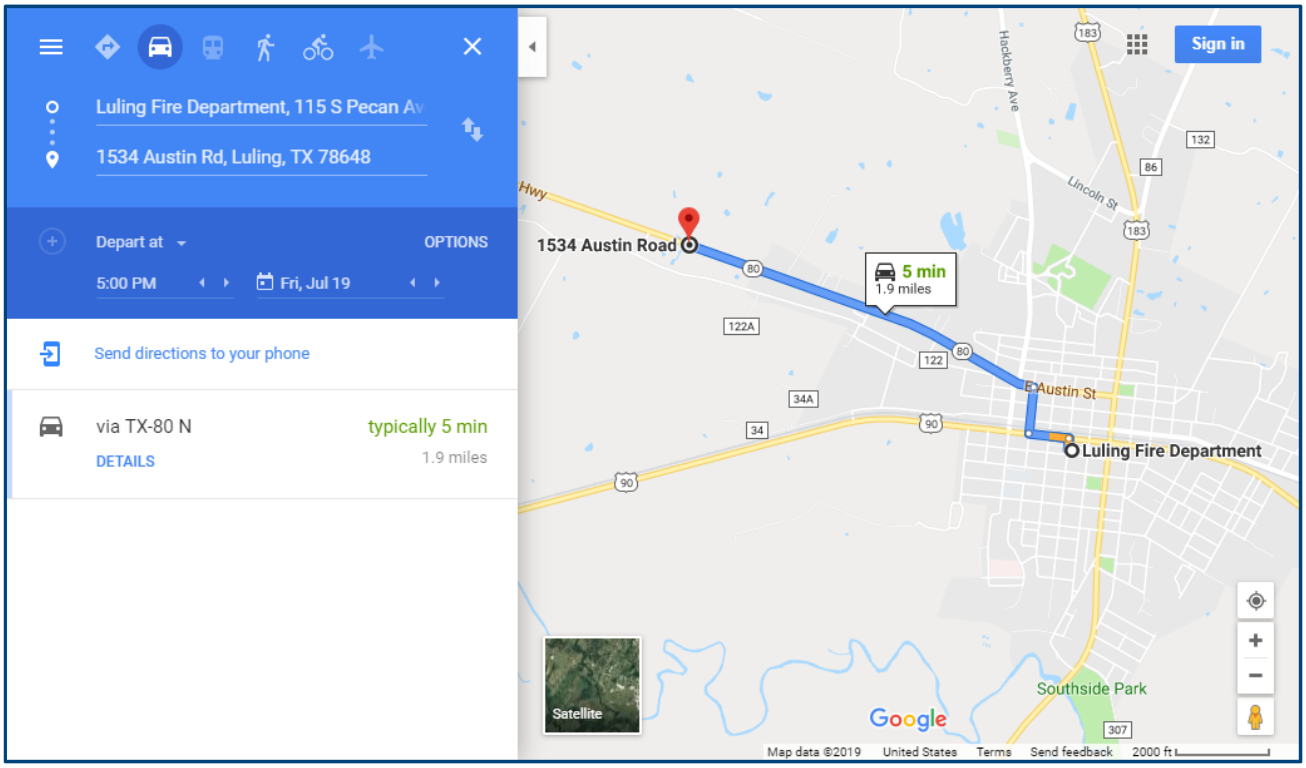
Measure identifies if new or improved pedestrian infrastructure is provided within central Luling as part of the option concept. Pedestrian infrastructure includes protected crossings (number of striped crosswalks added with protected pedestrian crossing phase) and sidewalks (linear feet of sidewalk added or reconstructed). Central Luling is defined roughly as the area south of Newton Street, west of Elm Avenue, north of Milam Street, and east of Mulberry Avenue.

1-C. Provision of New Grade-Separated Railroad Crossings

Measure identifies if the option includes a grade-separated crossing of the Union Pacific Railroad within the study area. Grade-separated crossings include both roadway overpasses (bridges) and underpasses (tunnels).

1-D. Improvement to Travel Time Reliability for Evacuation and Emergency Responders

Travel time reliability for emergency response services was analyzed by estimating the area accessible to the Luling Fire Department (115 South Pecan Avenue) within a five-minute drive, also referred to as a five-minute travelshed. The existing travelshed was developed using the Google Maps travel time estimates for Friday conditions at 5 PM – the Luling Fire Department was selected as the starting point for a trip and the destination was adjusted on each road leading into/out of Luling until the estimated drive time was reported at 5 minutes. The perimeter formed by each of the destination points for the roads leading into/out of Luling was assumed as the boundary of the 5-minute travelshed, and the area contained within the boundary was reported (in acres).



For the no-build, near-term, and three long-term improvement conditions, travelsheds accounted for the estimated increase or decrease in delay at signalized intersections and travel time on new roadway corridors (see section 2-C). For example, if under no-build conditions the delay at Hackberry Avenue / Austin Street increased by an average of one minute for northbound left-turning traffic, the travelshed was set at the destination accessible within 4 minutes (as reported by Google Maps). Travelshed maps for each scenario were generated with ArcGIS and are included at the end of this document.

2-A. Estimated Daily Traffic Entering Magnolia Avenue/Pierce Street Intersection

The daily traffic entering Magnolia Avenue / Pierce Street was calculated as the sum of all intersection approached. For existing conditions, the existing average annual daily traffic (AADT) counts in **Appendix C** were used. For no build conditions, the AADT counts were used as a baseline for estimating future year traffic demand under low and high growth assumptions, as described in **Appendix J**.

The near-term and three long-term improvement options were all assumed to result in rerouted traffic compared to the no build condition. StreetLight data patterns were used to estimate the amount of heavy vehicle and total traffic using various routes to traverse Luling. Volumes were then redistributed through the street network for each improvement option based on the specific improvements proposed.

- Near Term Improvement: The traffic traversing Luling from Austin Street (SH 80) near Wall Street to US 183 near Blanco Street would reroute from Magnolia Avenue to Hackberry Avenue. It was assumed the volumes entering Luling on SH 80 south of the San Marcos River would use the route with fewer turns and would not take the reroute via Hackberry Avenue and Pierce Street (US 90).
- Option A: The traffic traversing Luling from Austin Street (SH 80) near Wall Street to US 183 near Blanco Street would reroute from Magnolia Avenue to the new Option A corridor. Additionally, it was assumed that traffic traversing from SH 80 south of the San Marcos River to SH 80 west of Wall Street through traffic would take the new route to bypass the railroad crossing.
- Option B / C: Traffic between the following traversal points was assumed to reroute away from the Magnolia Avenue / Pierce Street intersection via the new corridors provided by Options B and C:
    - SH 80 west of Wall Street to/from US 183 east of Blanco Avenue
    - SH 80 west of Wall Street to/from US 183 north of FM 86
    - SH 80 west of Wall Street to/from FM 86 north of US 183
    - US 183 north of FM 86 to/from US 183 east of Blanco Avenue
    - FM 86 north of US 183 to/from US 183 east of Blanco Avenue

2-B. Estimated Travel Time for Cross-Town Automobile Travel, Friday PM Peak

The travel times for traffic traversing Luling during the Friday PM peak hour through Luling were estimated using StreetLight data. The origins/destination points for the analysis were:

- Austin Street (SH 80) at Scenic View Drive,
- Magnolia Avenue (US 183) at FM 309, and
- US 183 at Oakview Road

Average duration of trips between these three points during the 2018 Friday PM peak hour was output directly from StreetLight. The following formula was used to estimate the westbound time for personal vehicles.

The 2045 no build, near-term, and Option A travel times were estimated by adjusting the 2018 travel times according to the intersection delay estimates produced by Synchro (see section 2-C). Option A travel times along the new roadway were estimated with an assumed posted speed of 55 miles per hour (MPH).

Option B and C travel times were estimated assuming a 55 MPH posted speed on the new corridors. The travel time for the area bypassed was estimated Google Maps travel information for a summer Friday at 4 PM. This travel time was adjusted to reflect 2045 no build conditions using the Synchro results. The difference between these two numbers (a reduction in travel time) was subtracted from the 2045 no build travel time results. Because Options B and C have slightly different corridor lengths, an average of the two options is reported.

2-C. Intersection Level of Service (LOS) and Average Delay, Friday PM Peak

Synchro Version 10, a software package for evaluating traffic operations by Highway Capacity Manual (HCM) methods, was used to estimate intersection level of service (LOS) grades and average delay per vehicle. LOS refers to the operational conditions within a traffic stream and the motorist's perception of the roadway conditions in terms of delay, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. There are six LOS capacity conditions for each roadway facility, designated from "A" to "F," with "A" representing a free-flow optimal condition and "F" representing a congested, forced flow condition, with volumes exceeding roadway capacity. The general criteria and delay thresholds associated with each LOS grade are presented in the table below.

Definitions of Level of Service (LOS) Criteria			
Level of Service	Delay Range for Unsignalized Intersections (sec/veh)	Delay Range for Signalized Intersections (sec/veh)	Description
A	≤10	≤10	Very low delays, nearly free traffic flow
B	>10 and ≤15	>10 and ≤20	Good traffic flow, more vehicles stop than LOS A
C	>15 and ≤25	>20 and ≤35	Stable traffic flow, significant number of vehicles stop
D	>25 and ≤35	>35 and ≤55	Noticeable traffic congestion, longer delays and queue lengths
E	>35 and ≤50	>55 and ≤80	Unstable traffic flow, significant congestion, traffic near roadway capacity
F	>50	>80	Unacceptable delay, extremely unstable flow, heavy congestion, traffic exceeds capacity

Inputs to the Synchro model included 2018 turning movement counts (**Appendix C**); forecasted traffic counts for no build, near-term improvement, and long-term improvement options (**Appendix J**); roadway layout and geometric characteristics from site visits and aerial imagery; and signal timing information from TxDOT for the Magnolia Avenue / Pierce Street and Magnolia Avenue / Austin Street intersection. A detailed operational analysis was undertaken to evaluate each intersection's peak hour capacity and LOS. Synchro generated LOS and delay results for the five study area intersections. Delay was reported as an intersection average, by roadway approach, and by movement (e.g. southbound left-turn).

2-D. Total Railroad Crossing Delay, Friday Daily and PM Peak

Railroad crossing delay for the daily and PM peak hour Friday conditions was estimated for the at-grade (crossing gate) locations on Magnolia Avenue and Hackberry Avenue between Pierce Street and Davis Street. To find the total delay per time period, the delay per event (D_e) was multiplied by the number of events in that time period. It was assumed that there were 50 train events per day and 3 train events per PM peak hour. No

change in the number of trains or the gate-down time per train event was assumed for the year 2045. The equation below was used to calculate the delay per event.

$$D_e = \frac{1}{2}\frac{qT_G^2}{(1 - {}^{q}/_{d})}$$

where,

T_G=gate-down time per train event (hours)

q=arrival rate (vehicles/hour)

d=departure rate (vehicles/hour)

The gate-down time per train event was estimated from field observations. The arrival rate was calculated using the average AADT from 2013-2017 and dividing by 24 hours per day. The departure rate was calculated using the formula for the saturation flow rate in vehicles per hour.

$$S = S_o N f_{HV}$$

where,

S_o=base saturation flow rate per lane (passenger-car/hour/lane)

N=number of lanes at railroad crossing being delayed

f_{HV} =adjustment factor for heavy vehicles in the traffic stream

$$f_{HV} = \frac{100}{100 + \%HV(E_T - 1)}$$

where,

%HV=percent of heavy vehicles in the traffic stream

E_T=passenger-car equivalent used for each heavy vehicle (assumed to be 2 passenger-car units)

The AADT for each scenario (no build, near-term, and long term) was taken from the forecasted 2045 numbers (**Appendix J**).

3-A. Planning Level Cost Estimate

Planning level costs estimates were prepared for the improvement options. **Appendix G** contains a full schedule of the items and assumptions used to generate the cost estimates. It should be noted that costs were estimated with the project defined only at the conceptual level and in the absence of any detailed design work.

3-B. Environmental Impacts, Friday PM peak

The amount of greenhouse gas emitted by automobiles is a direct function of fuel consumption. In turn, automobile fuel consumption is dependent on distance travelled and acceleration / deceleration (due to turns, stops, and interrupted traffic flow). The Synchro network, described in section 2-C, provided network-wide estimates of fuel consumption and carbon monoxide emissions for each scenario. Output reports are provided at the end of this document.

3-C. Overall Environmental Suitability

Overall environmental suitability of each improvement option was assessed using a qualitative rating system:

- Low = many conflicts
- Medium = some conflicts
- High = few conflicts

The overall amount of conflicts was determined by comparing the environmental constraints against the locations of the near-term, Option A, Option B, and Option C improvements. Observed conflicts included but were not limited to construction within/near floodplains, crossing oil / gas pipelines, right-of-way acquisition near sites that may require mitigation, proximity to waste / pollutant discharge sites, and proximity to civic amenities.

4-A. Average Annual Daily Traffic Passing-through Luling via Magnolia Avenue / Pierce Street Intersection

The analysis described in section 2-A yielded the number of total vehicles and heavy trucks passing through Luling via the Magnolia Avenue / Pierce Street intersection. The totals for no-build, near-term improvements, and Option A were assumed to all be equal since no diversion from central Luling would be expected (vehicle would approach Magnolia Avenue / Pierce Street from a different direction under the near-term and Option A improvements but the total from all approaches would be the same). For Options B and C traffic between the following traversal points was assumed to reroute away from the Magnolia Avenue / Pierce Street intersection via the new corridors:

- SH 80 west of Wall Street to/from US 183 east of Blanco Avenue
- SH 80 west of Wall Street to/from US 183 north of FM 86
- SH 80 west of Wall Street to/from FM 86 north of US 183
- US 183 north of FM 86 to/from US 183 east of Blanco Avenue
- FM 86 north of US 183 to/from US 183 east of Blanco Avenue

4-B. Improvement to Pedestrian Connectivity on Magnolia Avenue between Davis Street and Pierce Street

Measure identifies if option includes new or improved pedestrian infrastructure is provided on Magnolia Avenue (US 183) between Davis Street and Pierce Street. Pedestrian infrastructure includes protected crossings (number of striped crosswalks added with protected pedestrian crossing phase) and sidewalks (linear feet of sidewalk added or reconstructed).

1-A. Predicted Annual Crash Rate

2018 Existing HSM Prediction

Worksheet 3A -- Predicted Crashes by Severity and Site Type and Observed Crashes Using the Site-Specific EB Method for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Collision type / Site type	**Predicted average crash frequency (crashes/year)**			**Observed crashes, $N_{observed}$** (crashes/year)	**Overdispersion Parameter, k**	**Weighted adjustment, w**	**Expected average crash frequency,**
	$N_{predicted}$ (TOTAL)	$N_{predicted}$ (FI)	$N_{predicted}$ (PDO)			Equation A-5 from Part C Appendix	Equation A-4 from Part C Appendix
ROADWAY SEGMENTS							
Multiple-vehicle nondriveway							
Segment 1	0.576	0.194	0.383		1.010	0.632	0.364
Segment 2	0.333	0.099	0.234		0.840	0.781	0.260
Segment 3	0.001	0.000	0.001		0.840	0.999	0.001
Segment 4	1.044	0.322	0.722		1.010	0.487	0.508
Segment 5	1.948	0.619	1.330		1.010	0.337	0.656
Single-vehicle							
Segment 1	0.238	0.070	0.168		0.910	0.822	0.196
Segment 2	0.362	0.098	0.264		0.810	0.773	0.280
Segment 3	0.045	0.026	0.018		0.810	0.965	0.043
Segment 4	0.261	0.065	0.195		0.910	0.808	0.211
Segment 5	0.575	0.153	0.423		0.910	0.656	0.378
Multiple-vehicle driveway-related							
Segment 1	0.702	0.240	0.462		0.810	0.638	0.447
Segment 2	0.199	0.064	0.135		0.810	0.861	0.171
Segment 3	0.003	0.001	0.002		0.810	0.997	0.003
Segment 4	2.100	0.718	1.382		0.810	0.370	0.777
Segment 5	0.256	0.088	0.168		0.810	0.828	0.212
INTERSECTIONS							
Multiple-vehicle							
Intersection 1	0.878	0.300	0.577	1.000	0.400	0.740	0.909
Intersection 2	0.563	0.182	0.381	1.000	0.400	0.816	0.643
Intersection 3	3.042	0.972	2.070	1.143	0.390	0.457	2.012
Intersection 4	2.714	0.873	1.841	8.000	0.390	0.486	5.432
Intersection 5	1.209	0.431	0.778	1.286	0.400	0.674	1.234
Single-vehicle							
Intersection 1	0.179	0.058	0.120	0.000	0.650	0.896	0.160
Intersection 2	0.145	0.054	0.091	0.000	0.650	0.914	0.132
Intersection 3	0.220	0.062	0.158	0.000	0.360	0.927	0.204
Intersection 4	0.193	0.054	0.139	0.143	0.360	0.935	0.189
Intersection 5	0.205	0.065	0.140	0.286	0.650	0.883	0.214
COMBINED (sum of column)	17.991	5.810	12.181	13	--	--	15.640

Worksheet 3B -- Predicted Pedestrian and Bicycle Crashes for Urban and Suburban Arterials

(1)	(2)	(3)
Site Type	**N_{ped}**	**N_{bike}**
ROADWAY SEGMENTS		
Segment 1	0.014	0.003
Segment 2	0.004	0.004
Segment 3	0.002	0.001
Segment 4	0.031	0.007
Segment 5	0.025	0.006
INTERSECTIONS		
Intersection 1	0.023	0.019
Intersection 2	0.016	0.013
Intersection 3	0.016	0.049
Intersection 4	0.010	0.044
Intersection 5	0.031	0.025
COMBINED (sum of column)	0.172	0.170

Worksheet 3C -- Site-Specific EB Method Summary Results for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)
Crash severity level	**$N_{predicted}$**	**N_{ped}**	**N_{bike}**	**$N_{expected\ (VEHICLE)}$**	**$N_{expected}$**
Total	$(2)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(8)_{COMB}$ Worksheet 3A	(3)+(4)+(5)
	18.0	0.2	0.2	15.6	16.0
Fatal and injury (FI)	$(3)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(5)_{TOTAL} * (2)_{FI} / (2)_{TOTAL}$	(3)+(4)+(5)
	5.8	0.2	0.2	5.1	5.4
Property damage only (PDO)	$(4)_{COMB}$ from Worksheet 3A	--	--	$(5)_{TOTAL} * (2)_{PDO} / (2)_{TOTAL}$	(3)+(4)+(5)
	12.2	0.0	0.0	10.6	10.6

2045 No Build HSM Prediction Low Growth

Worksheet 3A -- Predicted Crashes by Severity and Site Type and Observed Crashes Using the Site-Specific EB Method for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Collision type / Site type	**Predicted average crash frequency (crashes/year)**			**Observed crashes, $N_{observed}$** (crashes/year)	**Overdispersion Parameter, k**	**Weighted adjustment, w**	**Expected average crash frequency,**
	$N_{predicted}$ (TOTAL)	$N_{predicted}$ (FI)	$N_{predicted}$ (PDO)			Equation A-5 from Part C Appendix	Equation A-4 from Part C Appendix
ROADWAY SEGMENTS							
Multiple-vehicle nondriveway							
Segment 1	0.796	0.262	0.534		1.010	0.554	0.441
Segment 2	0.497	0.147	0.350		0.840	0.706	0.350
Segment 3	0.002	0.001	0.001		0.840	0.998	0.002
Segment 4	1.438	0.434	1.004		1.010	0.408	0.586
Segment 5	2.679	0.833	1.847		1.010	0.270	0.723
Single-vehicle							
Segment 1	0.290	0.082	0.208		0.910	0.791	0.229
Segment 2	0.414	0.104	0.310		0.810	0.749	0.310
Segment 3	0.056	0.031	0.025		0.810	0.957	0.054
Segment 4	0.317	0.076	0.241		0.910	0.776	0.246
Segment 5	0.699	0.178	0.521		0.910	0.611	0.427
Multiple-vehicle driveway-related							
Segment 1	0.933	0.319	0.614		0.810	0.570	0.531
Segment 2	0.252	0.081	0.171		0.810	0.830	0.209
Segment 3	0.005	0.002	0.003		0.810	0.996	0.005
Segment 4	2.784	0.952	1.832		0.810	0.307	0.855
Segment 5	0.339	0.116	0.223		0.810	0.785	0.266
INTERSECTIONS							
Multiple-vehicle							
Intersection 1	1.144	0.405	0.739		0.400	0.686	0.785
Intersection 2	0.754	0.253	0.501		0.400	0.768	0.579
Intersection 3	4.160	1.360	2.800		0.390	0.381	1.586
Intersection 4	4.465	1.470	2.995		0.390	0.365	1.629
Intersection 5	1.564	0.576	0.988		0.400	0.615	0.962
Single-vehicle							
Intersection 1	0.200	0.064	0.136		0.650	0.885	0.177
Intersection 2	0.164	0.059	0.105		0.650	0.903	0.149
Intersection 3	0.277	0.074	0.203		0.360	0.909	0.252
Intersection 4	0.291	0.077	0.214		0.360	0.905	0.264
Intersection 5	0.228	0.070	0.158		0.650	0.871	0.199
COMBINED (sum of column)	24.749	8.027	16.722	0	--	--	11.817

Worksheet 3B -- Predicted Pedestrian and Bicycle Crashes for Urban and Suburban Arterials

(1)	(2)	(3)
Site Type	**N_{ped}**	**N_{bike}**
ROADWAY SEGMENTS		
Segment 1	0.018	0.004
Segment 2	0.006	0.005
Segment 3	0.002	0.001
Segment 4	0.041	0.009
Segment 5	0.033	0.007
INTERSECTIONS		
Intersection 1	0.030	0.024
Intersection 2	0.020	0.017
Intersection 3	0.013	0.067
Intersection 4	0.011	0.071
Intersection 5	0.039	0.032
COMBINED (sum of column)	0.214	0.237

Worksheet 3C -- Site-Specific EB Method Summary Results for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)
Crash severity level	**$N_{predicted}$**	**N_{ped}**	**N_{bike}**	**$N_{expected\ (VEHICLE)}$**	**$N_{expected}$**
Total	$(2)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(8)_{COMB}$ Worksheet 3A	(3)+(4)+(5)
	24.7	0.2	0.2	11.8	12.3
Fatal and injury (FI)	$(3)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(5)_{TOTAL} * (2)_{FI} / (2)_{TOTAL}$	(3)+(4)+(5)
	8.0	0.2	0.2	3.8	4.3
Property damage only (PDO)	$(4)_{COMB}$ from Worksheet 3A	--	--	$(5)_{TOTAL} * (2)_{PDO} / (2)_{TOTAL}$	(3)+(4)+(5)
	16.7	0.0	0.0	8.0	8.0

2045 No Build HSM Prediction High Growth

Worksheet 3A -- Predicted Crashes by Severity and Site Type and Observed Crashes Using the Site-Specific EB Method for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Collision type / Site type	**Predicted average crash frequency (crashes/year)**			**Observed crashes, $N_{observed}$** (crashes/year)	**Overdispersion Parameter, k**	**Weighted adjustment, w**	**Expected average crash frequency,**
	$N_{predicted}$ (TOTAL)	$N_{predicted}$ (FI)	$N_{predicted}$ (PDO)			Equation A-5 from Part C Appendix	Equation A-4 from Part C Appendix
ROADWAY SEGMENTS							
Multiple-vehicle nondriveway							
Segment 1	1.190	0.381	0.809		1.010	0.454	0.540
Segment 2	0.839	0.247	0.592		0.840	0.587	0.492
Segment 3	0.002	0.001	0.001		0.840	0.998	0.002
Segment 4	2.161	0.635	1.527		1.010	0.314	0.679
Segment 5	4.036	1.220	2.816		1.010	0.197	0.795
Single-vehicle							
Segment 1	0.370	0.100	0.270		0.910	0.748	0.277
Segment 2	0.493	0.113	0.380		0.810	0.715	0.352
Segment 3	0.056	0.031	0.025		0.810	0.957	0.054
Segment 4	0.406	0.093	0.314		0.910	0.730	0.297
Segment 5	0.897	0.216	0.680		0.910	0.551	0.494
Multiple-vehicle driveway-related							
Segment 1	1.329	0.455	0.875		0.810	0.482	0.640
Segment 2	0.345	0.111	0.233		0.810	0.782	0.269
Segment 3	0.005	0.002	0.003		0.810	0.996	0.005
Segment 4	3.986	1.363	2.622		0.810	0.237	0.943
Segment 5	0.487	0.166	0.320		0.810	0.717	0.349
INTERSECTIONS							
Multiple-vehicle							
Intersection 1	1.567	0.577	0.990		0.400	0.615	0.963
Intersection 2	0.979	0.340	0.640		0.400	0.719	0.704
Intersection 3	6.194	2.084	4.110		0.390	0.293	1.813
Intersection 4	6.657	2.254	4.402		0.390	0.278	1.851
Intersection 5	2.169	0.832	1.337		0.400	0.535	1.161
Single-vehicle							
Intersection 1	0.228	0.070	0.158		0.650	0.871	0.199
Intersection 2	0.183	0.066	0.117		0.650	0.894	0.163
Intersection 3	0.370	0.093	0.278		0.360	0.882	0.327
Intersection 4	0.390	0.096	0.294		0.360	0.877	0.342
Intersection 5	0.262	0.078	0.184		0.650	0.855	0.224
COMBINED (sum of column)	35.115	11.623	23.978	0	--	--	13.935

Worksheet 3B -- Predicted Pedestrian and Bicycle Crashes for Urban and Suburban Arterials

(1)	(2)	(3)
Site Type	**N_{ped}**	**N_{bike}**
ROADWAY SEGMENTS		
Segment 1	0.026	0.006
Segment 2	0.008	0.007
Segment 3	0.002	0.001
Segment 4	0.059	0.013
Segment 5	0.049	0.011
INTERSECTIONS		
Intersection 1	0.039	0.032
Intersection 2	0.026	0.021
Intersection 3	0.015	0.098
Intersection 4	0.012	0.106
Intersection 5	0.053	0.044
COMBINED (sum of column)	0.290	0.339

Worksheet 3C -- Site-Specific EB Method Summary Results for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)
Crash severity level	**$N_{predicted}$**	**N_{ped}**	**N_{bike}**	**$N_{expected\ (VEHICLE)}$**	**$N_{expected}$**
Total	$(2)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(8)_{COMB}$ Worksheet 3A	(3)+(4)+(5)
	35.1	0.3	0.3	13.9	14.6
Fatal and injury (FI)	$(3)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(5)_{TOTAL} * (2)_{FI} / (2)_{TOTAL}$	(3)+(4)+(5)
	11.6	0.3	0.3	4.6	5.2
Property damage only (PDO)	$(4)_{COMB}$ from Worksheet 3A	--	--	$(5)_{TOTAL} * (2)_{PDO} / (2)_{TOTAL}$	(3)+(4)+(5)
	24.0	0.0	0.0	9.5	9.5

2045 Build Option 1 HSM Prediction Low Growth

Worksheet 3A -- Predicted Crashes by Severity and Site Type and Observed Crashes Using the Site-Specific EB Method for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Collision type / Site type	**Predicted average crash frequency (crashes/year)**			**Observed crashes, $N_{observed}$** (crashes/year)	**Overdispersion Parameter, k**	**Weighted adjustment, w**	**Expected average crash frequency,**
	$N_{predicted}$ (TOTAL)	$N_{predicted}$ (FI)	$N_{predicted}$ (PDO)			Equation A-5 from Part C Appendix	Equation A-4 from Part C Appendix
ROADWAY SEGMENTS							
Multiple-vehicle nondriveway							
Segment 1	1.472	0.407	1.065		0.810	0.456	0.671
Segment 2	0.218	0.068	0.150		1.320	0.777	0.169
Segment 3	0.090	0.027	0.063			1.000	0.090
Segment 4	1.187	0.363	0.824			1.000	1.187
Segment 5	2.679	0.833	1.847				
Single-vehicle							
Segment 1	0.574	0.154	0.420		0.520	0.770	0.442
Segment 2	0.183	0.024	0.159		0.860	0.864	0.158
Segment 3	0.201	0.066	0.136		0.810	0.860	0.173
Segment 4	0.282	0.070	0.212		0.910	0.796	0.224
Segment 5	0.699	0.178	0.521		0.910	0.611	0.427
Multiple-vehicle driveway-related							
Segment 1	0.951	0.256	0.695		0.100	0.913	0.868
Segment 2	0.022	0.006	0.016		1.390	0.970	0.021
Segment 3	0.047	0.015	0.032		0.810	0.964	0.045
Segment 4	2.351	0.804	1.547		0.810	0.344	0.809
Segment 5	0.339	0.116	0.223		0.810	0.785	0.266
INTERSECTIONS							
Multiple-vehicle							
Intersection 1	1.823	0.565	1.258		0.390	0.584	1.066
Intersection 2	1.243	0.370	0.873		0.390	0.674	0.837
Intersection 3	3.074	0.989	2.084		0.390	0.455	1.398
Intersection 4	3.503	1.143	2.360		0.390	0.423	1.480
Intersection 5	1.564	0.576	0.988		0.400	0.615	0.962
Single-vehicle							
Intersection 1	0.149	0.045	0.104		0.360	0.949	0.141
Intersection 2	0.117	0.039	0.078		0.360	0.960	0.112
Intersection 3	0.216	0.060	0.156		0.360	0.928	0.201
Intersection 4	0.237	0.064	0.173		0.360	0.921	0.219
Intersection 5	0.228	0.070	0.158		0.650	0.871	0.199
COMBINED (sum of column)	23.450	7.308	16.142	0	--	--	12.168

Worksheet 3B -- Predicted Pedestrian and Bicycle Crashes for Urban and Suburban Arterials

(1)	(2)	(3)
Site Type	**N_{ped}**	**N_{bike}**
ROADWAY SEGMENTS		
Segment 1	0.069	0.036
Segment 2	0.008	0.002
Segment 3	0.012	0.006
Segment 4	0.034	0.008
Segment 5	0.033	0.007
INTERSECTIONS		
Intersection 1	0.010	0.030
Intersection 2	0.008	0.020
Intersection 3	0.013	0.049
Intersection 4	0.012	0.056
Intersection 5	0.039	0.032
COMBINED (sum of column)	0.240	0.247

Worksheet 3C -- Site-Specific EB Method Summary Results for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)
Crash severity level	**$N_{predicted}$**	**N_{ped}**	**N_{bike}**	**$N_{expected\ (VEHICLE)}$**	**$N_{expected}$**
Total	$(2)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(8)_{COMB}$ Worksheet 3A	(3)+(4)+(5)
	23.4	0.2	0.2	12.2	12.7
Fatal and injury (FI)	$(3)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(5)_{TOTAL} * (2)_{FI} / (2)_{TOTAL}$	(3)+(4)+(5)
	7.3	0.2	0.2	3.8	4.3
Property damage only (PDO)	$(4)_{COMB}$ from Worksheet 3A	--	--	$(5)_{TOTAL} * (2)_{PDO} / (2)_{TOTAL}$	(3)+(4)+(5)
	16.1	0.0	0.0	8.4	8.4

2045 Build Option 1 HSM Prediction High Growth

Worksheet 3A -- Predicted Crashes by Severity and Site Type and Observed Crashes Using the Site-Specific EB Method for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Collision type / Site type	**Predicted average crash frequency (crashes/year)**			**Observed crashes, $N_{observed}$** (crashes/year)	**Overdispersion Parameter, k**	**Weighted adjustment, w**	**Expected average crash frequency,**
	$N_{predicted}$ (TOTAL)	$N_{predicted}$ (FI)	$N_{predicted}$ (PDO)			Equation A-5 from Part C Appendix	Equation A-4 from Part C Appendix
ROADWAY SEGMENTS							
Multiple-vehicle nondriveway							
Segment 1	2.107	0.576	1.531		0.810	0.369	0.779
Segment 2	0.380	0.113	0.267		0.840	0.758	0.288
Segment 3	0.148	0.044	0.103		0.840	0.890	0.131
Segment 4	1.786	0.531	1.254		1.010	0.357	0.637
Segment 5	4.036	1.220	2.816		1.010	0.197	0.795
Single-vehicle							
Segment 1	0.678	0.172	0.506		0.520	0.739	0.501
Segment 2	0.379	0.100	0.278		0.810	0.765	0.290
Segment 3	0.237	0.071	0.166		0.810	0.839	0.199
Segment 4	0.362	0.085	0.277		0.910	0.752	0.272
Segment 5	0.897	0.216	0.680		0.910	0.551	0.494
Multiple-vehicle driveway-related							
Segment 1	1.362	0.366	0.996		0.100	0.880	1.199
Segment 2	0.215	0.069	0.145		0.810	0.852	0.183
Segment 3	0.062	0.020	0.042		0.810	0.952	0.059
Segment 4	3.368	1.152	2.216		0.810	0.268	0.903
Segment 5	0.487	0.166	0.320		0.810	0.717	0.349
INTERSECTIONS							
Multiple-vehicle							
Intersection 1	2.708	0.864	1.844		0.390	0.486	1.317
Intersection 2	1.869	0.574	1.295		0.390	0.578	1.081
Intersection 3	4.581	1.518	3.063		0.390	0.359	1.644
Intersection 4	5.234	1.757	3.477		0.390	0.329	1.721
Intersection 5	2.169	0.832	1.337		0.400	0.535	1.161
Single-vehicle							
Intersection 1	0.199	0.057	0.142		0.360	0.933	0.185
Intersection 2	0.157	0.049	0.108		0.360	0.947	0.149
Intersection 3	0.290	0.075	0.214		0.360	0.906	0.262
Intersection 4	0.318	0.080	0.238		0.360	0.897	0.286
Intersection 5	0.262	0.078	0.184		0.650	0.855	0.224
COMBINED (sum of column)	34.289	10.786	23.503	0	--	--	15.109

Worksheet 3B -- Predicted Pedestrian and Bicycle Crashes for Urban and Suburban Arterials

(1)	(2)	(3)
Site Type	**N_{ped}**	**N_{bike}**
ROADWAY SEGMENTS		
Segment 1	0.095	0.050
Segment 2	0.005	0.004
Segment 3	0.016	0.008
Segment 4	0.050	0.011
Segment 5	0.049	0.011
INTERSECTIONS		
Intersection 1	0.012	0.044
Intersection 2	0.009	0.030
Intersection 3	0.015	0.073
Intersection 4	0.014	0.083
Intersection 5	0.053	0.044
COMBINED (sum of column)	0.318	0.358

Worksheet 3C -- Site-Specific EB Method Summary Results for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)
Crash severity level	**$N_{predicted}$**	**N_{ped}**	**N_{bike}**	**$N_{expected\ (VEHICLE)}$**	**$N_{expected}$**
Total	$(2)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(8)_{COMB}$ Worksheet 3A	(3)+(4)+(5)
	34.3	0.3	0.4	15.1	15.8
Fatal and injury (FI)	$(3)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(5)_{TOTAL} * (2)_{FI} / (2)_{TOTAL}$	(3)+(4)+(5)
	10.8	0.3	0.4	4.8	5.4
Property damage only (PDO)	$(4)_{COMB}$ from Worksheet 3A	--	--	$(5)_{TOTAL} * (2)_{PDO} / (2)_{TOTAL}$	(3)+(4)+(5)
	23.5	0.0	0.0	10.4	10.4

