



Zoning Case: Z145-300
Traffic Impact Analysis

**Henderson Avenue
Mixed-Use Development**

Dallas, TX

October 26th, 2016

Kimley-Horn and Associates, Inc.
Dallas, Texas

Project #064482700
Registered Firm F-928

Kimley»»Horn

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EXECUTIVE SUMMARY

Kimley-Horn was retained to conduct a Traffic Impact Analysis (TIA) of future traffic conditions associated with a mixed-use development located on Henderson Avenue between Glencoe Street and McMillan Avenue in Dallas, TX. The proposed mixed-use development would comprise approximately 190,000 SF and would consist of retail, restaurant and office space (approximately 170,000 SF on the north side of Henderson and 20,000 SF on the south side). Although this study designates 2016 as the buildout year (which is not the case anymore) the analysis is still valid. This study is intended to identify traffic generation characteristics, identify potential traffic-related impacts on the local street system and to develop mitigation measures required for identified impacts.

The following existing intersections were selected to be part of this study through discussions with the City of Dallas:

- Henderson Avenue and Belmont Avenue
- Henderson Avenue and Capitol Avenue
- Henderson Avenue and Glencoe Street
- Henderson Avenue and Fuqua Street
- Henderson Avenue and McMillan Avenue
- Henderson Avenue and Monarch Street

The analysis also included the following proposed driveways (see **Exhibit 1**):

- Drive A, a full access driveway located just east of Glencoe Street
- Drive B, an inbound only driveway located east of Drive A. Drive B accesses retail on the south side of Henderson Ave.
- Drive C, an outbound only driveway located east of Drive B.
- Drive D, a full access driveway located at the intersection of Henderson Avenue and Fuqua Street
- Drive E, a full access driveway located east of Fuqua Street

Traffic operations were analyzed at the study intersections for existing volumes, year 2016 and 2035 background traffic volumes and year 2016 and 2035 background plus site-generated traffic volumes. The future years correspond to the projected site buildout year and nineteen years later. With the proposed zoning change, the development is expected to generate approximately 6,561 daily one-way trips, with 389 AM peak hour one-way trips and 629 PM peak hour one-way trips. The distribution of the site-generated traffic volumes onto the street system was based on the surrounding roadway network, existing traffic patterns and the project's proposed access locations. Based on current zoning, the fully developed site would allow for a total of 106 dwelling units (4 bedrooms to a unit, 1 person per bedroom, for a total of 424 persons) for residential multifamily land use and 36,975 SF (this number does not include any patio dining area, which in this case would be approximately 10,000 SF) of bar and restaurant land uses. A fully developed site based on existing zoning would generate a total of 6,104 daily one-way trips with 519 AM peak hour one-way trips and 534 PM peak hour one-way trips.

Analysis results indicates that the signalized intersections of Henderson Avenue/Belmont Avenue and Henderson Avenue/McMillan Avenue will continue to operate at overall LOS C or better throughout all the scenarios evaluated for the years 2016 and 2035.

The study area unsignalized intersection approaches are expected to operate within acceptable conditions for 2016, except for the southbound approach at Henderson Avenue and Drive E, which is expected to operate at LOS E conditions during the PM peak. All proposed driveways are expected to operate at or above LOS D conditions for both AM and PM peak periods for opening year 2016.

Analysis results for year 2035 during the AM peak hour shows all unsignalized intersections and driveways operating at LOS D or above, except for the northbound approach of Henderson Avenue and Capitol Avenue, which is expected to operate at LOS F. Our recommendation to mitigate long delays on Capitol Avenue is to restripe it with a northbound left-turn storage lane. Although delay times are not ideal, the analysis shows a 95th percentile queue length of fewer than 4 vehicles for northbound Capitol Avenue.

Year 2035 PM peak hour results indicate that existing study area unsignalized intersections will continue to see increased delays and limited gaps as volumes increase on Henderson Avenue. Although this proposed development contributes to some delay throughout the study area in year 2035, background growth not associated with the development is also a contributing factor to study area unsignalized intersections operating over capacity. Although delay times have increased, the analysis shows a 95th percentile queue length of only 1-3 vehicles for all unsignalized intersection approaches, except for Capitol Avenue and Drive E. The 95th percentile queue lengths for Capitol Avenue and Drive E approaches are fewer than 5 cars. Even though three of the unsignalized approaches are operating at LOS F, delays seen in the models are typical of urban environments. If long wait times persist at Henderson Avenue and Capitol Avenue, drivers will divert to the signal at Belmont Avenue, which has ample capacity for year 2035. Furthermore, the proposed development includes a Traffic Management Plan (TMP), which will be updated biannually to reflect and address congestion issues on site driveways and adjacent streets.

The following roadway improvements are recommended to improve access throughout the study area:

General

1. Henderson Avenue will be improved to provide for a Two-Way Left Turn Lane (TWLTL) starting from just west of Glencoe Street and ending at McMillan Avenue. The TWLTL will provide for easier access to the driveways in and out of the site, while minimizing delays resulting from drivers turning left from Henderson Avenue. By contrasting the pavement color of the TWLTL and decreasing the width of the eastbound and westbound travel lanes, the resulting three lane configuration will encourage slower driving.

Drive A and Henderson Avenue

2. Although the available storage for this turn lane is minimal due to proximity of Glencoe Street, the 95th percentile queue is very minimal (1-2 cars).
3. Provide for a one-lane exiting approach (shared left/right lane).

Drive B and Henderson Avenue:

4. No intersection improvements are recommended at this driveway.
5. Drive will operate as inbound only.

Drive C and Henderson Avenue

6. No Intersections improvements are recommended at this driveway.
7. Drive will operate as outbound only. Provide for a one-lane exiting approach (shared left/right lane).

Drive D and Henderson Avenue

8. Provide for a two-lane exit consisting of a right-turn only lane and a shared through/left-turn lane.

Drive E and Henderson Avenue

9. Provide for a one-lane exiting approach (shared left/right lane)

Capitol Avenue and Henderson Avenue

10. Re-stripe northbound Capitol Avenue to include a left-turn storage bay.

I. INTRODUCTION

A. Purpose

Kimley-Horn was retained to conduct a Traffic Impact Analysis (TIA) of future traffic conditions associated with a mixed-use development to be located on Henderson Avenue between Glencoe Street and McMillan Avenue in Dallas, Texas. A site vicinity map is provided as **Exhibit 1**. **Exhibit 2** shows the proposed development plan. This study is intended to identify traffic generation characteristics, identify potential traffic related impacts on the local street system and to develop mitigation measures required for identified impacts.

B. Methodology

The traffic evaluation was comprised of five scenarios for which weekday AM and PM peak hour intersection level of service analyses were performed. Based upon the project's anticipated completion date, 2016 was assumed as the build-out year of the site, and 2035 was designated as a horizon year buildout. The first scenario analyzed existing traffic conditions (2014); the second scenario analyzed background traffic conditions in the site buildout year (2016); the third scenario analyzed total traffic (background plus site-generated) conditions in the site buildout year (2016), the fourth scenario analyzed background traffic conditions in 2035, and the fifth scenario analyzed total traffic conditions in 2035. For both unsignalized and signalized intersections, the capacity analyses were conducted using the *Synchro*TM software package and its associated *Highway Capacity Manual* reports.

EXHIBIT 1

Vicinity Map

Henderson Avenue Mixed-Use TIA





II. EXISTING AND FUTURE AREA CONDITIONS

A. Roadway Characteristics

The following existing intersections were selected to be part of this study through discussions with the City of Dallas:

- Henderson Avenue and Belmont Avenue
- Henderson Avenue and Capitol Avenue
- Henderson Avenue and Glencoe Street
- Henderson Avenue and Fuqua Street
- Henderson Avenue and McMillan Avenue
- Henderson Avenue and Monarch Street

The analysis also included the following proposed driveways:

- Drive A, a full access driveway located just east of Glencoe Street
- Drive B, an inbound only driveway located east of Drive A. Drive B accesses retail on the south side of Henderson Ave.
- Drive C, an outbound only driveway located east of Drive B.
- Drive D, a full access driveway located at the intersection of Henderson Avenue and Fuqua Street
- Drive E, a full access driveway located east of Fuqua Street

The major study area roadways are described below.

Henderson Avenue is a 2-lane undivided minor arterial that connects US 75 to Ross Avenue and Greenville Avenue. West of US 75, Henderson Avenue becomes Knox Street. Henderson Avenue forms the southern boundary, of the site and the posted speed limit is 30 mph.

Belmont Avenue is a 2-lane undivided local street that forms a traffic signal with Henderson Avenue west of the proposed site. Belmont Avenue connects to Fitzhugh Avenue to the south and to residential land uses north of the proposed site. The posted speed limit on Belmont Avenue is 30 mph.

McMillan Avenue is a 2-lane undivided local street that forms a traffic signal with Henderson Avenue on the east side of the property. McMillan Avenue connects to residential land uses north of the site and Mockingbird Lane. The posted speed limit on McMillan Avenue is 30 mph.

The rest of the roadways that are part of this study are local residential streets with low traffic volumes.

Exhibit 3 illustrates the intersection geometry used for the traffic analyses for existing and future conditions.

B. Existing Study Area

The project site is located on Henderson Avenue, between Glencoe Street and McMillan Avenue. North of Henderson Avenue, the property is mostly undeveloped. On the south

side of Henderson Avenue, the parcel is currently multifamily. The adjacent land use within the study area is primarily residential with some bars and restaurants located on both sides on the proposed site.

A fully developed site based on existing zoning would allow for a total of 106 dwelling units (4 bedrooms per unit, 1 person per bedroom for a total of 424 persons) for residential multifamily land use and 36,975 SF (this number does not include any patio dining area, which in this case would be approximately 10,000 SF) of bar and restaurant land uses. This will generate a total of 6,104 daily one-way trips with 519 AM peak hour one-way trips and 534 PM peak hour one-way trips.

C. Proposed Site Improvements

The project is designed to provide a Complete Streets cross-section to encourage walkability along the Henderson Avenue corridor. The project proposes to accommodate all of the code required parking substantially below grade, with access provided at three driveways serving the northern tract and two driveways serving the southern tract on Henderson Avenue. In addition to parking for vehicles, parking for at least 30 bicycles will be provided on site to encourage biking to the development. The proposed site will comprise a total of approximately 190,000 SF, of which a maximum of 12,000 SF is designated for restaurant use, 90,000 SF for retail use and the remaining 88,000 SF for office use. In order to provide for easier access to and from the site and ease the traffic flow, the proposed development will also incorporate a two-way left turn lane (TWLTL) starting from just west of Glencoe Street and ending at McMillan Avenue.

Drive A will have unsignalized full access on Henderson Avenue. Drive A will consist of a single lane for shared right/left turning movements. Drivers traveling eastbound will be able to access the driveway via the proposed TWLTL to provide for improved access to the site.

Drive B will be an unsignalized, inbound only driveway accessing the proposed retail development on the south side of Henderson Avenue. Drivers traveling westbound will be able to access the driveway via the proposed TWLTL to provide for improved access to the site.

Drive C will be an unsignalized, outbound only driveway for the proposed retail property on the south side of Henderson Avenue.

Drive D will have unsignalized full access on Henderson Avenue. Drive D will be constructed directly across from Fuqua Street and will allow for additional access to the site. Drive D will consist of a two-lane exit striped for shared through/left-turn lane and a right-turn only lane. The proposed TWLTL will provide easier access to the site for eastbound and westbound drivers.

Drive E will have unsignalized full access on Henderson Avenue. Drive E will consist of a single lane for shared right/left turning movements. Drivers traveling eastbound will be able to access the driveway via the proposed TWLTL to provide for improved access to the site.

D. Existing Traffic Volumes

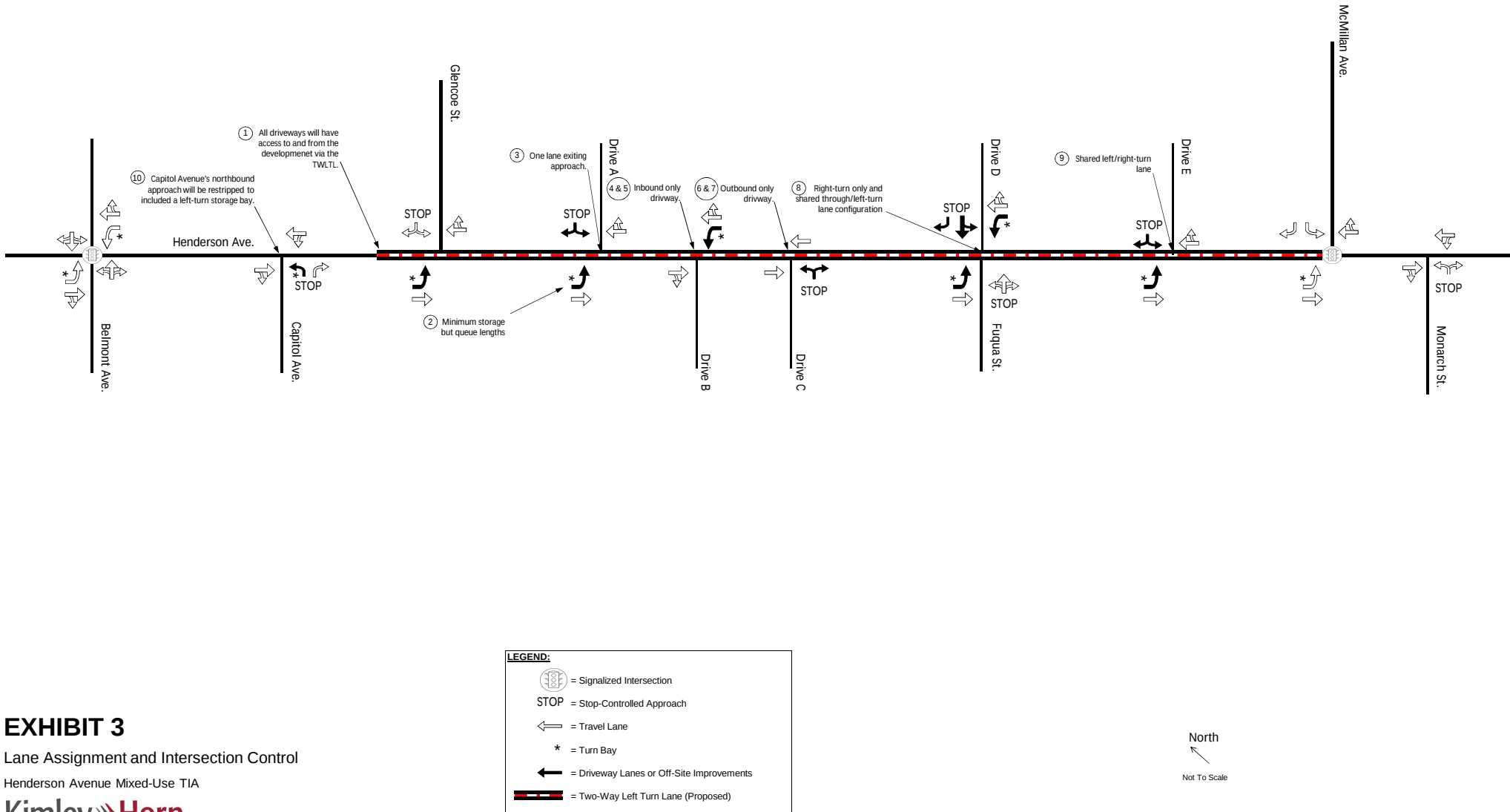
Weekday AM and PM peak hour turning movement counts were collected on December 2, 2014 at the major study intersections. 24-hour machine counts were also collected adjacent to the site on Henderson Avenue (11,495 vehicles per day), Glencoe Street (750 vpd), Madera Street (271 vpd), McMillan Avenue (2,211), Belmont Avenue (4,710), Capitol Avenue (2,728 vpd), Fuqua Street (896 vpd) and Monarch Street (1,420 vpd). **Exhibit 4** shows the existing weekday AM and PM peak hour traffic volumes. The raw count sheets are provided in the **Appendix**.