2045 Build Option 2 HSM Prediction Low Growth

Worksheet 3A -- Predicted Crashes by Severity and Site Type and Observed Crashes Using the Site-Specific EB Method for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Collision type / Site type	**Predicted average crash frequency (crashes/year)**			**Observed crashes, $N_{observed}$** (crashes/year)	**Overdispersion Parameter, k**	**Weighted adjustment, w**	**Expected average crash frequency,**
	$N_{predicted}$ (TOTAL)	$N_{predicted}$ (FI)	$N_{predicted}$ (PDO)			Equation A-5 from Part C Appendix	Equation A-4 from Part C Appendix
ROADWAY SEGMENTS							
Multiple-vehicle nondriveway							
Segment 1	1.290	0.411	0.879		1.010	0.434	0.560
Segment 2	0.170	0.051	0.119		0.840	0.875	0.149
Segment 3	0.002	0.001	0.001		0.840	0.998	0.002
Segment 4	1.124	0.345	0.779		1.010	0.468	0.526
Segment 5	2.679	0.833	1.847		0.000	1.000	2.679
Single-vehicle							
Segment 1	0.389	0.104	0.285		0.910	0.739	0.287
Segment 2	0.290	0.088	0.201		0.810	0.810	0.235
Segment 3	0.056	0.031	0.025		0.810	0.957	0.054
Segment 4	0.273	0.068	0.205		0.910	0.801	0.219
Segment 5	0.699	0.178	0.521		0.910	0.611	0.427
Multiple-vehicle driveway-related							
Segment 1	1.428	0.488	0.939		0.810	0.464	0.662
Segment 2	0.133	0.043	0.090		0.810	0.903	0.120
Segment 3	0.005	0.002	0.003		0.810	0.996	0.005
Segment 4	2.240	0.766	1.474		0.810	0.355	0.796
Segment 5	0.339	0.116	0.223		0.810	0.785	0.266
INTERSECTIONS							
Multiple-vehicle							
Intersection 1	1.541	0.566	0.974		0.400	0.619	0.953
Intersection 2	0.442	0.138	0.304		0.400	0.850	0.375
Intersection 3	2.971	0.952	2.019		0.390	0.463	1.376
Intersection 4	2.626	0.855	1.772		0.390	0.494	1.297
Intersection 5	1.564	0.576	0.988		0.400	0.615	0.962
Single-vehicle							
Intersection 1	0.225	0.071	0.154		0.650	0.872	0.197
Intersection 2	0.133	0.048	0.084		0.650	0.921	0.122
Intersection 3	0.213	0.060	0.153		0.360	0.929	0.197
Intersection 4	0.180	0.049	0.131		0.360	0.939	0.169
Intersection 5	0.228	0.070	0.158		0.650	0.871	0.199
COMBINED (sum of column)	21.240	6.910	14.329	0	--	--	12.835

Worksheet 3B -- Predicted Pedestrian and Bicycle Crashes for Urban and Suburban Arterials

(1)	(2)	(3)
Site Type	**N_{ped}**	**N_{bike}**
ROADWAY SEGMENTS		
Segment 1	0.028	0.006
Segment 2	0.003	0.002
Segment 3	0.002	0.001
Segment 4	0.033	0.007
Segment 5	0.033	0.007
INTERSECTIONS		
Intersection 1	0.039	0.032
Intersection 2	0.013	0.010
Intersection 3	0.013	0.048
Intersection 4	0.012	0.042
Intersection 5	0.039	0.032
COMBINED (sum of column)	0.215	0.189

Worksheet 3C -- Site-Specific EB Method Summary Results for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)
Crash severity level	**$N_{predicted}$**	**N_{ped}**	**N_{bike}**	**$N_{expected\ (VEHICLE)}$**	**$N_{expected}$**
Total	$(2)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(8)_{COMB}$ Worksheet 3A	(3)+(4)+(5)
	21.2	0.2	0.2	12.8	13.2
Fatal and injury (FI)	$(3)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(5)_{TOTAL} * (2)_{FI} / (2)_{TOTAL}$	(3)+(4)+(5)
	6.9	0.2	0.2	4.2	4.6
Property damage only (PDO)	$(4)_{COMB}$ from Worksheet 3A	--	--	$(5)_{TOTAL} * (2)_{PDO} / (2)_{TOTAL}$	(3)+(4)+(5)
	14.3	0.0	0.0	8.7	8.7

2045 Build Option 2 HSM Prediction High Growth

Worksheet 3A -- Predicted Crashes by Severity and Site Type and Observed Crashes Using the Site-Specific EB Method for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Collision type / Site type	**Predicted average crash frequency (crashes/year)**			**Observed crashes, $N_{observed}$** (crashes/year)	**Overdispersion Parameter, k**	**Weighted adjustment, w**	**Expected average crash frequency,**
	$N_{predicted}$ (TOTAL)	$N_{predicted}$ (FI)	$N_{predicted}$ (PDO)			Equation A-5 from Part C Appendix	Equation A-4 from Part C Appendix
ROADWAY SEGMENTS							
Multiple-vehicle nondriveway							
Segment 1	1.940	0.602	1.339		1.010	0.338	0.656
Segment 2	0.285	0.085	0.200		0.840	0.807	0.230
Segment 3	0.002	0.001	0.001		0.840	0.998	0.002
Segment 4	1.696	0.506	1.190		1.010	0.369	0.625
Segment 5	4.036	1.220	2.816		1.010	0.197	0.795
Single-vehicle							
Segment 1	0.499	0.126	0.372		0.910	0.688	0.343
Segment 2	0.344	0.096	0.248		0.810	0.782	0.269
Segment 3	0.056	0.031	0.025		0.810	0.957	0.054
Segment 4	0.350	0.083	0.268		0.910	0.758	0.266
Segment 5	0.897	0.216	0.680		0.910	0.551	0.494
Multiple-vehicle driveway-related							
Segment 1	2.045	0.700	1.346		0.810	0.376	0.770
Segment 2	0.181	0.059	0.123		0.810	0.872	0.158
Segment 3	0.005	0.002	0.003		0.810	0.996	0.005
Segment 4	3.219	1.101	2.118		0.810	0.277	0.892
Segment 5	0.487	0.166	0.320		0.810	0.717	0.349
INTERSECTIONS							
Multiple-vehicle							
Intersection 1	2.119	0.810	1.309		0.400	0.541	1.147
Intersection 2	0.568	0.184	0.385		0.400	0.815	0.463
Intersection 3	4.439	1.465	2.974		0.390	0.366	1.625
Intersection 4	3.924	1.315	2.609		0.390	0.395	1.551
Intersection 5	2.169	0.832	1.337		0.400	0.535	1.161
Single-vehicle							
Intersection 1	0.258	0.079	0.179		0.650	0.857	0.221
Intersection 2	0.147	0.053	0.093		0.650	0.913	0.134
Intersection 3	0.285	0.075	0.210		0.360	0.907	0.258
Intersection 4	0.241	0.061	0.180		0.360	0.920	0.222
Intersection 5	0.262	0.078	0.184		0.650	0.855	0.224
COMBINED (sum of column)	30.453	9.943	20.510	0	--	--	12.912

Worksheet 3B -- Predicted Pedestrian and Bicycle Crashes for Urban and Suburban Arterials

(1)	(2)	(3)
Site Type	**N_{ped}**	**N_{bike}**
ROADWAY SEGMENTS		
Segment 1	0.040	0.009
Segment 2	0.004	0.003
Segment 3	0.002	0.001
Segment 4	0.047	0.011
Segment 5	0.049	0.011
INTERSECTIONS		
Intersection 1	0.052	0.043
Intersection 2	0.016	0.013
Intersection 3	0.015	0.071
Intersection 4	0.013	0.062
Intersection 5	0.053	0.044
COMBINED (sum of column)	0.292	0.267

Worksheet 3C -- Site-Specific EB Method Summary Results for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)
Crash severity level	**$N_{predicted}$**	**N_{ped}**	**N_{bike}**	**$N_{expected\ (VEHICLE)}$**	**$N_{expected}$**
Total	$(2)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(8)_{COMB}$ Worksheet 3A	(3)+(4)+(5)
	30.5	0.3	0.3	12.9	13.5
Fatal and injury (FI)	$(3)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(5)_{TOTAL} * (2)_{FI} / (2)_{TOTAL}$	(3)+(4)+(5)
	9.9	0.3	0.3	4.2	4.8
Property damage only (PDO)	$(4)_{COMB}$ from Worksheet 3A	--	--	$(5)_{TOTAL} * (2)_{PDO} / (2)_{TOTAL}$	(3)+(4)+(5)
	20.5	0.0	0.0	8.7	8.7

2045 Build Option 3 HSM Prediction Low Growth

Worksheet 3A -- Predicted Crashes by Severity and Site Type and Observed Crashes Using the Site-Specific EB Method for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Collision type / Site type	**Predicted average crash frequency (crashes/year)**			**Observed crashes, $N_{observed}$** (crashes/year)	**Overdispersion Parameter, k**	**Weighted adjustment, w**	**Expected average crash frequency,**
	$N_{predicted}$ (TOTAL)	$N_{predicted}$ (FI)	$N_{predicted}$ (PDO)			Equation A-5 from Part C Appendix	Equation A-4 from Part C Appendix
ROADWAY SEGMENTS							
Multiple-vehicle nondriveway							
Segment 1	0.796	0.262	0.534		1.010	0.554	0.441
Segment 2	0.231	0.069	0.162		0.840	0.838	0.193
Segment 3	0.002	0.001	0.001		0.840	0.998	0.002
Segment 4	0.983	0.305	0.679		1.010	0.502	0.493
Segment 5	1.622	0.475	1.146		0.840	0.423	0.686
Segment 6	0.103	0.031	0.072		0.840	0.920	0.095
Single-vehicle							
Segment 1	0.290	0.082	0.208		0.910	0.791	0.229
Segment 2	0.321	0.093	0.228		0.810	0.794	0.255
Segment 3	0.290	0.082	0.208		0.910	0.791	0.229
Segment 4	0.251	0.064	0.188		0.910	0.814	0.205
Segment 5	0.792	0.172	0.620		0.810	0.609	0.482
Segment 6	0.265	0.089	0.175		0.810	0.823	0.218
Multiple-vehicle driveway-related							
Segment 1	0.933	0.319	0.614		0.810	0.570	0.531
Segment 2	0.160	0.052	0.108		0.810	0.885	0.142
Segment 3	0.005	0.002	0.003		0.810	0.996	0.005
Segment 4	1.991	0.681	1.310		0.810	0.383	0.762
Segment 5	0.267	0.086	0.181		0.810	0.822	0.220
Segment 6	0.077	0.025	0.052		0.810	0.942	0.072
INTERSECTIONS							
Multiple-vehicle							
Intersection 1	1.144	0.405	0.739		0.400	0.686	0.785
Intersection 2	0.513	0.164	0.349		0.400	0.830	0.426
Intersection 3	2.420	0.771	1.648		0.390	0.515	1.245
Intersection 4	2.459	0.790	1.669		0.390	0.510	1.255
Intersection 5	1.564	0.576	0.988		0.400	0.615	0.962
Intersection 6	0.472	0.149	0.323		0.400	0.841	0.397
Intersection 7	1.785	0.560	1.225		0.390	0.590	1.052
Single-vehicle							
Intersection 1	0.200	0.064	0.136		0.650	0.885	0.177
Intersection 2	0.141	0.051	0.089		0.650	0.916	0.129
Intersection 3	0.177	0.050	0.127		0.360	0.940	0.166
Intersection 4	0.176	0.049	0.127		0.360	0.940	0.166
Intersection 5	0.228	0.070	0.158		0.650	0.871	0.199
Intersection 6	0.140	0.046	0.095		0.650	0.917	0.128
Intersection 7	0.139	0.041	0.098		0.360	0.952	0.133
COMBINED (sum of column)	20.656	6.589	14.067	0	--	--	12.220

Worksheet 3B -- Predicted Pedestrian and Bicycle Crashes for Urban and Suburban Arterials

(1)	(2)	(3)
Site Type	**N_{ped}**	**N_{bike}**
ROADWAY SEGMENTS		
Segment 1	0.018	0.004
Segment 2	0.004	0.003
Segment 3	0.002	0.001
Segment 4	0.029	0.006
Segment 5	0.013	0.011
Segment 6	0.002	0.002
INTERSECTIONS		
Intersection 1	0.030	0.024
Intersection 2	0.014	0.012
Intersection 3	0.011	0.039
Intersection 4	0.012	0.040
Intersection 5	0.039	0.032
COMBINED (sum of column)	0.175	0.174

Worksheet 3C -- Site-Specific EB Method Summary Results for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)
Crash severity level	**$N_{predicted}$**	**N_{ped}**	**N_{bike}**	**$N_{expected\ (VEHICLE)}$**	**$N_{expected}$**
Total	$(2)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(8)_{COMB}$ Worksheet 3A	(3)+(4)+(5)
	20.7	0.2	0.2	12.2	12.6
Fatal and injury (FI)	$(3)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(5)_{TOTAL} * (2)_{FI} / (2)_{TOTAL}$	(3)+(4)+(5)
	6.6	0.2	0.2	3.9	4.2
Property damage only (PDO)	$(4)_{COMB}$ from Worksheet 3A	--	--	$(5)_{TOTAL} * (2)_{PDO} / (2)_{TOTAL}$	(3)+(4)+(5)
	14.1	0.0	0.0	8.3	8.3

2045 Build Option 3 HSM Prediction High Growth

Worksheet 3A -- Predicted Crashes by Severity and Site Type and Observed Crashes Using the Site-Specific EB Method for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Collision type / Site type	**Predicted average crash frequency (crashes/year)**			**Observed crashes, $N_{observed}$** (crashes/year)	**Overdispersion Parameter, k**	**Weighted adjustment, w**	**Expected average crash frequency,**
	$N_{predicted}$ (TOTAL)	$N_{predicted}$ (FI)	$N_{predicted}$ (PDO)			Equation A-5 from Part C Appendix	Equation A-4 from Part C Appendix
ROADWAY SEGMENTS							
Multiple-vehicle nondriveway							
Segment 1	1.190	0.381	0.809		1.010	0.454	0.540
Segment 2	0.390	0.116	0.274		0.840	0.753	0.294
Segment 3	0.002	0.001	0.001		0.840	0.998	0.002
Segment 4	1.481	0.446	1.035		1.010	0.401	0.593
Segment 5	2.726	0.794	1.933		0.840	0.304	0.829
Segment 6	0.174	0.052	0.122		0.840	0.873	0.152
Single-vehicle							
Segment 1	0.370	0.100	0.270		0.910	0.748	0.277
Segment 2	0.382	0.101	0.281		0.810	0.764	0.292
Segment 3	0.056	0.031	0.025		0.810	0.957	0.054
Segment 4	0.323	0.077	0.245		0.910	0.773	0.249
Segment 5	0.941	0.185	0.756		0.810	0.567	0.534
Segment 6	0.315	0.098	0.218		0.810	0.797	0.251
Multiple-vehicle driveway-related							
Segment 1	1.329	0.455	0.875		0.810	0.482	0.640
Segment 2	0.218	0.071	0.148		0.810	0.850	0.186
Segment 3	0.005	0.002	0.003		0.810	0.996	0.005
Segment 4	2.857	0.977	1.880		0.810	0.302	0.862
Segment 5	0.364	0.118	0.247		0.810	0.772	0.281
Segment 6	0.105	0.034	0.071		0.810	0.922	0.096
INTERSECTIONS							
Multiple-vehicle							
Intersection 1	1.567	0.577	0.990		0.400	0.615	0.963
Intersection 2	0.663	0.219	0.444		0.400	0.790	0.524
Intersection 3	5.147	1.690	3.457		0.390	0.333	1.711
Intersection 4	3.674	1.215	2.459		0.390	0.411	1.510
Intersection 5	2.169	0.832	1.337		0.400	0.535	1.161
Intersection 6	0.652	0.215	0.437		0.400	0.793	0.517
Intersection 7	2.670	0.863	1.807		0.390	0.490	1.308
Single-vehicle							
Intersection 1	0.228	0.070	0.158		0.650	0.871	0.199
Intersection 2	0.156	0.057	0.100		0.650	0.908	0.142
Intersection 3	0.338	0.090	0.248		0.360	0.892	0.301
Intersection 4	0.236	0.062	0.174		0.360	0.922	0.218
Intersection 5	0.262	0.078	0.184		0.650	0.855	0.224
Intersection 6	0.160	0.051	0.110		0.650	0.906	0.145
Intersection 7	0.187	0.052	0.135		0.360	0.937	0.175
COMBINED (sum of column)	30.991	10.003	20.988	0	--	--	14.915

Worksheet 3B -- Predicted Pedestrian and Bicycle Crashes for Urban and Suburban Arterials

(1)	(2)	(3)
Site Type	**N_{ped}**	**N_{bike}**
ROADWAY SEGMENTS		
Segment 1	0.026	0.006
Segment 2	0.005	0.004
Segment 3	0.002	0.001
Segment 4	0.042	0.009
Segment 5	0.020	0.016
Segment 6	0.003	0.002
INTERSECTIONS		
Intersection 1	0.039	0.032
Intersection 2	0.018	0.015
Intersection 3	0.013	0.082
Intersection 4	0.014	0.059
Intersection 5	0.053	0.044
COMBINED (sum of column)	0.236	0.270

Worksheet 3C -- Site-Specific EB Method Summary Results for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)
Crash severity level	**$N_{predicted}$**	**N_{ped}**	**N_{bike}**	**$N_{expected\ (VEHICLE)}$**	**$N_{expected}$**
Total	$(2)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(8)_{COMB}$ Worksheet 3A	(3)+(4)+(5)
	31.0	0.2	0.3	14.9	15.4
Fatal and injury (FI)	$(3)_{COMB}$ from Worksheet 3A	$(2)_{COMB}$ from Worksheet 3B	$(3)_{COMB}$ from Worksheet 3B	$(5)_{TOTAL} * (2)_{FI} / (2)_{TOTAL}$	(3)+(4)+(5)
	10.0	0.2	0.3	4.8	5.3
Property damage only (PDO)	$(4)_{COMB}$ from Worksheet 3A	--	--	$(5)_{TOTAL} * (2)_{PDO} / (2)_{TOTAL}$	(3)+(4)+(5)
	21.0	0.0	0.0	10.1	10.1

1-D. Improvement to Travel Time Reliability for Evacuation and Emergency Responders

0 0.1250.25 0.5
Miles

N

Legend

- Luling Fire Department
- Existing Emergency Response Area

Source: Google Maps and future travel time estimated using traffic projections and Synchro

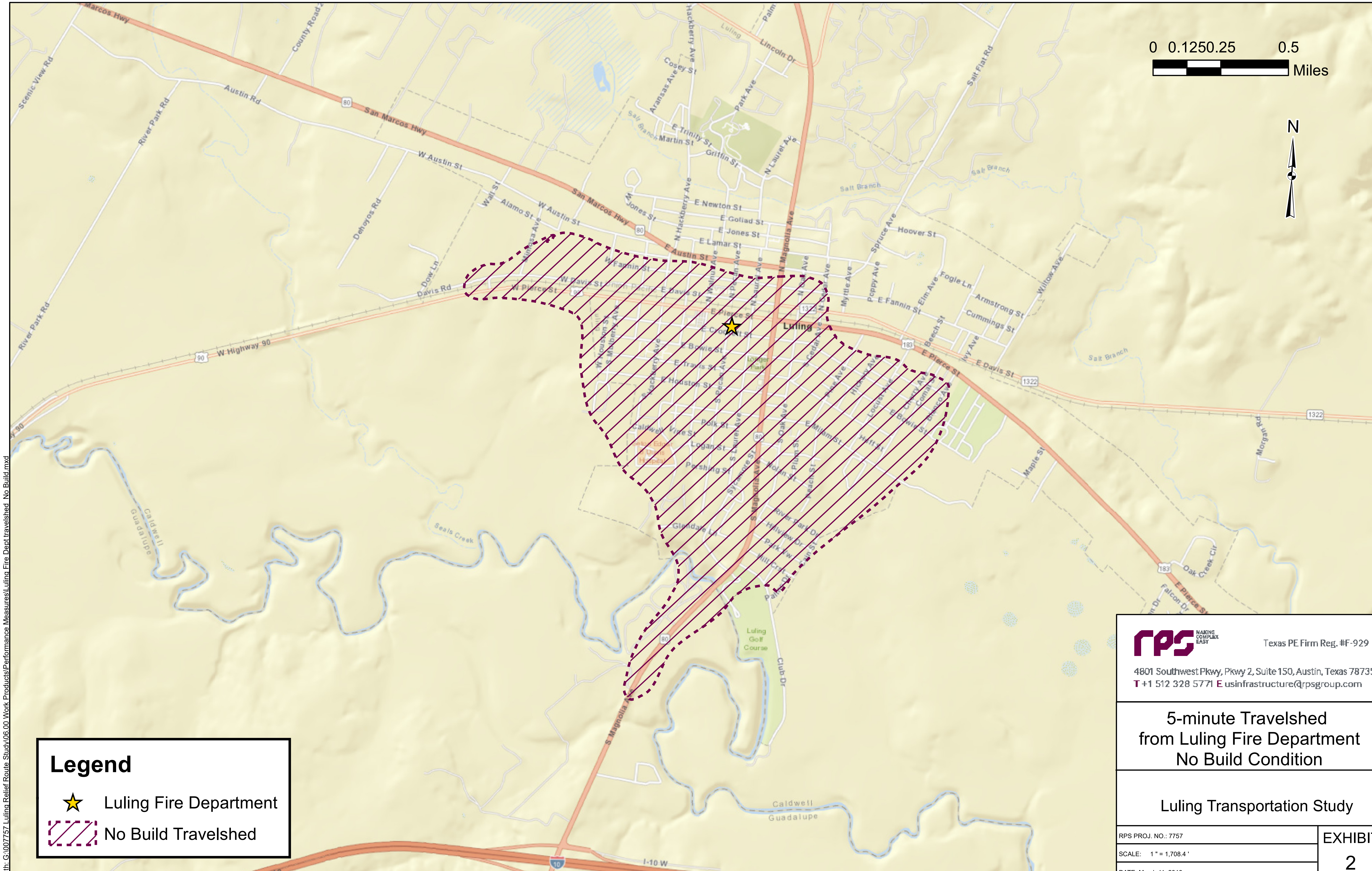
RPS MAKING COMPLEX EASY
Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

5-minute Travelshed from Luling Fire Department Existing Condition

Luling Transportation Study

RPS PROJ. NO.: 7757	EXHIBIT 1
SCALE: 1 " = 1,708.4 '	
DATE: March 11, 2019	

Path: G:\007757 Luling Relief Route Study\06 00 Work Products\Performance Measures\Luling Fire Dept travelshed.mxd



5-minute Travelshed from Luling Fire Department No Build Condition

Luling Transportation Study

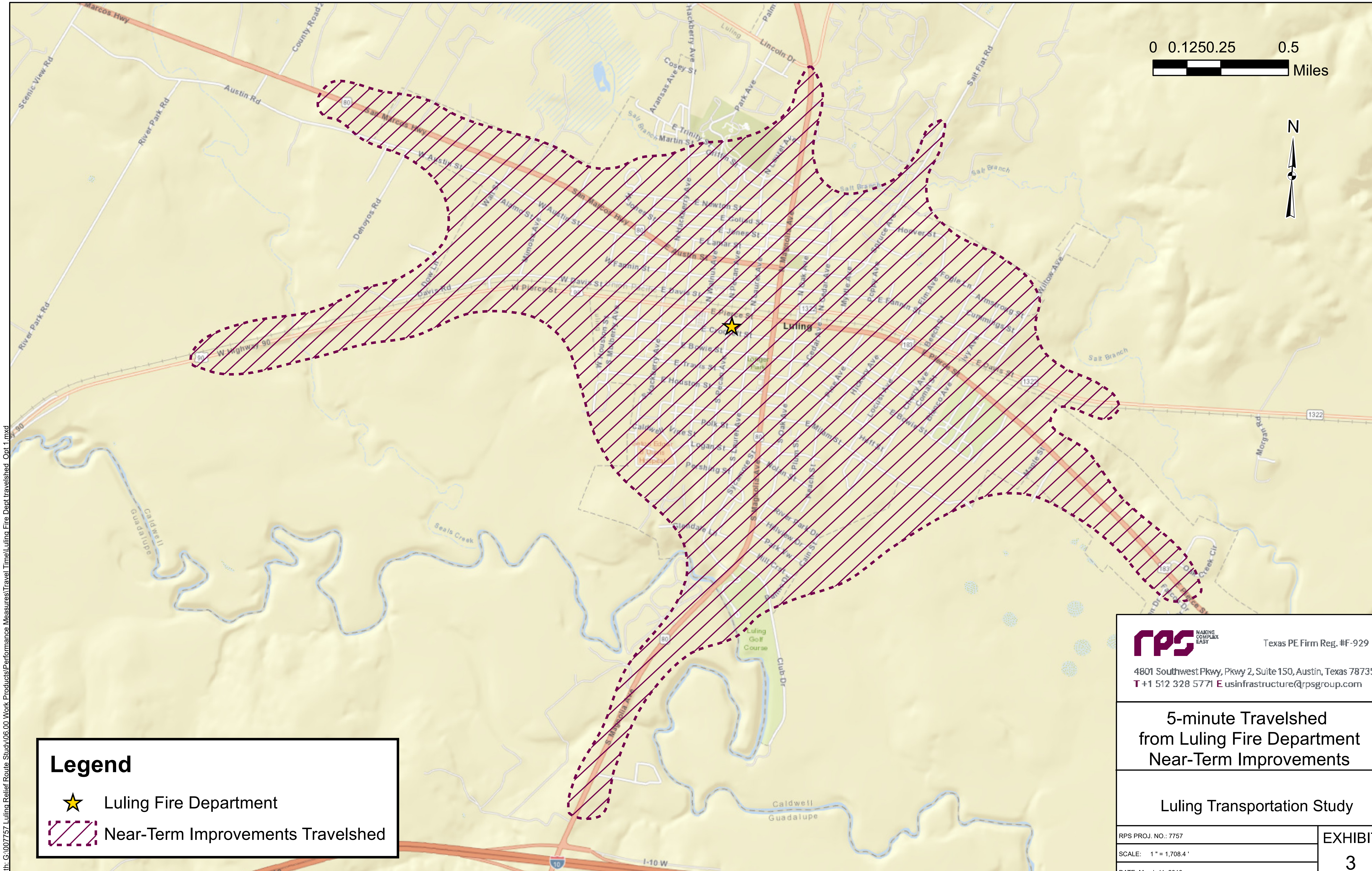
rps MAKING COMPLEX EASY
Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

RPS PROJ. NO.: 7757
SCALE: 1 " = 1,708.4 '
DATE: March 11, 2019

EXHIBIT 2

Source: Google Maps and future travel time estimated using traffic projections and Synchro

Path: G:\007757 Luling Relief Route Study\06.00 Work Products\Performance Measures\Luling Fire Dept travelshed_No Build.mxd



Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

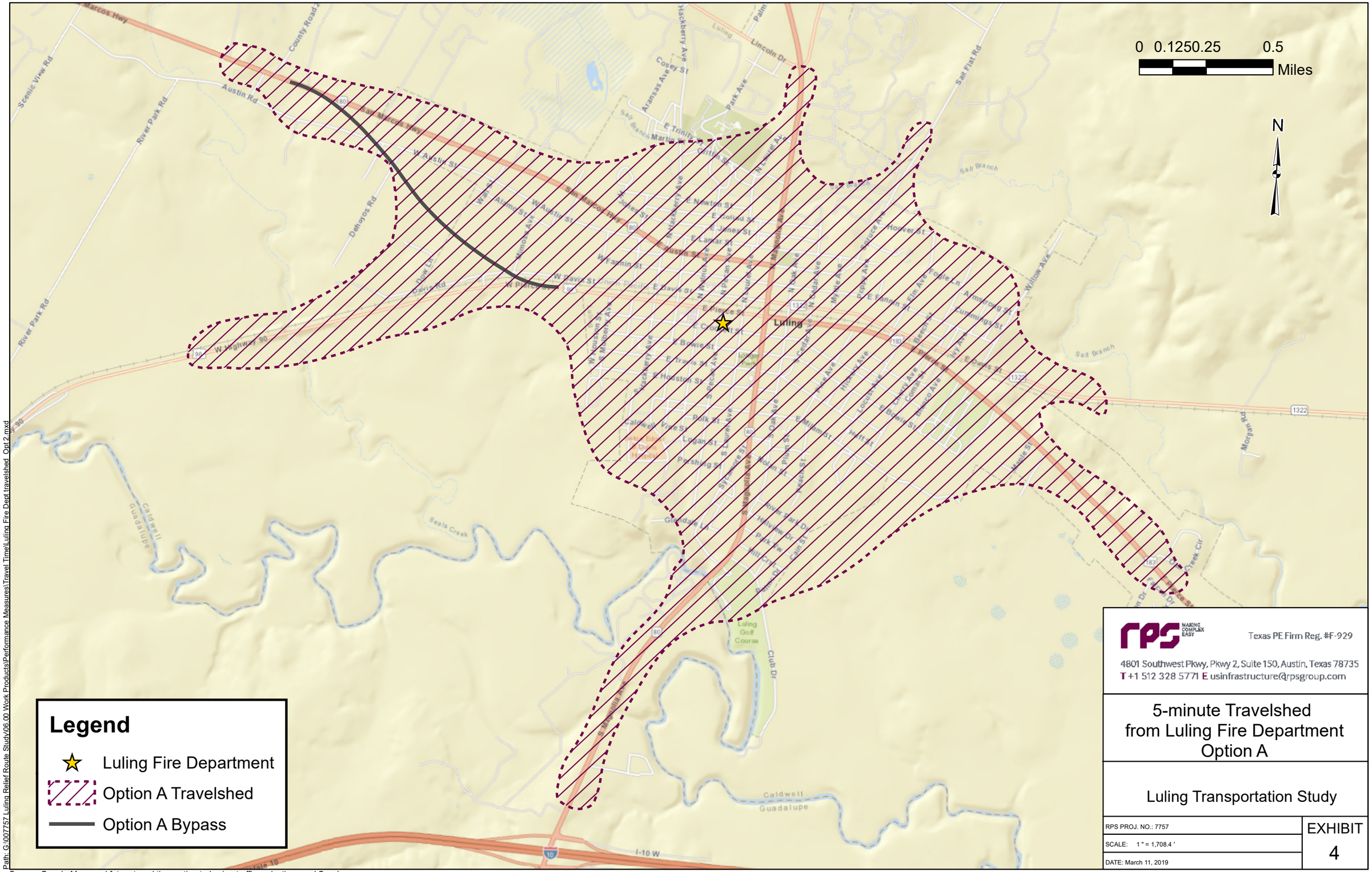
5-minute Travelshed from Luling Fire Department Near-Term Improvements

Luling Transportation Study

RPS PROJ. NO.: 7757	EXHIBIT
SCALE: 1 " = 1,708.4 '	3
DATE: March 11, 2019	

Path: G:\007757 Luling Relief Route Study\06.00 Work Products\Performance Measures\Travel Time\Luling Fire Dept travelshed_Opt 1.mxd

Source: Google Maps and future travel time estimated using traffic projections and Synchro



Source: Google Maps and future travel time estimated using traffic projections and Synchro

RPS MAKING COMPLEX EASY
Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

5-minute Travelshed from Luling Fire Department Option A

Luling Transportation Study

RPS PROJ. NO.: 7757	EXHIBIT 4
SCALE: 1 " = 1,708.4 '	
DATE: March 11, 2019	

Path: G:\007757 Luling Relief Route Study\06.00 Work Products\Performance Measures\Travel Time\Luling Fire Dept travelshed_Opt2.mxd

0 0.1250.25 0.5
Miles

N

Legend

- Luling Fire Department
- Option B / C Travelshed
- Option B / C Bypass

Source: Google Maps and future travel time estimated using traffic projections and Synchro

RPS MAKING COMPLEX EASY
Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

5-minute Travelshed from Luling Fire Department Option B / C

Luling Transportation Study

RPS PROJ. NO.: 7757	EXHIBIT
SCALE: 1 " = 1,708.4 '	5
DATE: March 11, 2019	

Path: G:\007757 Luling Relief Route Study\06.00 Work Products\Performance Measures\Travel Time\Figures\Luling Fire Dept travelshed_Opt 3.mxd

2-A. Estimated Daily Traffic Entering Magnolia Avenue/Pierce Street Intersection

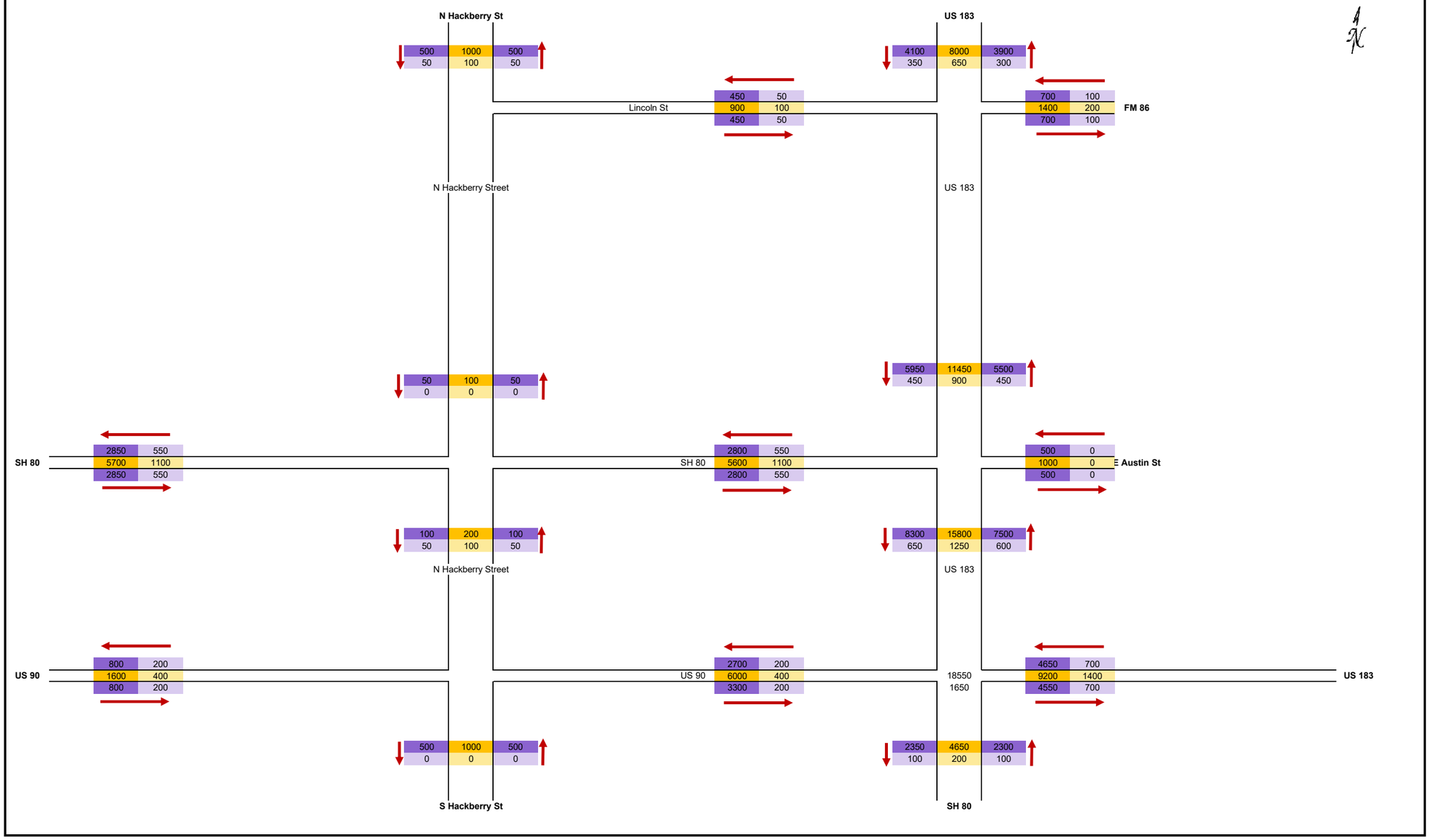
Luling Transportation Study
Roadway Segment Volume

Average Annual Daily Traffic (AADT)

Annual Growth	
LOW	1.0%
HIGH	2.7%

Directional Total
Directional Heavy Truck
Bidirectional Total
Bidirectional Heavy Truck

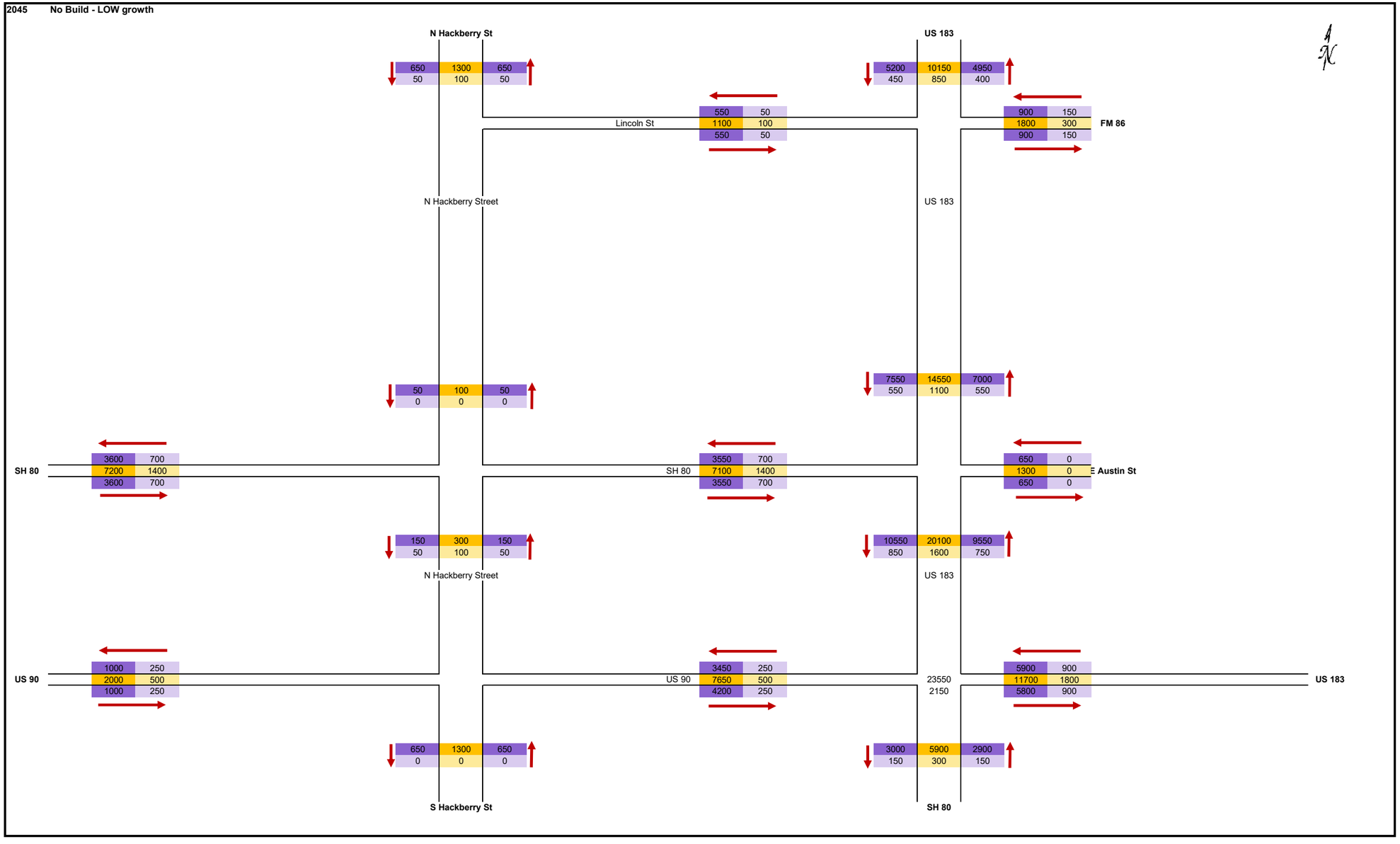
2018 Existing Conditions



Luling Transportation Study
Roadway Segment Volume

Average Annual Daily Traffic (AADT)

2045 No Build - LOW growth



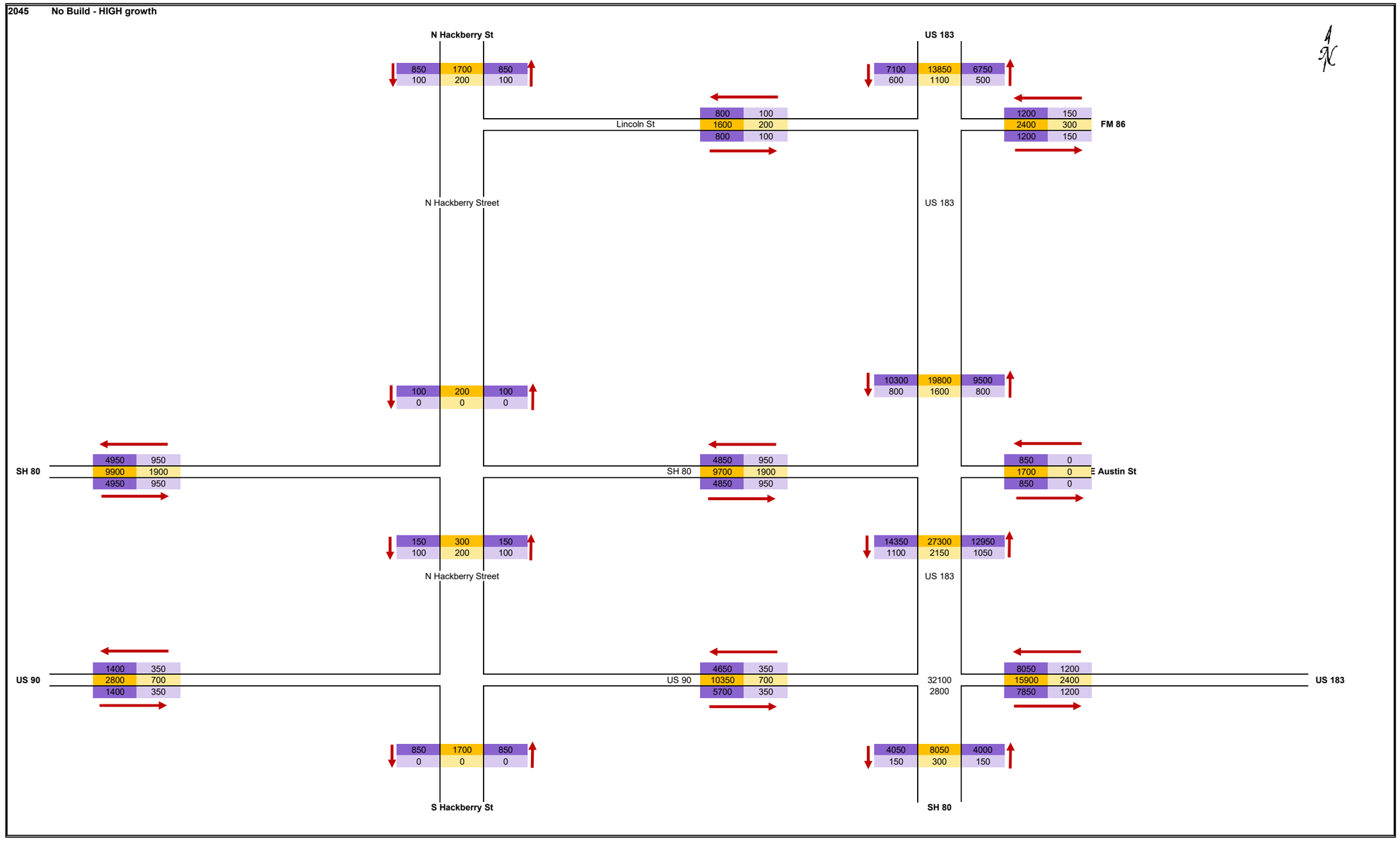
Annual Growth	
LOW	1.0%
HIGH	2.7%

Directional Total
Directional Heavy Truck

Bidirectional Total
Bidirectional Heavy Truck

Luling Transportation Study
Roadway Segment Volume

Average Annual Daily Traffic (AADT)



Annual Growth	
LOW	1.0%
HIGH	2.7%

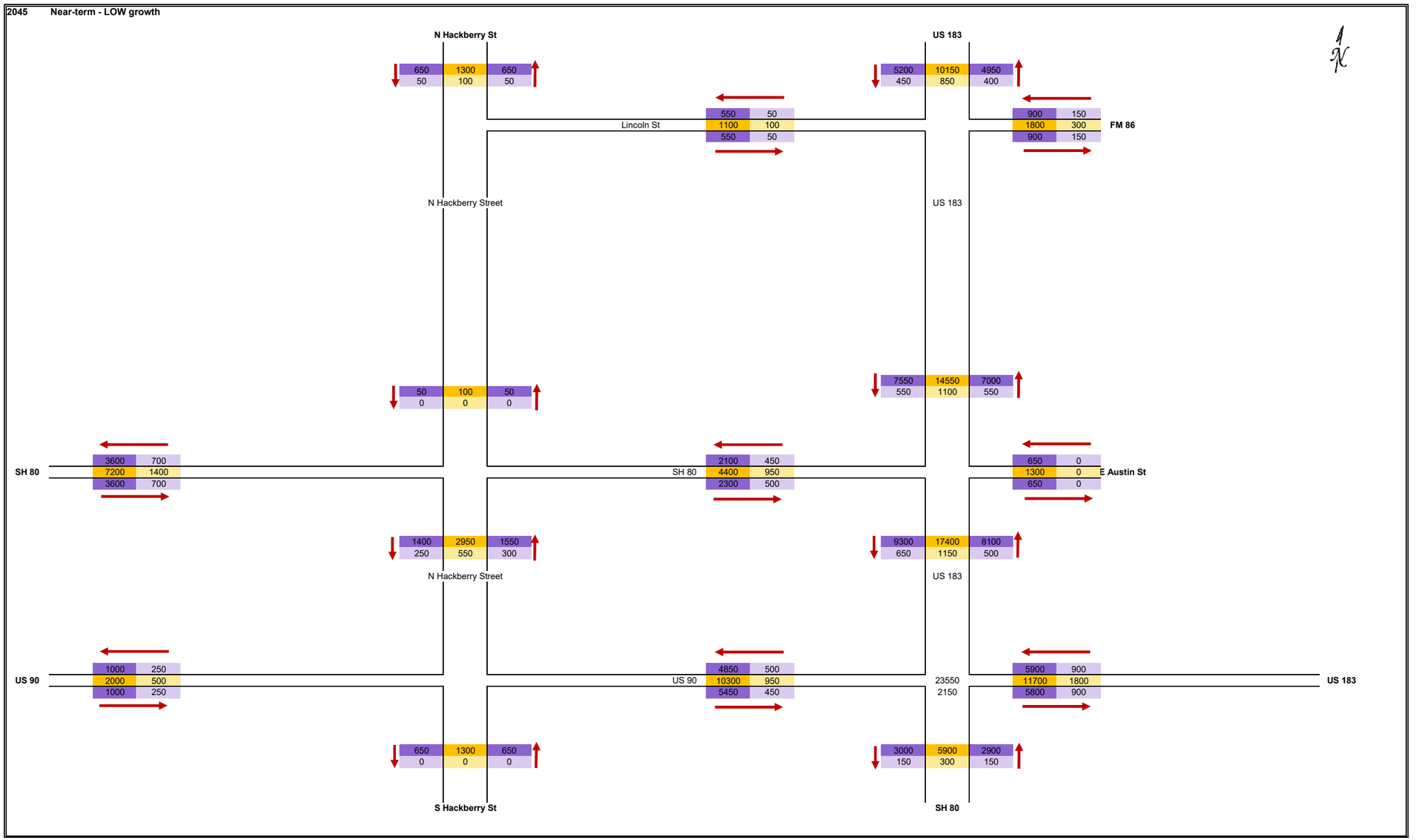
Directional Total
Directional Heavy Truck

Bidirectional Total
Bidirectional Heavy Truck

Luling Transportation Study
Roadway Segment Volume

Average Annual Daily Traffic (AADT)

2045 Near-term - LOW growth



Annual Growth	
LOW	1.0%
HIGH	2.7%

Directional Total
Directional Heavy Truck

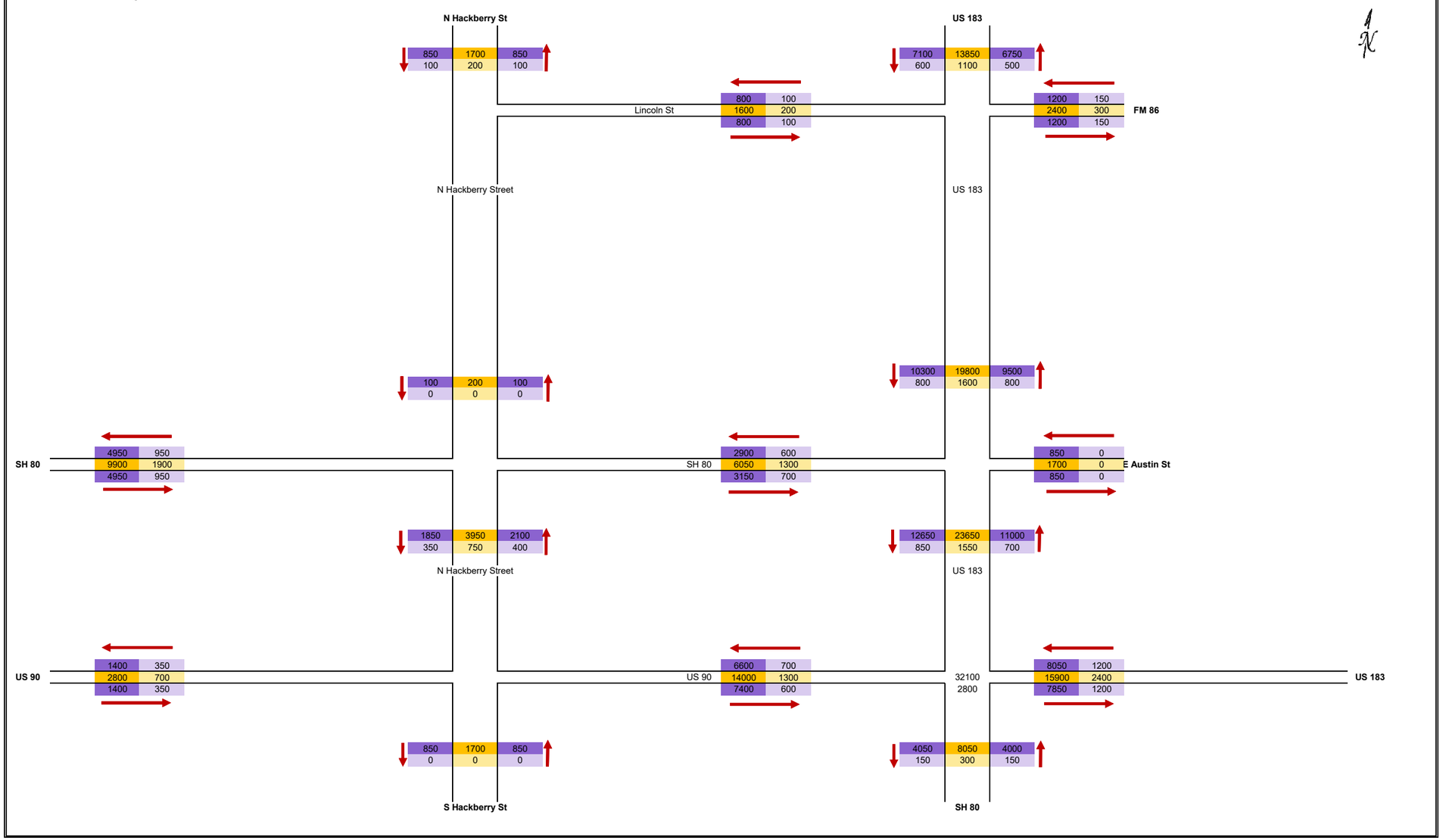
Bidirectional Total
Bidirectional Heavy Truck

Origin	Destination	AADT	CMV
SH 80 N	US 183 S	828	153
US 183 S	SH 80 N	943	191
SH 80 N	SH 80 S	230	13
SH 80 S	SH 80 N	310	9
SH 80 N	US 183 N	131	2
US 183 N	SH 80 N	154	1
SH 80 N	Southeast	156	1
Southeast	SH 80 N	184	1
Hackberry	US 183 S	15	19
US 183 S	Hackberry	6	1
US 183 N	US 183 S	1145	69
US 183 S	US 183 N	979	229

Luling Transportation Study
Roadway Segment Volume

Average Annual Daily Traffic (AADT)

2045 Near-term - HIGH growth



Annual Growth	
LOW	1.0%
HIGH	2.7%

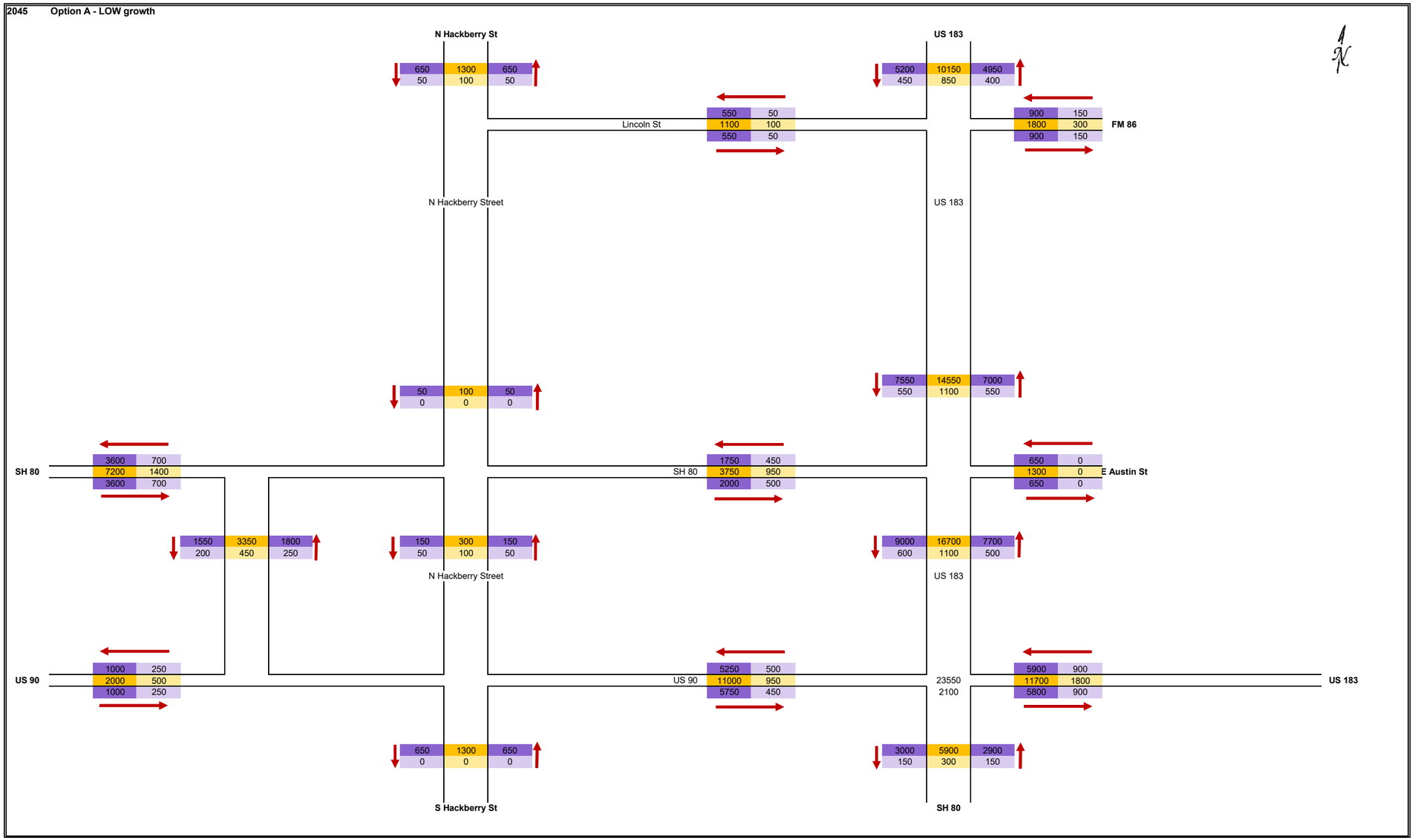
Directional Total
Directional Heavy Truck

Bidirectional Total
Bidirectional Heavy Truck

Origin	Destination	AADT	CMV
SH 80 N	US 183 S	828	153
US 183 S	SH 80 N	943	191
SH 80 N	SH 80 S	230	13
SH 80 S	SH 80 N	310	9
SH 80 N	US 183 N	131	2
US 183 N	SH 80 N	154	1
SH 80 N	Southeast	156	1
Southeast	SH 80 N	184	1
Hackberry	US 183 S	15	19
US 183 S	Hackberry	6	1
US 183 N	US 183 S	1145	69
US 183 S	US 183 N	979	229

Luling Transportation Study
Roadway Segment Volume

Average Annual Daily Traffic (AADT)



Annual Growth	
LOW	1.0%
HIGH	2.7%

Directional Total
Directional Heavy Truck

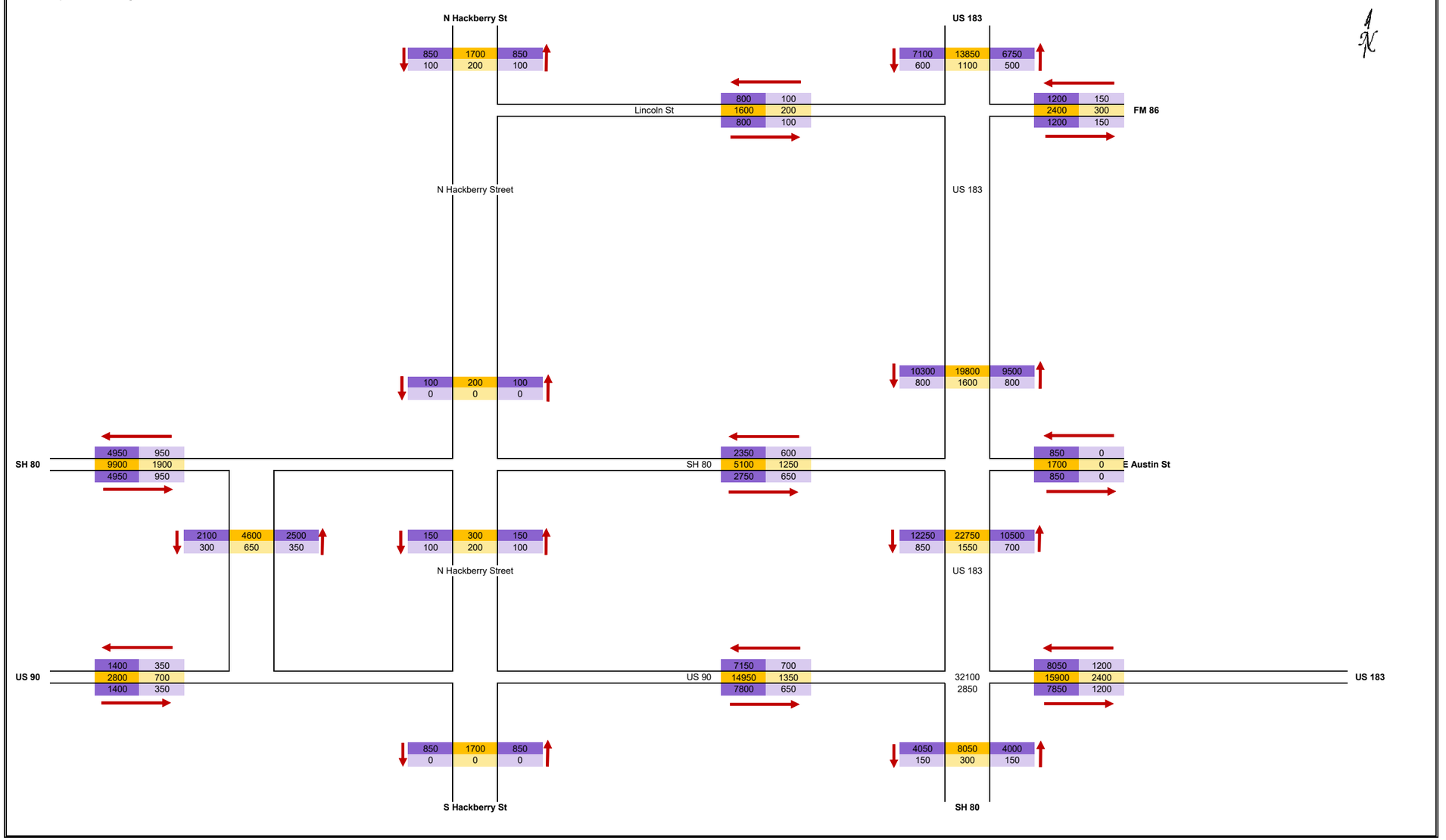
Bidirectional Total
Bidirectional Heavy Truck

Origin	Destination	AADT	CMV
SH 80 N	US 183 S	828	153
US 183 S	SH 80 N	943	191
SH 80 N	SH 80 S	230	13
SH 80 S	SH 80 N	310	9
SH 80 N	US 183 N	131	2
US 183 N	SH 80 N	154	1
SH 80 N	Southeast	156	1
Southeast	SH 80 N	184	1
Hackberry	US 183 S	15	19
US 183 S	Hackberry	6	1
US 183 N	US 183 S	1145	69
US 183 S	US 183 N	979	229

Luling Transportation Study
Roadway Segment Volume

Average Annual Daily Traffic (AADT)

2045 Option A - HIGH growth



Annual Growth	
LOW	1.0%
HIGH	2.7%

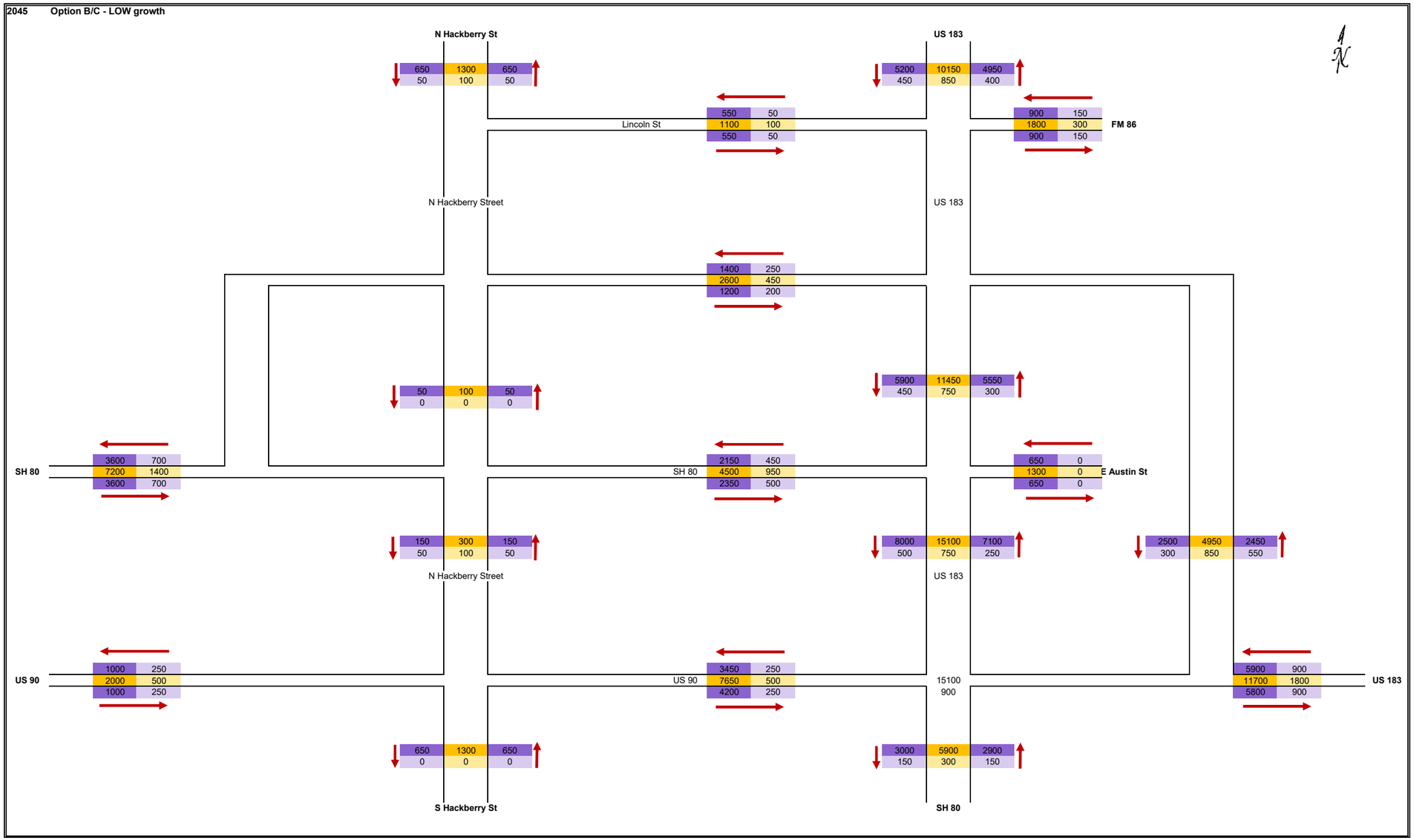
Directional Total
Directional Heavy Truck

Bidirectional Total
Bidirectional Heavy Truck

Origin	Destination	AADT	CMV
SH 80 N	US 183 S	828	153
US 183 S	SH 80 N	943	191
SH 80 N	SH 80 S	230	13
SH 80 S	SH 80 N	310	9
SH 80 N	US 183 N	131	2
US 183 N	SH 80 N	154	1
SH 80 N	Southeast	156	1
Southeast	SH 80 N	184	1
Hackberry	US 183 S	15	19
US 183 S	Hackberry	6	1
US 183 N	US 183 S	1145	69
US 183 S	US 183 N	979	229

Luling Transportation Study
Roadway Segment Volume

Average Annual Daily Traffic (AADT)



Annual Growth	
LOW	1.0%
HIGH	2.7%

Directional Total
Directional Heavy Truck

Bidirectional Total
Bidirectional Heavy Truck

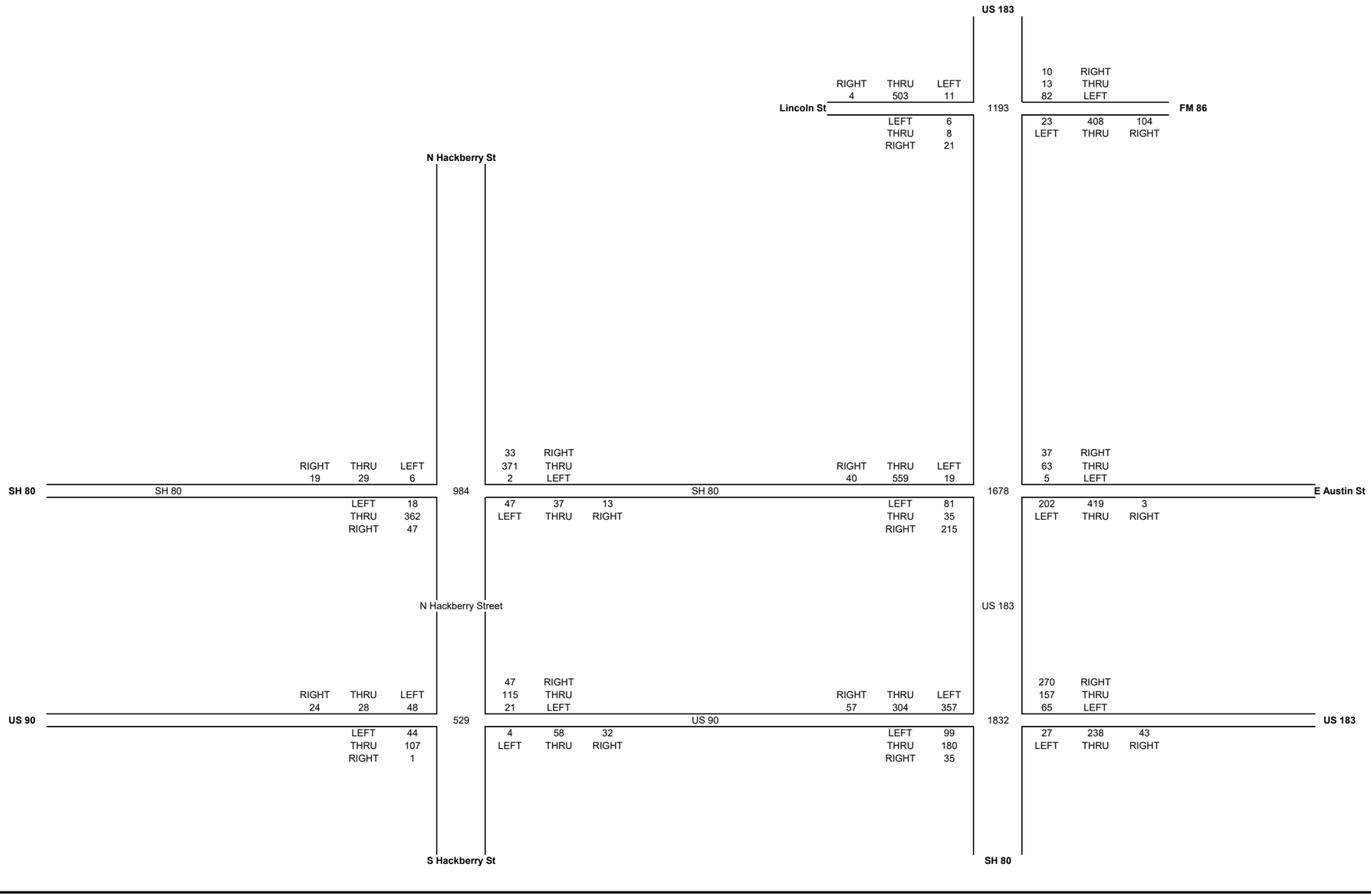
Origin	Destination	AADT	CMV
SH 80 N	US 183 S	828	153
US 183 S	SH 80 N	943	191
SH 80 N	SH 80 S	230	13
SH 80 S	SH 80 N	310	9
SH 80 N	US 183 N	131	2
US 183 N	SH 80 N	154	1
SH 80 N	Southeast	156	1
Southeast	SH 80 N	184	1
Hackberry	US 183 S	15	19
US 183 S	Hackberry	6	1
US 183 N	US 183 S	1145	69
US 183 S	US 183 N	979	229