EXHIBIT 3

Lane Assignment and Intersection Control

Henderson Avenue Mixed-Use TIA

Kimley»Horn



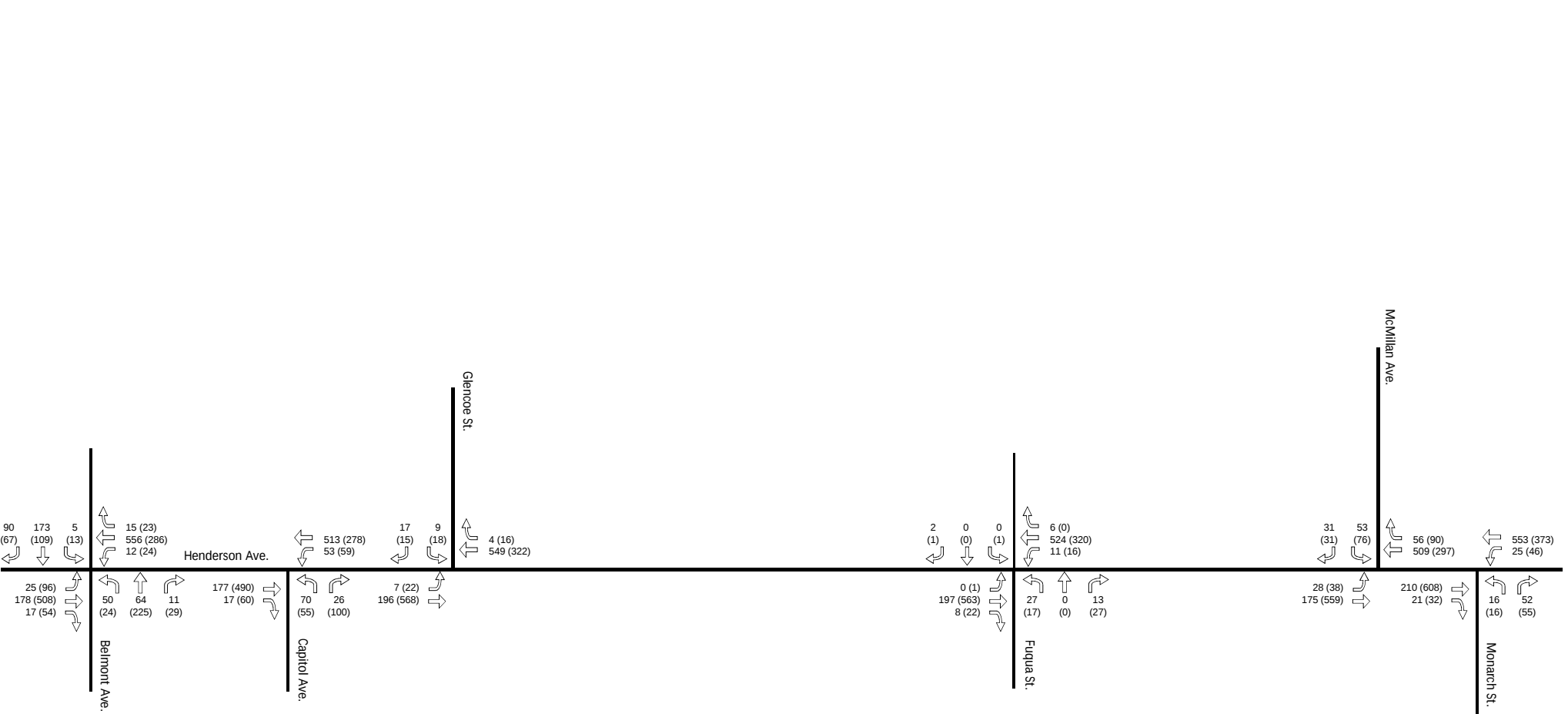


EXHIBIT 4
 2014 Existing Traffic Volumes
 Henderson Avenue Mixed-Use TIA
 Kimley»Horn

LEGEND:
 X (Y)
 X = Weekday AM Peak Hour Turning Movements
 Y = Weekday PM Peak Hour Turning Movements
 Volumes may not sum from point to point due to rounding
 and presence of smaller driveways not included in analysis.



Not To Scale

III. PROJECT TRAFFIC CHARACTERISTICS

A. Site-Generated Traffic

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the 9th edition of *Trip Generation Manual* published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. The trips indicated are actually one-way trips or *trip ends*, where one vehicle entering and exiting the site is counted as one inbound trip and one outbound trip.

Pass-by trips are existing vehicles on the adjacent roadways that choose to visit the new site and then return to their original path. Pass-by trips do not reduce the driveway volumes projected for the site, but are deducted from the net new traffic added to the area roadways, since they are already present. To be conservative, no pass-by trips were included in this analysis.

Reductions to the base trip generation estimates are sometimes applied due to internal capture or transit usage. Internal capture is the tendency for customers or residents to visit several parts of a multi-use development in one trip, but be counted twice in the trip generation since the formulae assumes the individual trip generators are isolated. Internal capture reduces the number of trips leaving the site and results in a projection of internal trips and external trips. To be conservative, internal capture was not included in this analysis.

Table 1 shows the resulting Daily, and weekday AM and PM peak hour trip generation for the proposed development, showing net new trips.

Table 1 – Trip Generation

Land Uses	Amount	Units	ITE Code	Daily	AM Peak Hour			PM Peak Hour		
				One-Way	One-Way Trips			One-Way Trips		
				Trips	IN	OUT	TOTAL	IN	OUT	TOTAL
Office	88,000	SF	710	1,192	152	21	173	30	147	177
Retail - Shopping Center	90,000	SF	820	3,843	53	33	86	160	174	334
High-Turnover (Sit-Down) Restaurant	12,000	SF	932	1,526	72	58	130	71	47	118
Total Net New External Trips:				6,561	277	112	389	261	368	629

Trip Generation rates based on ITE's *Trip Generation Manual*, 9th Edition.

B. Trip Distribution and Assignment

The distribution of the site-generated traffic volumes into and out of site driveways and onto the street system was based on the area street system characteristics, existing traffic patterns, relative residential density and the locations of the proposed driveway access to/from the site. The locations of other existing retail and restaurant sites in all four directions were also considered. **Table 2** displays the general directional distribution percentages assumed for the site.

Table 2 – General Directional Distribution

Direction (To/From)	Percent of Site Traffic
West (via Henderson Avenue)	55%
East (via Henderson Avenue)	32%
North (via McMillan Avenue)	2%
North (via Glencoe Street)	2%
South (via Belmont Avenue)	5%
South (via Capitol Avenue)	2%
South (via Fuqua Street)	2%

The corresponding inbound and outbound traffic assignment, where the directional distribution in **Table 2** is applied using the most probable paths to and from the site, can be found in **Exhibit 5**.

Exhibit 6 shows the resulting site-generated weekday AM and weekday PM peak hour turning movements after multiplying the new external trip generation for each use by the traffic assignment percentages.

C. Development of 2016 Background Traffic

To obtain 2016 background traffic, the existing traffic counts and historic counts near the site were compared to find expected growth trends within the study area. Traffic counts taken on Henderson Avenue near the study area were 12,733 vpd from 2002, 12,383 vpd from 2009 and 11,495 vpd from 2014. These counts indicate a downward trend for traffic volumes along the corridor. To be conservative, a 2% growth rate per year was still applied throughout the study area to account for future development not associated with this site. To develop 2016 background traffic, the existing 2014 traffic counts were grown by 2% annually for two years. The resulting 2016 background weekday AM and PM peak hour traffic volumes are shown in **Exhibit 7**.

D. Development of 2016 Total Traffic

Site traffic volumes were added to the background volumes to represent the estimated total (background plus site-generated) traffic conditions for the 2016 study year after completion of the proposed development. **Exhibit 8** shows the resulting 2016 weekday AM and PM peak hour total traffic volumes.

E. Development of 2035 Background and Total Traffic

The background and total traffic volumes in the 2035 study year were developed using the North Central Texas Council of Governments (NCTCOG) 2035 model. Results from the regional model (as shown in the Appendix) indicate approximately 14,000 vpd will be traveling on Henderson Avenue in year 2035. This is approximately 1% per year growth beyond the existing 11,495 vpd on Henderson Avenue. Existing traffic volumes were grown at 1% per year to develop year 2035 background traffic. To determine year 2035 total traffic conditions, the site-generated traffic was added to the background traffic. **Exhibit 9** shows the resulting 2035 weekday AM and PM peak hour background traffic volumes, and **Exhibit 10** shows the resulting 2035 weekday AM and PM peak hour total traffic volumes after the addition of the site-generated traffic.

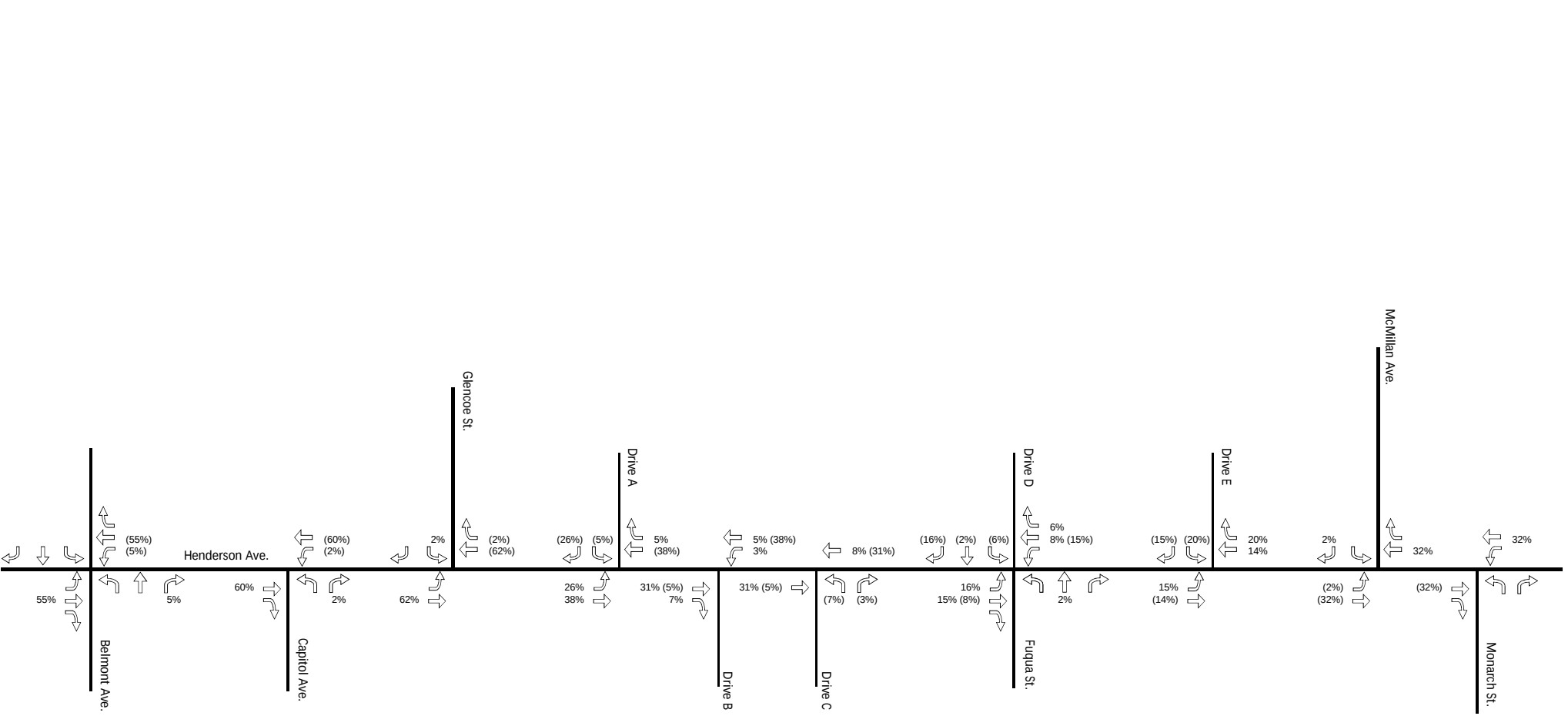


EXHIBIT 5
 Trip Distribution and Traffic Assignment - New Trips
 Henderson Avenue Mixed-Use TIA

Kimley»Horn

LEGEND:
 X% (Y%)
 X% = Percentage of Inbound Site-Generated Traffic
 Y% = Percentage of Outbound Site-Generated Traffic

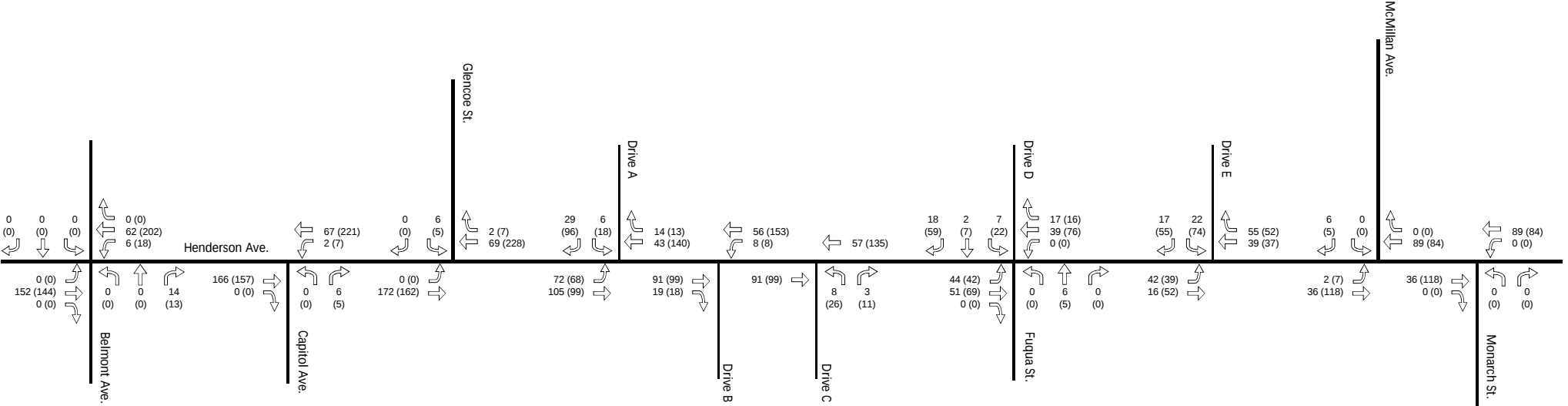
North
 ↖
 Not To Scale

EXHIBIT 6

Site-Generated Traffic Volumes - New Trips

Henderson Avenue Mixed-Use TIA

Kimley»Horn



LEGEND:
X (Y)
X = Weekday AM Peak Hour Turning Movements
Y = Weekday PM Peak Hour Turning Movements
Volumes may not sum from point to point due to rounding
and presence of smaller driveways not included in analysis.