Luling Transportation Study
Turning Movement Volumes

PM Peak Hour, Typical Friday
4:00 - 5:00 PM

2018 Existing Conditions

Annual Growth	
LOW	1.0%
HIGH	2.7%

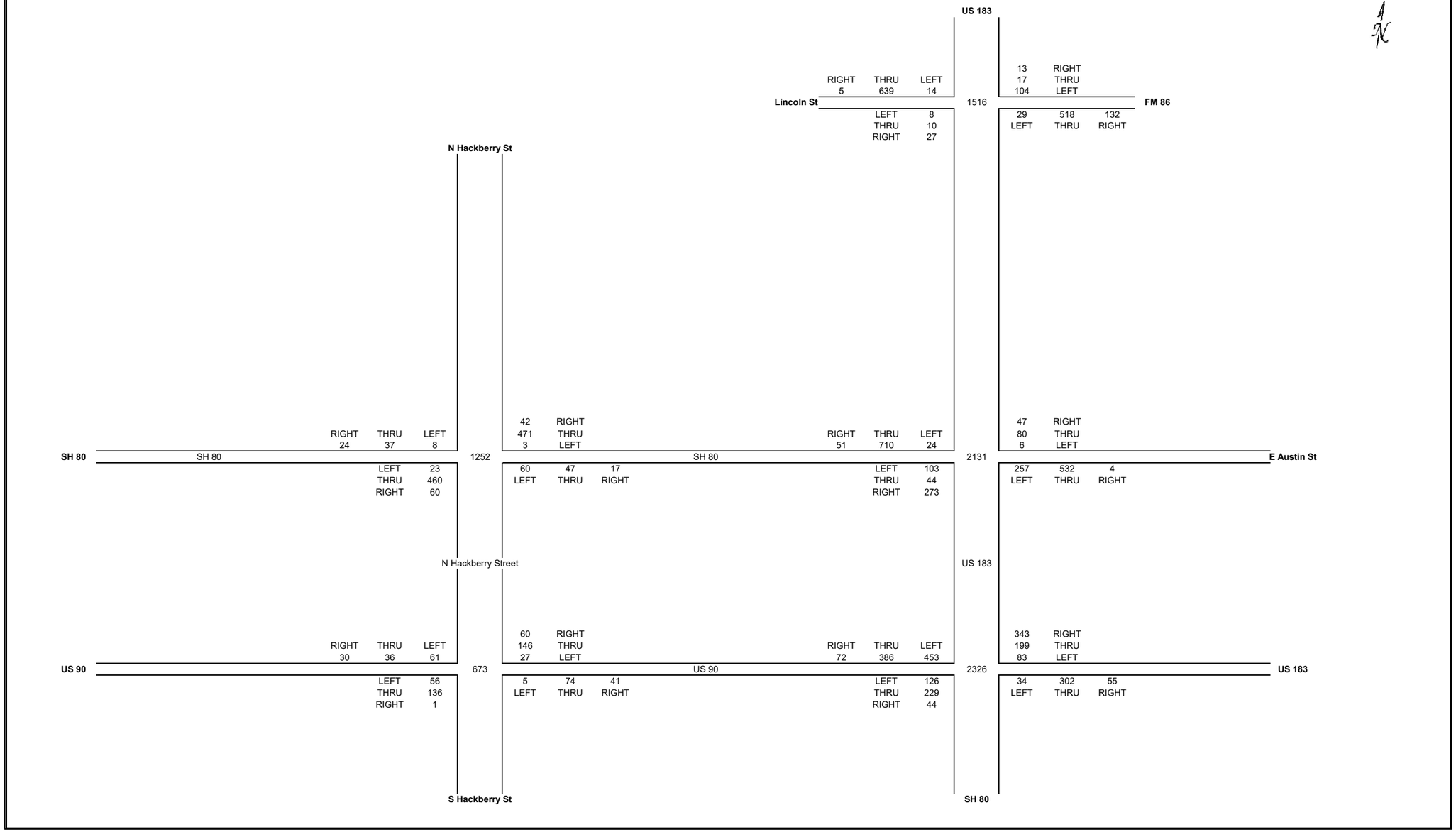


Luling Transportation Study
Turning Movement Volumes

PM Peak Hour, Typical Friday
4:00 - 5:00 PM

2045 No Build - LOW growth

Annual Growth	
LOW	1.0%
HIGH	2.7%

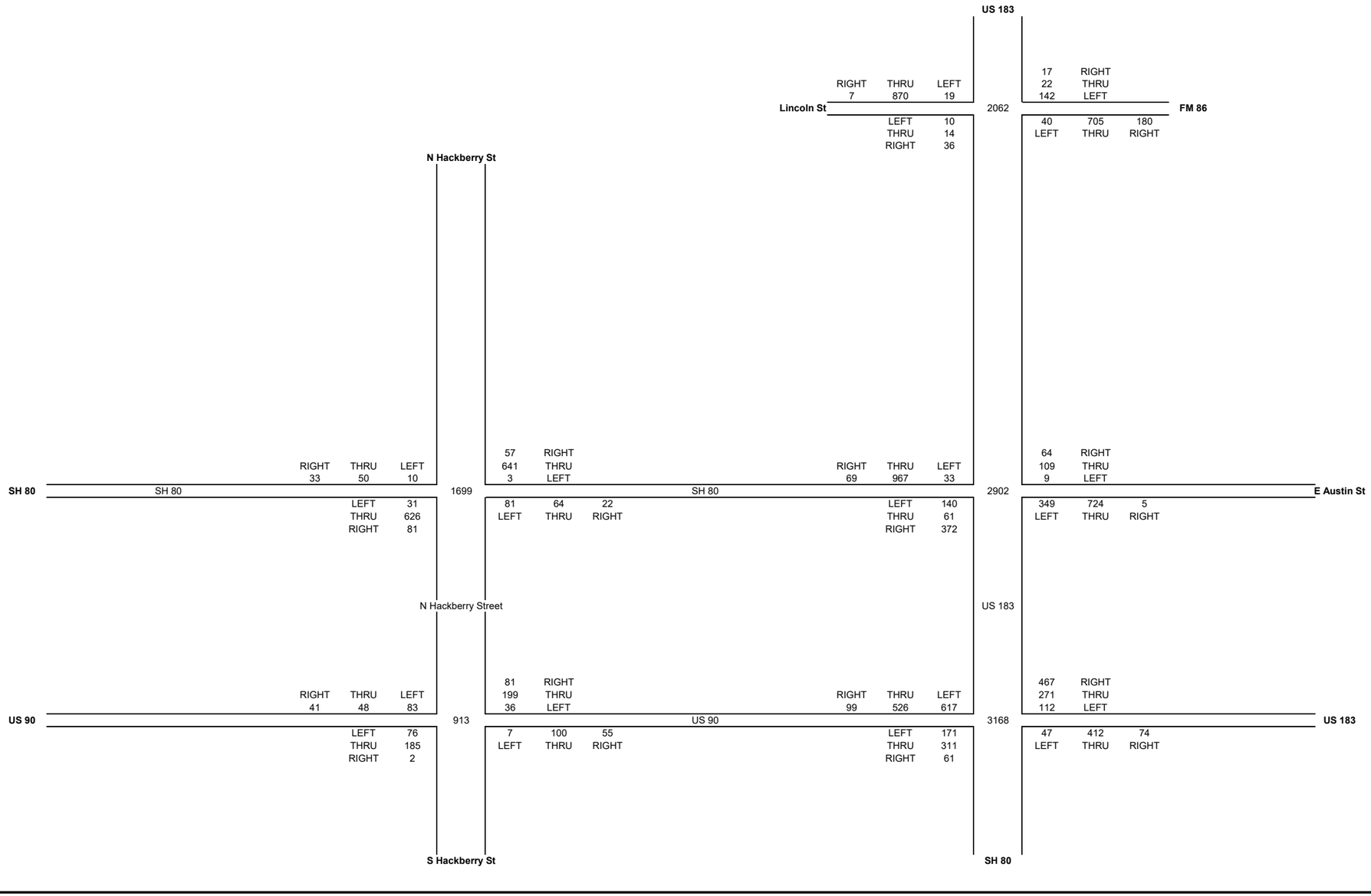


Luling Transportation Study
Turning Movement Volumes

PM Peak Hour, Typical Friday
4:00 - 5:00 PM

2045 No Build - HIGH growth

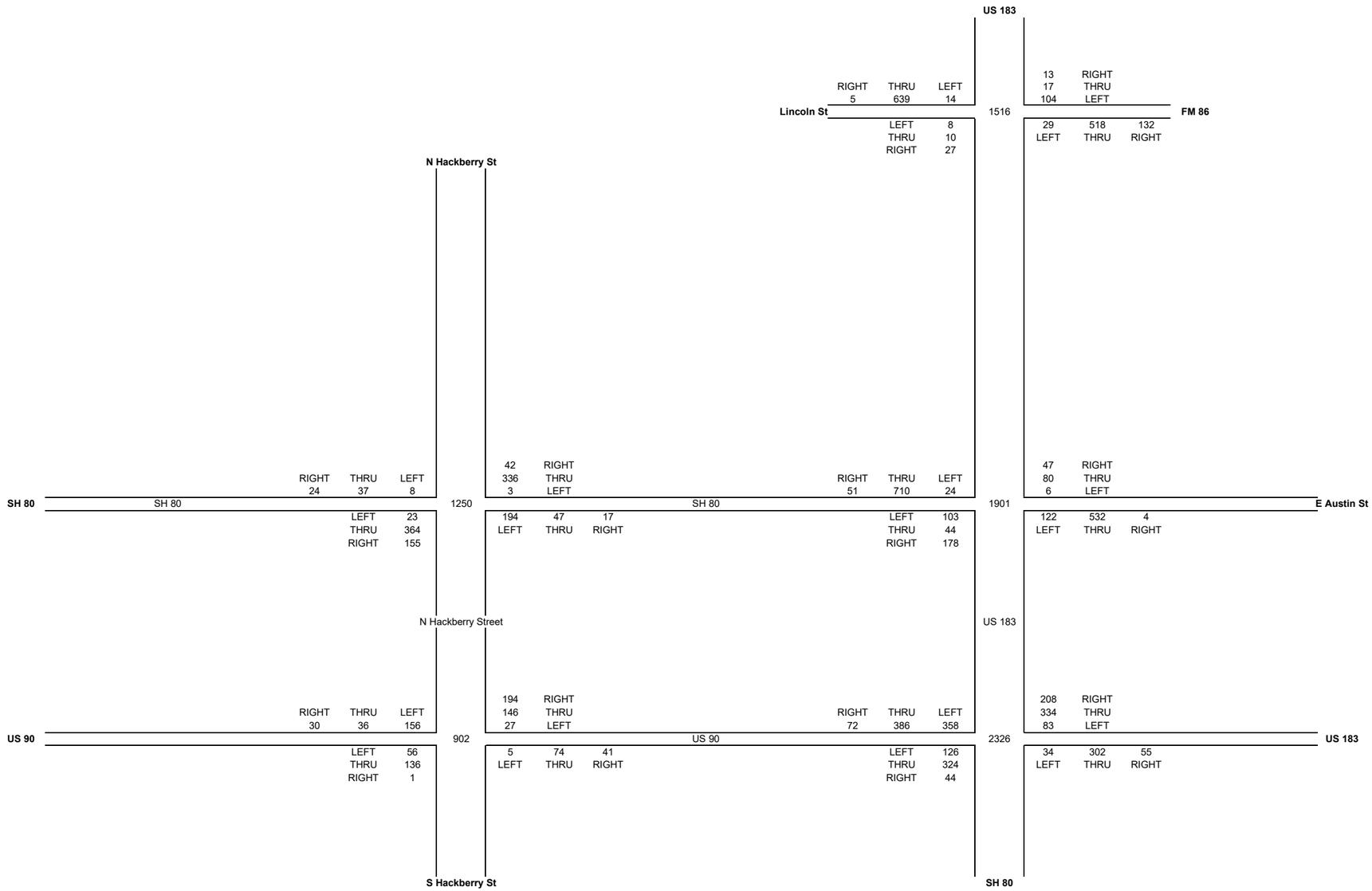
Annual Growth	
LOW	1.0%
HIGH	2.7%



Luling Transportation Study
Turning Movement Volumes

PM Peak Hour, Typical Friday
4:00 - 5:00 PM

2045 Near-term - LOW growth



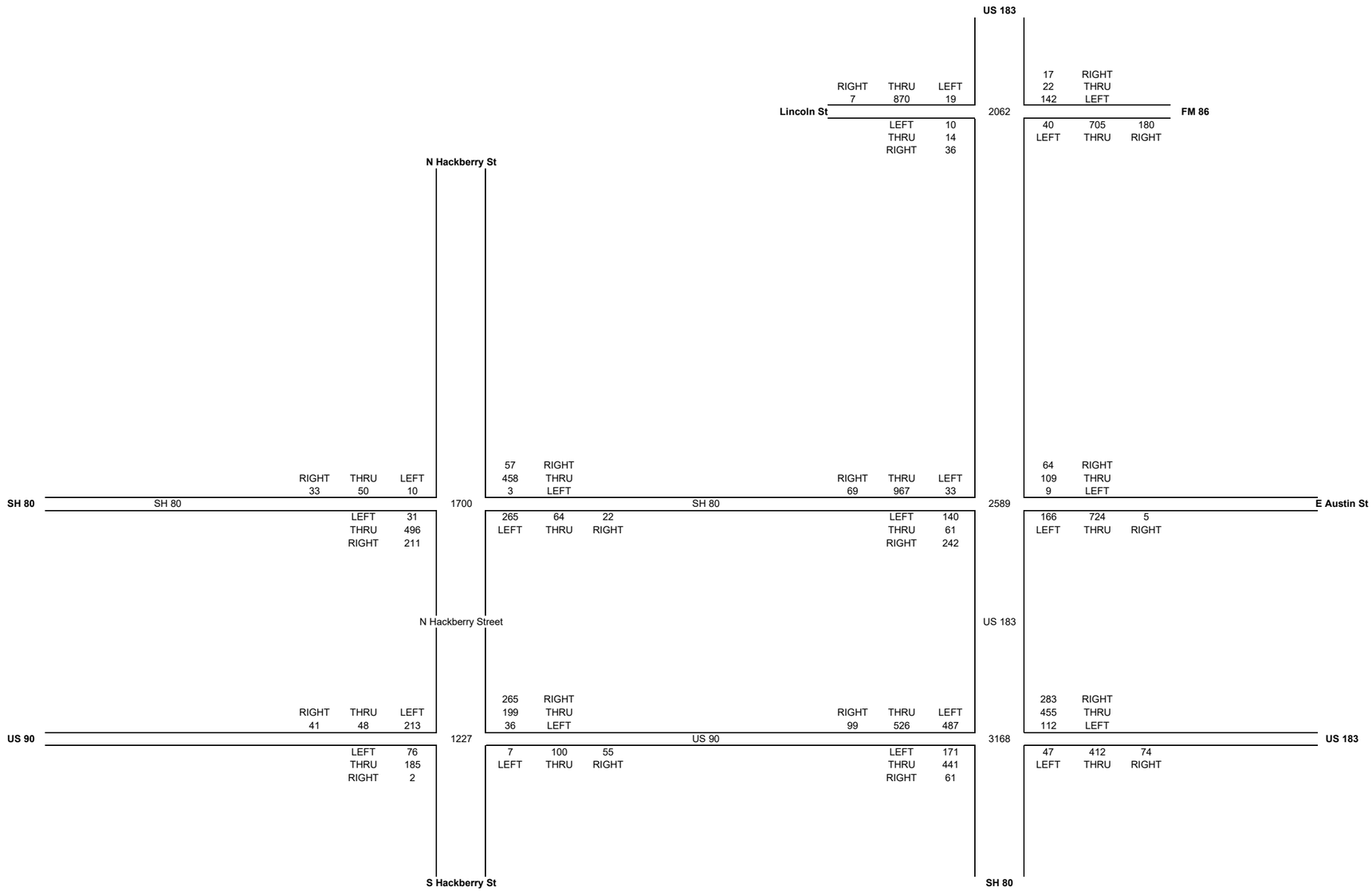
Annual Growth	
LOW	1.0%
HIGH	2.7%

Origin	Destination	2018 AADT
SH 80 N	US 183 S	63
US 183 S	SH 80 N	94
SH 80 N	SH 80 S	28
SH 80 S	SH 80 N	14
SH 80 N	US 183 N	4
US 183 N	SH 80 N	14
SH 80 N	Southeast	12
Southeast	SH 80 N	12
Hackberry	US 183 S	
US 183 S	Hackberry	
US 183 N	US 183 S	84
US 183 S	US 183 N	79

Luling Transportation Study
Turning Movement Volumes

PM Peak Hour, Typical Friday
4:00 - 5:00 PM

2045 Near-term - HIGH growth



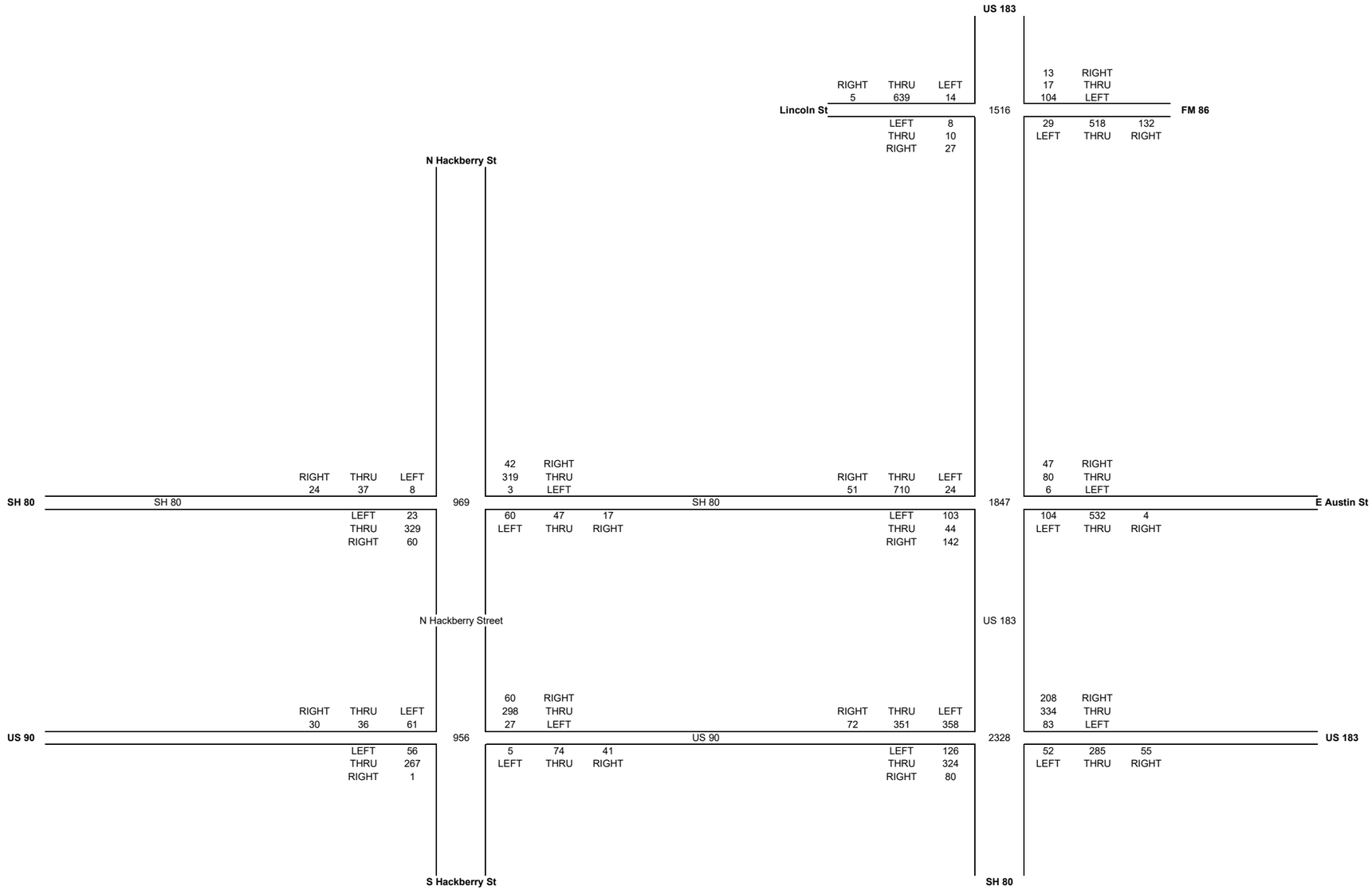
Annual Growth	
LOW	1.0%
HIGH	2.7%

Origin	Destination	2018 AADT
SH 80 N	US 183 S	63
US 183 S	SH 80 N	94
SH 80 N	SH 80 S	28
SH 80 S	SH 80 N	14
SH 80 N	US 183 N	4
US 183 N	SH 80 N	14
SH 80 N	Southeast	12
Southeast	SH 80 N	12
Hackberry	US 183 S	
US 183 S	Hackberry	
US 183 N	US 183 S	84
US 183 S	US 183 N	79

Luling Transportation Study
Turning Movement Volumes

PM Peak Hour, Typical Friday
4:00 - 5:00 PM

2045 Option A - LOW growth



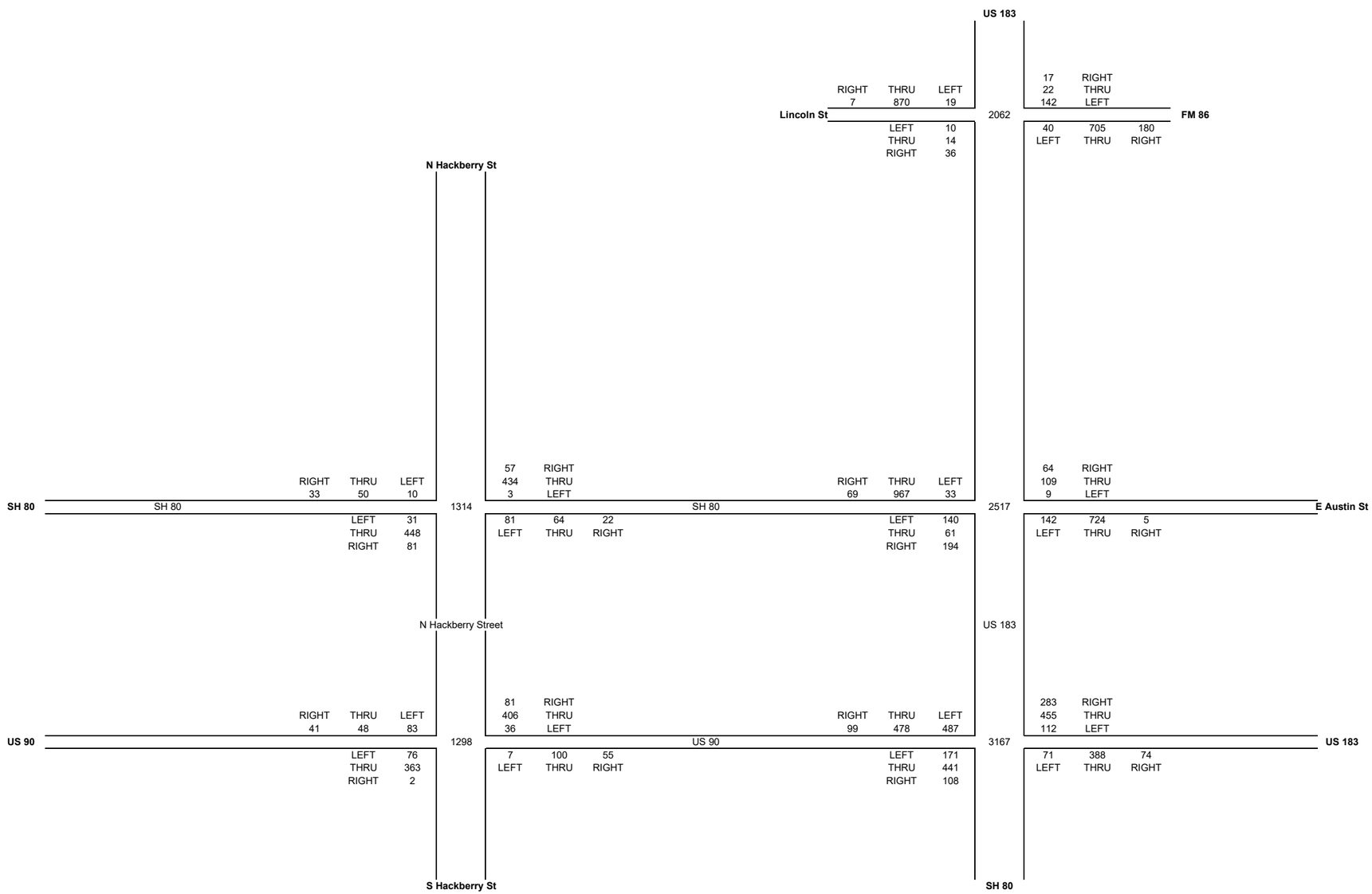
Annual Growth	
LOW	1.0%
HIGH	2.7%

Origin	Destination	2018 AADT
SH 80 N	US 183 S	63
US 183 S	SH 80 N	94
SH 80 N	SH 80 S	28
SH 80 S	SH 80 N	14
SH 80 N	US 183 N	4
US 183 N	SH 80 N	14
SH 80 N	Southeast	12
Southeast	SH 80 N	12
Hackberry	US 183 S	
US 183 S	Hackberry	
US 183 N	US 183 S	84
US 183 S	US 183 N	79

Luling Transportation Study
Turning Movement Volumes

PM Peak Hour, Typical Friday
4:00 - 5:00 PM

2045 Option A - HIGH growth



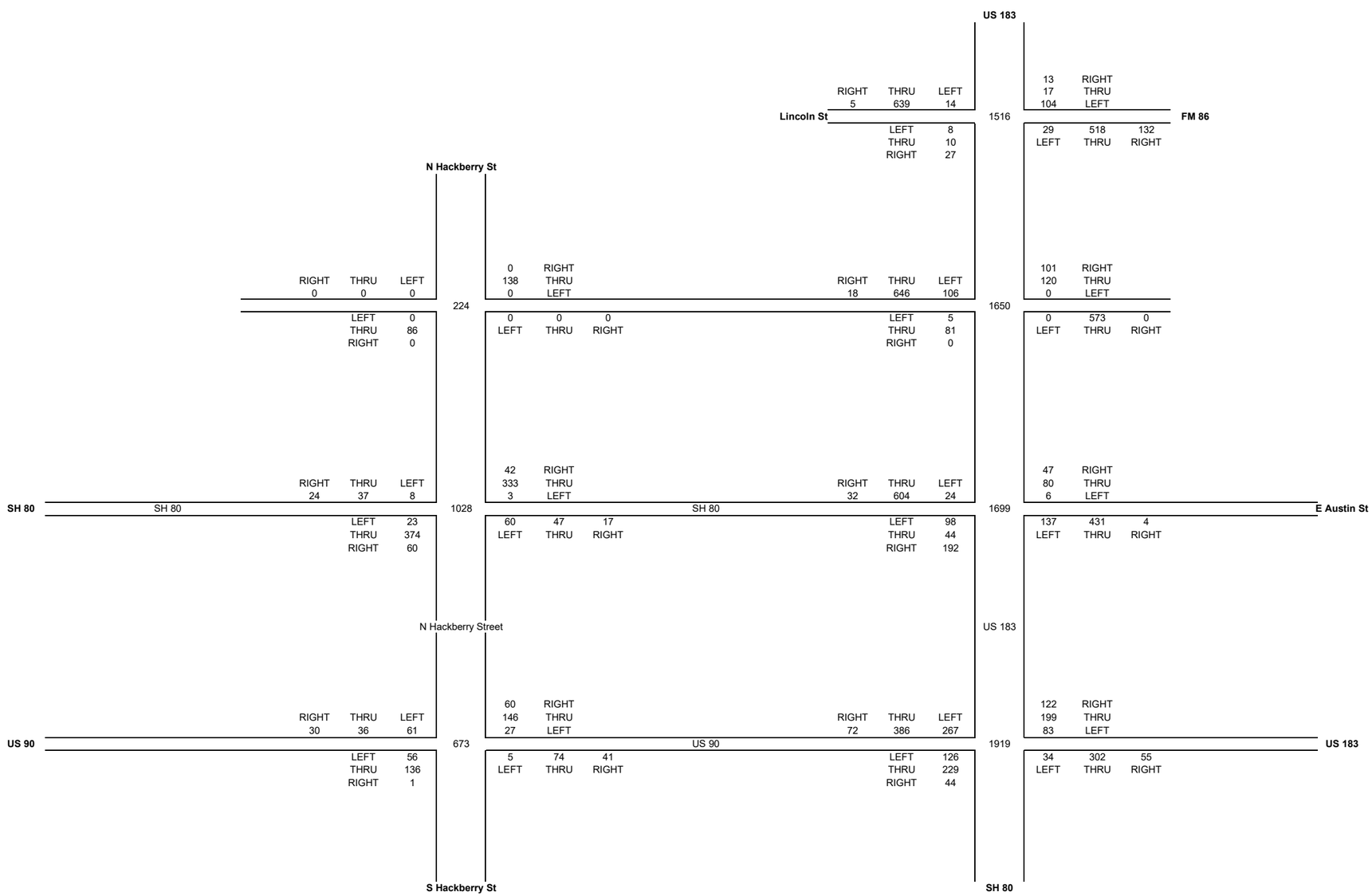
Annual Growth	
LOW	1.0%
HIGH	2.7%

Origin	Destination	2018 AADT
SH 80 N	US 183 S	63
US 183 S	SH 80 N	94
SH 80 N	SH 80 S	28
SH 80 S	SH 80 N	14
SH 80 N	US 183 N	4
US 183 N	SH 80 N	14
SH 80 N	Southeast	12
Southeast	SH 80 N	12
Hackberry	US 183 S	
US 183 S	Hackberry	
US 183 N	US 183 S	84
US 183 S	US 183 N	79

Luling Transportation Study
Turning Movement Volumes

PM Peak Hour, Typical Friday
4:00 - 5:00 PM

2045 Option B/C - LOW growth



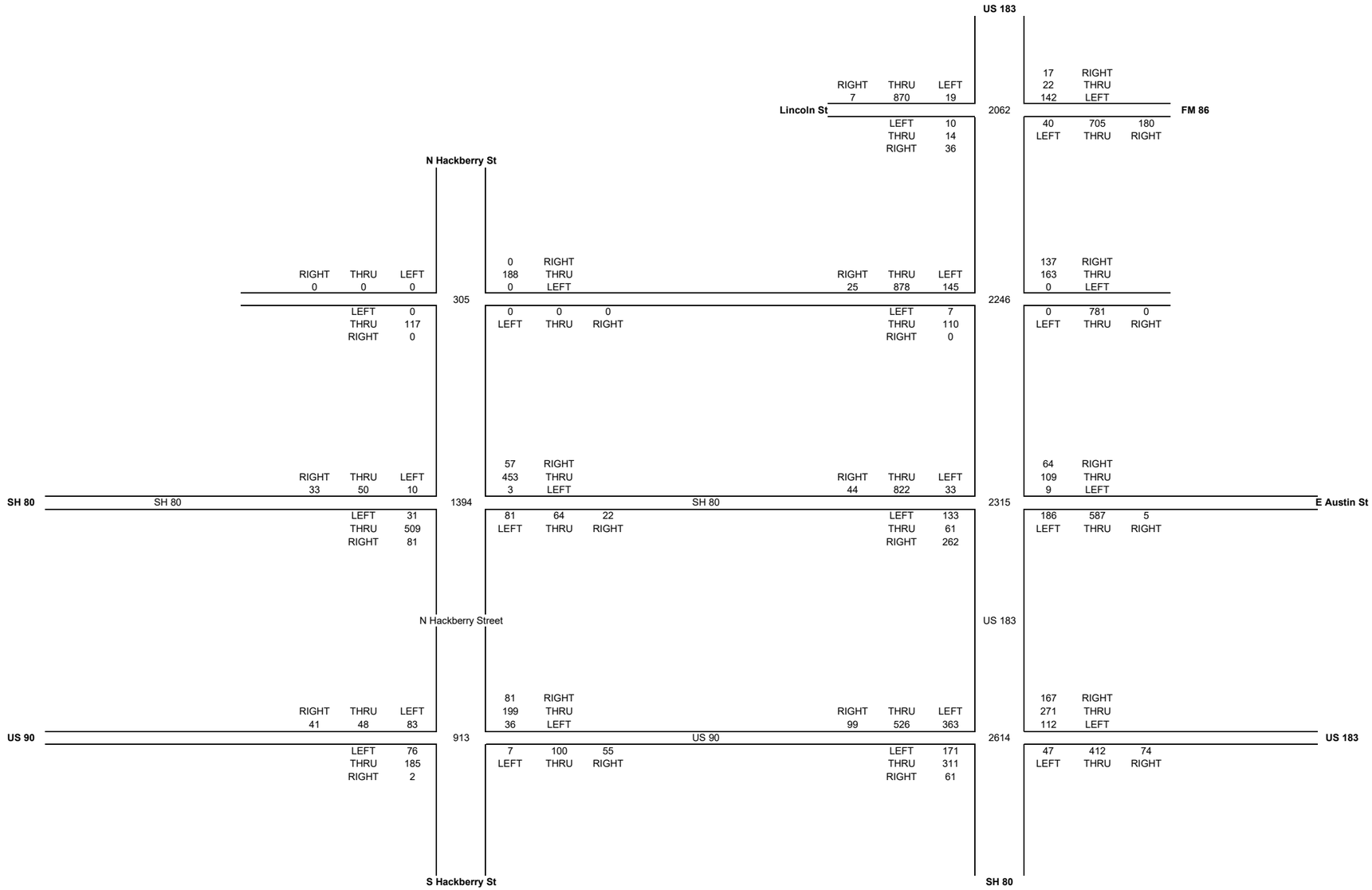
Annual Growth	
LOW	1.0%
HIGH	2.7%

Origin	Destination	2018 ADT
SH 80 N	US 183 S	63
US 183 S	SH 80 N	94
SH 80 N	SH 80 S	28
SH 80 S	SH 80 N	14
SH 80 N	US 183 N	4
US 183 N	SH 80 N	14
SH 80 N	Southeast	12
Southeast	SH 80 N	12
Hackberry	US 183 S	
US 183 S	Hackberry	
US 183 N	US 183 S	84
US 183 S	US 183 N	79

Luling Transportation Study
Turning Movement Volumes

PM Peak Hour, Typical Friday
4:00 - 5:00 PM

2045 Option B/C - HIGH growth

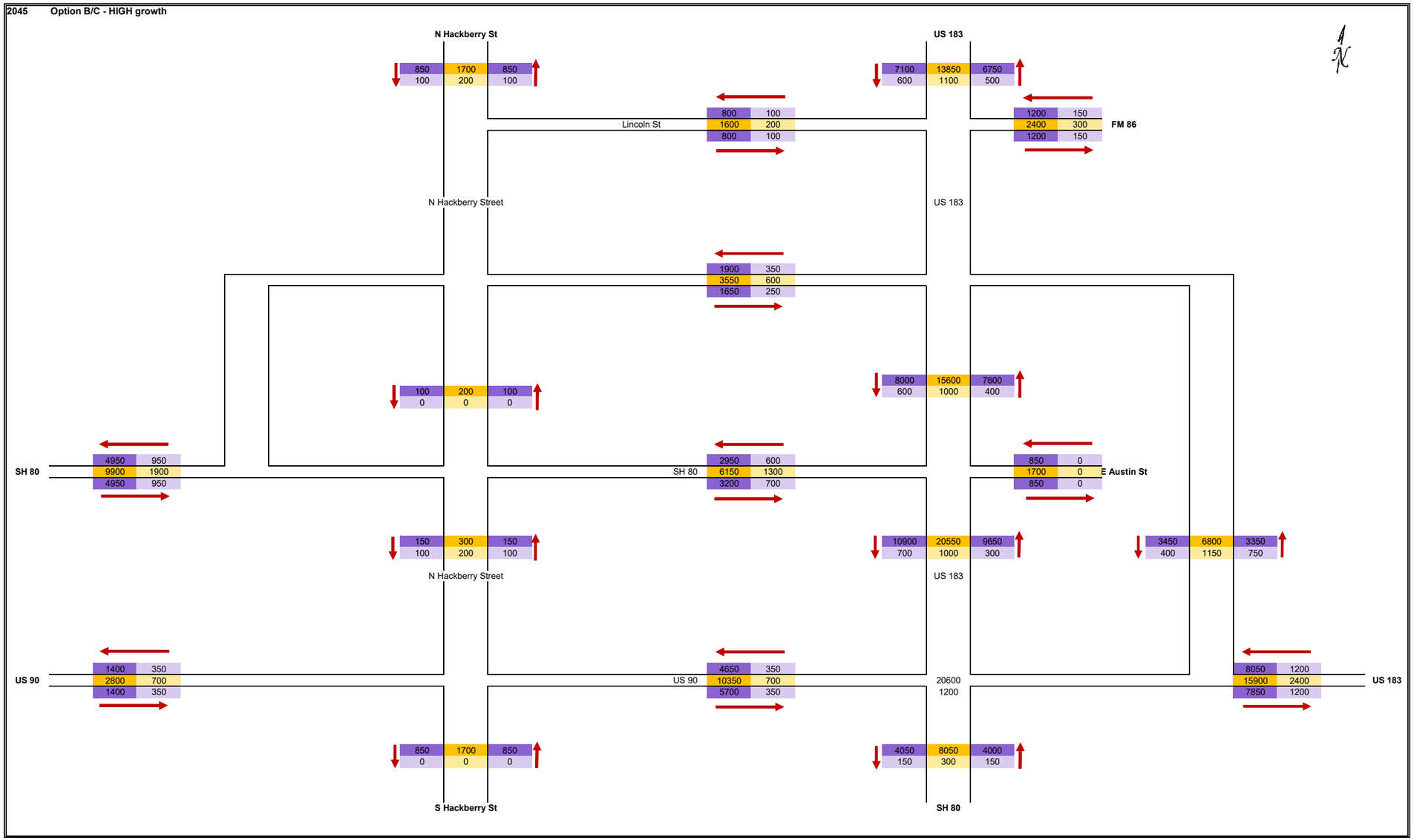


Annual Growth	
LOW	1.0%
HIGH	2.7%

Origin	Destination	2018 AADT
SH 80 N	US 183 S	63
US 183 S	SH 80 N	94
SH 80 N	SH 80 S	28
SH 80 S	SH 80 N	14
SH 80 N	US 183 N	4
US 183 N	SH 80 N	14
SH 80 N	Southeast	12
Southeast	SH 80 N	12
Hackberry	US 183 S	
US 183 S	Hackberry	
US 183 N	US 183 S	84
US 183 S	US 183 N	79

Luling Transportation Study
Roadway Segment Volume

Average Annual Daily Traffic (AADT)



Annual Growth	
LOW	1.0%
HIGH	2.7%

Directional Total
Directional Heavy Truck

Bidirectional Total
Bidirectional Heavy Truck

Origin	Destination	AADT	CMV
SH 80 N	US 183 S	828	153
US 183 S	SH 80 N	943	191
SH 80 N	SH 80 S	230	13
SH 80 S	SH 80 N	310	9
SH 80 N	US 183 N	131	2
US 183 N	SH 80 N	154	1
SH 80 N	Southeast	156	1
Southeast	SH 80 N	184	1
Hackberry	US 183 S	15	19
US 183 S	Hackberry	6	1
US 183 N	US 183 S	1145	69
US 183 S	US 183 N	979	229

2-B. Estimated Travel Time for Cross-Town Automobile Travel, Friday PM Peak

Luling Transportation Study

Estimated Friday PM Travel Time

Zone ID	Inbound	Middle Filter	Outbound	2018 Personal Travel Time (sec)	2018 Personal Travel Time (min)	2018 CMV Travel Time (sec)	2018 CMV Travel Time (min)	Factor	No Build Personal (sec) Low Growth	No Build Personal (sec) High Growth	No Build CMV (sec) Low Growth	No Build CMV (sec) High Growth	Near-term Personal (sec) Low Growth	Near-term Personal (sec) High Growth	Near-term CMV (sec) Low Growth	Near-term CMV (sec) High Growth	Option A Personal (sec) Low Growth	Option A Personal (sec) High Growth	Option A CMV (sec) Low Growth	Option A CMV (sec) High Growth	Option B/C Personal (sec) Low Growth	Option B/C Personal (sec) High Growth	Option B/C CMV (sec) Low Growth	Option B/C CMV (sec) High Growth
216	2 SH 80 EB	1 SH 80 Downtown	6 US 183 EB	569	9.48	539	8.98	0.95	644	1019	610	965												
256	2 SH 80 EB	5 US 90 Downtown	6 US 183 EB	571	9.52	562	9.37	0.98					358	406	352	400								
126	1 US 183 SB	2 US 183 (SH 80 to US 90)	6 US 183 EB	557	9.28	535	8.92	0.96	618	842	594	809	532	561	511	539	533	566	512	543				
315	3 US 183 WB	1 SH 80 Downtown	5 SH 80 WB	531	8.85	564	9.40	1.06	786	1273	834	1352												
355	3 US 183 WB	5 US 90 Downtown	5 SH 80 WB	549	9.16	609	10.15	1.11					434	477	481	529								
324	3 US 183 WB	2 US 183 (SH 80 to US 90)	4 US 183 NB	484	8.07	526	8.77	1.09	739	1226	803	1332	375	421	408	457	374	409	407	444				
				Option 2		Option 3																		
206	2 SH 80 EB	0 Bypass	6 US 183 EB	482		350											263	287	259	282	379	381	366	368
106	1 US 183 SB	0 Bypass	6 US 183 EB			330															342	347	329	333
305	3 US 183 WB	0 Bypass	5 SH 80 WB	460		350											358	381	397	422	378	382	410	414
304	3 US 183 WB	0 Bypass	4 US 183 NB			330															359	363	391	395

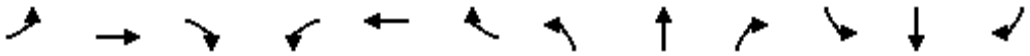
				Existing	No Build Low	No Build High	Near-term Low	Near-term High	Option A Low	Option A High	Option B/C Low	Option B/C High
216	EB →	Hackberry/SH 80		1	1	1	20	33	1	1	1	1
	EB →	US 183/SH 80		29	45	198	30	55	29	53	27	49
	SB ↓	US 183/US 90		49	108	329	23	47	24	51	13	33
				78	153	528						
256	EB →	Hackberry/SH 80		1	1	1	20	33	1	1	1	1
	SB ↓	Hackberry/US 90		20	45	693	10	16	9	10	45	693
	EB →	Hackberry/US 90		3					7	9		
	EB →	US 183/US 90		248	488	891	26	55	25	47	25	25
				269			56	104	32	56		
126	SB ↓	US 183/Lincoln		0	0	1	1	1	1	1	1	1
	SB ↓	US 183/SH 80		7	10	12	7	13	7	13	7	12
	SB ↓	US 183/US 90		49	108	329	23	47	24	51	13	33
				56	118	342	31	60	32	65		
315	WB ←	US 183/US 90		137	385	796	28	51	28	49	26	30
	NB ↑	US 183/SH 80		8	14	91	7	30	7	20	7	17
	WB ←	Hackberry/SH 80		0	0	0	13	14	0	0	0	0
				145	399	887						
355	WB ←	US 183/US 90		137	385	796	28	51	28	49	26	30
	WB ←	Hackberry/US 90		1	1	1	9	12	7	9	1	1
	NB ↑	Hackberry/SH 80		31	99	Error	15	33	33	223	39	326
				168			52	96	35	58		
324	WB ←	US 183/US 90		137	385	796	28	51	28	49	26	30
	NB ↑	US 183/SH 80		8	14	91	7	30	7	20	7	17
	NB ↑	US 183/Lincoln		1	1	1	1	1	1	1	1	1
				145	400	887	36	82	36	70		
206	EB →	Hackberry/Bypass									0	0
	EB →	US 183/Bypass									29	32
											29	32
106	SB ↓	US 183/Lincoln		0	0	1	1	1	1	1	1	1
	SB ↓	US 183/Bypass									11	16
											12	17
305	WB ←	US 183/Bypass									28	32
	WB ←	Hackberry/Bypass									0	0
											28	32
304	WB ←	US 183/Bypass									28	32
	NB ↑	US 183/Lincoln		1	1	1	1	1	1	1	1	1
											29	33

Calculated raw data
Pertains to future route
Calculated distance for bypass

Roadway	Assumed speed (mph)
Option A bypass	55
Option B bypass	55

EB/WB	1.121
Factor factor	1.131
Average	1.126

2-C. Intersection Level of Service (LOS) and Average Delay, Friday PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	8	21	82	13	10	23	408	104	11	503	4
Future Volume (Veh/h)	6	8	21	82	13	10	23	408	104	11	503	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	6	8	22	86	14	11	24	429	109	12	529	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	836	1141	266	846	1088	269	533			538		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	836	1141	266	846	1088	269	533			538		
tC, single (s)	7.5	6.5	7.0	7.6	6.7	7.7	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.7	2.2			2.4		
p0 queue free %	97	96	97	62	93	98	98			99		
cM capacity (veh/h)	238	195	723	229	198	626	1017			923		

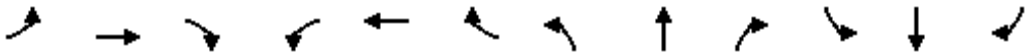
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	36	111	238	324	276	268
Volume Left	6	86	24	0	12	0
Volume Right	22	11	0	109	0	4
cSH	372	239	1017	1700	923	1700
Volume to Capacity	0.10	0.46	0.02	0.19	0.01	0.16
Queue Length 95th (ft)	8	57	2	0	1	0
Control Delay (s)	15.7	32.4	1.1	0.0	0.5	0.0
Lane LOS	C	D	A		A	
Approach Delay (s)	15.7	32.4	0.5		0.3	
Approach LOS	C	D				

Intersection Summary				
Average Delay	3.6			
Intersection Capacity Utilization	51.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	352	111	664	658
v/c Ratio	0.77	0.24	0.53	0.34
Control Delay	29.2	16.5	10.5	7.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.2	16.5	10.5	7.9
Queue Length 50th (ft)	97	27	82	69
Queue Length 95th (ft)	#211	63	129	102
Internal Link Dist (ft)	2117	230	939	3161
Turn Bay Length (ft)				
Base Capacity (vph)	517	531	1892	1929
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.21	0.35	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	35	215	5	63	37	202	419	3	19	559	40
Future Volume (vph)	81	35	215	5	63	37	202	419	3	19	559	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.91			0.95			1.00			0.99	
Flt Protected		0.99			1.00			0.98			1.00	
Satd. Flow (prot)		1660			1743			3341			3475	
Flt Permitted		0.90			0.98			0.62			0.93	
Satd. Flow (perm)		1510			1719			2119			3233	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	86	37	229	5	67	39	215	446	3	20	595	43
RTOR Reduction (vph)	0	71	0	0	21	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	281	0	0	90	0	0	664	0	0	654	0
Heavy Vehicles (%)	5%	0%	3%	0%	6%	0%	9%	5%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		17.2			17.2			40.1			40.1	
Effective Green, g (s)		17.2			17.2			40.1			40.1	
Actuated g/C Ratio		0.26			0.26			0.60			0.60	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		385			439			1262			1926	
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.05			c0.31			0.20	
v/c Ratio		0.73			0.21			0.53			0.34	
Uniform Delay, d1		22.9			19.7			8.0			6.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		5.8			0.1			0.2			0.5	
Delay (s)		28.7			19.8			8.2			7.4	
Level of Service		C			B			A			A	
Approach Delay (s)		28.7			19.8			8.2			7.4	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

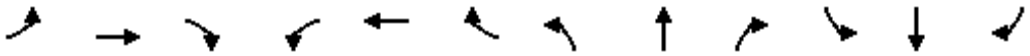
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	324	507	317	740
v/c Ratio	1.37	1.06	0.87	1.03dl
Control Delay	227.9	81.6	66.1	50.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	227.9	81.6	66.1	50.3
Queue Length 50th (ft)	~162	~125	113	252
Queue Length 95th (ft)	#258	#236	#202	#360
Internal Link Dist (ft)	2127	1292	974	939
Turn Bay Length (ft)				
Base Capacity (vph)	237	478	363	906
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.37	1.06	0.87	0.82

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

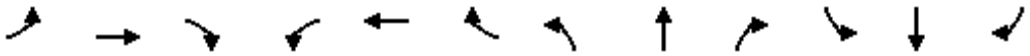


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	180	35	65	157	270	27	238	43	357	304	57
Future Volume (vph)	99	180	35	65	157	270	27	238	43	357	304	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.98			0.92			0.98			0.99	
Flt Protected		0.98			0.99			1.00			0.98	
Satd. Flow (prot)		3395			3119			3311			3390	
Flt Permitted		0.71			0.56			0.54			0.68	
Satd. Flow (perm)		2455			1749			1804			2364	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	102	186	36	67	162	278	28	245	44	368	313	59
RTOR Reduction (vph)	0	9	0	0	218	0	0	11	0	0	7	0
Lane Group Flow (vph)	0	315	0	0	289	0	0	306	0	0	733	0
Heavy Vehicles (%)	1%	4%	3%	3%	4%	7%	7%	7%	2%	3%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			1			3			4	
Permitted Phases	2			1			3			4		
Actuated Green, G (s)		10.0			16.0			21.1			36.7	
Effective Green, g (s)		10.0			16.0			21.1			36.7	
Actuated g/C Ratio		0.09			0.15			0.20			0.34	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		227			259			353			804	
v/s Ratio Prot												
v/s Ratio Perm		c0.13			c0.17			c0.17			c0.31	
v/c Ratio		1.39			1.12			0.87			1.03dl	
Uniform Delay, d1		48.9			45.9			42.0			34.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		199.2			90.6			23.7			14.6	
Delay (s)		248.1			136.5			65.7			48.6	
Level of Service		F			F			E			D	
Approach Delay (s)		248.1			136.5			65.7			48.6	
Approach LOS		F			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	109.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	107.8	Sum of lost time (s)	24.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

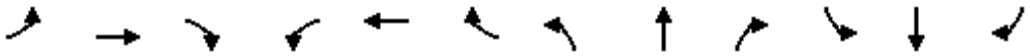
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	362	47	2	371	33	47	37	13	6	29	19
Future Volume (Veh/h)	18	362	47	2	371	33	47	37	13	6	29	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	20	407	53	2	417	37	53	42	15	7	33	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	454			460			950	932	434	949	940	436
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	454			460			950	932	434	949	940	436
tC, single (s)	4.2			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	98			100			74	84	98	97	87	97
cM capacity (veh/h)	1086			1112			204	263	610	204	257	625

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	480	456	110	61
Volume Left	20	2	53	7
Volume Right	53	37	15	21
cSH	1086	1112	248	311
Volume to Capacity	0.02	0.00	0.44	0.20
Queue Length 95th (ft)	1	0	53	18
Control Delay (s)	0.6	0.1	30.6	19.4
Lane LOS	A	A	D	C
Approach Delay (s)	0.6	0.1	30.6	19.4
Approach LOS			D	C

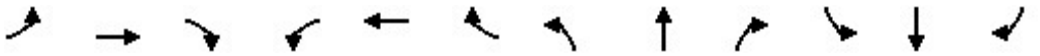
Intersection Summary				
Average Delay	4.4			
Intersection Capacity Utilization	53.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	107	1	21	115	47	4	58	32	48	28	24
Future Volume (Veh/h)	44	107	1	21	115	47	4	58	32	48	28	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	66	160	1	31	172	70	6	87	48	72	42	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	242			161			498	596	80	572	562	121
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	242			161			498	596	80	572	562	121
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.7	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	95			98			98	78	95	75	90	96
cM capacity (veh/h)	1300			1430			385	389	970	291	407	901

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	146	81	117	156	141	150
Volume Left	66	0	31	0	6	72
Volume Right	0	1	0	70	48	36
cSH	1300	1700	1430	1700	489	384
Volume to Capacity	0.05	0.05	0.02	0.09	0.29	0.39
Queue Length 95th (ft)	4	0	2	0	30	45
Control Delay (s)	3.8	0.0	2.1	0.0	15.3	20.3
Lane LOS	A		A		C	C
Approach Delay (s)	2.5		0.9		15.3	20.3
Approach LOS					C	C

Intersection Summary				
Average Delay	7.6			
Intersection Capacity Utilization	31.8%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	10	27	104	17	13	29	518	132	14	639	5
Future Volume (Veh/h)	8	10	27	104	17	13	29	518	132	14	639	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	8	11	28	109	18	14	31	545	139	15	673	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1063	1452	339	1076	1384	342	678			684		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1063	1452	339	1076	1384	342	678			684		
tC, single (s)	7.5	6.5	7.0	7.6	6.7	7.7	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.7	2.2			2.4		
p0 queue free %	95	91	96	25	86	97	97			98		
cM capacity (veh/h)	151	125	648	145	128	555	897			806		

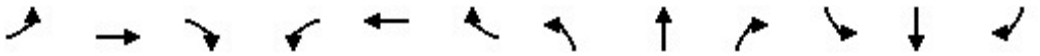
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	47	141	304	412	352	342
Volume Left	8	109	31	0	15	0
Volume Right	28	14	0	139	0	5
cSH	255	154	897	1700	806	1700
Volume to Capacity	0.18	0.92	0.03	0.24	0.02	0.20
Queue Length 95th (ft)	17	163	3	0	1	0
Control Delay (s)	22.3	109.4	1.3	0.0	0.6	0.0
Lane LOS	C	F	A		A	
Approach Delay (s)	22.3	109.4	0.5		0.3	
Approach LOS	C	F				

Intersection Summary				
Average Delay	10.7			
Intersection Capacity Utilization	61.3%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	447	141	843	835
v/c Ratio	0.91	0.28	0.92dl	0.46
Control Delay	45.6	17.2	17.0	9.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	45.6	17.2	17.0	9.6
Queue Length 50th (ft)	148	37	130	97
Queue Length 95th (ft)	#320	79	207	137
Internal Link Dist (ft)	2117	230	939	3161
Turn Bay Length (ft)				
Base Capacity (vph)	490	510	1663	1823
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.28	0.51	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	44	273	6	80	47	257	532	4	24	710	51
Future Volume (vph)	103	44	273	6	80	47	257	532	4	24	710	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.91			0.95			1.00			0.99	
Flt Protected		0.99			1.00			0.98			1.00	
Satd. Flow (prot)		1660			1742			3340			3475	
Flt Permitted		0.88			0.98			0.57			0.91	
Satd. Flow (perm)		1481			1717			1941			3184	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	110	47	290	6	85	50	273	566	4	26	755	54
RTOR Reduction (vph)	0	68	0	0	20	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	379	0	0	121	0	0	843	0	0	831	0
Heavy Vehicles (%)	5%	0%	3%	0%	6%	0%	9%	5%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		20.0			20.0			40.0			40.0	
Effective Green, g (s)		20.0			20.0			40.0			40.0	
Actuated g/C Ratio		0.29			0.29			0.57			0.57	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		423			490			1109			1819	
v/s Ratio Prot												
v/s Ratio Perm		c0.26			0.07			c0.43			0.26	
v/c Ratio		0.90			0.25			0.92dl			0.46	
Uniform Delay, d1		24.0			19.2			11.4			8.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		20.5			0.1			2.7			0.8	
Delay (s)		44.5			19.3			14.1			9.5	
Level of Service		D			B			B			A	
Approach Delay (s)		44.5			19.3			14.1			9.5	
Approach LOS		D			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

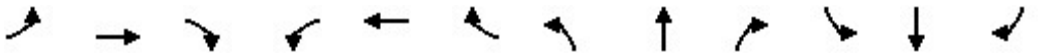
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	411	645	403	939
v/c Ratio	1.89	1.38	1.20	1.32dl
Control Delay	447.7	209.3	153.6	105.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	447.7	209.3	153.6	105.7
Queue Length 50th (ft)	~237	~238	~181	~411
Queue Length 95th (ft)	#341	#358	#284	#543
Internal Link Dist (ft)	2127	1292	974	939
Turn Bay Length (ft)				
Base Capacity (vph)	217	466	336	834
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.89	1.38	1.20	1.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

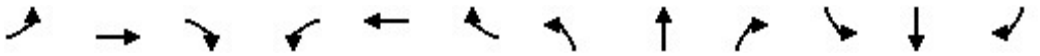


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	229	44	83	199	343	34	302	55	453	386	72
Future Volume (vph)	126	229	44	83	199	343	34	302	55	453	386	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.98			0.92			0.98			0.99	
Flt Protected		0.98			0.99			1.00			0.98	
Satd. Flow (prot)		3396			3119			3310			3391	
Flt Permitted		0.68			0.56			0.52			0.65	
Satd. Flow (perm)		2337			1750			1729			2263	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	130	236	45	86	205	354	35	311	57	467	398	74
RTOR Reduction (vph)	0	9	0	0	217	0	0	12	0	0	6	0
Lane Group Flow (vph)	0	402	0	0	428	0	0	391	0	0	933	0
Heavy Vehicles (%)	1%	4%	3%	3%	4%	7%	7%	7%	2%	3%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			1			3			4	
Permitted Phases	2			1			3			4		
Actuated Green, G (s)		10.0			16.0			21.0			41.0	
Effective Green, g (s)		10.0			16.0			21.0			41.0	
Actuated g/C Ratio		0.09			0.14			0.19			0.37	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		208			250			324			828	
v/s Ratio Prot												
v/s Ratio Perm		c0.17			c0.24			c0.23			c0.41	
v/c Ratio		1.93			1.71			1.21			1.32dl	
Uniform Delay, d1		51.0			48.0			45.5			35.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		436.7			337.1			118.3			72.2	
Delay (s)		487.7			385.1			163.8			107.7	
Level of Service		F			F			F			F	
Approach Delay (s)		487.7			385.1			163.8			107.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	256.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	112.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

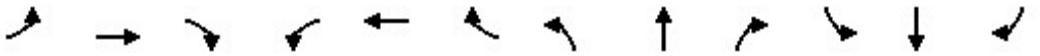
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	460	60	3	471	42	60	47	17	8	37	24
Future Volume (Veh/h)	23	460	60	3	471	42	60	47	17	8	37	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	26	517	67	3	529	47	67	53	19	9	42	27
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	576			584			1209	1184	550	1206	1194	552
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	576			584			1209	1184	550	1206	1194	552
tC, single (s)	4.2			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	97			100			44	71	96	92	77	95
cM capacity (veh/h)	978			1001			121	185	523	119	180	537

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	610	579	139	78
Volume Left	26	3	67	9
Volume Right	67	47	19	27
cSH	978	1001	158	217
Volume to Capacity	0.03	0.00	0.88	0.36
Queue Length 95th (ft)	2	0	153	39
Control Delay (s)	0.7	0.1	99.1	30.6
Lane LOS	A	A	F	D
Approach Delay (s)	0.7	0.1	99.1	30.6
Approach LOS			F	D

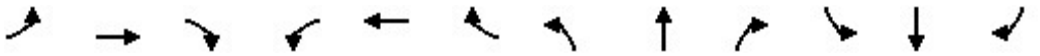
Intersection Summary			
Average Delay	11.8		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	136	1	27	146	60	5	74	41	61	36	30
Future Volume (Veh/h)	56	136	1	27	146	60	5	74	41	61	36	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	84	203	1	40	218	90	7	110	61	91	54	45
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	308			204			632	760	102	728	715	154
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	308			204			632	760	102	728	715	154
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.7	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	93			97			98	64	94	52	83	95
cM capacity (veh/h)	1228			1380			283	306	940	188	324	858

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	186	102	149	199	178	190
Volume Left	84	0	40	0	7	91
Volume Right	0	1	0	90	61	45
cSH	1228	1700	1380	1700	396	271
Volume to Capacity	0.07	0.06	0.03	0.12	0.45	0.70
Queue Length 95th (ft)	5	0	2	0	56	120
Control Delay (s)	4.0	0.0	2.2	0.0	21.3	44.5
Lane LOS	A		A		C	E
Approach Delay (s)	2.6		1.0		21.3	44.5
Approach LOS					C	E

Intersection Summary				
Average Delay	13.3			
Intersection Capacity Utilization	35.9%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	14	36	142	22	17	40	705	180	19	870	7
Future Volume (Veh/h)	10	14	36	142	22	17	40	705	180	19	870	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	15	38	149	23	18	42	742	189	20	916	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1444	1974	462	1464	1884	466	923			931		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1444	1974	462	1464	1884	466	923			931		
tC, single (s)	7.5	6.5	7.0	7.6	6.7	7.7	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.7	2.2			2.4		
p0 queue free %	82	74	93	0	62	96	94			97		
cM capacity (veh/h)	60	57	539	61	60	452	723			639		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	64	190	413	560	478	465
Volume Left	11	149	42	0	20	0
Volume Right	38	18	0	189	0	7
cSH	124	66	723	1700	639	1700
Volume to Capacity	0.52	2.89	0.06	0.33	0.03	0.27
Queue Length 95th (ft)	61	481	5	0	2	0
Control Delay (s)	61.6	985.4	1.7	0.0	0.9	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	61.6	985.4	0.7		0.5	
Approach LOS	F	F				

Intersection Summary				
Average Delay	88.6			
Intersection Capacity Utilization	77.9%	ICU Level of Service	D	
Analysis Period (min)	15			

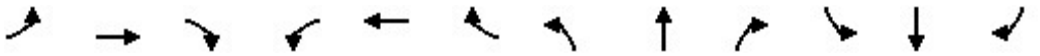
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	610	194	1146	1137
v/c Ratio	1.30	0.39	1.98dl	0.64
Control Delay	173.3	19.9	94.2	12.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	173.3	19.9	94.2	12.2
Queue Length 50th (ft)	~315	56	~312	156
Queue Length 95th (ft)	#505	110	#434	217
Internal Link Dist (ft)	2117	230	939	3161
Turn Bay Length (ft)				
Base Capacity (vph)	469	498	1507	1770
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.30	0.39	0.76	0.64

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	61	372	9	109	64	349	724	5	33	967	69
Future Volume (vph)	140	61	372	9	109	64	349	724	5	33	967	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.91			0.95			1.00			0.99	
Flt Protected		0.99			1.00			0.98			1.00	
Satd. Flow (prot)		1660			1743			3341			3475	
Flt Permitted		0.84			0.96			0.52			0.89	
Satd. Flow (perm)		1408			1674			1758			3089	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	149	65	396	10	116	68	371	770	5	35	1029	73
RTOR Reduction (vph)	0	68	0	0	20	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	542	0	0	174	0	0	1146	0	0	1133	0
Heavy Vehicles (%)	5%	0%	3%	0%	6%	0%	9%	5%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		20.0			20.0			40.0			40.0	
Effective Green, g (s)		20.0			20.0			40.0			40.0	
Actuated g/C Ratio		0.29			0.29			0.57			0.57	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		402			478			1004			1765	
v/s Ratio Prot												
v/s Ratio Perm		c0.39			0.10			c0.65			0.37	
v/c Ratio		1.35			0.36			1.98dl			0.64	
Uniform Delay, d1		25.0			19.9			15.0			10.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		172.6			0.2			75.6			1.8	
Delay (s)		197.6			20.1			90.6			12.0	
Level of Service		F			C			F			B	
Approach Delay (s)		197.6			20.1			90.6			12.0	
Approach LOS		F			C			F			B	

Intersection Summary			
HCM 2000 Control Delay	78.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	120.8%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

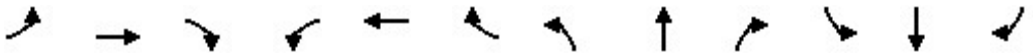
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	560	875	549	1280
v/c Ratio	2.75	1.87	1.62	2.06dl
Control Delay	819.2	420.6	324.9	317.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	819.2	420.6	324.9	317.9
Queue Length 50th (ft)	~362	~422	~298	~705
Queue Length 95th (ft)	#477	#552	#412	#844
Internal Link Dist (ft)	2127	1292	974	939
Turn Bay Length (ft)				
Base Capacity (vph)	204	468	338	784
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	2.75	1.87	1.62	1.63

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

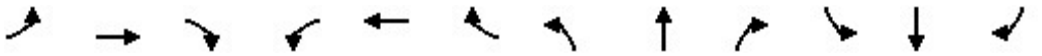


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	311	61	112	271	467	47	412	74	617	526	99
Future Volume (vph)	171	311	61	112	271	467	47	412	74	617	526	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.98			0.92			0.98			0.99	
Flt Protected		0.98			0.99			1.00			0.98	
Satd. Flow (prot)		3394			3119			3311			3390	
Flt Permitted		0.63			0.56			0.53			0.61	
Satd. Flow (perm)		2174			1748			1747			2125	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	176	321	63	115	279	481	48	425	76	636	542	102
RTOR Reduction (vph)	0	10	0	0	219	0	0	11	0	0	6	0
Lane Group Flow (vph)	0	550	0	0	656	0	0	538	0	0	1274	0
Heavy Vehicles (%)	1%	4%	3%	3%	4%	7%	7%	7%	2%	3%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			1			3			4	
Permitted Phases	2			1			3			4		
Actuated Green, G (s)		10.0			16.0			21.0			41.0	
Effective Green, g (s)		10.0			16.0			21.0			41.0	
Actuated g/C Ratio		0.09			0.14			0.19			0.37	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		194			249			327			777	
v/s Ratio Prot												
v/s Ratio Perm		c0.25			c0.38			c0.31			c0.60	
v/c Ratio		2.83			2.64			1.64			2.06dl	
Uniform Delay, d1		51.0			48.0			45.5			35.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		839.8			747.8			303.3			293.5	
Delay (s)		890.8			795.8			348.8			329.0	
Level of Service		F			F			F			F	
Approach Delay (s)		890.8			795.8			348.8			329.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	553.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.95		
Actuated Cycle Length (s)	112.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

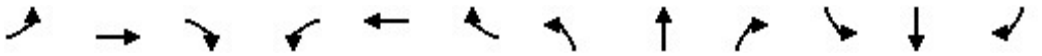
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	626	81	3	641	57	81	64	22	10	50	33
Future Volume (Veh/h)	31	626	81	3	641	57	81	64	22	10	50	33
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	35	703	91	3	720	64	91	72	25	11	56	37
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	784			794			1642	1608	748	1638	1622	752
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	784			794			1642	1608	748	1638	1622	752
tC, single (s)	4.2			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	96			100			0	29	94	65	43	91
cM capacity (veh/h)	817			836			38	101	402	31	97	413

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	829	787	188	104
Volume Left	35	3	91	11
Volume Right	91	64	25	37
cSH	817	836	59	102
Volume to Capacity	0.04	0.00	3.17	1.02
Queue Length 95th (ft)	3	0	Err	159
Control Delay (s)	1.1	0.1	Err	171.1
Lane LOS	A	A	F	F
Approach Delay (s)	1.1	0.1	Err	171.1
Approach LOS			F	F

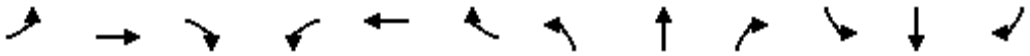
Intersection Summary				
Average Delay	995.1			
Intersection Capacity Utilization	83.2%	ICU Level of Service	E	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	185	2	36	199	81	7	100	55	83	48	41
Future Volume (Veh/h)	76	185	2	36	199	81	7	100	55	83	48	41
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	113	276	3	54	297	121	10	149	82	124	72	61
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	418			279			857	1030	140	986	970	209
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	418			279			857	1030	140	986	970	209
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.7	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	90			96			94	27	91	0	67	92
cM capacity (veh/h)	1116			1295			157	203	889	64	220	791

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	251	141	202	270	241	257
Volume Left	113	0	54	0	10	124
Volume Right	0	3	0	121	82	61
cSH	1116	1700	1295	1700	271	110
Volume to Capacity	0.10	0.08	0.04	0.16	0.89	2.34
Queue Length 95th (ft)	8	0	3	0	196	566
Control Delay (s)	4.4	0.0	2.4	0.0	70.7	693.4
Lane LOS	A		A		F	F
Approach Delay (s)	2.8		1.0		70.7	693.4
Approach LOS					F	F

Intersection Summary				
Average Delay	144.5			
Intersection Capacity Utilization	48.5%	ICU Level of Service		A
Analysis Period (min)	15			



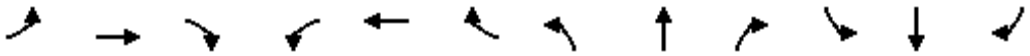
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	10	27	104	17	13	29	518	132	14	639	5
Future Volume (Veh/h)	8	10	27	104	17	13	29	518	132	14	639	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	8	11	28	109	18	14	31	545	139	15	673	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1063	1452	339	1076	1384	342	678			684		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1063	1452	339	1076	1384	342	678			684		
tC, single (s)	7.5	6.5	7.0	7.6	6.7	7.7	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.7	2.2			2.4		
p0 queue free %	95	91	96	25	86	97	97			98		
cM capacity (veh/h)	151	125	648	145	128	555	897			806		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	47	141	304	412	352	342
Volume Left	8	109	31	0	15	0
Volume Right	28	14	0	139	0	5
cSH	255	154	897	1700	806	1700
Volume to Capacity	0.18	0.92	0.03	0.24	0.02	0.20
Queue Length 95th (ft)	17	163	3	0	1	0
Control Delay (s)	22.3	109.4	1.3	0.0	0.6	0.0
Lane LOS	C	F	A		A	
Approach Delay (s)	22.3	109.4	0.5		0.3	
Approach LOS	C	F				

Intersection Summary				
Average Delay	10.7			
Intersection Capacity Utilization	61.3%	ICU Level of Service	B	
Analysis Period (min)	15			

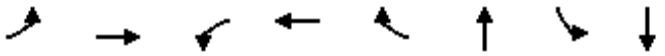
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	346	141	700	835
v/c Ratio	0.81	0.32	0.50	0.44
Control Delay	30.9	14.7	9.7	8.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	30.9	14.7	9.7	8.4
Queue Length 50th (ft)	84	28	69	77
Queue Length 95th (ft)	170	66	133	138
Internal Link Dist (ft)	2117	230	939	3161
Turn Bay Length (ft)				
Base Capacity (vph)	559	609	1389	1904
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.23	0.50	0.44

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	44	178	6	80	47	122	532	4	24	710	51
Future Volume (vph)	103	44	178	6	80	47	122	532	4	24	710	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.93			0.95			1.00			0.99	
Flt Protected		0.98			1.00			0.99			1.00	
Satd. Flow (prot)		1678			1742			3381			3475	
Flt Permitted		0.86			0.98			0.69			0.92	
Satd. Flow (perm)		1470			1719			2349			3215	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	110	47	189	6	85	50	130	566	4	26	755	54
RTOR Reduction (vph)	0	73	0	0	33	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	273	0	0	108	0	0	700	0	0	830	0
Heavy Vehicles (%)	5%	0%	3%	0%	6%	0%	9%	5%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.3			14.3			35.2			35.2	
Effective Green, g (s)		14.3			14.3			35.2			35.2	
Actuated g/C Ratio		0.24			0.24			0.59			0.59	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		353			413			1389			1901	
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.06			c0.30			0.26	
v/c Ratio		0.77			0.26			0.50			0.44	
Uniform Delay, d1		21.1			18.3			7.1			6.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		9.3			0.1			0.1			0.7	
Delay (s)		30.4			18.4			7.2			7.4	
Level of Service		C			B			A			A	
Approach Delay (s)		30.4			18.4			7.2			7.4	
Approach LOS		C			B			A			A	

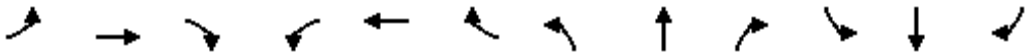
Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	130	379	86	344	214	403	369	472
v/c Ratio	0.52	0.48	0.26	0.75	0.39	0.47	0.85	0.55
Control Delay	24.3	25.7	16.5	37.1	5.8	24.1	39.7	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	25.7	16.5	37.1	5.8	24.1	39.7	18.4
Queue Length 50th (ft)	39	78	25	150	0	80	121	159
Queue Length 95th (ft)	74	118	52	240	48	129	#298	268
Internal Link Dist (ft)		2127		1292		974		939
Turn Bay Length (ft)			150					
Base Capacity (vph)	250	1004	332	581	642	862	433	860
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.38	0.26	0.59	0.33	0.47	0.85	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	324	44	83	334	208	34	302	55	358	386	72
Future Volume (vph)	126	324	44	83	334	208	34	302	55	358	386	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	13	10	12	13	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1668	3413		1636	1827	1560		3310		1752	1813	
Flt Permitted	0.36	1.00		0.45	1.00	1.00		0.88		0.38	1.00	
Satd. Flow (perm)	638	3413		773	1827	1560		2916		704	1813	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	130	334	45	86	344	214	35	311	57	369	398	74
RTOR Reduction (vph)	0	14	0	0	0	161	0	16	0	0	8	0
Lane Group Flow (vph)	130	365	0	86	344	53	0	387	0	369	464	0
Heavy Vehicles (%)	1%	4%	3%	3%	4%	7%	7%	7%	2%	3%	2%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	20.7	16.9		23.7	18.4	18.4		21.5		34.6	34.6	
Effective Green, g (s)	20.7	16.9		23.7	18.4	18.4		21.5		34.6	34.6	
Actuated g/C Ratio	0.28	0.23		0.32	0.25	0.25		0.29		0.46	0.46	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	228	771		306	449	383		838		425	838	
v/s Ratio Prot	c0.03	0.11		0.02	c0.19					c0.08	0.26	
v/s Ratio Perm	0.13			0.07		0.03		0.13		c0.32		
v/c Ratio	0.57	0.47		0.28	0.77	0.14		0.46		0.87	0.55	
Uniform Delay, d1	22.3	25.1		18.5	26.2	22.0		21.9		16.8	14.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	3.4	0.5		0.5	7.6	0.2		1.8		16.9	0.8	
Delay (s)	25.8	25.6		19.0	33.8	22.2		23.7		33.7	15.3	
Level of Service	C	C		B	C	C		C		C	B	
Approach Delay (s)		25.6			28.0			23.7			23.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	24.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	609	428	290	78
v/c Ratio	0.81	0.57	0.53	0.11
Control Delay	21.9	14.2	18.0	9.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	21.9	14.2	18.0	9.3
Queue Length 50th (ft)	145	92	65	10
Queue Length 95th (ft)	248	156	151	35
Internal Link Dist (ft)	1052	2117	142	205
Turn Bay Length (ft)				
Base Capacity (vph)	986	1002	546	717
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.43	0.53	0.11

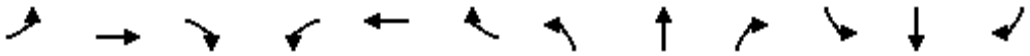
Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	364	155	3	336	42	194	47	17	8	37	24
Future Volume (vph)	23	364	155	3	336	42	194	47	17	8	37	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.96			0.99			0.99			0.95	
Flt Protected		1.00			1.00			0.96			0.99	
Satd. Flow (prot)		1764			1777			1753			1772	
Flt Permitted		0.97			1.00			0.73			0.96	
Satd. Flow (perm)		1721			1772			1326			1715	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	26	409	174	3	378	47	218	53	19	9	42	27
RTOR Reduction (vph)	0	27	0	0	9	0	0	4	0	0	16	0
Lane Group Flow (vph)	0	582	0	0	419	0	0	286	0	0	62	0
Heavy Vehicles (%)	6%	2%	6%	0%	6%	0%	4%	0%	8%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		22.3			22.3			21.8			21.8	
Effective Green, g (s)		22.3			22.3			21.8			21.8	
Actuated g/C Ratio		0.42			0.42			0.41			0.41	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		722			744			544			704	
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.24			c0.22			0.04	
v/c Ratio		0.81			0.56			0.53			0.09	
Uniform Delay, d1		13.5			11.7			11.8			9.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		6.5			1.0			3.6			0.2	
Delay (s)		20.0			12.7			15.4			9.8	
Level of Service		C			B			B			A	
Approach Delay (s)		20.0			12.7			15.4			9.8	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	53.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