North
Not To Scale

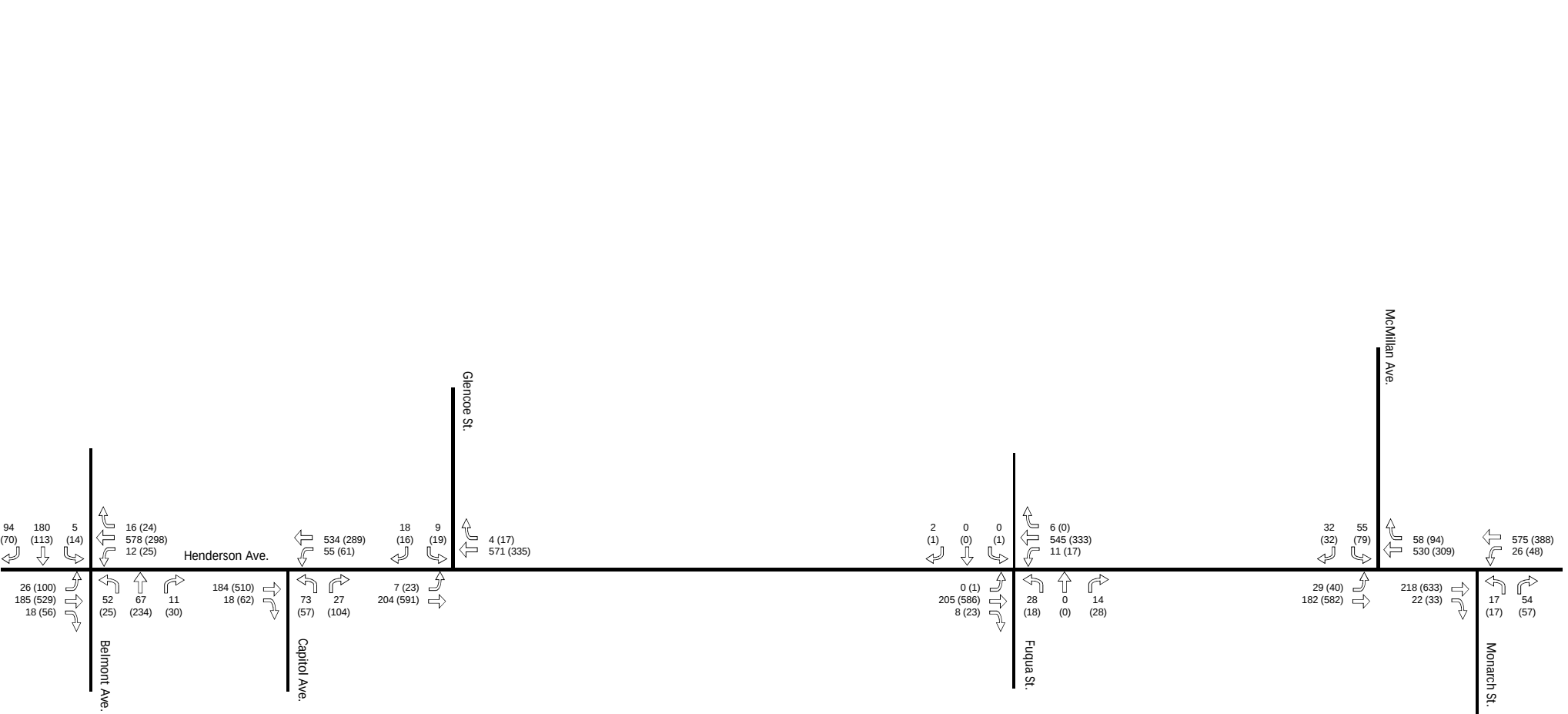
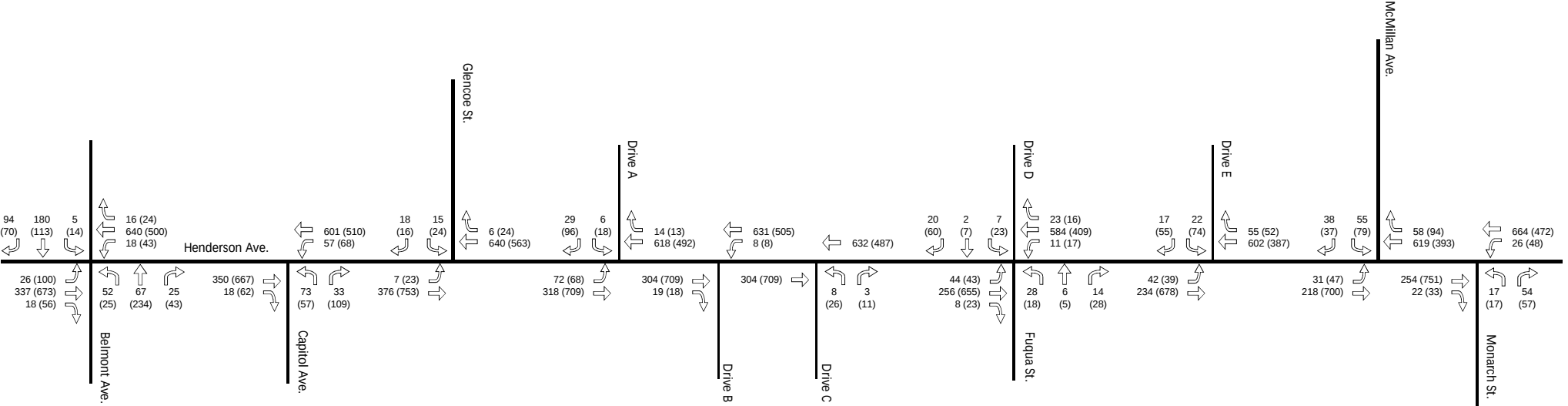


EXHIBIT 8

2016 Background Plus Site-Generated Traffic Volumes

Henderson Avenue Mixed-Use TIA

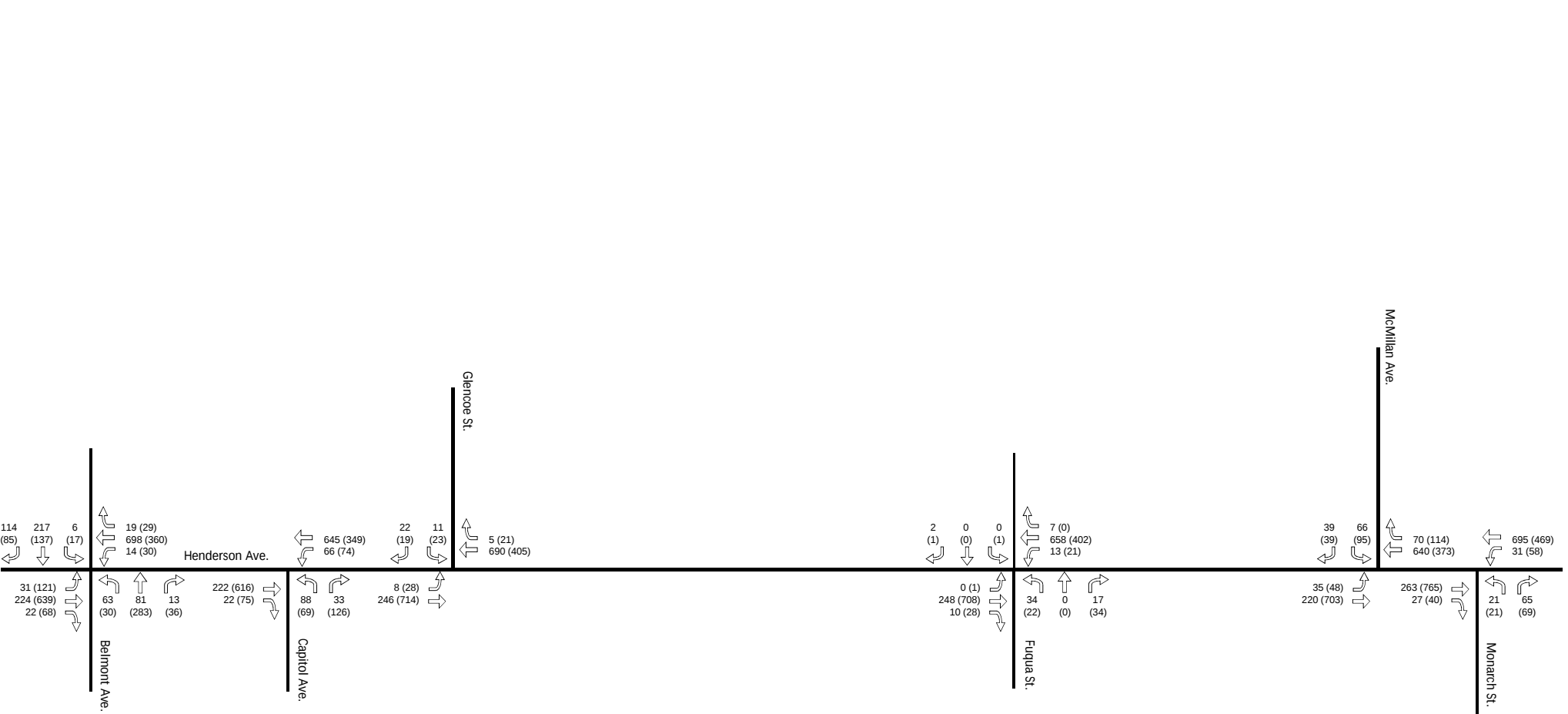
Kimley»Horn



LEGEND:
X (Y)
X = Weekday AM Peak Hour Turning Movements
Y = Weekday PM Peak Hour Turning Movements
Volumes may not sum from point to point due to rounding
and presence of smaller driveways not included in analysis.

North

Not To Scale



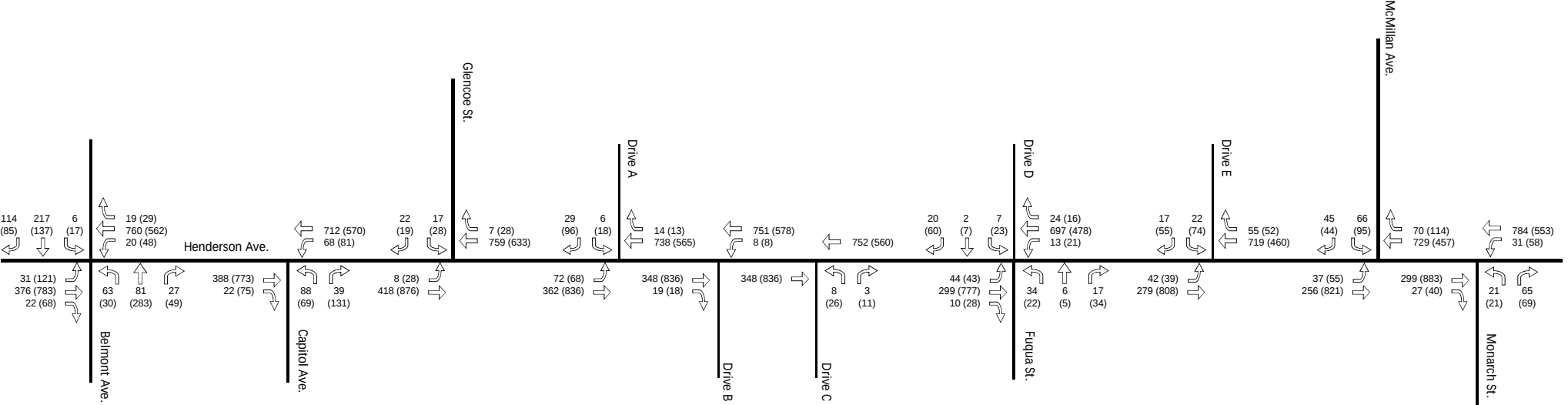


EXHIBIT 10
2035 Background Plus Site Generated Traffic Volumes
Henderson Avenue Mixed-Use TIA
Kimley»Horn

LEGEND:
X (Y)
X = Weekday AM Peak Hour Turning Movements
Y = Weekday PM Peak Hour Turning Movements
Volumes may not sum from point to point due to rounding
and presence of smaller driveways not included in analysis.



Not To Scale

IV. TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn conducted a traffic operations analysis to determine potential capacity deficiencies in the 2014, 2016 and 2035 study years at the study intersections. The acknowledged source for determining overall capacity is the current edition of the *Highway Capacity Manual*.

A. Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). **Table 3** shows the definition of level of service for signalized and unsignalized intersections. LOS D is generally considered the threshold for acceptable operations for signalized intersections in an urban area.

Table 3 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Definitions provided from the Highway Capacity Manual, Special Report 209, Transportation Research Board, 2010.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. For the unsignalized analysis, the level of service (LOS) for a two-way stop controlled intersection is defined for each movement. Unlike signalized intersections which define LOS for each approach and for the intersection as a whole, LOS for two-way stop-controlled intersections is not defined as a whole.

Calculations for the level of service at the key intersections identified for study are provided in the **Appendix**. The analyses assumed the lane geometry and intersection control shown in **Exhibit 3**.

B. Analysis Results

Tables 4 and **5** show the intersection operational results for the weekday AM and PM peak hours, respectively.