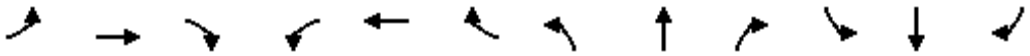
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	288	548	178	332
v/c Ratio	0.38	0.51	0.23	0.66
Control Delay	11.6	6.8	5.4	15.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.6	6.8	5.4	15.0
Queue Length 50th (ft)	18	16	11	36
Queue Length 95th (ft)	38	32	27	72
Internal Link Dist (ft)	1517	2127	1095	780
Turn Bay Length (ft)				
Base Capacity (vph)	1597	1938	1335	894
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.28	0.13	0.37

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	136	1	27	146	194	5	74	41	156	36	30
Future Volume (vph)	56	136	1	27	146	194	5	74	41	156	36	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			0.92			0.95			0.98	
Flt Protected		0.99			1.00			1.00			0.97	
Satd. Flow (prot)		3481			3193			1809			1697	
Flt Permitted		0.72			0.91			0.98			0.68	
Satd. Flow (perm)		2545			2917			1781			1201	
Peak-hour factor, PHF	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Adj. Flow (vph)	84	203	1	40	218	290	7	110	61	233	54	45
RTOR Reduction (vph)	0	1	0	0	201	0	0	36	0	0	12	0
Lane Group Flow (vph)	0	287	0	0	347	0	0	142	0	0	320	0
Heavy Vehicles (%)	5%	1%	0%	0%	4%	4%	0%	0%	0%	8%	0%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.9			9.9			13.4			13.4	
Effective Green, g (s)		9.9			9.9			13.4			13.4	
Actuated g/C Ratio		0.31			0.31			0.41			0.41	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		780			894			738			498	
v/s Ratio Prot												
v/s Ratio Perm		0.11			c0.12			0.08			c0.27	
v/c Ratio		0.37			0.39			0.19			0.64	
Uniform Delay, d1		8.8			8.8			6.0			7.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.3			0.1			2.8	
Delay (s)		9.1			9.1			6.1			10.4	
Level of Service		A			A			A			B	
Approach Delay (s)		9.1			9.1			6.1			10.4	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	32.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	14	36	142	22	17	40	705	180	19	870	7
Future Volume (Veh/h)	10	14	36	142	22	17	40	705	180	19	870	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	15	38	149	23	18	42	742	189	20	916	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1444	1974	462	1464	1884	466	923			931		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1444	1974	462	1464	1884	466	923			931		
tC, single (s)	7.5	6.5	7.0	7.6	6.7	7.7	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.7	2.2			2.4		
p0 queue free %	82	74	93	0	62	96	94			97		
cM capacity (veh/h)	60	57	539	61	60	452	723			639		

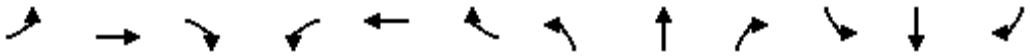
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	64	190	413	560	478	465
Volume Left	11	149	42	0	20	0
Volume Right	38	18	0	189	0	7
cSH	124	66	723	1700	639	1700
Volume to Capacity	0.52	2.89	0.06	0.33	0.03	0.27
Queue Length 95th (ft)	61	481	5	0	2	0
Control Delay (s)	61.6	985.4	1.7	0.0	0.9	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	61.6	985.4	0.7		0.5	
Approach LOS	F	F				

Intersection Summary				
Average Delay	88.6			
Intersection Capacity Utilization	77.9%	ICU Level of Service	D	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	471	194	952	1137
v/c Ratio	0.97	0.36	1.04dl	0.67
Control Delay	54.1	15.7	34.1	13.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	54.1	15.7	34.1	13.0
Queue Length 50th (ft)	147	45	171	154
Queue Length 95th (ft)	#327	94	#313	218
Internal Link Dist (ft)	2117	230	939	3161
Turn Bay Length (ft)				
Base Capacity (vph)	497	557	1010	1706
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.95	0.35	0.94	0.67

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

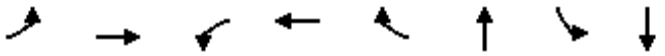


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	61	242	9	109	64	166	724	5	33	967	69
Future Volume (vph)	140	61	242	9	109	64	166	724	5	33	967	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.93			0.95			1.00			0.99	
Flt Protected		0.98			1.00			0.99			1.00	
Satd. Flow (prot)		1679			1743			3381			3475	
Flt Permitted		0.82			0.98			0.55			0.90	
Satd. Flow (perm)		1392			1705			1863			3140	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	149	65	257	10	116	68	177	770	5	35	1029	73
RTOR Reduction (vph)	0	67	0	0	30	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	404	0	0	164	0	0	952	0	0	1132	0
Heavy Vehicles (%)	5%	0%	3%	0%	6%	0%	9%	5%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		19.6			19.6			35.0			35.0	
Effective Green, g (s)		19.6			19.6			35.0			35.0	
Actuated g/C Ratio		0.30			0.30			0.54			0.54	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		422			517			1009			1701	
v/s Ratio Prot												
v/s Ratio Perm		c0.29			0.10			c0.51			0.36	
v/c Ratio		0.96			0.32			1.04dl			0.67	
Uniform Delay, d1		22.1			17.3			13.9			10.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		32.5			0.1			16.2			2.1	
Delay (s)		54.6			17.5			30.0			12.7	
Level of Service		D			B			C			B	
Approach Delay (s)		54.6			17.5			30.0			12.7	
Approach LOS		D			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	64.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

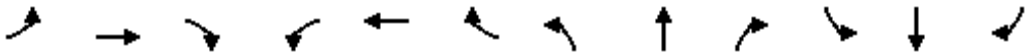


Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	176	518	115	469	292	549	502	644
v/c Ratio	1.08	0.58	0.43	1.03	0.48	0.86	1.05	0.71
Control Delay	121.8	33.1	25.5	85.5	6.4	47.5	76.7	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.8	33.1	25.5	85.5	6.4	47.5	76.7	22.5
Queue Length 50th (ft)	~75	140	45	~294	0	157	~246	270
Queue Length 95th (ft)	#202	195	84	#483	62	#247	#443	403
Internal Link Dist (ft)		2127		1292		974		939
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	163	887	265	456	609	642	479	913
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.08	0.58	0.43	1.03	0.48	0.86	1.05	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	441	61	112	455	283	47	412	74	487	526	99
Future Volume (vph)	171	441	61	112	455	283	47	412	74	487	526	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	13	10	12	13	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1668	3412		1636	1827	1560		3311		1752	1813	
Flt Permitted	0.17	1.00		0.33	1.00	1.00		0.83		0.22	1.00	
Satd. Flow (perm)	298	3412		563	1827	1560		2754		403	1813	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	176	455	63	115	469	292	48	425	76	502	542	102
RTOR Reduction (vph)	0	12	0	0	0	216	0	14	0	0	8	0
Lane Group Flow (vph)	176	506	0	115	469	76	0	535	0	502	636	0
Heavy Vehicles (%)	1%	4%	3%	3%	4%	7%	7%	7%	2%	3%	2%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	28.6	23.6		29.8	24.2	24.2		21.0		46.0	46.0	
Effective Green, g (s)	28.6	23.6		29.8	24.2	24.2		21.0		46.0	46.0	
Actuated g/C Ratio	0.31	0.25		0.32	0.26	0.26		0.23		0.49	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	164	863		244	474	405		620		473	894	
v/s Ratio Prot	c0.06	0.15		0.03	0.26					c0.22	0.35	
v/s Ratio Perm	c0.27			0.12		0.05		0.19		c0.31		
v/c Ratio	1.07	0.59		0.47	0.99	0.19		0.86		1.06	0.71	
Uniform Delay, d1	31.0	30.5		23.5	34.4	26.8		34.7		21.5	18.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	91.1	1.0		1.4	38.2	0.2		14.8		58.6	2.7	
Delay (s)	122.1	31.5		24.9	72.5	27.1		49.5		80.1	21.1	
Level of Service	F	C		C	E	C		D		F	C	
Approach Delay (s)		54.5			51.1			49.5			46.9	
Approach LOS		D			D			D			D	

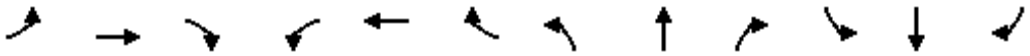
Intersection Summary			
HCM 2000 Control Delay	50.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	24.0
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	829	582	395	104
v/c Ratio	0.94	0.64	0.80	0.16
Control Delay	35.2	15.9	35.3	11.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.2	15.9	35.3	11.8
Queue Length 50th (ft)	289	161	151	19
Queue Length 95th (ft)	#531	256	#295	49
Internal Link Dist (ft)	1052	2117	142	205
Turn Bay Length (ft)				
Base Capacity (vph)	935	958	492	635
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.89	0.61	0.80	0.16

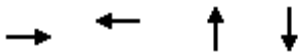
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



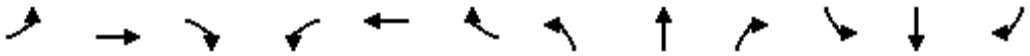
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	496	211	3	458	57	265	64	22	10	50	33
Future Volume (vph)	31	496	211	3	458	57	265	64	22	10	50	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.96			0.99			0.99			0.95	
Flt Protected		1.00			1.00			0.96			0.99	
Satd. Flow (prot)		1764			1777			1753			1771	
Flt Permitted		0.96			1.00			0.75			0.95	
Satd. Flow (perm)		1704			1772			1358			1697	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	35	557	237	3	515	64	298	72	25	11	56	37
RTOR Reduction (vph)	0	21	0	0	6	0	0	3	0	0	24	0
Lane Group Flow (vph)	0	808	0	0	576	0	0	392	0	0	80	0
Heavy Vehicles (%)	6%	2%	6%	0%	6%	0%	4%	0%	8%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		34.6			34.6			24.6			24.6	
Effective Green, g (s)		34.6			34.6			24.6			24.6	
Actuated g/C Ratio		0.51			0.51			0.36			0.36	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		864			898			489			612	
v/s Ratio Prot												
v/s Ratio Perm		c0.47			0.32			c0.29			0.05	
v/c Ratio		0.93			0.64			0.80			0.13	
Uniform Delay, d1		15.7			12.3			19.6			14.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		16.9			1.6			13.0			0.4	
Delay (s)		32.6			13.8			32.6			15.1	
Level of Service		C			B			C			B	
Approach Delay (s)		32.6			13.8			32.6			15.1	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	68.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



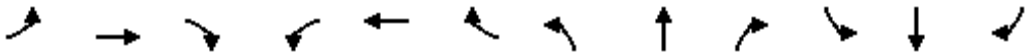
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	392	747	241	451
v/c Ratio	0.60	0.64	0.28	0.79
Control Delay	16.8	8.6	6.4	22.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.8	8.6	6.4	22.9
Queue Length 50th (ft)	44	36	21	75
Queue Length 95th (ft)	53	38	40	118
Internal Link Dist (ft)	1517	2127	1095	780
Turn Bay Length (ft)				
Base Capacity (vph)	963	1527	1057	714
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.41	0.49	0.23	0.63

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	185	2	36	199	265	7	100	55	213	48	41
Future Volume (vph)	76	185	2	36	199	265	7	100	55	213	48	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			0.92			0.95			0.98	
Flt Protected		0.99			1.00			1.00			0.97	
Satd. Flow (prot)		3480			3193			1809			1697	
Flt Permitted		0.60			0.90			0.98			0.69	
Satd. Flow (perm)		2105			2872			1776			1219	
Peak-hour factor, PHF	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Adj. Flow (vph)	113	276	3	54	297	396	10	149	82	318	72	61
RTOR Reduction (vph)	0	1	0	0	271	0	0	37	0	0	11	0
Lane Group Flow (vph)	0	391	0	0	476	0	0	204	0	0	440	0
Heavy Vehicles (%)	5%	1%	0%	0%	4%	4%	0%	0%	0%	8%	0%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.9			12.9			19.1			19.1	
Effective Green, g (s)		12.9			12.9			19.1			19.1	
Actuated g/C Ratio		0.31			0.31			0.47			0.47	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		662			903			827			567	
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.17			0.11			c0.36	
v/c Ratio		0.59			0.53			0.25			0.78	
Uniform Delay, d1		11.8			11.5			6.6			9.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.4			0.6			0.2			6.6	
Delay (s)		13.2			12.1			6.8			15.7	
Level of Service		B			B			A			B	
Approach Delay (s)		13.2			12.1			6.8			15.7	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	41.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



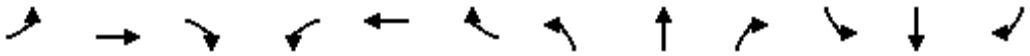
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	10	27	104	17	13	29	518	132	14	639	5
Future Volume (Veh/h)	8	10	27	104	17	13	29	518	132	14	639	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	8	11	28	109	18	14	31	545	139	15	673	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1063	1452	339	1076	1384	342	678			684		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1063	1452	339	1076	1384	342	678			684		
tC, single (s)	7.5	6.5	7.0	7.6	6.7	7.7	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.7	2.2			2.4		
p0 queue free %	95	91	96	25	86	97	97			98		
cM capacity (veh/h)	151	125	648	145	128	555	897			806		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	47	141	304	412	352	342
Volume Left	8	109	31	0	15	0
Volume Right	28	14	0	139	0	5
cSH	255	154	897	1700	806	1700
Volume to Capacity	0.18	0.92	0.03	0.24	0.02	0.20
Queue Length 95th (ft)	17	163	3	0	1	0
Control Delay (s)	22.3	109.4	1.3	0.0	0.6	0.0
Lane LOS	C	F	A		A	
Approach Delay (s)	22.3	109.4	0.5		0.3	
Approach LOS	C	F				

Intersection Summary				
Average Delay	10.7			
Intersection Capacity Utilization	61.3%	ICU Level of Service	B	
Analysis Period (min)	15			

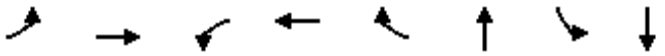
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	308	141	681	835
v/c Ratio	0.78	0.33	0.46	0.43
Control Delay	29.9	15.0	8.8	8.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.9	15.0	8.8	8.0
Queue Length 50th (ft)	75	28	61	72
Queue Length 95th (ft)	153	66	124	138
Internal Link Dist (ft)	2117	230	939	3161
Turn Bay Length (ft)				
Base Capacity (vph)	548	615	1473	1934
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.56	0.23	0.46	0.43

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	44	142	6	80	47	104	532	4	24	710	51
Future Volume (vph)	103	44	142	6	80	47	104	532	4	24	710	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.93			0.95			1.00			0.99	
Flt Protected		0.98			1.00			0.99			1.00	
Satd. Flow (prot)		1688			1742			3387			3475	
Flt Permitted		0.85			0.99			0.72			0.92	
Satd. Flow (perm)		1459			1720			2460			3219	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	110	47	151	6	85	50	111	566	4	26	755	54
RTOR Reduction (vph)	0	59	0	0	34	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	249	0	0	107	0	0	681	0	0	830	0
Heavy Vehicles (%)	5%	0%	3%	0%	6%	0%	9%	5%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		13.6			13.6			35.4			35.4	
Effective Green, g (s)		13.6			13.6			35.4			35.4	
Actuated g/C Ratio		0.23			0.23			0.60			0.60	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		336			396			1476			1931	
v/s Ratio Prot												
v/s Ratio Perm		c0.17			0.06			c0.28			0.26	
v/c Ratio		0.74			0.27			0.46			0.43	
Uniform Delay, d1		21.1			18.6			6.5			6.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		7.5			0.1			0.1			0.7	
Delay (s)		28.5			18.8			6.6			7.1	
Level of Service		C			B			A			A	
Approach Delay (s)		28.5			18.8			6.6			7.1	
Approach LOS		C			B			A			A	

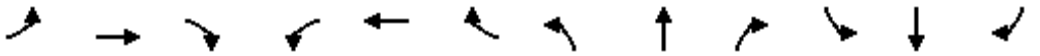
Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	130	416	86	344	214	405	369	436
v/c Ratio	0.49	0.52	0.25	0.75	0.40	0.49	0.86	0.51
Control Delay	22.5	25.2	16.4	37.1	6.0	24.6	40.1	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	25.2	16.4	37.1	6.0	24.6	40.1	17.6
Queue Length 50th (ft)	39	83	25	150	0	82	121	143
Queue Length 95th (ft)	73	125	52	240	48	131	#299	241
Internal Link Dist (ft)		2127		1292		974		939
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	268	1006	340	581	626	821	431	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.41	0.25	0.59	0.34	0.49	0.86	0.51

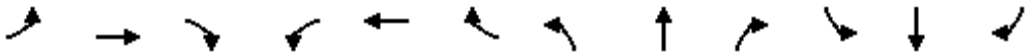
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	324	80	83	334	208	52	285	55	358	351	72
Future Volume (vph)	126	324	80	83	334	208	52	285	55	358	351	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1787	3375		1752	1827	1509		3302		1752	1809	
Flt Permitted	0.36	1.00		0.41	1.00	1.00		0.83		0.38	1.00	
Satd. Flow (perm)	683	3375		759	1827	1509		2773		701	1809	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	130	334	82	86	344	214	54	294	57	369	362	74
RTOR Reduction (vph)	0	29	0	0	0	161	0	16	0	0	9	0
Lane Group Flow (vph)	130	387	0	86	344	53	0	389	0	369	427	0
Heavy Vehicles (%)	1%	4%	3%	3%	4%	7%	7%	7%	2%	3%	2%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	20.7	16.9		23.7	18.4	18.4		21.5		34.6	34.6	
Effective Green, g (s)	20.7	16.9		23.7	18.4	18.4		21.5		34.6	34.6	
Actuated g/C Ratio	0.28	0.23		0.32	0.25	0.25		0.29		0.46	0.46	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	245	762		310	449	371		797		424	836	
v/s Ratio Prot	c0.03	0.11		0.02	c0.19					c0.08	0.24	
v/s Ratio Perm	0.12			0.07		0.03		0.14		c0.32		
v/c Ratio	0.53	0.51		0.28	0.77	0.14		0.49		0.87	0.51	
Uniform Delay, d1	21.9	25.3		18.4	26.2	22.0		22.1		16.8	14.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	2.2	0.5		0.5	7.6	0.2		2.1		17.4	0.5	
Delay (s)	24.1	25.9		18.9	33.8	22.2		24.2		34.2	14.7	
Level of Service	C	C		B	C	C		C		C	B	
Approach Delay (s)		25.4			28.0			24.2			23.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	24.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	329	60	3	319	42	60	47	17	8	37	24
Future Volume (Veh/h)	23	329	60	3	319	42	60	47	17	8	37	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	26	370	67	3	358	47	67	53	19	9	42	27
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	405			437			891	866	404	888	876	382
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	405			437			891	866	404	888	876	382
tC, single (s)	4.2			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	98			100			69	81	97	96	85	96
cM capacity (veh/h)	1132			1134			217	286	634	217	279	670

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	463	408	139	78
Volume Left	26	3	67	9
Volume Right	67	47	19	27
cSH	1132	1134	265	336
Volume to Capacity	0.02	0.00	0.52	0.23
Queue Length 95th (ft)	2	0	70	22
Control Delay (s)	0.7	0.1	32.6	18.9
Lane LOS	A	A	D	C
Approach Delay (s)	0.7	0.1	32.6	18.9
Approach LOS			D	C

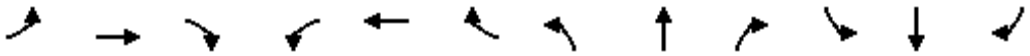
Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	484	575	178	190
v/c Ratio	0.46	0.48	0.31	0.44
Control Delay	8.7	8.0	7.7	11.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.7	8.0	7.7	11.0
Queue Length 50th (ft)	24	26	12	16
Queue Length 95th (ft)	42	44	32	40
Internal Link Dist (ft)	1517	2127	1095	780
Turn Bay Length (ft)				
Base Capacity (vph)	1798	1977	1164	869
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.29	0.15	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	267	1	27	298	60	5	74	41	61	36	30
Future Volume (vph)	56	267	1	27	298	60	5	74	41	61	36	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			0.98			0.95			0.97	
Flt Protected		0.99			1.00			1.00			0.98	
Satd. Flow (prot)		3518			3387			1809			1714	
Flt Permitted		0.79			0.90			0.98			0.76	
Satd. Flow (perm)		2804			3051			1782			1334	
Peak-hour factor, PHF	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Adj. Flow (vph)	84	399	1	40	445	90	7	110	61	91	54	45
RTOR Reduction (vph)	0	1	0	0	34	0	0	42	0	0	28	0
Lane Group Flow (vph)	0	483	0	0	541	0	0	136	0	0	162	0
Heavy Vehicles (%)	5%	1%	0%	0%	4%	4%	0%	0%	0%	8%	0%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		11.2			11.2			8.9			8.9	
Effective Green, g (s)		11.2			11.2			8.9			8.9	
Actuated g/C Ratio		0.38			0.38			0.31			0.31	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1079			1174			545			407	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.18			0.08			c0.12	
v/c Ratio		0.45			0.46			0.25			0.40	
Uniform Delay, d1		6.7			6.7			7.6			8.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.3			0.2			0.6	
Delay (s)		6.9			7.0			7.8			8.6	
Level of Service		A			A			A			A	
Approach Delay (s)		6.9			7.0			7.8			8.6	
Approach LOS		A			A			A			A	

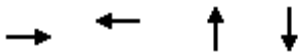
Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	29.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	14	36	142	22	17	40	705	180	19	870	7
Future Volume (Veh/h)	10	14	36	142	22	17	40	705	180	19	870	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	15	38	149	23	18	42	742	189	20	916	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1444	1974	462	1464	1884	466	923			931		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1444	1974	462	1464	1884	466	923			931		
tC, single (s)	7.5	6.5	7.0	7.6	6.7	7.7	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.7	2.2			2.4		
p0 queue free %	82	74	93	0	62	96	94			97		
cM capacity (veh/h)	60	57	539	61	60	452	723			639		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	64	190	413	560	478	465
Volume Left	11	149	42	0	20	0
Volume Right	38	18	0	189	0	7
cSH	124	66	723	1700	639	1700
Volume to Capacity	0.52	2.89	0.06	0.33	0.03	0.27
Queue Length 95th (ft)	61	481	5	0	2	0
Control Delay (s)	61.6	985.4	1.7	0.0	0.9	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	61.6	985.4	0.7		0.5	
Approach LOS	F	F				

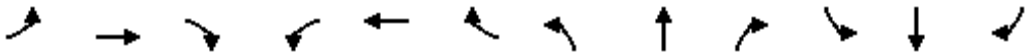
Intersection Summary				
Average Delay	88.6			
Intersection Capacity Utilization	77.9%	ICU Level of Service	D	
Analysis Period (min)	15			



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	420	194	926	1137
v/c Ratio	0.93	0.36	0.85	0.64
Control Delay	52.6	18.8	24.7	13.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.6	18.8	24.7	13.9
Queue Length 50th (ft)	170	58	196	193
Queue Length 95th (ft)	#341	111	#338	261
Internal Link Dist (ft)	2117	230	939	3161
Turn Bay Length (ft)				
Base Capacity (vph)	488	594	1087	1780
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	0.33	0.85	0.64

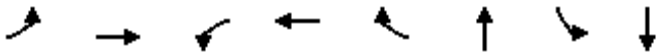
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	61	194	9	109	64	142	724	5	33	967	69
Future Volume (vph)	140	61	194	9	109	64	142	724	5	33	967	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.93			0.95			1.00			0.99	
Flt Protected		0.98			1.00			0.99			1.00	
Satd. Flow (prot)		1688			1743			3387			3475	
Flt Permitted		0.77			0.98			0.56			0.90	
Satd. Flow (perm)		1331			1706			1920			3136	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	149	65	206	10	116	68	151	770	5	35	1029	73
RTOR Reduction (vph)	0	45	0	0	25	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	375	0	0	169	0	0	926	0	0	1133	0
Heavy Vehicles (%)	5%	0%	3%	0%	6%	0%	9%	5%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		23.7			23.7			44.1			44.1	
Effective Green, g (s)		23.7			23.7			44.1			44.1	
Actuated g/C Ratio		0.30			0.30			0.57			0.57	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		405			519			1088			1777	
v/s Ratio Prot												
v/s Ratio Perm		c0.28			0.10			c0.48			0.36	
v/c Ratio		0.93			0.33			0.85			0.64	
Uniform Delay, d1		26.2			20.9			14.1			11.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		26.7			0.1			6.3			1.8	
Delay (s)		52.9			21.0			20.4			13.2	
Level of Service		D			C			C			B	
Approach Delay (s)		52.9			21.0			20.4			13.2	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	77.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

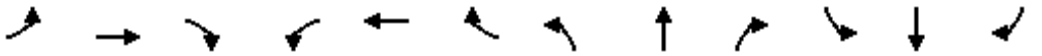


Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	176	566	115	469	292	549	502	595
v/c Ratio	0.99	0.63	0.43	1.02	0.49	0.90	1.07	0.66
Control Delay	95.9	32.8	24.6	82.0	6.6	52.6	84.4	21.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.9	32.8	24.6	82.0	6.6	52.6	84.4	21.1
Queue Length 50th (ft)	~72	149	44	~278	0	157	~248	239
Queue Length 95th (ft)	#189	208	81	#475	61	#255	#445	358
Internal Link Dist (ft)		2127		1292		974		939
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	177	899	269	461	599	611	468	902
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.63	0.43	1.02	0.49	0.90	1.07	0.66

Intersection Summary

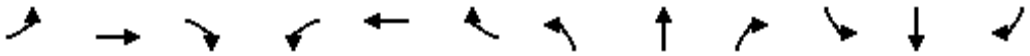
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	441	108	112	455	283	71	388	74	487	478	99
Future Volume (vph)	171	441	108	112	455	283	71	388	74	487	478	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1787	3375		1752	1827	1509		3303		1752	1809	
Flt Permitted	0.17	1.00		0.29	1.00	1.00		0.78		0.22	1.00	
Satd. Flow (perm)	319	3375		536	1827	1509		2591		409	1809	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	176	455	111	115	469	292	73	400	76	502	493	102
RTOR Reduction (vph)	0	23	0	0	0	215	0	14	0	0	8	0
Lane Group Flow (vph)	176	543	0	115	469	77	0	535	0	502	587	0
Heavy Vehicles (%)	1%	4%	3%	3%	4%	7%	7%	7%	2%	3%	2%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	28.6	23.6		29.8	24.2	24.2		21.0		45.0	45.0	
Effective Green, g (s)	28.6	23.6		29.8	24.2	24.2		21.0		45.0	45.0	
Actuated g/C Ratio	0.31	0.26		0.32	0.26	0.26		0.23		0.49	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	178	863		247	479	396		590		461	882	
v/s Ratio Prot	c0.05	0.16		0.03	c0.26					c0.21	0.32	
v/s Ratio Perm	0.25			0.12		0.05		0.21		c0.32		
v/c Ratio	0.99	0.63		0.47	0.98	0.19		0.91		1.09	0.67	
Uniform Delay, d1	30.3	30.4		23.0	33.7	26.4		34.6		20.8	17.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	63.5	1.4		1.4	35.3	0.2		20.1		68.1	1.9	
Delay (s)	93.8	31.9		24.4	69.0	26.7		54.7		88.9	19.8	
Level of Service	F	C		C	E	C		D		F	B	
Approach Delay (s)		46.6			49.0			54.7			51.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	50.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	24.0
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



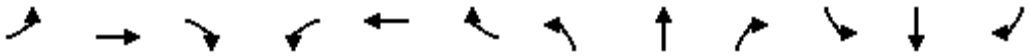
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	448	81	3	434	57	81	64	22	10	50	33
Future Volume (Veh/h)	31	448	81	3	434	57	81	64	22	10	50	33
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	35	503	91	3	488	64	91	72	25	11	56	37
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	552			594			1210	1176	548	1206	1190	520
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	552			594			1210	1176	548	1206	1190	520
tC, single (s)	4.2			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	96			100			16	61	95	89	69	93
cM capacity (veh/h)	998			992			109	185	524	105	180	560

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	629	555	188	104
Volume Left	35	3	91	11
Volume Right	91	64	25	37
cSH	998	992	148	215
Volume to Capacity	0.04	0.00	1.27	0.48
Queue Length 95th (ft)	3	0	282	60
Control Delay (s)	0.9	0.1	223.4	36.4
Lane LOS	A	A	F	E
Approach Delay (s)	0.9	0.1	223.4	36.4
Approach LOS			F	E

Intersection Summary				
Average Delay	31.4			
Intersection Capacity Utilization	73.1%	ICU Level of Service	D	
Analysis Period (min)	15			

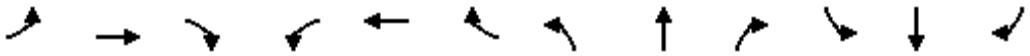
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	658	781	241	257
v/c Ratio	0.63	0.63	0.39	0.55
Control Delay	11.9	10.7	9.0	13.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.9	10.7	9.0	13.6
Queue Length 50th (ft)	45	49	24	32
Queue Length 95th (ft)	72	76	42	54
Internal Link Dist (ft)	1517	2127	1095	780
Turn Bay Length (ft)				
Base Capacity (vph)	1405	1648	1000	766
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.47	0.47	0.24	0.34

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	363	2	36	406	81	7	100	55	83	48	41
Future Volume (vph)	76	363	2	36	406	81	7	100	55	83	48	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			0.98			0.95			0.97	
Flt Protected		0.99			1.00			1.00			0.98	
Satd. Flow (prot)		3518			3388			1809			1713	
Flt Permitted		0.73			0.88			0.98			0.78	
Satd. Flow (perm)		2579			2978			1779			1373	
Peak-hour factor, PHF	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Adj. Flow (vph)	113	542	3	54	606	121	10	149	82	124	72	61
RTOR Reduction (vph)	0	1	0	0	33	0	0	47	0	0	28	0
Lane Group Flow (vph)	0	657	0	0	748	0	0	194	0	0	229	0
Heavy Vehicles (%)	5%	1%	0%	0%	4%	4%	0%	0%	0%	8%	0%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.2			14.2			11.1			11.1	
Effective Green, g (s)		14.2			14.2			11.1			11.1	
Actuated g/C Ratio		0.41			0.41			0.32			0.32	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1067			1232			575			444	
v/s Ratio Prot												
v/s Ratio Perm		c0.25			0.25			0.11			c0.17	
v/c Ratio		0.62			0.61			0.34			0.52	
Uniform Delay, d1		7.9			7.9			8.8			9.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.1			0.9			0.4			1.0	
Delay (s)		9.0			8.7			9.2			10.4	
Level of Service		A			A			A			B	
Approach Delay (s)		9.0			8.7			9.2			10.4	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	34.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



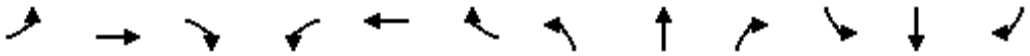
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	10	27	104	17	13	29	518	132	14	639	5
Future Volume (Veh/h)	8	10	27	104	17	13	29	518	132	14	639	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	8	11	28	109	18	14	31	545	139	15	673	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1063	1452	339	1076	1384	342	678			684		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1063	1452	339	1076	1384	342	678			684		
tC, single (s)	7.5	6.5	7.0	7.6	6.7	7.7	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.7	2.2			2.4		
p0 queue free %	95	91	96	25	86	97	97			98		
cM capacity (veh/h)	151	125	648	145	128	555	897			806		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	47	141	304	412	352	342
Volume Left	8	109	31	0	15	0
Volume Right	28	14	0	139	0	5
cSH	255	154	897	1700	806	1700
Volume to Capacity	0.18	0.92	0.03	0.24	0.02	0.20
Queue Length 95th (ft)	17	163	3	0	1	0
Control Delay (s)	22.3	109.4	1.3	0.0	0.6	0.0
Lane LOS	C	F	A		A	
Approach Delay (s)	22.3	109.4	0.5		0.3	
Approach LOS	C	F				

Intersection Summary				
Average Delay	10.7			
Intersection Capacity Utilization	61.3%	ICU Level of Service	B	
Analysis Period (min)	15			

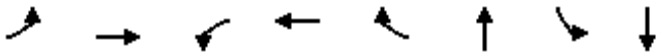
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	355	141	609	703
v/c Ratio	0.79	0.31	0.45	0.38
Control Delay	27.0	13.7	9.4	8.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.0	13.7	9.4	8.1
Queue Length 50th (ft)	76	26	55	59
Queue Length 95th (ft)	158	62	120	122
Internal Link Dist (ft)	2120	230	939	1105
Turn Bay Length (ft)				
Base Capacity (vph)	643	692	1343	1873
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.20	0.45	0.38

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	44	192	6	80	47	137	431	4	24	604	32
Future Volume (vph)	98	44	192	6	80	47	137	431	4	24	604	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.92			0.95			1.00			0.99	
Flt Protected		0.99			1.00			0.99			1.00	
Satd. Flow (prot)		1674			1742			3364			3482	
Flt Permitted		0.87			0.98			0.68			0.92	
Satd. Flow (perm)		1485			1718			2317			3221	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	104	47	204	6	85	50	146	459	4	26	643	34
RTOR Reduction (vph)	0	85	0	0	35	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	270	0	0	106	0	0	609	0	0	700	0
Heavy Vehicles (%)	5%	0%	3%	0%	6%	0%	9%	5%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.0			14.0			33.3			33.3	
Effective Green, g (s)		14.0			14.0			33.3			33.3	
Actuated g/C Ratio		0.24			0.24			0.58			0.58	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		362			419			1346			1871	
v/s Ratio Prot												
v/s Ratio Perm		c0.18			0.06			c0.26			0.22	
v/c Ratio		0.74			0.25			0.45			0.37	
Uniform Delay, d1		20.0			17.4			6.8			6.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		7.1			0.1			0.1			0.6	
Delay (s)		27.1			17.6			6.9			7.0	
Level of Service		C			B			A			A	
Approach Delay (s)		27.1			17.6			6.9			7.0	
Approach LOS		C			B			A			A	

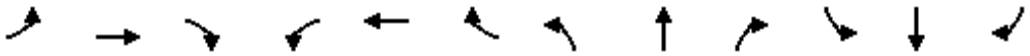
Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	130	281	86	205	126	403	275	472
v/c Ratio	0.42	0.45	0.27	0.59	0.27	0.44	0.59	0.52
Control Delay	20.9	25.5	17.7	33.4	2.1	21.5	19.1	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.9	25.5	17.7	33.4	2.1	21.5	19.1	15.7
Queue Length 50th (ft)	39	53	25	84	0	70	71	133
Queue Length 95th (ft)	75	86	53	145	8	124	#146	255
Internal Link Dist (ft)		2127		1292		974		939
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	311	1068	323	592	644	919	468	915
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.26	0.27	0.35	0.20	0.44	0.59	0.52

Intersection Summary

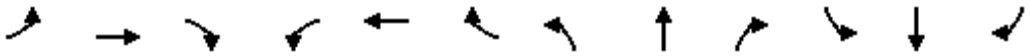
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	229	44	83	199	122	34	302	55	267	386	72
Future Volume (vph)	126	229	44	83	199	122	34	302	55	267	386	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	13	10	12	13	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1668	3393		1636	1827	1560		3310		1752	1813	
Flt Permitted	0.60	1.00		0.55	1.00	1.00		0.88		0.39	1.00	
Satd. Flow (perm)	1047	3393		944	1827	1560		2922		725	1813	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	130	236	45	86	205	126	35	311	57	275	398	74
RTOR Reduction (vph)	0	22	0	0	0	103	0	15	0	0	8	0
Lane Group Flow (vph)	130	259	0	86	205	23	0	388	0	275	464	0
Heavy Vehicles (%)	1%	4%	3%	3%	4%	7%	7%	7%	2%	3%	2%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	17.0	12.4		18.4	13.1	13.1		21.5		34.6	34.6	
Effective Green, g (s)	17.0	12.4		18.4	13.1	13.1		21.5		34.6	34.6	
Actuated g/C Ratio	0.24	0.18		0.26	0.19	0.19		0.31		0.49	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	293	598		299	340	290		893		460	892	
v/s Ratio Prot	c0.03	0.08		0.02	c0.11					0.06	c0.26	
v/s Ratio Perm	0.08			0.05		0.02		0.13		c0.23		
v/c Ratio	0.44	0.43		0.29	0.60	0.08		0.43		0.60	0.52	
Uniform Delay, d1	21.9	25.8		20.2	26.2	23.6		19.5		11.2	12.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.5		0.5	3.0	0.1		1.5		2.1	0.6	
Delay (s)	23.0	26.3		20.8	29.2	23.7		21.1		13.3	12.7	
Level of Service	C	C		C	C	C		C		B	B	
Approach Delay (s)		25.3			25.8			21.1			12.9	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	24.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

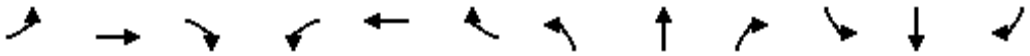
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	374	60	3	333	42	60	47	17	8	37	24
Future Volume (Veh/h)	23	374	60	3	333	42	60	47	17	8	37	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	26	420	67	3	374	47	67	53	19	9	42	27
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	421			487			957	932	454	954	942	398
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	421			487			957	932	454	954	942	398
tC, single (s)	4.2			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	98			100			65	80	97	95	84	96
cM capacity (veh/h)	1117			1086			193	261	594	193	255	656

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	513	424	139	78
Volume Left	26	3	67	9
Volume Right	67	47	19	27
cSH	1117	1086	239	309
Volume to Capacity	0.02	0.00	0.58	0.25
Queue Length 95th (ft)	2	0	82	25
Control Delay (s)	0.7	0.1	39.0	20.6
Lane LOS	A	A	E	C
Approach Delay (s)	0.7	0.1	39.0	20.6
Approach LOS			E	C

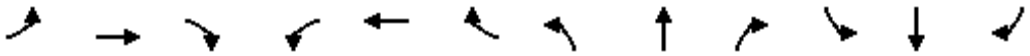
Intersection Summary				
Average Delay	6.4			
Intersection Capacity Utilization	59.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	136	1	27	146	60	5	74	41	61	36	30
Future Volume (Veh/h)	56	136	1	27	146	60	5	74	41	61	36	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	84	203	1	40	218	90	7	110	61	91	54	45
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	308			204			632	760	102	728	715	154
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	308			204			632	760	102	728	715	154
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.7	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	93			97			98	64	94	52	83	95
cM capacity (veh/h)	1228			1380			283	306	940	188	324	858

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	186	102	149	199	178	190
Volume Left	84	0	40	0	7	91
Volume Right	0	1	0	90	61	45
cSH	1228	1700	1380	1700	396	271
Volume to Capacity	0.07	0.06	0.03	0.12	0.45	0.70
Queue Length 95th (ft)	5	0	2	0	56	120
Control Delay (s)	4.0	0.0	2.2	0.0	21.3	44.5
Lane LOS	A		A		C	E
Approach Delay (s)	2.6		1.0		21.3	44.5
Approach LOS					C	E

Intersection Summary				
Average Delay	13.3			
Intersection Capacity Utilization	35.9%	ICU Level of Service		A
Analysis Period (min)	15			



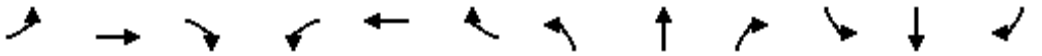
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	86	0	0	138	0	0	90	0	0	50	0
Future Volume (Veh/h)	0	86	0	0	138	0	0	90	0	0	50	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	93	0	0	150	0	0	98	0	0	54	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	150			93			270	243	93	292	243	150
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	150			93			270	243	93	292	243	150
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	85	100	100	92	100
cM capacity (veh/h)	1431			1501			640	659	964	585	659	896

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	93	150	98	54
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1431	1501	659	659
Volume to Capacity	0.00	0.00	0.15	0.08
Queue Length 95th (ft)	0	0	13	7
Control Delay (s)	0.0	0.0	11.4	11.0
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	11.4	11.0
Approach LOS			B	B

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	18.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	93	240	623	115	722
v/c Ratio	0.37	0.64	0.46	0.31	0.41
Control Delay	31.4	27.9	20.0	14.2	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	31.4	27.9	20.0	14.2	13.0
Queue Length 50th (ft)	34	69	106	24	94
Queue Length 95th (ft)	79	143	185	64	172
Internal Link Dist (ft)	1979	602	1105		1976
Turn Bay Length (ft)				300	
Base Capacity (vph)	528	531	1350	371	1766
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.45	0.46	0.31	0.41

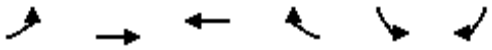
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	81	0	0	120	101	0	573	0	106	646	18
Future Volume (vph)	5	81	0	0	120	101	0	573	0	106	646	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		1.00			0.94			1.00		1.00	1.00	
Flt Protected		1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1858			1747			3539		1770	3525	
Flt Permitted		1.00			1.00			1.00		0.28	1.00	
Satd. Flow (perm)		1858			1747			3539		526	3525	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	88	0	0	130	110	0	623	0	115	702	20
RTOR Reduction (vph)	0	0	0	0	40	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	93	0	0	200	0	0	623	0	115	720	0
Turn Type	Split	NA			NA			NA		pm+pt	NA	
Protected Phases	4	4			8			2		1	6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		7.2			12.3			24.5		33.2	33.2	
Effective Green, g (s)		7.2			12.3			24.5		33.2	33.2	
Actuated g/C Ratio		0.11			0.19			0.37		0.50	0.50	
Clearance Time (s)		4.5			4.5			4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		202			324			1309		342	1767	
v/s Ratio Prot		c0.05			c0.11			c0.18		0.02	c0.20	
v/s Ratio Perm										0.15		
v/c Ratio		0.46			0.62			0.48		0.34	0.41	
Uniform Delay, d1		27.7			24.8			15.9		9.6	10.3	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		1.7			3.5			1.2		0.6	0.7	
Delay (s)		29.3			28.3			17.2		10.1	11.0	
Level of Service		C			C			B		B	B	
Approach Delay (s)		29.3			28.3			17.2			10.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

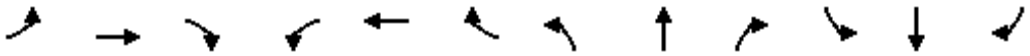
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0				0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				0	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1623				1023	1085

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		0.0%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	14	36	142	22	17	40	705	180	19	870	7
Future Volume (Veh/h)	10	14	36	142	22	17	40	705	180	19	870	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	15	38	149	23	18	42	742	189	20	916	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1444	1974	462	1464	1884	466	923			931		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1444	1974	462	1464	1884	466	923			931		
tC, single (s)	7.5	6.5	7.0	7.6	6.7	7.7	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.7	2.2			2.4		
p0 queue free %	82	74	93	0	62	96	94			97		
cM capacity (veh/h)	60	57	539	61	60	452	723			639		

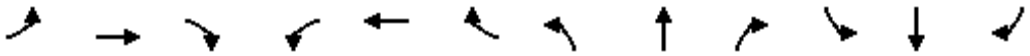
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	64	190	413	560	478	465
Volume Left	11	149	42	0	20	0
Volume Right	38	18	0	189	0	7
cSH	124	66	723	1700	639	1700
Volume to Capacity	0.52	2.89	0.06	0.33	0.03	0.27
Queue Length 95th (ft)	61	481	5	0	2	0
Control Delay (s)	61.6	985.4	1.7	0.0	0.9	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	61.6	985.4	0.7		0.5	
Approach LOS	F	F				

Intersection Summary				
Average Delay	88.6			
Intersection Capacity Utilization	77.9%	ICU Level of Service	D	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	485	194	827	956
v/c Ratio	0.94	0.34	0.88dl	0.56
Control Delay	48.5	15.9	21.1	12.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	48.5	15.9	21.1	12.3
Queue Length 50th (ft)	160	48	143	134
Queue Length 95th (ft)	#342	97	#261	187
Internal Link Dist (ft)	2120	230	939	1105
Turn Bay Length (ft)				
Base Capacity (vph)	538	597	1034	1697
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.90	0.32	0.80	0.56

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

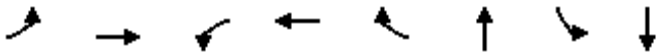


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	61	262	9	109	64	186	587	5	33	822	44
Future Volume (vph)	133	61	262	9	109	64	186	587	5	33	822	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.92			0.95			1.00			0.99	
Flt Protected		0.99			1.00			0.99			1.00	
Satd. Flow (prot)		1674			1743			3365			3481	
Flt Permitted		0.83			0.98			0.56			0.90	
Satd. Flow (perm)		1401			1705			1921			3146	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	141	65	279	10	116	68	198	624	5	35	874	47
RTOR Reduction (vph)	0	71	0	0	28	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	414	0	0	166	0	0	827	0	0	952	0
Heavy Vehicles (%)	5%	0%	3%	0%	6%	0%	9%	5%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		21.8			21.8			37.0			37.0	
Effective Green, g (s)		21.8			21.8			37.0			37.0	
Actuated g/C Ratio		0.32			0.32			0.54			0.54	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		443			540			1033			1691	
v/s Ratio Prot												
v/s Ratio Perm		c0.30			0.10			c0.43			0.30	
v/c Ratio		0.93			0.31			0.88dl			0.56	
Uniform Delay, d1		22.8			17.8			12.9			10.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		26.6			0.1			4.3			1.4	
Delay (s)		49.4			17.9			17.2			11.9	
Level of Service		D			B			B			B	
Approach Delay (s)		49.4			17.9			17.2			11.9	
Approach LOS		D			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	68.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

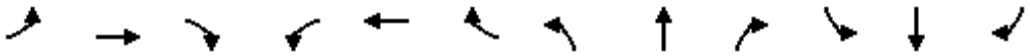
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	176	384	115	279	172	549	374	644
v/c Ratio	0.58	0.44	0.35	0.75	0.36	0.74	0.94	0.75
Control Delay	25.9	26.1	20.1	43.3	4.8	34.2	52.8	24.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	26.1	20.1	43.3	4.8	34.2	52.8	24.3
Queue Length 50th (ft)	60	83	38	133	0	130	124	253
Queue Length 95th (ft)	106	125	73	215	33	#202	#287	412
Internal Link Dist (ft)		2127		1292		974		939
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	306	939	326	454	541	740	397	864
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.41	0.35	0.61	0.32	0.74	0.94	0.75

Intersection Summary

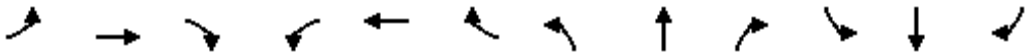
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	311	61	112	271	167	47	412	74	363	526	99
Future Volume (vph)	171	311	61	112	271	167	47	412	74	363	526	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	13	10	12	13	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1668	3391		1636	1827	1560		3311		1752	1813	
Flt Permitted	0.35	1.00		0.52	1.00	1.00		0.83		0.26	1.00	
Satd. Flow (perm)	611	3391		903	1827	1560		2776		471	1813	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	176	321	63	115	279	172	48	425	76	374	542	102
RTOR Reduction (vph)	0	21	0	0	0	135	0	15	0	0	8	0
Lane Group Flow (vph)	176	363	0	115	279	37	0	534	0	374	636	0
Heavy Vehicles (%)	1%	4%	3%	3%	4%	7%	7%	7%	2%	3%	2%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	28.2	20.2		23.2	17.7	17.7		21.1		38.1	38.1	
Effective Green, g (s)	28.2	20.2		23.2	17.7	17.7		21.1		38.1	38.1	
Actuated g/C Ratio	0.34	0.25		0.28	0.22	0.22		0.26		0.47	0.47	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	314	837		305	395	337		716		391	844	
v/s Ratio Prot	c0.05	0.11		0.03	c0.15					c0.13	0.35	
v/s Ratio Perm	0.14			0.08		0.02		0.19		c0.32		
v/c Ratio	0.56	0.43		0.38	0.71	0.11		0.75		0.96	0.75	
Uniform Delay, d1	20.1	26.0		22.6	29.6	25.7		27.9		17.2	18.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	2.3	0.4		0.8	5.7	0.1		7.0		34.0	3.8	
Delay (s)	22.4	26.3		23.4	35.3	25.9		34.8		51.2	21.8	
Level of Service	C	C		C	D	C		C		D	C	
Approach Delay (s)		25.1			30.0			34.8			32.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	81.8	Sum of lost time (s)	24.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

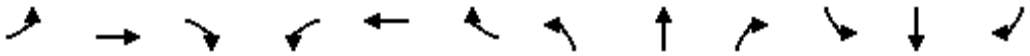
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	509	81	3	453	57	81	64	22	10	50	33
Future Volume (Veh/h)	31	509	81	3	453	57	81	64	22	10	50	33
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	35	572	91	3	509	64	91	72	25	11	56	37
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	573			663			1300	1266	618	1296	1280	541
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	573			663			1300	1266	618	1296	1280	541
tC, single (s)	4.2			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	96			100			0	56	95	87	65	93
cM capacity (veh/h)	980			935			90	164	479	85	159	545

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	698	576	188	104
Volume Left	35	3	91	11
Volume Right	91	64	25	37
cSH	980	935	125	189
Volume to Capacity	0.04	0.00	1.50	0.55
Queue Length 95th (ft)	3	0	330	72
Control Delay (s)	0.9	0.1	326.3	45.2
Lane LOS	A	A	F	E
Approach Delay (s)	0.9	0.1	326.3	45.2
Approach LOS			F	E

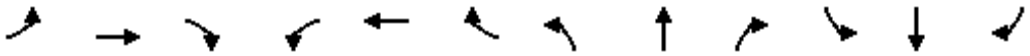
Intersection Summary				
Average Delay	42.6			
Intersection Capacity Utilization	76.3%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	185	2	36	199	81	7	100	55	83	48	41
Future Volume (Veh/h)	76	185	2	36	199	81	7	100	55	83	48	41
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	113	276	3	54	297	121	10	149	82	124	72	61
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	418			279			857	1030	140	986	970	209
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	418			279			857	1030	140	986	970	209
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.7	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	90			96			94	27	91	0	67	92
cM capacity (veh/h)	1116			1295			157	203	889	64	220	791

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	251	141	202	270	241	257
Volume Left	113	0	54	0	10	124
Volume Right	0	3	0	121	82	61
cSH	1116	1700	1295	1700	271	110
Volume to Capacity	0.10	0.08	0.04	0.16	0.89	2.34
Queue Length 95th (ft)	8	0	3	0	196	566
Control Delay (s)	4.4	0.0	2.4	0.0	70.7	693.4
Lane LOS	A		A		F	F
Approach Delay (s)	2.8		1.0		70.7	693.4
Approach LOS					F	F

Intersection Summary				
Average Delay	144.5			
Intersection Capacity Utilization	48.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	117	0	0	188	0	0	130	0	0	75	0
Future Volume (Veh/h)	0	117	0	0	188	0	0	130	0	0	75	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	127	0	0	204	0	0	141	0	0	82	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	204			127			372	331	127	402	331	204
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	204			127			372	331	127	402	331	204
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	76	100	100	86	100
cM capacity (veh/h)	1368			1459			522	588	923	456	588	837

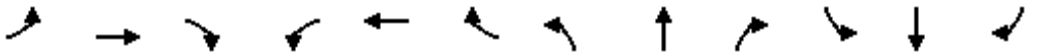
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	127	204	141	82
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1368	1459	588	588
Volume to Capacity	0.00	0.00	0.24	0.14
Queue Length 95th (ft)	0	0	23	12
Control Delay (s)	0.0	0.0	13.0	12.1
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	13.0	12.1
Approach LOS			B	B

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	23.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	128	326	849	158	981
v/c Ratio	0.46	0.76	0.75	0.64	0.60
Control Delay	33.7	34.5	28.3	29.9	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	34.5	28.3	29.9	17.4
Queue Length 50th (ft)	53	112	181	42	172
Queue Length 95th (ft)	102	#234	#303	#114	264
Internal Link Dist (ft)	1979	602	1105		1976
Turn Bay Length (ft)				300	
Base Capacity (vph)	509	514	1132	245	1640
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.25	0.63	0.75	0.64	0.60

Intersection Summary

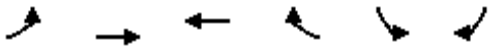
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	110	0	0	163	137	0	781	0	145	878	25
Future Volume (vph)	7	110	0	0	163	137	0	781	0	145	878	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		1.00			0.94			1.00		1.00	1.00	
Flt Protected		1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1857			1748			3539		1770	3525	
Flt Permitted		1.00			1.00			1.00		0.15	1.00	
Satd. Flow (perm)		1857			1748			3539		284	3525	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	120	0	0	177	149	0	849	0	158	954	27
RTOR Reduction (vph)	0	0	0	0	38	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	128	0	0	288	0	0	849	0	158	979	0
Turn Type	Split	NA			NA			NA		pm+pt	NA	
Protected Phases	4	4			8			2		1	6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		8.3			15.1			21.7		31.3	31.3	
Effective Green, g (s)		8.3			15.1			21.7		31.3	31.3	
Actuated g/C Ratio		0.12			0.22			0.32		0.46	0.46	
Clearance Time (s)		4.5			4.5			4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		225			387			1126		241	1617	
v/s Ratio Prot		c0.07			c0.16			c0.24		0.05	c0.28	
v/s Ratio Perm										0.25		
v/c Ratio		0.57			0.74			0.75		0.66	0.61	
Uniform Delay, d1		28.3			24.7			20.9		13.2	13.8	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		3.3			7.6			4.7		6.3	1.7	
Delay (s)		31.5			32.3			25.6		19.5	15.5	
Level of Service		C			C			C		B	B	
Approach Delay (s)		31.5			32.3			25.6			16.1	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	68.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0				0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				0	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1623				1023	1085

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		0.0%	ICU Level of Service A
Analysis Period (min)		15	

2-D. Total Railroad Crossing Delay, Friday Daily and PM Peak

Luling Transportation Study

Railroad Crossing Delay

Raw Data	
T (min)	4.5
N (daily)	50
N (PM)	3

Daily

		Existing		No Build				Near-term Improvements			
				Low		High		Low		High	
US 183	Tg	Gate-down time/train event (hr)	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
	ADT	Average daily traffic (veh/day)	15800	20100	20100	27300	27300	17400	17400	23650	23650
	n	Number of lanes	4	4	4	4	4	4	4	4	4
	N	Number of trains/day	50	50	50	50	50	50	50	50	50
	% HV	Percent Heavy Vehicles	7.91	7.96	7.96	7.88	7.88	6.61	6.61	6.55	6.55
	q	Arrival rate (veh/hr)	658.3	837.5	837.5	1137.5	1137.5	725.0	725.0	985.4	985.4
	d	Departure rate (veh/hr)*	7042.8	7039.6	7039.6	7045.2	7045.2	7128.8	7128.8	7132.5	7132.5
	y	Number of vehicles departing	49	63	63	85	85	54	54	74	74
	De	Total vehicle delay (hr/event)	2.0	2.7	2.7	3.8	3.8	2.3	2.3	3.2	3.2
	D	Total vehicle delay (hr/day)	102.1	133.7	133.7	190.8	190.8	113.5	113.5	160.8	160.8
Hackberry	Tg	Gate-down time/train event (min)	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
	ADT	Average daily traffic (veh/day)	300	300	300	300	300	2950	2950	3950	3950
	n	Number of lanes	2	2	2	2	2	2	2	2	2
	N	Number of trains/day	50	50	50	50	50	50	50	50	50
	% HV	Percent Heavy Vehicles	33.33	33.33	33.33	66.67	66.67	18.64	18.64	18.99	18.99
	q	Arrival rate (veh/hr)	12.5	12.5	12.5	12.5	12.5	122.9	122.9	164.6	164.6
	d	Departure rate (veh/hr)*	2850.0	2850.0	2850.0	2280.0	2280.0	3202.9	3202.9	3193.6	3193.6
	y	Number of vehicles departing	1	1	1	1	1	9	9	12	12
	De	Total vehicle delay (hr/event)	0.04	0.04	0.04	0.04	0.04	0.36	0.36	0.49	0.49
	D	Total vehicle delay (hr/day)	1.8	1.8	1.8	1.8	1.8	18.0	18.0	24.4	24.4
			103.9		135.4		192.5		131.5		185.2

Port of LA (Appendix H2)
*HCM 16-9,16-7E

Peak PM

				Low		High		Low		High	
US 183	Tg	Gate-down time/train event (hr)	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
	AT	Average PM traffic (veh/hr)	1325	1682	1682	2292	2292	1452	1452	1978	1978
	n	Number of lanes	4	4	4	4	4	4	4	4	4
	N	Number of trains/PM Peak	3	3	3	3	3	3	3	3	3
	% HV	Percent Heavy Vehicles	2.93	2.30	2.30	1.69	1.69	2.67	2.67	1.96	1.96
	q	Arrival rate (veh/hr)	1325.0	1682.0	1682.0	2292.0	2292.0	1452.0	1452.0	1978.0	1978.0
	d	Departure rate (veh/hr)*	7384.0	7428.8	7428.8	7473.6	7473.6	7402.4	7402.4	7453.9	7453.9
	y	Number of vehicles departing	99	126	126	172	172	109	109	148	148
	De	Total vehicle delay (hr/event)	4.5	6.1	6.1	9.3	9.3	5.1	5.1	7.6	7.6
	D	Total vehicle delay (hr/day)	13.6	18.3	18.3	27.9	27.9	15.2	15.2	22.7	22.7
Hackberry	Tg	Gate-down time/train event (min)	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
	AT	Average PM traffic (veh/hr)	249	317	317	429	429	546	546	743	743
	n	Number of lanes	2	2	2	2	2	2	2	2	2
	N	Number of trains/day	3	3	3	3	3	3	3	3	3
	% HV	Percent Heavy Vehicles	53.28	53.28	53.28	53.28	53.28	53.28	53.28	53.28	53.28
	q	Arrival rate (veh/hr)	249.0	317.0	317.0	429.0	429.0	546.0	546.0	743.0	743.0
	d	Departure rate (veh/hr)*	2479.2	2479.2	2479.2	2479.2	2479.2	2479.2	2479.2	2479.2	2479.2
	y	Number of vehicles departing	19	24	24	32	32	41	41	56	56
	De	Total vehicle delay (hr/event)	0.78	1.02	1.02	1.46	1.46	1.97	1.97	2.98	2.98
	D	Total vehicle delay (hr/day)	2.3	3.1	3.1	4.4	4.4	5.9	5.9	9.0	9.0
			16.0		21.4		32.3		21.1		31.7

Luling Transportation Study

Railroad Crossing Delay

Option A					
Low			High		
Tg	Gate-down time/train event (hr)	0.075	Tg	Gate-down time/train event (hr)	0.075
ADT	Average daily traffic (veh/day)	16700	ADT	Average daily traffic (veh/day)	22750
n	Number of lanes	4	n	Number of lanes	4
N	Number of trains/day	50	N	Number of trains/day	50
% HV	Percent Heavy Vehicles	6.59	% HV	Percent Heavy Vehicles	6.81
q	Arrival rate (veh/hr)	695.8	q	Arrival rate (veh/hr)	947.9
d	Departure rate (veh/hr)*	7130.3	d	Departure rate (veh/hr)*	7115.2
y	Number of vehicles departing	52	y	Number of vehicles departing	71
De	Total vehicle delay (hr/event)	2.2	De	Total vehicle delay (hr/event)	3.1
D	Total vehicle delay (hr/day)	108.4	D	Total vehicle delay (hr/day)	153.8
Tg	Gate-down time/train event (min)	0.075	Tg	Gate-down time/train event (min)	0.075
ADT	Average daily traffic (veh/day)	300	ADT	Average daily traffic (veh/day)	300
n	Number of lanes	2	n	Number of lanes	2
N	Number of trains/day	50	N	Number of trains/day	50
% HV	Percent Heavy Vehicles	33.33	% HV	Percent Heavy Vehicles	66.67
q	Arrival rate (veh/hr)	12.5	q	Arrival rate (veh/hr)	12.5
d	Departure rate (veh/hr)*	2850.0	d	Departure rate (veh/hr)*	2280.0
y	Number of vehicles departing	1	y	Number of vehicles departing	1
De	Total vehicle delay (hr/event)	0.04	De	Total vehicle delay (hr/event)	0.04
D	Total vehicle delay (hr/day)	1.8	D	Total vehicle delay (hr/day)	1.8
		110.2			155.6

Option B/C					
Low			High		
Tg	Gate-down time/train event (hr)	0.075	Tg	Gate-down time/train event (hr)	0.075
ADT	Average daily traffic (veh/day)	15100	ADT	Average daily traffic (veh/day)	20550
n	Number of lanes	4	n	Number of lanes	4
N	Number of trains/day	50	N	Number of trains/day	50
% HV	Percent Heavy Vehicles	4.97	% HV	Percent Heavy Vehicles	4.87
q	Arrival rate (veh/hr)	629.2	q	Arrival rate (veh/hr)	856.3
d	Departure rate (veh/hr)*	7240.4	d	Departure rate (veh/hr)*	7247.3
y	Number of vehicles departing	47	y	Number of vehicles departing	64
De	Total vehicle delay (hr/event)	1.9	De	Total vehicle delay (hr/event)	2.7
D	Total vehicle delay (hr/day)	96.9	D	Total vehicle delay (hr/day)	136.5
Tg	Gate-down time/train event (min)	0.075	Tg	Gate-down time/train event (min)	0.075
ADT	Average daily traffic (veh/day)	300	ADT	Average daily traffic (veh/day)	300
n	Number of lanes	2	n	Number of lanes	2
N	Number of trains/day	50	N	Number of trains/day	50
% HV	Percent Heavy Vehicles	33.33	% HV	Percent Heavy Vehicles	66.67
q	Arrival rate (veh/hr)	12.5	q	Arrival rate (veh/hr)	12.5
d	Departure rate (veh/hr)*	2850.0	d	Departure rate (veh/hr)*	2280.0
y	Number of vehicles departing	1	y	Number of vehicles departing	1
De	Total vehicle delay (hr/event)	0.04	De	Total vehicle delay (hr/event)	0.04
D	Total vehicle delay (hr/day)	1.8	D	Total vehicle delay (hr/day)	1.8
		98.7			138.3

Port of LA (Appendix H2)
*HCM 16-9,16-7E

Low			High		
Tg	Gate-down time/train event (hr)	0.075	Tg	Gate-down time/train event (hr)	0.075
AT	Average PM traffic (veh/hr)	1400	AT	Average PM traffic (veh/hr)	1906
n	Number of lanes	4	n	Number of lanes	4
N	Number of trains/PM Peak	3	N	Number of trains/PM Peak	3
% HV	Percent Heavy Vehicles	2.77	% HV	Percent Heavy Vehicles	2.03
q	Arrival rate (veh/hr)	1400.0	q	Arrival rate (veh/hr)	1906.0
d	Departure rate (veh/hr)*	7395.3	d	Departure rate (veh/hr)*	7448.5
y	Number of vehicles departing	105	y	Number of vehicles departing	143
De	Total vehicle delay (hr/event)	4.9	De	Total vehicle delay (hr/event)	7.2
D	Total vehicle delay (hr/day)	14.6	D	Total vehicle delay (hr/day)	21.6
Tg	Gate-down time/train event (min)	0.075	Tg	Gate-down time/train event (min)	0.075
AT	Average PM traffic (veh/hr)	317	AT	Average PM traffic (veh/hr)	429
n	Number of lanes	2	n	Number of lanes	2
N	Number of trains/day	3	N	Number of trains/day	3
% HV	Percent Heavy Vehicles	53.28	% HV	Percent Heavy Vehicles	53.28
q	Arrival rate (veh/hr)	317.0	q	Arrival rate (veh/hr)	429.0
d	Departure rate (veh/hr)*	2479.2	d	Departure rate (veh/hr)*	2479.2
y	Number of vehicles departing	24	y	Number of vehicles departing	32
De	Total vehicle delay (hr/event)	1.02	De	Total vehicle delay (hr/event)	1.46
D	Total vehicle delay (hr/day)	3.1	D	Total vehicle delay (hr/day)	4.4
		17.6			26.0

Low			High		
Tg	Gate-down time/train event (hr)	0.075	Tg	Gate-down time/train event (hr)	0.075
AT	Average PM traffic (veh/hr)	1275	AT	Average PM traffic (veh/hr)	1738
n	Number of lanes	4	n	Number of lanes	4
N	Number of trains/PM Peak	3	N	Number of trains/PM Peak	3
% HV	Percent Heavy Vehicles	3.04	% HV	Percent Heavy Vehicles	2.23
q	Arrival rate (veh/hr)	1275.0	q	Arrival rate (veh/hr)	1738.0
d	Departure rate (veh/hr)*	7375.8	d	Departure rate (veh/hr)*	7434.2
y	Number of vehicles departing	96	y	Number of vehicles departing	130
De	Total vehicle delay (hr/event)	4.3	De	Total vehicle delay (hr/event)	6.4
D	Total vehicle delay (hr/day)	13.0	D	Total vehicle delay (hr/day)	19.1
Tg	Gate-down time/train event (min)	0.075	Tg	Gate-down time/train event (min)	0.075
AT	Average PM traffic (veh/hr)	317	AT	Average PM traffic (veh/hr)	429
n	Number of lanes	2	n	Number of lanes	2
N	Number of trains/day	3	N	Number of trains/day	3
% HV	Percent Heavy Vehicles	53.28	% HV	Percent Heavy Vehicles	53.28
q	Arrival rate (veh/hr)	317.0	q	Arrival rate (veh/hr)	429.0
d	Departure rate (veh/hr)*	2479.2	d	Departure rate (veh/hr)*	2479.2
y	Number of vehicles departing	24	y	Number of vehicles departing	32
De	Total vehicle delay (hr/event)	1.02	De	Total vehicle delay (hr/event)	1.46
D	Total vehicle delay (hr/day)	3.1	D	Total vehicle delay (hr/day)	4.4
		16.1			23.5

3-B. Environmental Impacts, Friday PM peak

Network Totals

Number of Intersections	5
Fuel Consumed (gal)	143
Fuel Economy (mpg)	14.7
CO Emissions (kg)	9.97
NOx Emissions (kg)	1.94
VOC Emissions (kg)	2.31
Performance Index	64.5

Network Totals

Number of Intersections	5
Fuel Consumed (gal)	242
Fuel Economy (mpg)	11.0
CO Emissions (kg)	16.92
NOx Emissions (kg)	3.29
VOC Emissions (kg)	3.92
Performance Index	163.0

Network Totals

Number of Intersections	5
Fuel Consumed (gal)	910
Fuel Economy (mpg)	4.0
CO Emissions (kg)	63.60
NOx Emissions (kg)	12.37
VOC Emissions (kg)	14.74
Performance Index	1011.4

Network Totals

Number of Intersections	8
Fuel Consumed (gal)	164
Fuel Economy (mpg)	16.4
CO Emissions (kg)	11.47
NOx Emissions (kg)	2.23
VOC Emissions (kg)	2.66
Performance Index	46.3

Network Totals

Number of Intersections	5
Fuel Consumed (gal)	285
Fuel Economy (mpg)	12.8
CO Emissions (kg)	19.92
NOx Emissions (kg)	3.88
VOC Emissions (kg)	4.62
Performance Index	149.9

Network Totals

Number of Intersections	5
Fuel Consumed (gal)	150
Fuel Economy (mpg)	17.5
CO Emissions (kg)	10.47
NOx Emissions (kg)	2.04
VOC Emissions (kg)	2.43
Performance Index	41.1

Network Totals

Number of Intersections	5
Fuel Consumed (gal)	273
Fuel Economy (mpg)	13.1
CO Emissions (kg)	19.06
NOx Emissions (kg)	3.71
VOC Emissions (kg)	4.42
Performance Index	142.4

Network Totals

Number of Intersections	5
Fuel Consumed (gal)	160
Fuel Economy (mpg)	16.7
CO Emissions (kg)	11.19
NOx Emissions (kg)	2.18
VOC Emissions (kg)	2.59
Performance Index	48.4

Network Totals

Number of Intersections	8
Fuel Consumed (gal)	312
Fuel Economy (mpg)	11.7
CO Emissions (kg)	21.82
NOx Emissions (kg)	4.25
VOC Emissions (kg)	5.06
Performance Index	175.6

Appendix J

Traffic Demand Forecasting

MEMO

Date: February 7, 2019
Pages: 6 inc. this page
Regarding: Traffic Projections & Methodology for the Luling Transportation Study

1 PURPOSE AND SCOPE

The Capital Area Metropolitan Planning Organization (CAMPO) has identified the need to study traffic patterns, congestion, and safety for roadways approaching and departing Luling, TX. Current issues and constraints include, but are not limited to:

- Heavy freight traffic headed east-west via SH 80 and US 183 encounters bottleneck at US 183 / SH 80 / Austin Street and US 183 / US 90 / SH 80 intersections
- Trains crossings can delay traffic approaching and departing north leg of US 183 / US 90 / SH 80 intersection by several minutes
- Queuing at southbound and westbound approaches to US 183 / US 90 / SH 80 intersection during peak periods.
- Unsafe conditions for pedestrians on US 183 between US 90 and SH 80. Frequent vehicle collisions on this stretch of road can exacerbate traffic congestion

As part of this study, traffic volumes were projected to year 2045 to help assess future needs and set a baseline for improvement alternatives. This memo outlines the methodology used for developing Existing 2018 and Design Year 2045 average daily traffic (ADT) and turning movement counts for Study Area. ADT and turning movement counts were developed for the No Build for Existing 2018 and for the No Build and Build alternatives for Design Year 2045.

The study area is comprised of routes entering/leaving Luling including US 183, US 90, SH 80 and five key intersections within the City:

1. US 183 / FM 86 / Lincoln Street
2. US 183 / SH 80 / Austin Street
3. US 183 / SH 80 / US 90
4. Hackberry Street / SH 80
5. Hackberry Street / US 90

The study area is depicted in **Figure 1**.

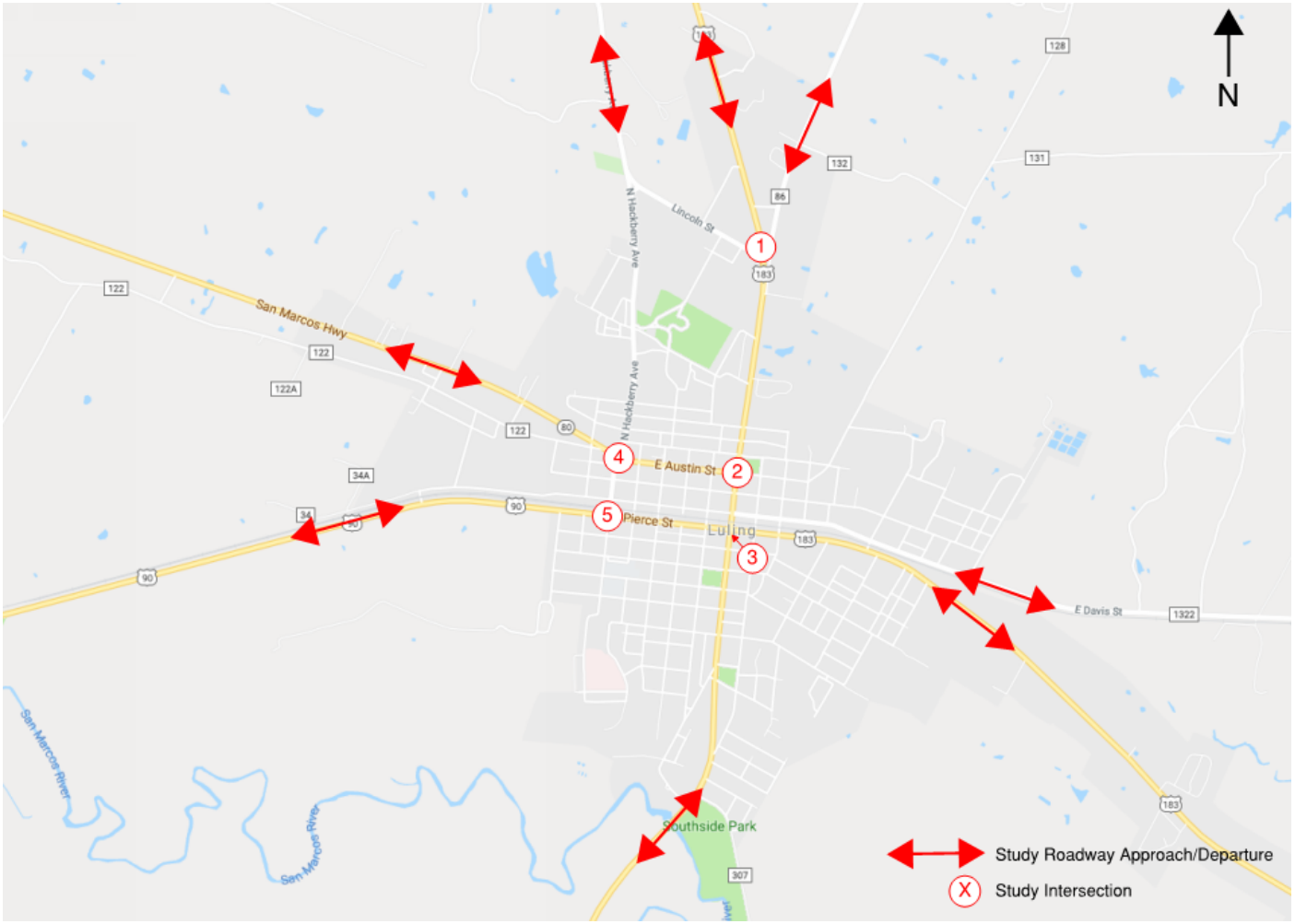


Figure 1. Location Map

2 DATA COLLECTION

Historical and existing traffic counts were collected for the study area to better understand traffic volume levels, truck activity, peaking characteristics, and directional distribution. Average annual daily traffic (AADT) counts from the TxDOT Traffic County Database System (TCDS) were compiled and summarized for approaching/departing study area roadways. **Appendix C** provides a summary of daily traffic volumes and directional factors collected from the TCDS.