Table 4 – Traffic Operational Results – Weekday AM Peak Hour

INTERSECTION	APPROACH	2014 Existing Traffic AM Peak Hour		2016 Background Traffic AM Peak Hour		2016 Background Plus Site Traffic AM Peak Hour		2035 Background Traffic AM Peak Hour		2035 Background Plus Site Traffic AM Peak Hour	
		DELAY (SEC/VBH)	LOS	DELAY (SEC/VBH)	LOS	DELAY (SEC/VBH)	LOS	DELAY (SEC/VBH)	LOS	DELAY (SEC/VBH)	LOS
Henderson Ave. @ Belmont Ave.	EB	11.8	B	11.7	B	11.7	B	10.9	B	11.5	B
	WB	15.2	B	15.2	B	16.0	B	16.6	B	19.8	B
	NB	11.2	B	12.0	B	14.4	B	16.9	B	19.3	B
	SB	13.1	B	14.0	B	16.6	B	20.2	C	22.5	C
	Overall	13.7	B	14.0	B	14.9	B	16.4	B	18.1	B
Henderson Ave. @ McMillan Ave.	EB	9.8	A	9.7	A	9.3	A	8.5	A	9.1	A
	WB	12.6	B	12.5	B	12.5	B	11.4	B	14.7	B
	SB	10.3	B	10.9	B	13.4	B	14.6	B	17.4	B
	Overall	11.7	B	11.7	B	11.8	B	11.0	B	13.6	B
Henderson Ave. @ Capitol Ave.	NB*	18.9	C	20.1	C	27.7	D	30.9	D	50.1	F
Henderson Ave. @ Glencoe St.	SB*	14.0	B	14.3	B	18.3	C	16.8	C	22.3	C
Henderson Ave. @ Fuqua St./Drive D	NB*	16.1	C	16.6	C	24.0	C	21.2	C	34.0	D
	SB*	12.0	B	12.2	B	16.8	C	13.5	B	20.2	C
Henderson Ave. @ Monarch St.	NB*	12.2	B	12.5	B	13.6	B	14.7	B	16.4	C
Henderson Ave. @ Drive A	SB*	-	-	-	-	15.9	C	-	-	18.7	C
Henderson Ave. @ Drive C	NB*	-	-	-	-	16.8	C	-	-	19.9	C
Henderson Ave. @ Drive E	SB*	-	-	-	-	18.6	C	-	-	22.8	C

* Stop-Controlled Approach

- No movements in Time Period

Table 5 – Traffic Operational Results – Weekday PM Peak Hour

INTERSECTION	APPROACH	2014 Existing Traffic PM Peak Hour		2016 Background Traffic PM Peak Hour		2016 Background Plus Site Traffic PM Peak Hour		2035 Background Traffic PM Peak Hour		2035 Background Plus Site Traffic PM Peak Hour	
		DELAY (SEC/VB-H)	LOS	DELAY (SEC/VB-H)	LOS	DELAY (SEC/VB-H)	LOS	DELAY (SEC/VB-H)	LOS	DELAY (SEC/VB-H)	LOS
Henderson Ave. @ Belmont Ave.	EB	14.9	B	15.8	B	17.7	B	18.4	B	24.8	C
	WB	12.1	B	12.4	B	12.7	B	12.1	B	13.9	B
	NB	13.7	B	14.5	B	20.8	C	20.3	C	25.6	C
	SB	12.5	B	13.2	B	18.4	B	17.8	B	21.6	C
	Overall	13.7	B	14.5	B	16.8	B	17.2	B	21.4	C
Henderson Ave. @ McMillan Ave.	EB	11.8	B	11.8	B	11.8	B	10.6	B	13.8	B
	WB	9.9	A	9.8	A	9.3	A	8.4	A	9.0	A
	SB	10.6	B	11.2	B	14.5	B	14.9	B	18.3	B
	Overall	11.0	B	11.0	B	11.1	B	10.3	B	12.4	B
Henderson Ave. @ Capitol Ave.	NB*	22.0	C	24.0	C	32.1	D	49.9	E	66.3	F
Henderson Ave. @ Glencoe St.	SB*	16.3	C	17.0	C	30.2	D	22.2	C	44.8	E
Henderson Ave. @ Fuqua St./Drive D	NB*	17.9	C	18.9	C	31.0	D	26.2	D	51.9	F
	SB*	16.8	C	17.6	C	24.0	C	22.6	C	36.7	E
Henderson Ave. @ Monarch St.	NB*	18.3	C	19.4	C	24.9	C	29.1	D	42.5	E
Henderson Ave. @ Drive A	SB*	-	-	-	-	20.0	C	-	-	25.6	D
Henderson Ave. @ Drive C	NB*	-	-	-	-	25.8	D	-	-	34.9	D
Henderson Ave. @ Drive E	SB*	-	-	-	-	35.1	E	-	-	61.5	F

* Stop-Controlled Approach

- No movements in Time Period

C. 2014 Existing Traffic Operations

The analysis of the 2014 existing traffic operations shows both the signalized intersections of Henderson Avenue and Belmont Avenue, and Henderson Avenue and McMillan Avenue operating at overall LOS B during both peak periods.

All unsignalized intersection approaches are currently operating within acceptable conditions at or above LOS C conditions.

D. 2016 Background Traffic Operations

The addition of two years of background growth adds a small amount of average delay to the signalized and unsignalized intersections. All intersections remained at or above LOS C conditions.

E. 2016 Background Plus Site-Generated Traffic Operations

The addition of the site-generated traffic to the 2016 background traffic resulted in a small amount of additional delay at the existing signalized intersections. However, overall LOS remained the same for both signalized intersections for AM and PM peak hour.

For the AM peak hour, the northbound approach for the unsignalized intersections of Henderson Avenue and Capitol Avenue changed from LOS C to LOS D. All other unsignalized intersection approaches remained at LOS C or better for the AM peak hour.

For the PM peak hour, the southbound approach for the unsignalized intersection of Henderson Avenue and Drive E operates at LOS E. All other proposed site driveway approaches are expected to operate at LOS D or better for the PM peak hour.

F. 2035 Background Traffic Operations

The addition of the background traffic adds a marginal amount of delay throughout the system. However, the signalized intersections remained at the same overall LOS when compared to existing conditions.

For the AM peak hour, the northbound approach for the unsignalized intersection of Henderson Avenue and Capitol Avenue changed from LOS C to LOS D. The remaining unsignalized approaches operated at LOS C or better.

For the PM peak hour, the northbound approach for the unsignalized intersection of Henderson Avenue and Capitol Avenue changed from LOS C to LOS E and is just shy of changing to LOS F. The northbound approach for the unsignalized intersection of Henderson Avenue and Fuqua Street changed from LOS C to LOS D. The remaining intersections operated at LOS D or better.

G. 2035 Background Plus Site-Generated Traffic Operations

The addition of site generated traffic to the background traffic adds a marginal amount of delay throughout the system. For the PM peak hour, the signalized intersection of Henderson Avenue and Belmont Avenue changed from LOS B to C. The rest of the signalized intersections remained at the same overall LOS when compared to the previous scenario.

For the AM peak hour, the northbound approach for the unsignalized intersection of Henderson Avenue and Capitol Avenue changed from LOS D to LOS F. The northbound approach for the unsignalized intersection of Henderson Avenue and Fuqua Street changed from LOS C to LOS D. The remaining unsignalized approaches operated at LOS C or better.

For the PM peak hour, the northbound approach for the unsignalized intersection of Henderson Avenue and Capitol Avenue changed from LOS E to LOS F. The southbound approach of Henderson Avenue and Glencoe Street changed from LOS C to E. The northbound approach of Henderson Avenue and Fuqua Street changed from LOS D to F. The LOS for the northbound approach of Henderson Avenue and Monarch Street changed from LOS D to E. The southbound approach of Henderson Avenue and Drive E operates at LOS F. Both Drive A and Drive C approaches operate at LOS D.

Although a few of the approaches are experiencing LOS F, the delay for those approaches is manageable. The maximum delay experienced is at the northbound approach of Capitol Avenue which is 66.3 seconds. This kind of delay is typical of unsignalized intersections in urban environments. Furthermore, the northbound approach of Capitol Avenue at Henderson Avenue is 0.1 seconds away from being LOS F in the year 2035 without any addition of site traffic and the added site traffic is only 6 cars in the PM peak hour and 5 cars in the AM peak hour. The 95th percentile queue length for the northbound approach of Capitol Avenue and the southbound approach of Drive E is fewer than 5 cars. The 95th percentile queue at the northbound approach of Fuqua Street it is fewer than 3 cars. This means that there is not a persistent queue that

stays at those approaches for a prolonged period and the operations at those approaches remain acceptable.

H. Link Analysis

The link capacity analysis examines the operating conditions of roadway links rather than intersections, and uses the daily traffic rather than the peak hours. The operating condition is defined by the ratio of link volume to link capacity, or V/C. The V/C of the different roadway links that would be impacted by the proposed development's traffic was calculated for the 2016 background and total traffic scenarios. The maximum daily capacity is calculated to be ten times the maximum hourly capacity, so the threshold for possible daily capacity is significantly lower than if the roadway was at maximum flow for an entire day. These theoretical capacity volumes were obtained from the North Central Texas Council of Governments (NCTCOG) tables of service volumes by lane, which are duplicated in the **Appendix**. For finding the capacity of each roadway, functional class is set to minor arterial for Henderson Avenue and collector for Belmont Avenue. Area type for both roadways was set to Urban Residential. The daily background volume on each link is found by applying the growth factor to known daily link volumes, then adding the percentage of the daily site traffic that uses at each link. **Table 6** summarizes daily volumes and volume-to-capacity ratios of the links considered for the 2016 and 2035 scenarios.

Table 6 – Link Capacity Analysis

Roadway From To	Volumes		Capacity			V/C Ratios	
	Year	Daily Volumes	Number Of Lanes	Median Type	LOS 'E' Capacity	v/c Ratio	LOS
Henderson Avenue - 2014 Existing Between Glencoe and Fuqua	2014	11,495 ¹	2	None	15,000 ³	0.77	D
Henderson Avenue - 2016 Projections - Without Site Between Glencoe and Fuqua	2016	11,955 ²	2	None	15,000 ³	0.80	D
Henderson Avenue - 2016 Projections - With Site Between Glencoe and Fuqua	Background	11,955					
	Proposed Site 64.0%	4,199					
	Total:	16,154	3	None	22,500 ³	0.72	D
Henderson Avenue - 2035 Projections - Without Site Between Glencoe and Fuqua	2035	13,886 ²	2	None	15,000 ³	0.93	E
Henderson Avenue - 2035 Projections - With Site Between Glencoe and Fuqua	Background	13,886					
	Proposed Site 64.0%	4,199					
	Total:	18,085	3	None	22,500 ³	0.80	E
Belmont Avenue- 2014 Existing South of Henderson	2014	3,891 ¹	2	None	9,500 ³	0.41	A/B
Belmont Avenue - 2016 Projections - Without Site South of Henderson	2016	4,047 ²	2	None	9,500 ³	0.43	A/B
Belmont Avenue - 2016 Projections - With Site South of Henderson	Background	4,047					
	Proposed Site 5.0%	328					
	Total:	4,375	2	None	9,500 ³	0.46	C
Belmont Avenue - 2035 Projections - Without Site South of Henderson	2035	4,700 ²	2	None	9,500 ³	0.49	C
Belmont Avenue - 2035 Projections - With Site South of Henderson	Background	4,700					
	Proposed Site 5.0%	328					
	Total:	5,028	2	None	9,500 ³	0.53	C

Notes:

- Count data from KHA 2014 counts
- 2016 volumes grown at 2.0% per year, 2035 volumes grown at 1.0% per year
- Link Capacity from North Central Texas Council of Governments, using Urban Residential District

V/C	LOS	V/C	LOS
< 0.45	A/B	< 0.80	D
< 0.65	C	< 1.00	E
		> 1.00	F

As seen in **Table 6**, Henderson Avenue is approaching its capacity in year 2014 operating shy of LOS E conditions. Adding an additional two-way left turn lane on Henderson Avenue for left-turning vehicles will improve the capacity of this roadway segment. The LOS for the year 2016 is D and the roadway segment still has additional capacity. For the year 2035 the LOS changes to E from LOS D. However, after the site improvements such as the TWLTL is added, the V/C ratio is at the cusp of changing to LOS D. Belmont Avenue is projected to operate under capacity thresholds for both year 2016 and 2035 conditions.

V. CONCLUSIONS AND RECOMMENDATIONS

Analysis results indicates that the signalized intersections of Henderson Avenue/Belmont Avenue and Henderson Avenue/McMillan Avenue will continue to operate at overall LOS C or better throughout all the scenarios evaluated for the years 2016 and 2035.

The study area unsignalized intersection approaches are expected to operate within acceptable conditions for 2016, except for the southbound approach at Henderson Avenue and Drive E, which is expected to operate at LOS E conditions during the PM peak. All proposed driveways are expected to operate at or above LOS D conditions for both AM and PM peak periods for opening year 2016.

Analysis results for year 2035 during the AM peak hour shows all unsignalized intersections and driveways operating at LOS D or above, except for the northbound approach of Henderson Avenue and Capitol Avenue, which is expected to operate at LOS F. Our recommendation to mitigate long delays on Capitol Avenue is to restripe it with a northbound left-turn storage lane. Although delay times are not ideal, the analysis shows a 95th percentile queue length of fewer than 4 vehicles for northbound Capitol Avenue.

Year 2035 PM peak hour results indicate that existing study area unsignalized intersections will continue to see increased delays and limited gaps as volumes increase on Henderson Avenue. Although this proposed development contributes to some delay throughout the study area in year 2035, background growth not associated with the development is also a contributing factor to study area unsignalized intersections operating over capacity. Although delay times have increased, the analysis shows a 95th percentile queue length of only 1-3 vehicles for all unsignalized intersection approaches, except for Capitol Avenue and Drive E. The 95th percentile queue lengths for Capitol Avenue and Drive E approaches are fewer than 5 cars. Even though three of the unsignalized approaches are operating at LOS F, delays seen in the models are typical of urban environments. If long wait times persist at Henderson Avenue and Capitol Avenue, drivers will divert to the signal at Belmont Avenue, which has ample capacity for year 2035. Furthermore, the proposed development includes a Traffic Management Plan (TMP), which will be updated biannually to reflect and address congestion issues on site driveways and adjacent streets.

The following roadway improvements are recommended to improve access throughout the study area:

General

1. Henderson Avenue will be improved to provide for a Two-Way Left Turn Lane (TWLTL) starting from just west of Glencoe Street and ending at McMillan Avenue. The TWLTL will provide for easier access to the driveways in and out of the site, while minimizing delays resulting from drivers turning left from Henderson Avenue. By contrasting the pavement color of the TWLTL and decreasing the width of the eastbound and westbound travel lanes, the resulting three lane configuration will encourage slower driving.

Drive A and Henderson Avenue

2. Although the available storage for this turn lane is minimal due to proximity of Glencoe Street, the 95th percentile queue is very minimal (1-2 cars).
3. Provide for a one-lane exiting approach (shared left/right lane).

Drive B and Henderson Avenue:

4. No intersection improvements are recommended at this driveway.
5. Drive will operate as inbound only.

Drive C and Henderson Avenue

6. No Intersections improvements are recommended at this driveway.
7. Drive will operate as outbound only. Provide for a one-lane exiting approach (shared left/right lane).

Drive D and Henderson Avenue

8. Provide for a two-lane exit consisting of a right-turn only lane and a shared through/left-turn lane.

Drive E and Henderson Avenue

9. Provide for a one-lane exiting approach (shared left/right lane)

Capitol Avenue and Henderson Avenue

10. Re-stripe northbound Capitol Avenue to include a left-turn storage bay.

VI. DISCUSSION OF THE CONTEXT FOR UNDERSTANDING THE TIA

Chapters I through V represent the typical elements that are submitted to the City of Dallas for a TIA in conjunction with a zoning application. However, Zoning Case Z145-300 is unique in several ways. This supplemental analysis for Z145-300 is provided to document the unique qualities of this new and sustainable project. The project is planned and designed to provide a Complete Streets cross-section to encourage walkability along the Henderson Avenue corridor. The project proposes to accommodate all of the code required parking substantially below grade with access provided at three driveways serving the north tract and two driveways serving the south tract on Henderson Avenue. In addition to parking for vehicles, parking for at least 30 bikes will be provided on site to encourage biking to the development. The existing zoning on the tracts in Z145-300 is based on areas and uses provided by GFF, which allows for 36,795 SF of restaurant use (with bars) and 106 multifamily units. If all the tracts were built out to their existing zoning, 36,795 SF (this number does not include any patio dining area, which in this case would be approximately 10,000 SF) of restaurant use and each dwelling unit had 4 bedrooms (1 person per bedroom), the ITE trip generation produced by the existing zoning development would be 6,104 one-way vehicle trips per day as shown in **Table 7**. The proposed development presented in Z145-300 generates 6,561 one-way trips per day according to the traditional ITE trip generation rates.