Peak period turning movement counts (TMCs) were collected for the five study area intersections. **Appendix C** provides the detailed peak hour TMCs collected in September 2018. **Table 1** below displays the 2017 AADT for the locations approaching/departing the study area.

Table 1. 2017 Average Daily Traffic (ADT) in Study Area

Location	2017 TCDS		
	Directional AADT		Total AADT
	NB/WB	SB/EB	
US 183 north of FM 86	3,856	4,075	7,931
FM 86 north of US 183/Lincoln Street	678	679	1,357
FM 1322 east of Willow Ave	469	469	938
US 183 east of Blanco Ave	4,581	4,511	9,092
SH 80 south of San Marcos River	2,281	2,334	4,614
US 90 west of Davis Street	804	804	1,608
SH 80 west of Wall Street	2,816	2,817	5,633
Hackberry Avenue north of Lincoln Street	501	502	1,003

3 TRAFFIC PROJECTIONS AND FORECASTING METHODOLOGY

The traffic projection method used to calculate baseline future ADT and turning movements were conducted using the following equation:

Analysis Year ADT = *(Count Year ADT) * [1 + (Analysis Year – Count Year) *) (Growth rate / 100)]*

For opening year 2018, the equation is as follows:

2018 ADT = *(2017 ADT) * [1 + (2018 – 2017) *) (Growth Rate / 100)]*

For future year 2045, the equations is as follows:

2045 ADT = *(2017 ADT) * [1 + (2045 – 2017) *) (Growth Rate / 100)]*

Two different growth rates were applied to the equations to capture a range (low and high) of potential future conditions. Identification of the low and high growth rates is described in the following section.

4 GROWTH RATE DETERMINATION

The project team recognizes that there is not a clear indication of how transportation conditions will change through Luling over the next 25 years. The oil boom ended several years ago, so some of the historical data indicates that traffic and truck growth will proceed at the moderate rates observed during much of the last 20 years. However, it could be argued that the oil market is cyclical, and new production technologies or increase in domestic/global demand could result in more booms like the one experienced between 2011 and 2014.

Several data sources and traffic models were reviewed to determine a potential range of growth rates (low and high):

- *Historical traffic counts from TxDOT TCDS* – for locations with two or more years of available AADT data, a logarithmic (trendline) growth rate was calculated. The calculation is shown in **Appendix C**. All study location had data spanning 1999 – 2019.
- *CAMPO 2040 RTP Model* – The Capital Area Metropolitan Planning Organization maintains a regional transportation plan model for long range traffic forecasting. CAMPO provided directional ADT and peak hour volume outputs for the City of Luling for years 2010 and 2040. Growth rates between these two years were calculated for each approaching/departing roadway. A summary of the model year outputs and growth rate calculation is provided in **Attachment 1**.

Table 2 summarizes the growth rates derived from the two data sources described above. Growth rates were averaged for eight approach/departure roadways. The average growth rate for the TCDS historical

data is 1%, and the average growth rate for the CAMPO RTP model outputs is 2.7%. The TCDS growth rate accounts for nearly 20 years of variation in traffic volumes, including the emergence and dissipation of the oil boom between 2011 and 2014. The CAMPO RTP model may have somewhat higher growth rates than the TCDS counts due to the expectation that population and employment growth in Caldwell County will begin to pick up as the areas surrounding Austin continue to develop. To capture a range of potential traffic growth scenarios, the 1% annual growth rate from the TCDS was assumed as a "low" scenario and the 2.7% CAMPO RTP rate as a "high" scenario.

Table 2. Growth Rate Comparison

Location	Historical AADT	CAMPO 2040 RTP Model
	1999-2017	2010-2040
US 183 north of FM 86 Average	1.0%	2.4%
FM 86 north of US 183/Lincoln St Average	1.9%	3.5%
FM 1322 east of Willow Ave Average	-0.1%	3.5%
US 183 east of Blanco Ave	2.2%	2.1%
SH 80 south of San Marcos River	0.9%	2.2%
US 90 west of Davis Street	-2.1%	3.2%
SH 80 west of Wall Street	1.7%	4.0%
Hackberry Avenue north of Lincoln Street	0.6%	3.6%
Average	1.0%	2.7%

The growth rates were applied to the equations in section 3 to produce "low" and "high" ADTs for opening year 2018 and future year 2045.

5 DEVELOPMENT OF TRAFFIC PROJECTIONS

Existing Year (2018) and Future Year (2045) projections of ADT were developed using equations in the previous section. Peak hour TMC forecasts were developed for Existing (2018) and Design Year (2045) using the same process, substituting the 2018 ADT for the 2018 Friday PM peak hour counts for each intersection turning movement.

Existing and projected ADT volumes are summarized in **Table 3**. Detailed ADT and TMC volumes for each forecasting year are shown in **Attachment 2**.

Table 3. Existing and Projected Corridor ADT

Location	2017	2018 (low)	2018 (high)	2045 (low)	2045 (high)
US 183 north of FM 86	7,931	8,000	8,150	10,150	13,950
FM 86 north of US 183/Lincoln Street	1,357	1,350	1,400	1,750	2,400
FM 1322 east of Willow Ave	938	950	950	1,200	1,650
US 183 east of Blanco Ave	9,092	9,200	9,350	11,650	15,950
SH 80 south of San Marcos River	4,614	4,650	4,750	5,900	8,100
US 90 west of Davis Street	1,608	1,600	1,650	2,050	2,800
SH 80 west of Wall Street	5,633	5,700	5,800	7,200	9,900
Hackberry Avenue north of Lincoln Street	1,003	1,000	1,050	1,300	1,750

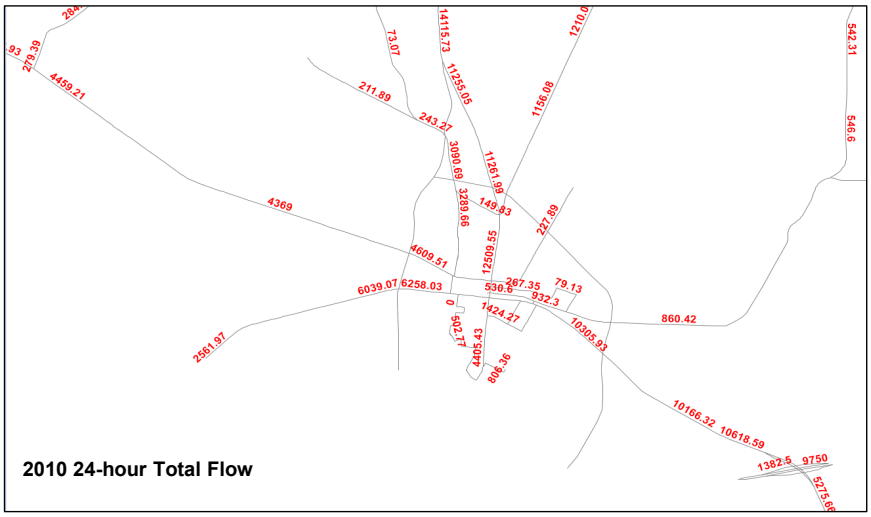
MEMO

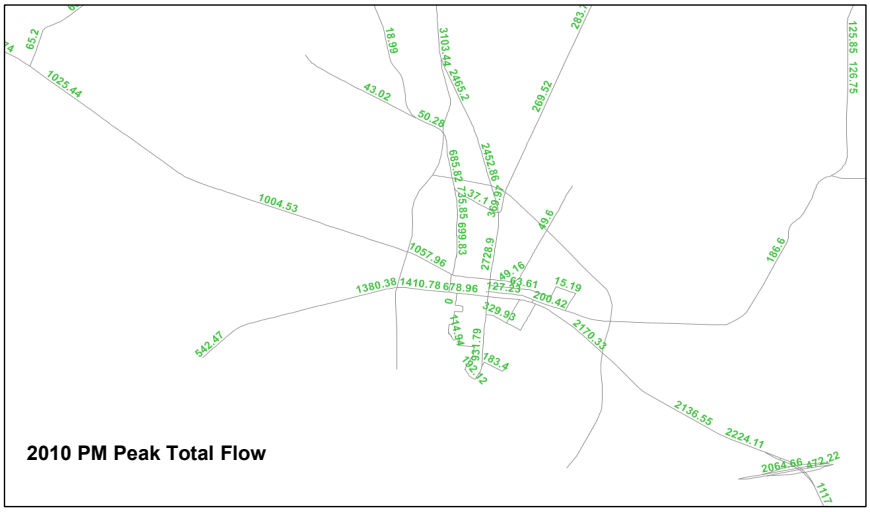
Traffic Projections & Methodology for the Luling Transportation Study

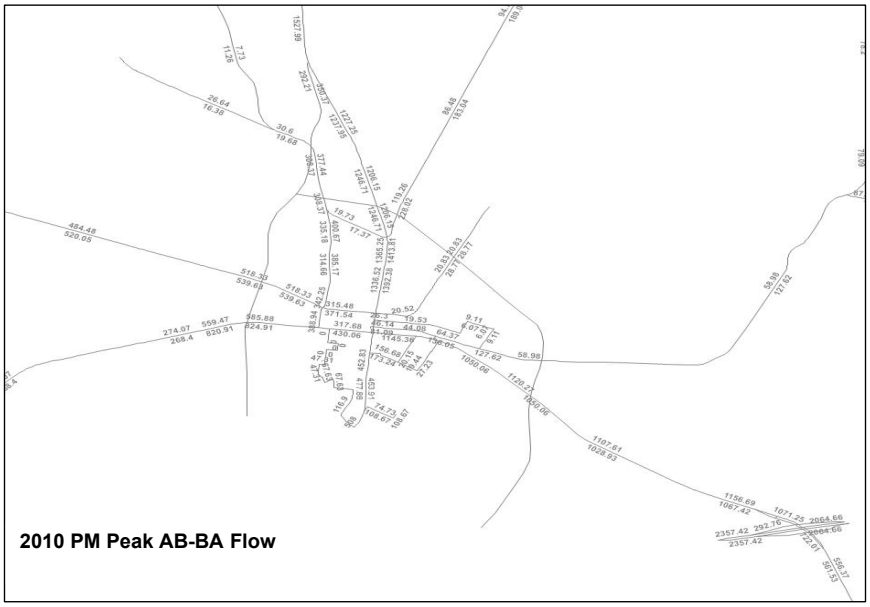
Attachment 1

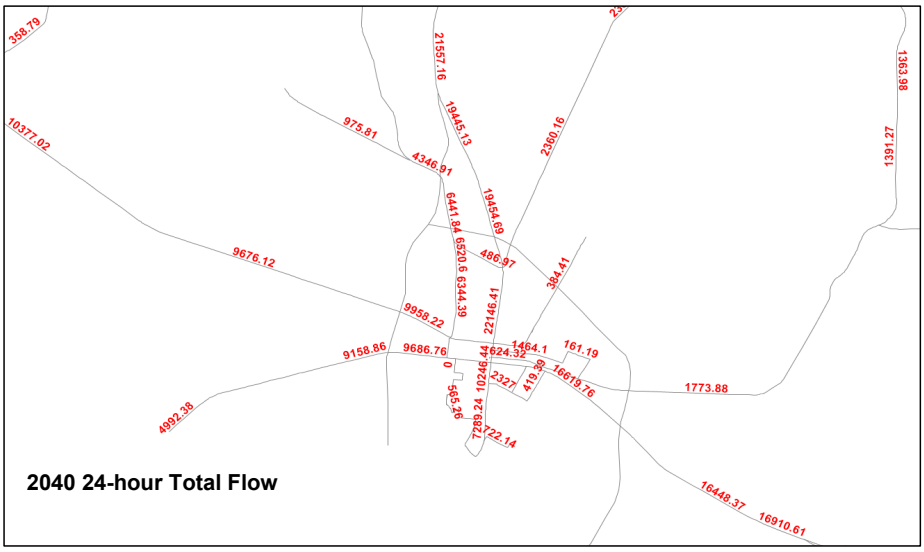
2040 CAMPO RTP Model

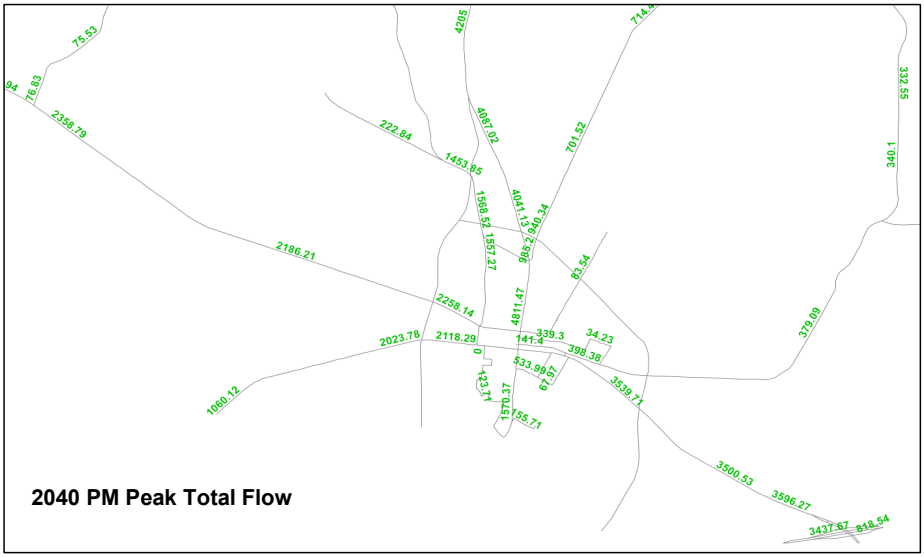
		CAMPO 2040 RTP Model										
		Daily Volumes		PM Peak Hour Volumes						Growth		Annualized Growth Rate	
				2010			2040						
ID	Location	2010	2040	SB/EB	NB/WB	Total	SB/EB	NB/WB	Total	Daily	Peak Hr	Daily	Peak Hr
1	US 183 north of FM 86	11255	19445	1238	1227	2465	2006	2081	4087	1.73	1.66	2.4%	2.2%
2	FM 86 north of US 183/Lincoln Street	1156	2360	86	183	269	209	492	701	2.04	2.61	3.5%	5.4%
3	FM 1322 east of Willow Ave	860	1774	128	59	187	233	147	380	2.06	2.03	3.5%	3.4%
4	US 183 east of Blanco Ave	10166	16448	1050	1120	2170	1724	1816	3540	1.62	1.63	2.1%	2.1%
5	SH 80 south of San Marcos River	4405	7289	478	454	932	792	778	1570	1.65	1.68	2.2%	2.3%
6	US 90 west of Davis Street	2562	4992	268	274	542	522	538	1060	1.95	1.96	3.2%	3.2%
7	SH 80 west of Wall Street	4369	9676	520	484	1004	1105	1081	2186	2.21	2.18	4.0%	3.9%
8	Hackberry Avenue north of Lincoln Street	3091	6442	308	377	685	697	872	1569	2.08	2.29	3.6%	4.3%
		37864	68426			8254			15093	1.81	1.83	**2.7%**	**2.8%**

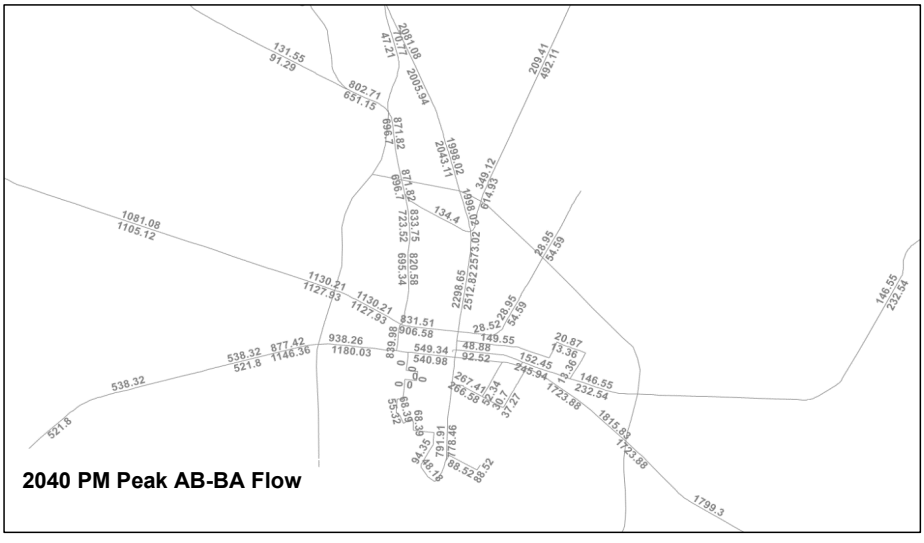

2010 24-hour Total Flow


2010 PM Peak Total Flow


2010 PM Peak AB-BA Flow


358.79
10377.02
975.81
4346.91
21557.16
19445.13
2360.16
1363.98
1361.27
9676.12
6441.84
6520.6
6344.39
19454.69
486.97
384.41
9958.22
22146.41
9158.86
9686.76
0
624.32
1464.1
161.19
10246.44
2327
419.39
16619.76
1773.88
4992.38
565.26
7289.24
722.14
16448.37
16910.61
2040 24-hour Total Flow


75.53
94
76.83
2358.79
4205
222.84
4087.02
1453.85
701.52
1568.52
1557.27
4041.13
2860.34
2186.21
83.54
2258.14
4811.47
339.3
34.23
2023.78
2118.29
141.4
398.38
0
123.71
533.99
1570.37
155.71
3539.71
1060.12
332.55
340.1
379.09
3500.53
3596.27
3437.67
848.54
2040 PM Peak Total Flow


131.55
91.29
802.71
651.15
2005.94
209.41
492.11
871.82
696.7
1988.02
2843.11
349.12
614.83
1081.08
1105.12
134.4
833.75
723.52
820.58
695.34
2573.02
2298.65
2512.82
28.85
54.59
1130.21
1127.93
831.51
906.58
28.52
149.55
20.87
13.36
877.42
1146.36
938.26
1180.03
549.34
540.98
48.88
92.52
152.45
245.94
146.55
232.54
538.32
521.8
267.41
266.58
1723.89
1815.89
1799.3
146.55
232.54
2040 PM Peak AB-BA Flow

MEMO

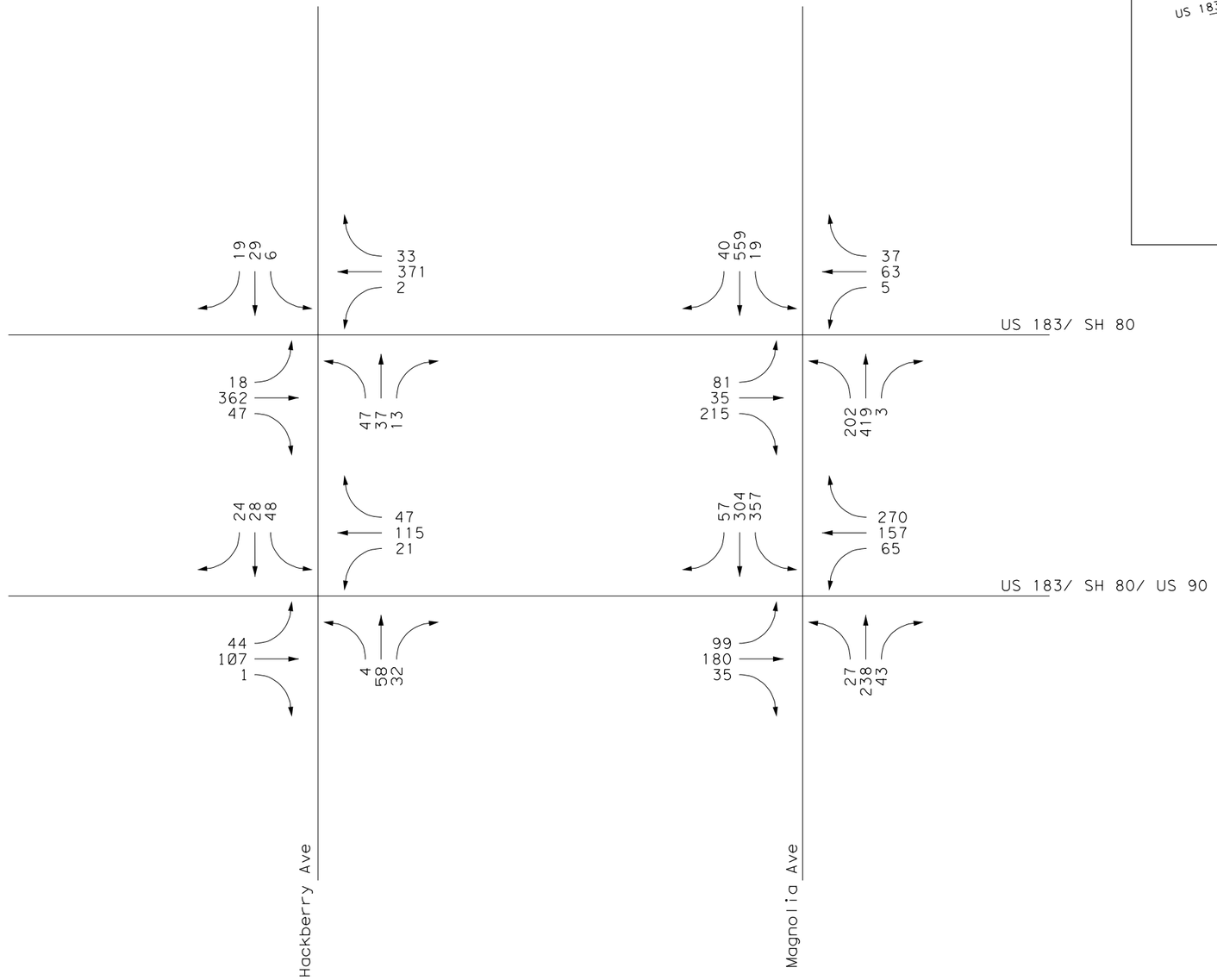
Traffic Projections & Methodology for the Luling Transportation Study

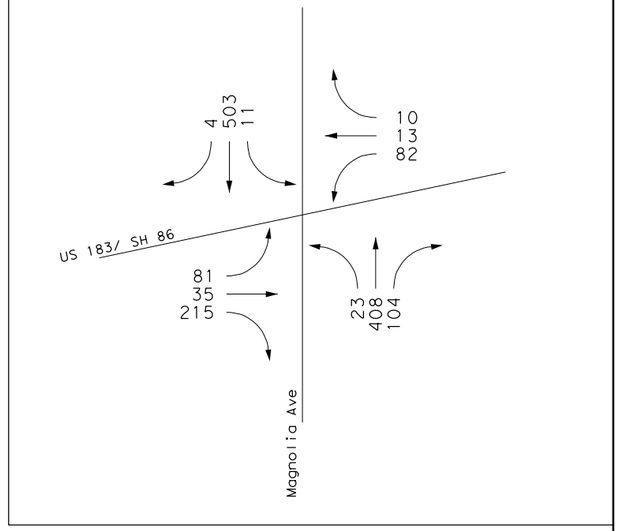
Attachment 2

2040 CAMPO RTP Model Average Daily Traffic (ADT) and Peak Hour Turning Movement Volume Estimates for Existing and Future Years

LEGEND

XXX PM Peak Hour





rps
Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

LINE DIAGRAM
2018 FRIDAY PM PEAK HOUR

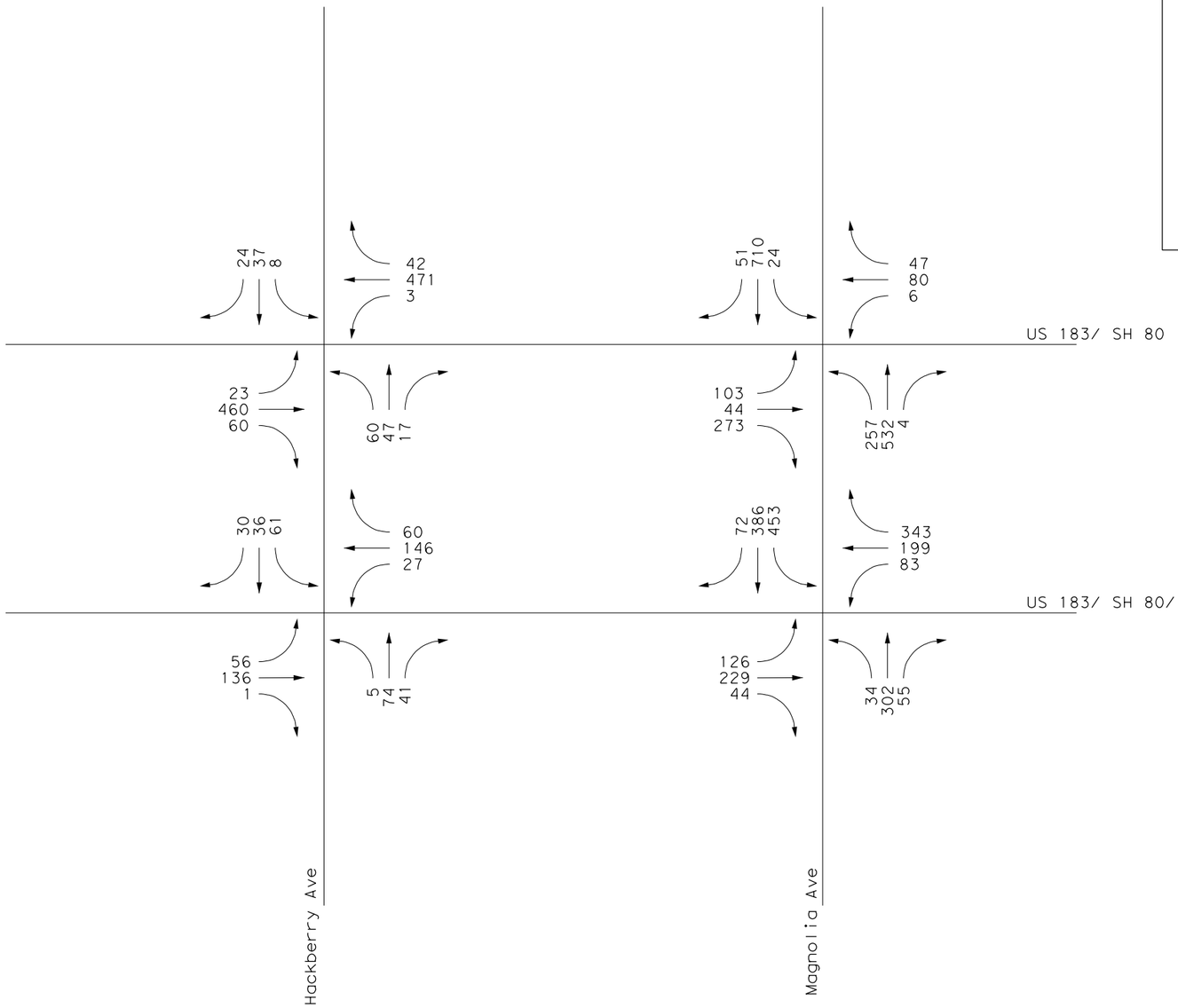
CAMPO
Luling Relief Route Study

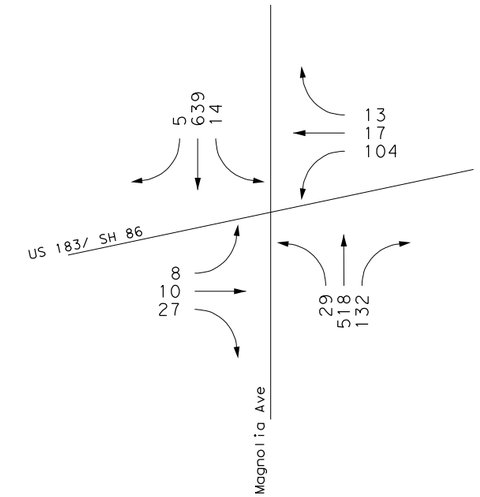
RPS Proj. No: 007757	Exhibit C-1
Scale: NTS	
Date: JANUARY 2019	

2/15/2019 11:59:08 AM
G:\007757 Luling Relief Route Study\07.00 CADD\Luling_Line Diagram Peak Hours.dgn

LEGEND

XXX PM Peak Hour





RPS
Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

LINE DIAGRAM
2045 FRIDAY PM Peak Hour
Low Growth Rate

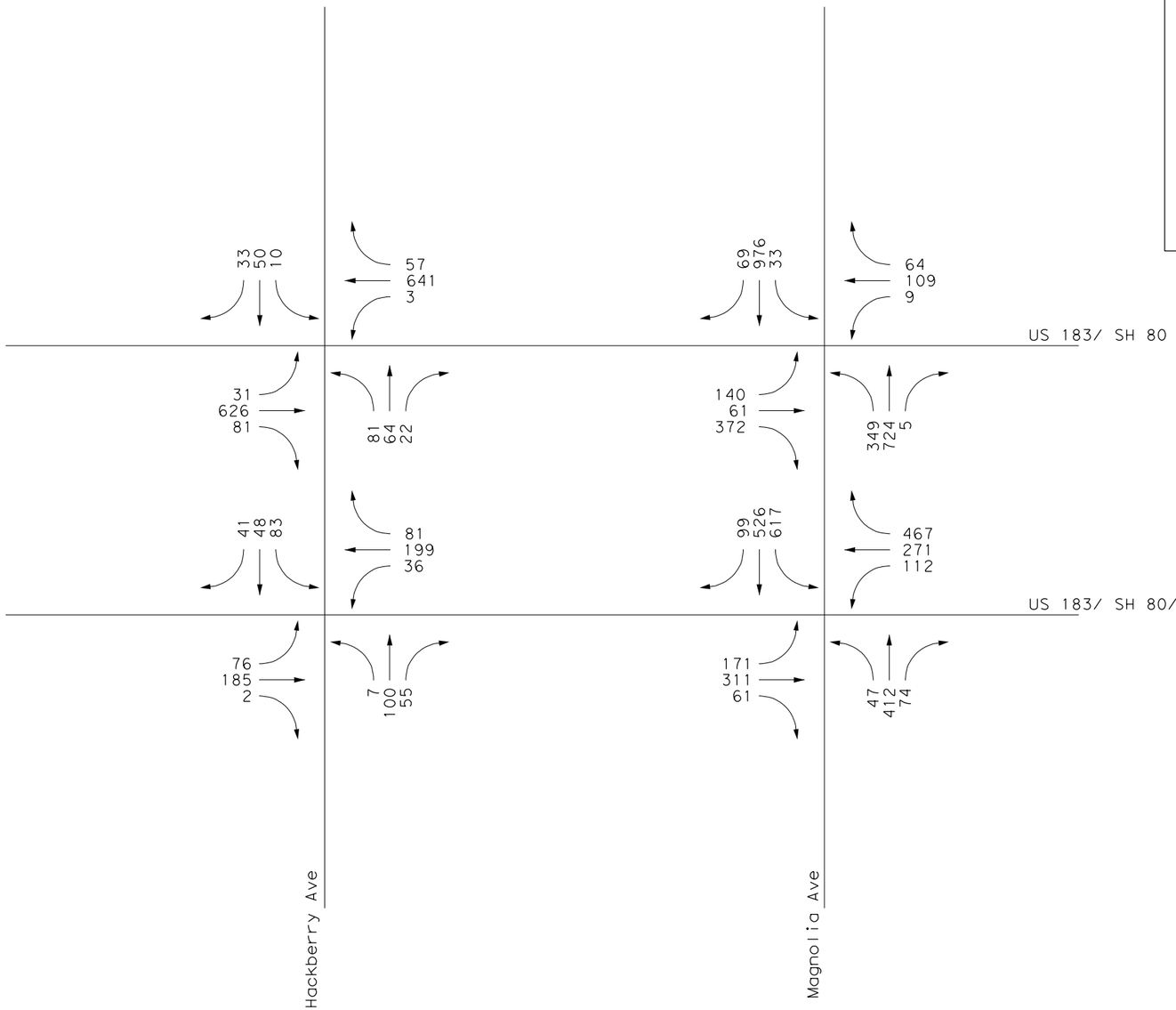
CAMPO
Luling Relief Route Study

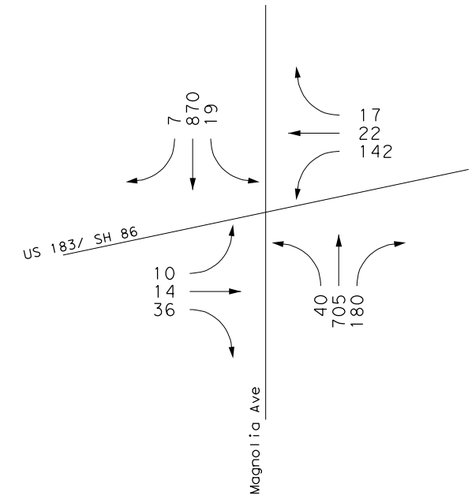
RPS Proj. No: 007757	Exhibit C-2
Scale: NTS	
Date: JANUARY 2019	

2/15/2019 11:59:39 AM
G:\007757 Luling Relief Route Study\07.00 CADD\Luling_Line Diagram Peak Hours.dgn

LEGEND

XXX PM Peak Hour





Texas PE Firm Reg. #F-929
4801 Southwest Pkwy, Pkwy 2, Suite 150, Austin, Texas 78735
T +1 512 328 5771 E usinfrastructure@rpsgroup.com

LINE DIAGRAM
2045 FRIDAY PM Peak Hour
High Growth Rate

CAMPO
Luling Relief Route Study

RPS Proj. No: 007757	Exhibit C-3
Scale: NTS	
Date: JANUARY 2019	

2/15/2019 11:59:26 AM
G:\007757 Luling Relief Route Study\07.00 CADD\Luling_Line Diagram Peak Hours.dgn

		TxDOT TCDS Data			Low GR (1%)			High GR (2.7%)			Low GR (1%)			High GR (2.7%)		
ID	Location	2017 AADT	SB/EB	NB/WB	2018 AADT	SB/EB	NB/WB	2018 AADT	SB/EB	NB/WB	2045 AADT	SB/EB	NB/WB	2045 AADT	SB/EB	NB/WB
1	US 183 north of FM 86	7931	4075	3856	8000	4100	3900	8150	4200	3950	10150	5200	4950	13950	7150	6750
2	FM 86 north of US 183/Lincoln Street	1357	679	678	1350	700	700	1400	700	700	1750	850	850	2400	1200	1200
3	FM 1322 east of Willow Ave	938	469	469	950	450	450	950	500	500	1200	600	600	1650	800	800
4	US 183 east of Blanco Ave	9092	4511	4581	9200	4550	4650	9350	4650	4700	11650	5750	5850	15950	7900	8050
5	SH 80 south of San Marcos River	4614	2334	2281	4650	2350	2300	4750	2400	2350	5900	3000	2900	8100	4100	4000
6	US 90 west of Davis Street	1608	804	804	1600	800	800	1650	850	850	2050	1050	1050	2800	1400	1400
7	SH 80 west of Wall Street	5633	2817	2816	5700	2850	2850	5800	2900	2900	7200	3600	3600	9900	4950	4950
8	Hackberry Avenue north of Lincoln Street	1003	502	501	1000	500	500	1050	500	500	1300	650	650	1750	900	900