Table 7 – Trip Generation Based on Existing Zoning

Land Uses	Amount	Units	ITE Code	Daily	AM Peak Hour			PM Peak Hour		
				One-Way Trips	One-Way Trips			One-Way Trips		
					IN	OUT	TOTAL	IN	OUT	TOTAL
Apartments*	424	Persons	220	1,403	57	62	119	100	70	170
High-Turnover (Sit-Down) Restaurant	36,975	SF	932	4,701	220	180	400	218	146	364
Total Net New External Trips:				6,104	277	242	519	318	216	534

* There was no directional distribution available for trip generations based on Persons for Peak Hour of Adjacent Street Traffic in the ITE Manual. Therefore, the directional distribution of the Peak Hour of the Generator was used for trip generation based on Persons.

The proposed development is inspired by the Complete Streets design concept for Henderson Avenue. Future occupants and patrons of the proposed development will walk more, bike more and use other modes of transportation, thus generating fewer trips than indicated by historical ITE rates. The main goal Complete Streets is to encourage multimodal transportation and achieve a reduction in vehicular trips by promoting other modes of travel through the design of the open space, streets and pedestrian realm. Traffic data for these types of developments is currently being collected around the country but has not yet been incorporated into the ITE Trip Generation Manual. ITE tends to overestimate the trip generation in a more walkable environment, since the data studied in the ITE Trip Generation Manual is primarily collected at isolated suburban sites with few if any transit services or pedestrian amenities.

Many of the existing land uses along Henderson Avenue are similar to the uses proposed in the Z145-300 development. In order to objectively assess the actual trip generation rates for these existing sites, we observed and counted in real time the inbound and outbound vehicular traffic to and from these sites. Under the heading **Henderson Corridor Trip Generation Comparisons** in the **Appendix**, there are several tables that show the comparison between ITE rates for inbound and outbound traffic and the in-field counted traffic for inbound and outbound trips. The difference between the ITE rates and the in-field counted

traffic for the land uses was then calculated and converted into a *Combined Observation Difference from ITE Standard*. These factors were then applied to the traditional ITE rates in **Table 1**, the results of which are shown in **Table 8** below. The adjustment factors were only applied for retail and restaurant land uses, since no existing office uses were observed under the study. The inbound and outbound trips of these existing land uses tended to be less on average than the ITE rates.

Table 8 – Trip Generation Based on Similar Land Use Observations

Land Uses	Amount	Units	ITE Code	Daily One-Way Trips	AM Peak Hour One-Way Trips			PM Peak Hour One-Way Trips		
				Trips	IN	OUT	TOTAL	IN	OUT	TOTAL
Office	88,000	SF	710	1,192	152	21	173	30	147	177
Retail - Shopping Center	90,000	SF	820	1,691	16	11	28	144	150	294
High-Turnover (Sit-Down) Restaurant	12,000	SF	932	671	22	20	42	64	40	104
Total Net New External Trips:				3,554	190	52	242	238	337	575

According to the trip generation based on the observed rates and the percentage adjustment factors applied to ITE rates, the proposed development will generate 3,554 daily one-way trips. This is 2,550 fewer overall daily one-way trips than are generated based on the existing zoning daily one-way trips according to standard ITE rates. The total AM peak hour one-way trips generated by the proposed development were less than half of the total AM peak hour one-way trips based on existing zoning according to standard ITE rates. For the proposed development the total AM peak hour one-way trips were 242, while for the existing zoning the total AM peak hour one-way trips were 519. Based on existing zoning, an additional 277 one-way trips would occur during the AM peak hour. The PM percentage adjustment factors based on observed trips were smaller. Whereas the proposed development produces 575 one-way trips during the PM peak hour, the total PM peak hour one-way trips generated based on existing zoning is 534. To find the intersection operational conditions for comparison of the two scenarios, the trip generations from **Table 7** for the existing zoning and **Table 8** for the proposed development (with the observed trip generation adjustments) were applied to the traffic models described in sections I through V. **Table 9** shows the resulting conditions and intersection operations for AM peak hour for the existing zoning, the proposed development with ITE rates and the proposed development with the adjusted ITE rates based on observations. **Table 10** shows the same comparison for resulting conditions and intersection operations for the PM peak hour.

Table 9 – Weekday AM Peak Hour Comparison

INTERSECTION		Existing Zoning		Proposed Zoning ITE Rates		Proposed Zoning Adjusted ITE Rates Based on Observed Data		Existing Zoning		Proposed Zoning ITE Rates		Proposed Zoning Adjusted ITE Rates Based on Observed Data	
		2016 Background Plus Site Traffic AM Peak Hour		2016 Background Plus Site Traffic AM Peak Hour		2016 Background Plus Site Traffic AM Peak Hour		2035 Background Plus Site Traffic AM Peak Hour		2035 Background Plus Site Traffic AM Peak Hour		2035 Background Plus Site Traffic AM Peak Hour	
		DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS
Henderson Ave. @ Belmont Ave.	EB	11.3	B	11.7	B	11.7	B	11.4	B	11.5	B	11.4	B
	WB	17.9	B	16.0	B	15.5	B	24.4	C	19.8	B	18.5	B
	NB	16.3	B	14.4	B	13.3	B	21.0	C	19.3	B	18.1	B
	SB	18.8	B	16.6	B	15.4	B	24.3	C	22.5	C	21.4	C
	Overall	16.3	B	14.9	B	14.4	B	21.0	C	18.1	B	17.4	B
Henderson Ave. @ McMillan Ave.	EB	9.3	A	9.3	A	9.4	A	9.1	A	9.1	A	9.1	A
	WB	12.4	B	12.5	B	12.5	B	14.6	B	14.7	B	14.1	B
	SB	13.7	B	13.4	B	12.5	B	17.6	B	17.4	B	16.5	B
	Overall	11.7	B	11.8	B	11.8	B	13.4	B	13.6	B	13.1	B
Henderson Ave. @ Capitol Ave.	NB*	33.0	D	27.7	D	23.6	C	67.3	F	50.1	F	39.1	E
Henderson Ave. @ Glencoe St.	SB*	20.2	C	18.3	C	16.5	C	25.1	D	22.3	C	19.8	C
Henderson Ave. @ Fuqua St./Drive D	NB*	26.6	D	24.0	C	20.8	C	40.0	E	34.0	D	28.1	D
	SB*	18.6	C	16.8	C	15.3	C	22.9	C	20.2	C	18.0	C
Henderson Ave. @ Monarch St.	NB*	14.3	B	13.6	B	13.1	B	17.3	C	16.4	C	15.7	C
Henderson Ave. @ Drive A	SB*	18.6	C	15.9	C	14.5	B	22.9	C	18.7	C	16.7	C
Henderson Ave. @ Drive C	NB*	18.0	C	16.8	C	15.2	C	21.7	C	19.9	C	17.7	C
Henderson Ave. @ Drive E	SB*	22.2	C	18.6	C	16.4	C	29.1	D	22.8	C	19.5	C

* Stop-Controlled Approach

Table 10 – Weekday PM Peak Hour Comparison

INTERSECTION		Existing Zoning		Proposed Zoning ITE Rates		Proposed Zoning Adjusted ITE Rates Based on Observed Data		Existing Zoning		Proposed Zoning ITE Rates		Proposed Zoning Adjusted ITE Rates Based on Observed Data	
		2016 Background Plus Site Traffic PM Peak Hour		2016 Background Plus Site Traffic PM Peak Hour		2016 Background Plus Site Traffic PM Peak Hour		2035 Background Plus Site Traffic PM Peak Hour		2035 Background Plus Site Traffic PM Peak Hour		2035 Background Plus Site Traffic PM Peak Hour	
		DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS
Henderson Ave. @ Belmont Ave.	EB	18.8	B	17.7	B	17.3	B	28.3	C	24.8	C	23.6	C
	WB	11.9	B	12.7	B	12.6	B	12.8	B	13.9	B	13.5	B
	NB	21.2	C	20.8	C	20.3	C	25.9	C	25.6	C	25.4	C
	SB	18.7	B	18.4	B	18.0	B	21.6	C	21.6	C	21.5	C
	Overall	17.4	B	16.8	B	16.5	B	23.2	C	21.4	C	20.8	C
Henderson Ave. @ McMillan Ave.	EB	11.7	B	11.8	B	11.8	B	12.8	B	13.8	B	13.6	B
	WB	9.9	A	9.3	A	9.3	A	9.5	A	9.0	A	9.0	A
	SB	13.4	B	14.5	B	14.2	B	17.1	B	18.3	B	18.0	B
	Overall	11.1	B	11.1	B	11.1	B	11.9	B	12.4	B	12.3	B
Henderson Ave. @ Capitol Ave.	NB*	29.5	D	32.1	D	30.4	D	56.4	F	66.3	F	60.0	F
Henderson Ave. @ Glencoe St.	SB*	27.5	D	30.2	D	28.7	D	39.9	E	44.8	E	42.0	E
Henderson Ave. @ Fuqua St./Drive D	NB*	29.8	D	31.0	D	29.6	D	49.7	E	51.9	F	48.7	E
	SB*	21.7	C	24.0	C	23.0	C	30.6	D	36.7	E	34.0	D
Henderson Ave. @ Monarch St.	NB*	23.3	C	24.9	C	24.4	C	38.2	E	42.5	E	40.7	E
Henderson Ave. @ Drive A	SB*	17.0	C	20.0	C	18.9	C	20.5	C	25.6	D	23.7	C
Henderson Ave. @ Drive C	NB*	23.2	C	25.8	D	24.9	C	30.3	D	34.9	D	33.2	D
Henderson Ave. @ Drive E	SB*	26.3	D	35.1	E	31.1	D	37.8	E	61.5	F	50.0	E

* Stop-Controlled Approach

For the AM peak hour, the signalized intersections operate at acceptable LOS for all three of the scenarios in years 2016 and 2035. The unsignalized intersection approaches have similar LOS for the year 2016 for all three of the scenarios and operate at acceptable conditions. For the year 2035, the northbound approach of Capitol Avenue operates at LOS F for the existing zoning scenario and the ITE rates scenario, while the same approach operates at LOS E in the “observed” scenario. The northbound approach of Fuqua Street operates at LOS E for the existing zoning scenario in comparison to both proposed zoning scenarios (ITE Standard/“observed”), where the approach operates at LOS D. All other unsignalized approaches operate at LOS D or better for all three scenarios.

For the PM peak hour, the signalized intersections operate at acceptable LOS for all three scenarios in years 2016 and 2035. The unsignalized intersections in the PM peak hour for the year 2016 operate at acceptable conditions for all three scenarios, with the exception of Drive E. Drive E operates at LOS E for the proposed zoning with ITE rates scenario. The LOS begins to degrade for all three scenarios in 2035. The northbound approach of Capitol Avenue operates at LOS F for all three scenarios. The southbound approach of Glencoe Street and the northbound approach of Monarch Street operates at LOS E for all three scenarios. The northbound approach of Fuqua Street operates at LOS F for the proposed zoning with ITE rates scenario, while the same approach operates at LOS E for the other two scenarios (Existing zoning/“observed”). Drive E’s southbound approach operates at LOS F for the proposed zoning with ITE rates scenario, while the same approach operates at LOS E for the other two scenarios (Existing zoning/“observed”). The remaining unsignalized intersection approaches operate at LOS D or better.

In summary, the proposed development will not impact the street network any more than a fully developed site based on existing zoning. The anticipated LOS and delays for all three different scenarios are similar for both the signalized intersections and most of the unsignalized intersection approaches for the AM and PM peak hour. The proposed development can be incorporated within the existing network without adversely affecting the LOS and operations at existing unsignalized intersections. The proposed development will also provide a safer environment for pedestrians, encourage multimodal travel and enhance the corridor with site-related improvements.

VII. DISCUSSION OF ALTERNATIVE DEVELOPMENT PLAN

The purpose of this chapter is to discuss the alternative development plan proposed by the City Design Studio, which includes 11 on-street parking spaces parallel and adjacent to the northern tract of the development site. In order to accommodate the proposed 11 parallel parking spaces, it becomes necessary to eliminate the TWLTL. The alternative development plan provides minimal storage for left-turns at drives A, C and E, although this storage is inadequate for the anticipated queuing. A conceptual plan for this is shown in the **Appendix**.

The proposed development provides a two-level garage under the northern tract with 754 spaces, 23 surface spaces and 43 surface spaces on the southern tract of the development.

The impact of the proposed parallel parking spaces on the corridor was studied using the microsimulation software VISSIM. VISSIM allows for modeling of the parallel parking spaces, measuring the effects of drivers entering and exiting the parallel parking spaces and how those delays would propagate through the corridor. VISSIM has numerous parameters/variables that can be adjusted such as driver behavior, vehicle characteristics, speed distributions, acceleration behavior, etc., but most of these settings remained at their default values for this study.

VISSIM also collects data on various parameters such as delay at intersections, travel times, speeds, number of stops, emissions, etc. The data collection parameters that were used for this analysis were delays at the unsignalized intersections, delays at signalized intersections and travel time eastbound and westbound through the corridor. The trip generation and distribution used for the VISSIM models was the same as the ITE trip generation rates used in the TIA.

Once the network was coded, the model was simulated to gather data for delay at unsignalized intersections, delay at signalized intersections and travel time through the corridor. The raw output from these model runs was analyzed. The AM and PM peak hour results for both scenarios are shown in the tables below.

Tables 11 and **12** show the AM and PM peak hour delays, LOS and vehicles processed through each approach for the signalized intersections.

Table 11 – 2035 AM Peak Hour Signalized Intersection Comparison

NODE	INTERSECTION	APPROACH	Proposed			Alternative Development Plan Per City Design Studio		
			VEHICLES (veh/hour)	DELAY (sec/veh)	LOS	VEHICLES (veh/hour)	DELAY (sec/veh)	LOS
1	Henderson @ Belmont	NB	410	26.9	C	411	25.6	C
		SB	278	22.1	C	280	22.3	C
		EB	1,047	24.8	C	1,045	25.2	C
		WB	672	11.8	B	656	12.1	B
			2,407	21.2	C	2,392	21.3	C
2	Henderson @ McMillan	NB	173	14.1	B	173	16.2	B
		EB	918	10.2	B	917	10.1	B
		WB	621	6.3	A	620	6.4	A
			1,712	9.2	A	1,710	9.4	A

Table 12 – 2035 PM Peak Hour Signalized Intersection Comparison

NODE	INTERSECTION	APPROACH	Proposed			Alternative Development Plan Per City Design Studio		
			VEHICLES (veh/hour)	DELAY (sec/veh)	LOS	VEHICLES (veh/hour)	DELAY (sec/veh)	LOS
1	Henderson @ Belmont	NB	194	33.8	C	193	31.1	C
		SB	398	19.4	B	396	19.1	B
		EB	479	15.2	B	481	14.4	B
		WB	854	15.4	B	840	15.5	B
			1,925	18.0	B	1,910	17.5	B
2	Henderson @ McMillan	NB	137	12.5	B	137	14.4	B
		EB	338	12.4	B	336	11.9	B
		WB	835	5.0	A	833	5.2	A
			1,310	7.7	A	1,306	7.9	A

Removal of the TWLTL did not affect the operations at the signalized intersections. In both scenarios (Proposed and Alternative Development Plan per City Design Studio) for AM and PM peak hour year 2035, both the signalized intersections of Henderson Avenue and Belmont Avenue, and Henderson Avenue and McMillan Avenue operated at or above acceptable conditions.

Tables 13 through **16** show maximum queue lengths, volumes, delays and LOS for the unsignalized intersection approaches for the AM and PM Peak hour.

Table 13 – 2035 AM Peak Hour Unsignalized Intersection (Proposed)

NODE	INTERSECTION	TURNING MOVEMENT	MAX QUEUE LENGTH (feet)	VOLUME (veh/hour)	DELAY (sec/veh)	LOS
1	Henderson @ Capitol	NBR*	55.2	41	10.2	B
		NBL*	146.0	105	50.8	F
		WBL	276.3	76	5.5	A
2	Henderson @ Glencoe	SBR*	65.8	28	18.3	C
		SBL*	67.6	22	23.8	C
		EBL	24.9	12	16.0	C
3	Henderson @ Drive A/Drive B	SBR*	60.5	38	18.1	C
		SBL*	52.0	9	28.6	D
		EBL	84.6	80	10.8	B
		WBL	20.4	14	4.5	A
4	Henderson @ Drive C	NBR*	34.5	4	12.3	B
		NBL*	35.9	14	17.0	C
5	Henderson @ Drive D/Fuqua	NBR*	64.3	21	13.3	B
		NBT*	66.3	10	20.3	C
		NBL*	65.4	41	17.2	C
		SBR*	58.3	19	15.4	C
		SBT*	51.7	4	27.5	D
		SBL*	50.8	14	22.2	C
		EBL	58.2	60	10.8	B
		WBL	25.0	20	2.6	A
6	Henderson @ Drive E	SBR*	103.3	25	26.4	D
		SBL*	103.1	30	23.6	C
		EBL	68.0	58	13.5	B
7	Henderson @ Monarch	NBR*	112.8	80	23.4	C
		NBL*	114.2	25	51.4	F
		WBL	416.2	37	8.7	A

*Stop Controlled Approach

Table 14 – 2035 AM Peak Hour Unsignalized Intersection (Alternative Development Plan Per City Design Studio)

NODE	INTERSECTION	TURNING MOVEMENT	MAX QUEUE LENGTH	VOLUME	DELAY (sec/veh)	LOS
1	Henderson @ Capitol	NBR*	78.7	41	12.7	B
		NBL*	296.0	104	49.7	E
		WBL	486.1	75	5.6	A
2	Henderson @ Glencoe	SBR*	96.5	28	16.4	C
		SBL*	98.3	22	20.8	C
		EBL	28.8	12	15.0	B
3	Henderson @ Drive A/Drive B	SBR*	86.6	38	19.0	C
		SBL*	78.1	9	18.0	C
		EBL	225.0	80	11.9	B
		WBL	29.2	14	2.8	A
4	Henderson @ Drive C	NBR*	58.1	4	17.8	C
		NBL*	59.1	14	22.2	C
5	Henderson @ Drive D/Fuqua	NBR*	164.8	21	22.0	C
		NBT*	166.8	10	33.1	D
		NBL*	164.7	41	36.3	E
		SBR*	93.1	19	20.5	C
		SBT*	76.4	4	31.2	D
		SBL*	76.5	14	20.8	C
		EBL	313.3	59	14.2	B
		WBL	279.2	19	4.7	A
6	Henderson @ Drive E	SBR*	117.2	25	24.5	C
		SBL*	118.4	30	17.3	C
		EBL	101.7	58	11.5	B
7	Henderson @ Monarch	NBR*	186.1	79	20.2	C
		NBL*	187.7	25	54.4	F
		WBL	480.6	37	9.2	A

*Stop Controlled Approach

Table 15 – 2035 PM Peak Hour Unsignalized Intersection (Proposed)

NODE	INTERSECTION	TURNING MOVEMENT	MAX QUEUE LENGTH (feet)	VOLUME (veh/hour)	DELAY (sec/veh)	LOS
1	Henderson @ Capitol	NBR*	166.0	141	23.4	C
		NBL*	209.3	83	72.6	F
		WBL	448.7	90	15.0	B
2	Henderson @ Glencoe	SBR*	71.6	29	19.1	C
		SBL*	73.5	36	28.1	D
		EBL	36.7	35	12.5	B
3	Henderson @ Drive A/Drive B	SBR*	120.3	113	16.6	C
		SBL*	111.7	23	23.9	C
		EBL	87.6	79	7.5	A
		WBL	25.7	11	8.5	A
4	Henderson @ Drive C	NBR*	55.0	14	18.7	C
		NBL*	56.3	32	19.2	C
5	Henderson @ Drive D/Fuqua	NBR*	79.1	44	18.7	C
		NBT*	81.2	8	30.1	D
		NBL*	78.8	32	27.7	D
		SBR*	97.7	71	12.7	B
		SBT*	86.2	11	25.5	D
		SBL*	86.2	32	22.2	C
		EBL	48.8	53	5.9	A
		WBL	40.6	28	15.0	B
6	Henderson @ Drive E	SBR	146.0	69	27.8	D
		SBL	144.8	87	32.8	D
		EBL	49.8	44	9.7	A
7	Henderson @ Monarch	NBR	142.4	82	34.4	D
		NBL	143.9	26	71.5	F
		WBL	454.7	67	25.6	D

*Stop Controlled Approach

Table 16 – 2035 PM Peak Hour Unsignalized Intersection (Alternative Development Per City Design Studio)

NODE	INTERSECTION	TURNING MOVEMENT	MAX QUEUE LENGTH (feet)	VOLUME (veh/hour)	DELAY (sec/veh)	LOS
1	Henderson @ Capitol	NBR*	137.6	142	24.3	C
		NBL*	179.2	83	76.0	F
		WBL	393.6	87	15.9	C
2	Henderson @ Glencoe	SBR*	69.3	29	17.3	C
		SBL*	71.1	36	25.7	D
		EBL	38.1	35	11.3	B
3	Henderson @ Drive A/Drive B	SBR*	122.8	113	16.0	C
		SBL*	114.3	23	23.7	C
		EBL	63.3	79	7.2	A
		WBL	26.2	11	11.4	B
4	Henderson @ Drive C	NBR*	65.6	14	18.8	C
		NBL*	66.6	32	30.0	D
5	Henderson @ Drive D/Fuqua	NBR*	100.0	44	47.7	E
		NBT*	102.6	8	66.6	F
		NBL*	100.0	32	60.1	F
		SBR*	122.0	73	22.4	C
		SBT*	105.3	12	40.8	E
		SBL*	105.4	33	34.7	D
		EBL	264.0	53	6.7	A
		WBL	258.7	28	17.3	C
6	Henderson @ Drive E	SBR*	154.9	69	33.4	D
		SBL*	153.8	87	34.4	D
		EBL	52.6	44	7.8	A
7	Henderson @ Monarch	NBR*	157.0	82	49.0	E
		NBL*	158.4	26	95.3	F
		WBL	452.5	67	31.2	D

*Stop Controlled Approach

For the AM peak hour most of the unsignalized intersection approaches operate at similar LOS and delays. The northbound left turns for the unsignalized intersection approaches of Capitol Avenue and Monarch Street operate with longer delays and a lower LOS for both scenarios. The northbound left-turns for the unsignalized intersection approach of Fuqua Street operates at LOS E for the alternative scenario, while the same left turn operates at LOS C for the proposed scenario. All other unsignalized approaches are operate at acceptable LOS.

During the PM peak hour, most of the unsignalized intersection approaches experience similar amounts of delay and operate at similar LOS. However, the intersections of Fuqua Street/Drive D and Henderson Avenue experience the most degradation when comparing the two scenarios. Although the alternative development plan provides for minimal, albeit inadequate left-turn lanes for most of the driveways, the Fuqua Street/Drive D intersection does not have a left-turn lane due to the space allocated for parallel parking on Henderson Avenue. As **Table 16** shows, the northbound approach is failing due to limited gaps in traffic; the southbound approach is operating poorly as well. Without the TWLTL, northbound and southbound vehicles on Fuqua Street and at Drive D are forced to queue as they wait for vehicles on Henderson Avenue to complete their left-turns and through movements.

The delay experienced by eastbound and westbound travelers is more clearly observed when comparing travel times. **Tables 17** and **18** show the travel time for vehicles traveling eastbound and westbound on Henderson Avenue through the corridor. Travel times for eastbound Henderson Avenue drivers were taken from just west of Belmont Avenue to just east of Monarch Street. Travel times for westbound Henderson Avenue drivers were taken from just east of Monarch Street to just west of Belmont Avenue. The distance for both travel times was roughly the same.

Table 17 – AM Travel Time through the Corridor

AM Travel Time Difference				
Direction	Distance (Feet)	Travel Time (Seconds)		Time Difference (seconds)
		Proposed	Alternative DP Per City Design Studio	
Henderson (EB)	2,950	85	87	+ 2
Henderson (WB)	2,960	99	123	+ 24

Table 18 – PM Travel Time through the Corridor

PM Travel Time Difference				
Direction	Distance (Feet)	Travel Time (Seconds)		Time Difference (seconds)
		Proposed	Alternative DP Per City Design Studio	
Henderson (EB)	2,950	94	96	+ 2
Henderson (WB)	2,960	104	146	+ 42

As shown in **Tables 17** and **18** above, the bulk of the delay in travel time occurs on westbound Henderson Avenue where parallel parking is proposed. Drivers trying to parallel park in urban environments disrupt the flow of traffic as the cars behind them cannot pass by, especially where there are no adjacent lanes in the same direction. There will be additional delay caused by parallel parking in conjunction with the removal of the TWLTL from that specific area. All these factors combined with the competing traffic from the various approaches trying to make left-turns with no protected turn lane lead to long travel times for the westbound direction. In the context of the alternative parallel parking scenario, westbound Henderson drivers experience 42 seconds of additional delay when traveling the corridor (2,960 ft).

The ultimate goal of this project is to create a unique and sustainable environment for its users, where multiple modes of travel are encouraged, while maintaining mobility through the corridor and acceptable LOS at its various intersections and driveways. The proposed development achieves this balance by providing a TWLTL that encourages a steady flow of traffic while minimizing delay due to left-turns. Travel speeds within a complete street corridor of this type should be between 20 – 25 mph in order to maintain traffic flow, while providing safety for pedestrians and bicyclists traveling at lower speeds. The benefit of adding 11 parallel parking spaces to the 820 parking spaces already provided is negligible when compared to the adverse impacts (i.e. delays, disruptions and prolonged travel times) caused by the addition of parallel parking spaces and removal of the TWLTL.

APPENDIX



Traffic Counts and Historical Data

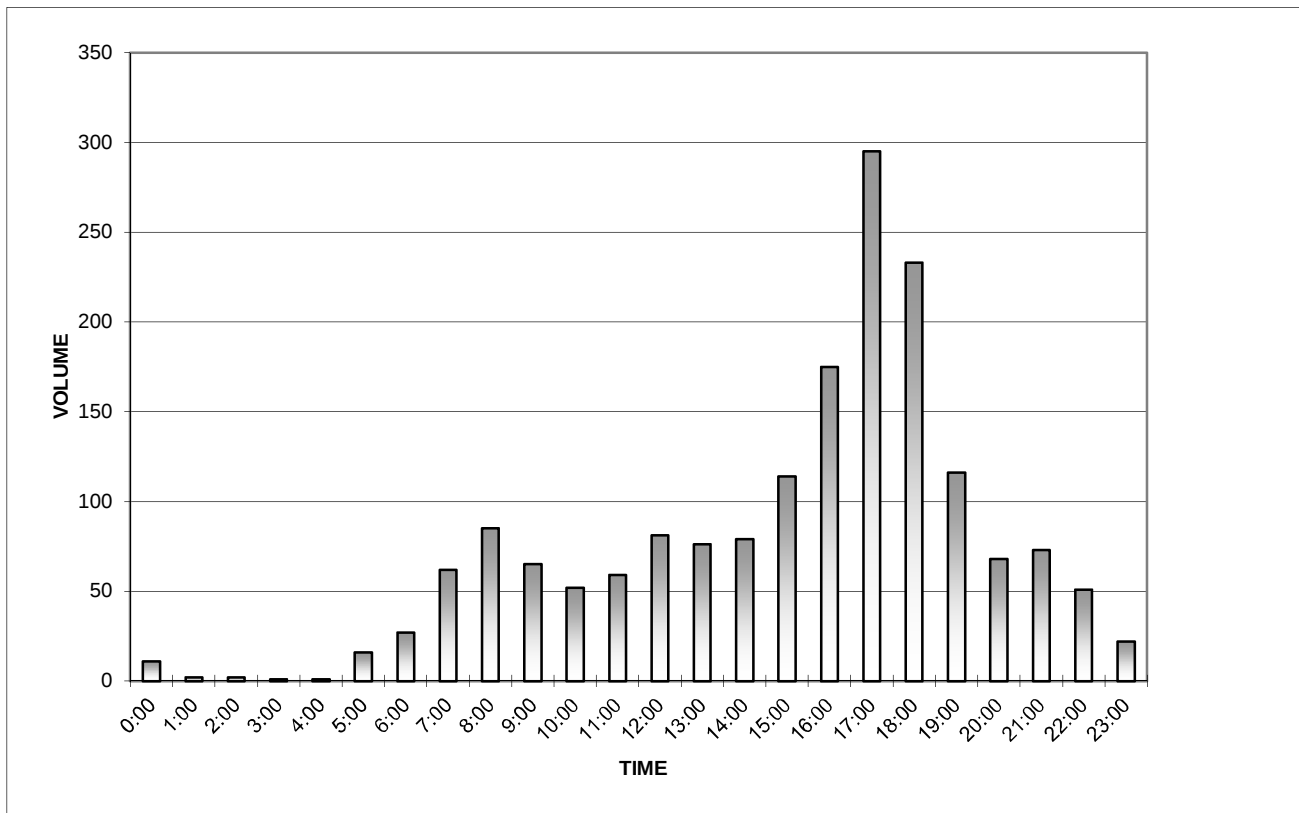
EB Belmont Avenue between Henderson Avenue and Garrett Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	4	3	2	2	11
1:00	2	0	0	0	2
2:00	0	1	0	1	2
3:00	1	0	0	0	1
4:00	1	0	0	0	1
5:00	0	6	4	6	16
6:00	6	6	10	5	27
7:00	6	16	14	26	62
8:00	22	26	19	18	85
9:00	26	14	11	14	65
10:00	15	11	12	14	52
11:00	14	13	12	20	59
12:00	22	10	30	19	81
13:00	18	20	22	16	76
14:00	16	21	26	16	79
15:00	22	24	28	40	114
16:00	38	45	38	54	175
17:00	60	79	78	78	295
18:00	67	66	46	54	233
19:00	37	29	26	24	116
20:00	27	14	18	9	68
21:00	18	16	25	14	73
22:00	17	8	18	8	51
23:00	8	6	4	4	22

TOTAL: 1766

The A.M. peak hour from 7:45 to 8:45 is 93
The P.M. peak hour from 17:15 to 18:15 is 302



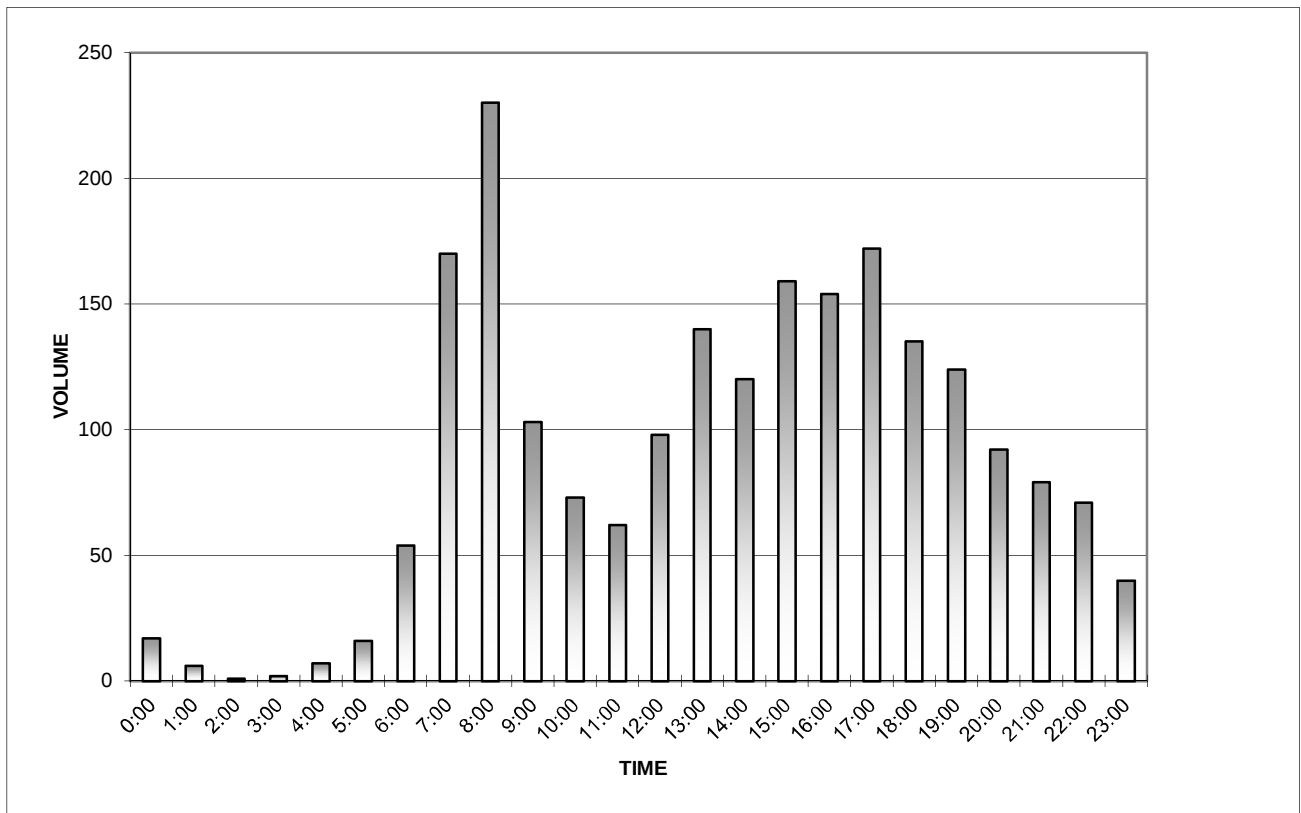
WB Belmont Avenue between Henderson Avenue and Garrett Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	6	2	4	5	17
1:00	0	1	3	2	6
2:00	0	1	0	0	1
3:00	0	0	1	1	2
4:00	0	1	2	4	7
5:00	2	5	7	2	16
6:00	6	13	12	23	54
7:00	22	43	38	67	170
8:00	56	70	62	42	230
9:00	38	28	18	19	103
10:00	13	24	16	20	73
11:00	20	14	16	12	62
12:00	20	30	18	30	98
13:00	25	32	50	33	140
14:00	26	22	38	34	120
15:00	49	36	34	40	159
16:00	42	40	32	40	154
17:00	34	51	51	36	172
18:00	37	36	36	26	135
19:00	34	34	28	28	124
20:00	24	22	24	22	92
21:00	26	10	18	25	79
22:00	19	18	16	18	71
23:00	10	12	12	6	40

TOTAL: 2125

The A.M. peak hour from 7:45 to 8:45 is 255
The P.M. peak hour from 16:45 to 17:45 is 176

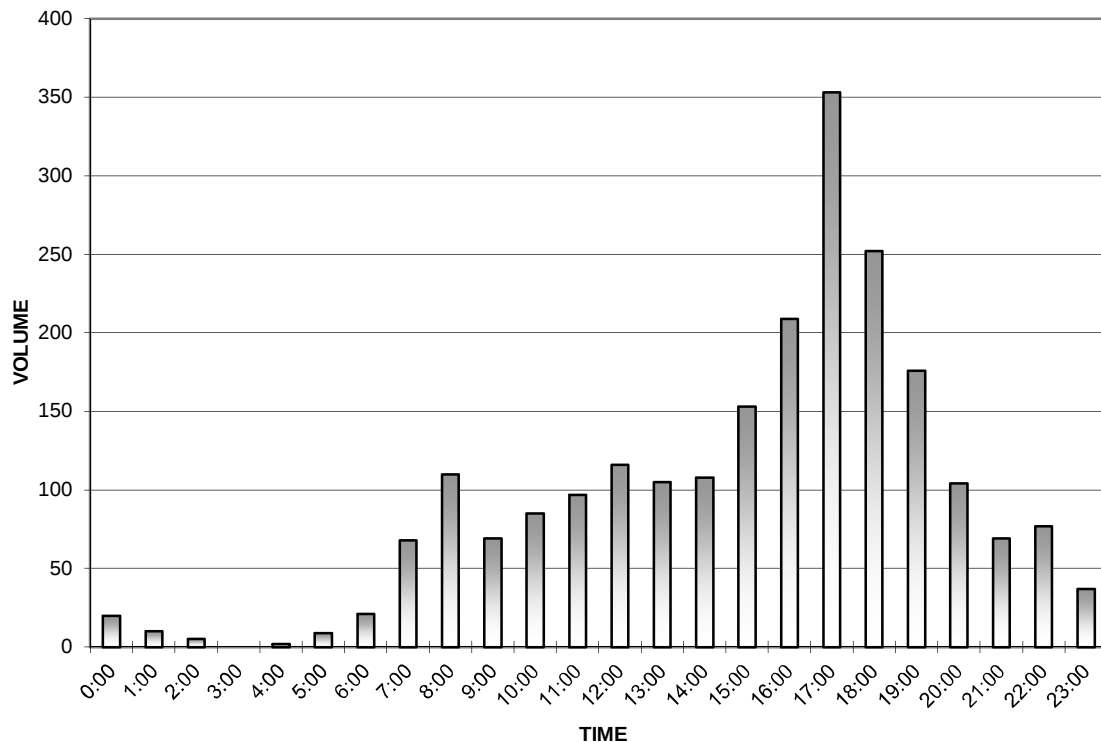


EB Belmont Avenue between Henderson and Madera Street

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	8	3	3	6	20
1:00	2	4	3	1	10
2:00	1	2	2	0	5
3:00	0	0	0	0	0
4:00	2	0	0	0	2
5:00	0	3	4	2	9
6:00	8	2	5	6	21
7:00	12	18	18	20	68
8:00	28	28	32	22	110
9:00	22	22	13	12	69
10:00	19	32	14	20	85
11:00	19	30	18	30	97
12:00	31	22	34	29	116
13:00	24	27	32	22	105
14:00	26	22	34	26	108
15:00	32	30	29	62	153
16:00	42	51	60	56	209
17:00	72	94	93	94	353
18:00	66	66	60	60	252
19:00	65	50	32	29	176
20:00	35	26	28	15	104
21:00	16	15	21	17	69
22:00	24	20	18	15	77
23:00	11	12	7	7	37
TOTAL:					2255

The A.M. peak hour from 8:00 to 9:00 is 110
The P.M. peak hour from 17:00 to 18:00 is 353



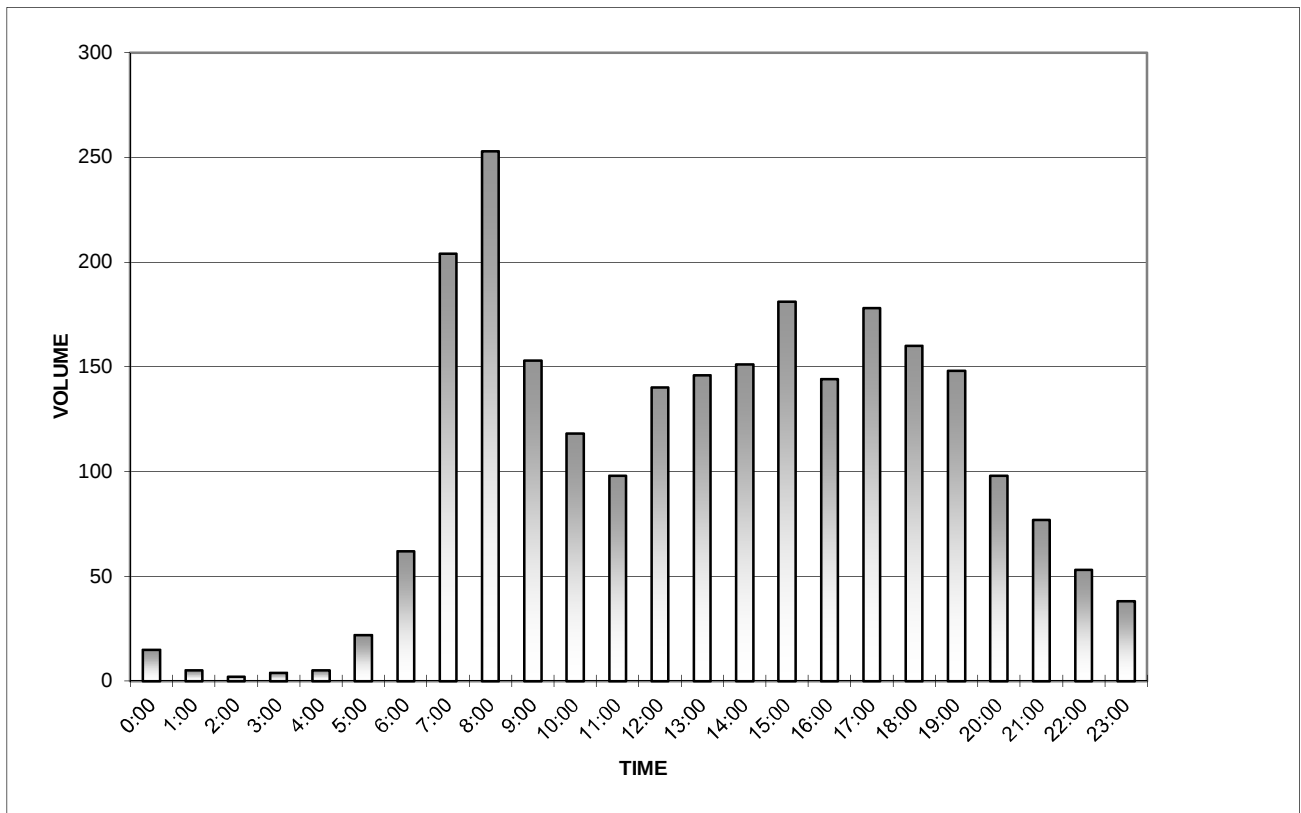
WB Belmont Avenue between Henderson and Madera Street

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	4	2	4	5	15
1:00	1	0	2	2	5
2:00	2	0	0	0	2
3:00	0	1	2	1	4
4:00	0	1	2	2	5
5:00	4	4	9	5	22
6:00	11	13	17	21	62
7:00	44	48	46	66	204
8:00	62	77	60	54	253
9:00	50	32	35	36	153
10:00	32	34	24	28	118
11:00	24	20	28	26	98
12:00	23	41	38	38	140
13:00	34	29	43	40	146
14:00	35	33	42	41	151
15:00	46	51	40	44	181
16:00	33	46	32	33	144
17:00	36	62	42	38	178
18:00	46	52	31	31	160
19:00	42	40	36	30	148
20:00	26	32	23	17	98
21:00	28	16	11	22	77
22:00	12	14	14	13	53
23:00	9	9	13	7	38

TOTAL: 2455

The A.M. peak hour from 7:45 to 8:45 is 265
The P.M. peak hour from 17:15 to 18:15 is 188





C. J. Hensch & Associates Inc.
5215 Sycamore Ave.

Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at Belmont Avenue
Site Code: 1
Start Date: 12/02/2014
Page No: 1

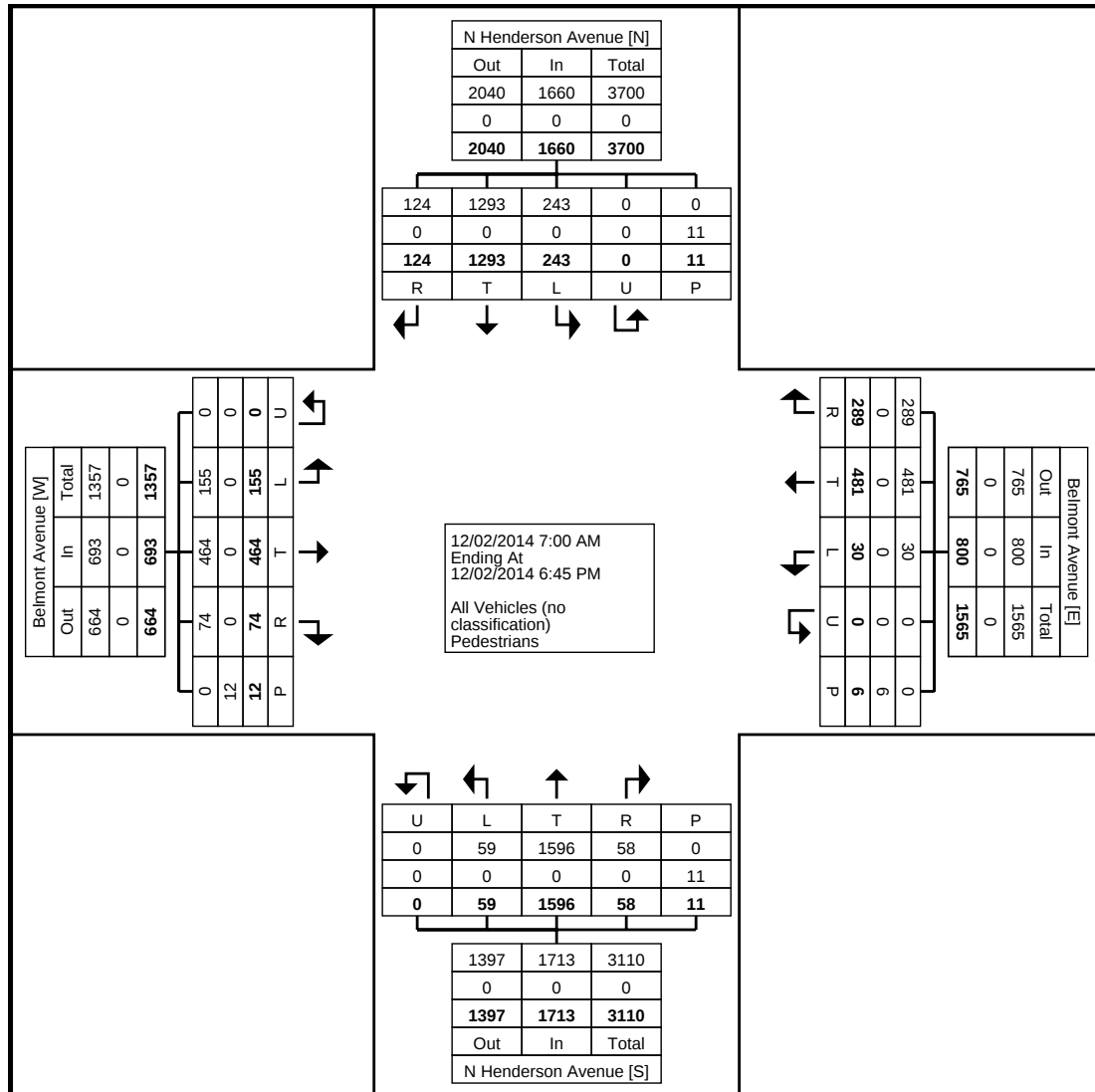
Turning Movement Data

Start Time	N Henderson Avenue Southbound						Belmont Avenue Westbound						N Henderson Avenue Northbound						Belmont Avenue Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	3	27	0	0	1	30	0	23	21	0	0	44	0	101	0	0	0	101	18	3	2	0	1	23	198
7:15 AM	3	28	3	0	0	34	0	26	21	0	0	47	4	102	1	0	0	107	11	10	2	0	0	23	211
7:30 AM	7	35	0	0	0	42	1	29	22	0	0	52	6	128	2	0	1	136	21	5	0	0	2	26	256
7:45 AM	4	39	5	0	0	48	1	38	24	0	0	63	4	144	4	0	0	152	10	22	2	0	0	34	297
Hourly Total	17	129	8	0	1	154	2	116	88	0	0	206	14	475	7	0	1	496	60	40	6	0	3	106	962
8:00 AM	7	44	4	0	0	55	0	44	24	0	0	68	1	142	3	0	1	146	18	9	1	0	1	28	297
8:15 AM	4	43	4	0	0	51	2	48	21	0	0	71	2	139	1	0	2	142	11	20	3	0	0	34	298
8:30 AM	10	34	4	0	0	48	2	43	21	0	0	66	5	131	7	0	1	143	11	13	5	0	1	29	286
8:45 AM	7	40	0	0	0	47	1	29	20	0	0	50	4	109	1	0	1	114	13	8	1	0	0	22	233
Hourly Total	28	161	12	0	0	201	5	164	86	0	0	255	12	521	12	0	5	545	53	50	10	0	2	113	1114
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
4:30 PM	30	115	11	0	0	156	2	26	8	0	0	36	2	77	2	0	0	81	5	24	7	0	1	36	309
4:45 PM	22	112	14	0	1	148	2	25	9	0	0	36	3	78	1	0	2	82	5	43	9	0	1	57	323
Hourly Total	52	227	25	0	1	304	4	51	17	0	0	72	5	155	3	0	2	163	10	67	16	0	2	93	632
5:00 PM	25	131	9	0	2	165	3	22	12	0	0	37	1	72	9	0	1	82	2	42	7	0	2	51	335
5:15 PM	26	150	10	0	1	186	2	33	16	0	0	51	7	69	6	0	0	82	5	56	11	0	0	72	391
5:30 PM	26	126	19	0	0	171	1	29	17	0	0	47	7	60	5	0	0	72	6	72	5	0	0	83	373
5:45 PM	24	116	17	0	4	157	4	20	11	0	5	35	7	78	6	0	2	91	8	54	3	0	1	65	348
Hourly Total	101	523	55	0	7	679	10	104	56	0	5	170	22	279	26	0	3	327	21	224	26	0	3	271	1447
6:00 PM	20	125	8	0	1	153	6	27	23	0	1	56	3	68	6	0	0	77	5	43	10	0	2	58	344
6:15 PM	25	128	16	0	1	169	3	19	19	0	0	41	3	97	4	0	0	104	6	40	6	0	0	52	366
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	243	1293	124	0	11	1660	30	481	289	0	6	800	59	1596	58	0	11	1713	155	464	74	0	12	693	4866
Approach %	14.6	77.9	7.5	0.0	-	-	3.8	60.1	36.1	0.0	-	-	3.4	93.2	3.4	0.0	-	-	22.4	67.0	10.7	0.0	-	-	-
Total %	5.0	26.6	2.5	0.0	-	34.1	0.6	9.9	5.9	0.0	-	16.4	1.2	32.8	1.2	0.0	-	35.2	3.2	9.5	1.5	0.0	-	14.2	-
All Vehicles (no classification)	243	1293	124	0	-	1660	30	481	289	0	-	800	59	1596	58	0	-	1713	155	464	74	0	-	693	4866
% All Vehicles (no classification)	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	-	11	-	-	-	-	-	6	-	-	-	-	-	11	-	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



C. J. Hensch & Associates Inc.
5215 Sycamore Ave.
Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at Belmont Avenue
Site Code: 1
Start Date: 12/02/2014
Page No: 2



Turning Movement Data Plot



C. J. Hensch & Associates Inc.
5215 Sycamore Ave.

Pasadena, Texas, United States 77503
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Count Name: N Henderson
Avenue at Belmont Avenue
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Page No: 3

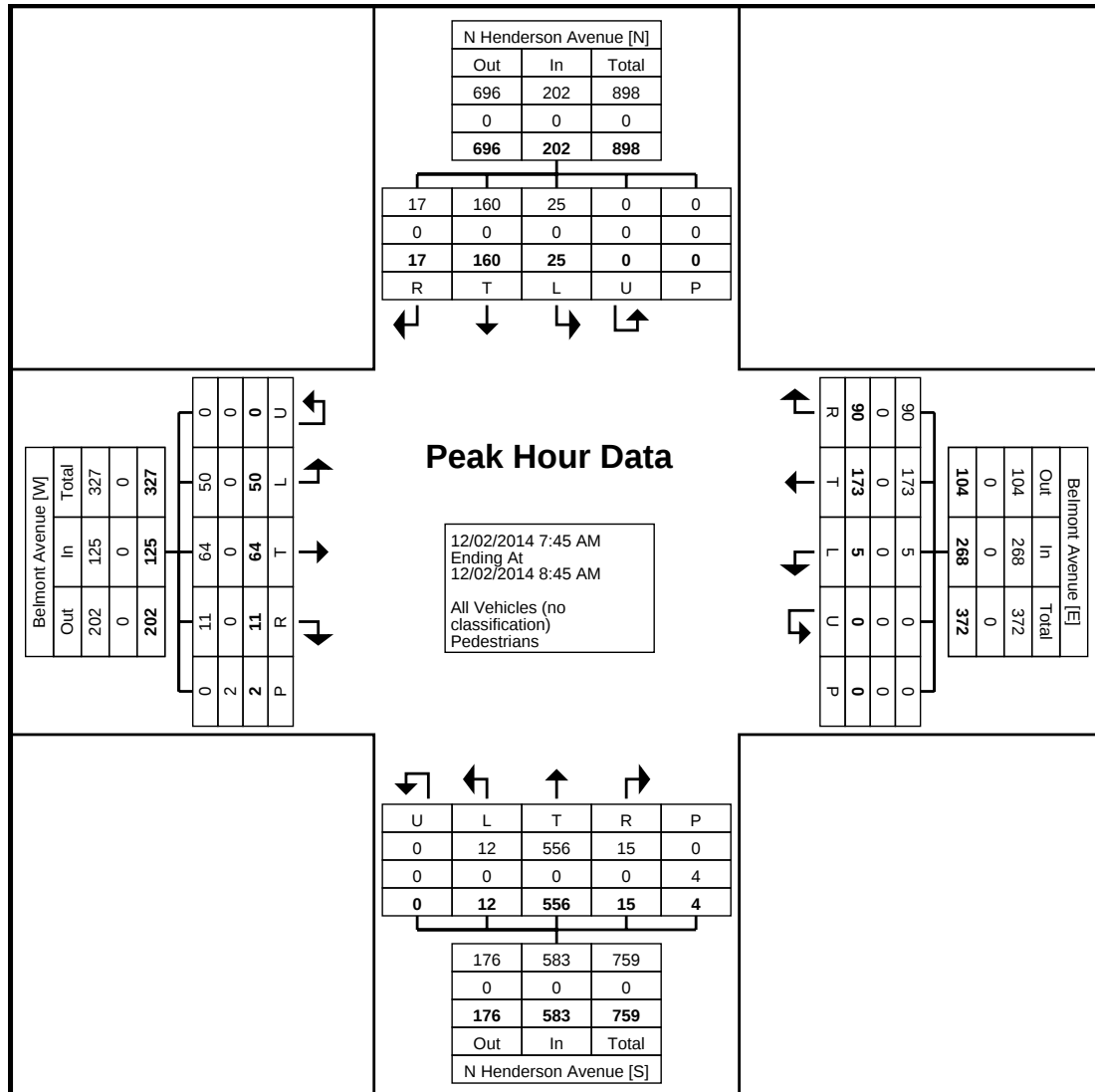
Turning Movement Peak Hour Data (7:45 AM)

Start Time	N Henderson Avenue Southbound						Belmont Avenue Westbound						N Henderson Avenue Northbound						Belmont Avenue Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:45 AM	4	39	5	0	0	48	1	38	24	0	0	63	4	144	4	0	0	152	10	22	2	0	0	34	297
8:00 AM	7	44	4	0	0	55	0	44	24	0	0	68	1	142	3	0	1	146	18	9	1	0	1	28	297
8:15 AM	4	43	4	0	0	51	2	48	21	0	0	71	2	139	1	0	2	142	11	20	3	0	0	34	298
8:30 AM	10	34	4	0	0	48	2	43	21	0	0	66	5	131	7	0	1	143	11	13	5	0	1	29	286
Total	25	160	17	0	0	202	5	173	90	0	0	268	12	556	15	0	4	583	50	64	11	0	2	125	1178
Approach %	12.4	79.2	8.4	0.0	-	-	1.9	64.6	33.6	0.0	-	-	2.1	95.4	2.6	0.0	-	-	40.0	51.2	8.8	0.0	-	-	-
Total %	2.1	13.6	1.4	0.0	-	17.1	0.4	14.7	7.6	0.0	-	22.8	1.0	47.2	1.3	0.0	-	49.5	4.2	5.4	0.9	0.0	-	10.6	-
PHF	0.625	0.909	0.850	0.000	-	0.918	0.625	0.901	0.938	0.000	-	0.944	0.600	0.965	0.536	0.000	-	0.959	0.694	0.727	0.550	0.000	-	0.919	0.988
All Vehicles (no classification)	25	160	17	0	-	202	5	173	90	0	-	268	12	556	15	0	-	583	50	64	11	0	-	125	1178
% All Vehicles (no classification)	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: N Henderson
Avenue at Belmont Avenue
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Turning Movement Peak Hour Data Plot (7:45 AM)



C. J. Hensch & Associates Inc.
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Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at Belmont Avenue
Site Code: 1
Start Date: 12/02/2014
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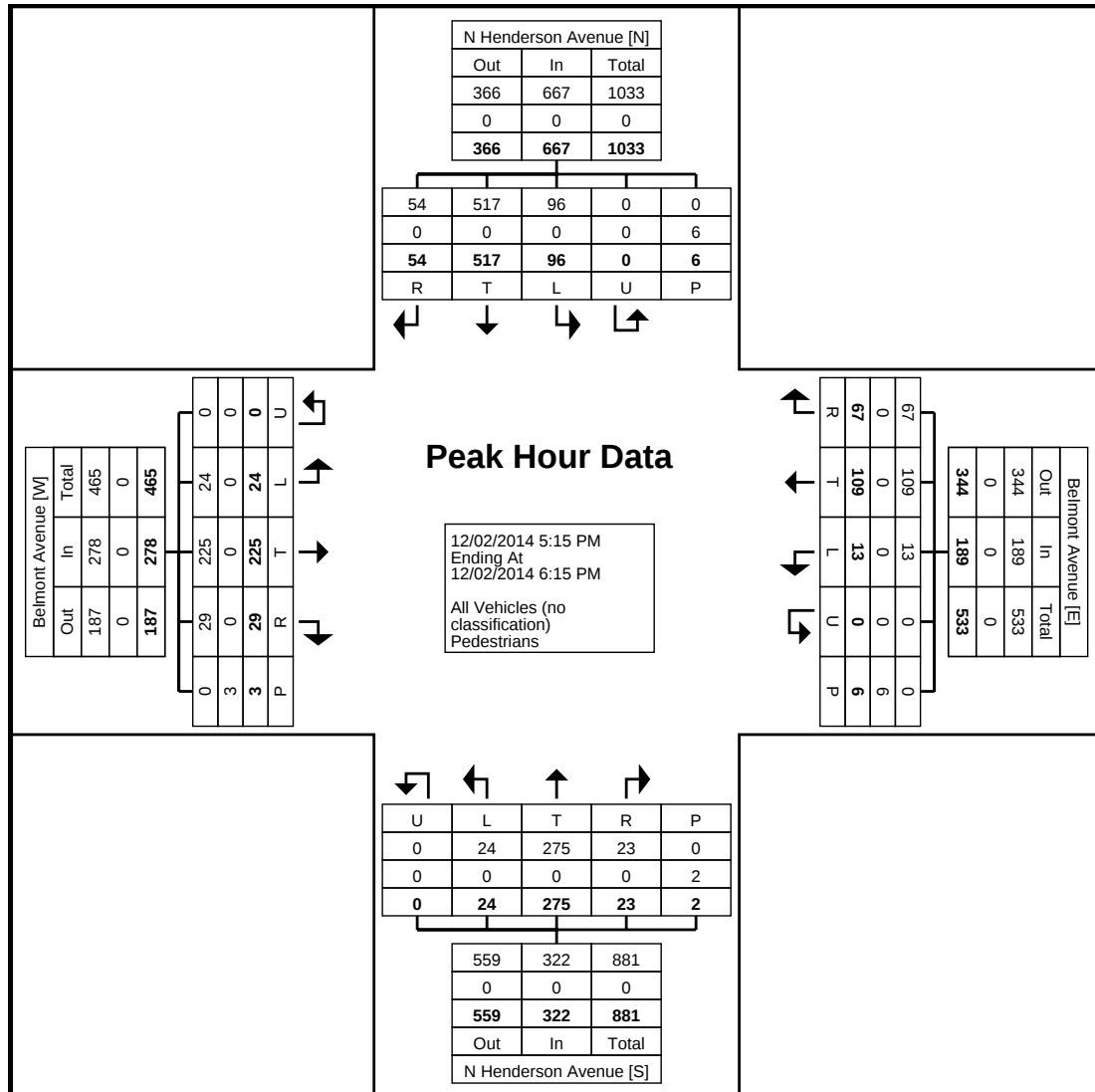
Turning Movement Peak Hour Data (5:15 PM)

Start Time	N Henderson Avenue Southbound						Belmont Avenue Westbound						N Henderson Avenue Northbound						Belmont Avenue Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
5:15 PM	26	150	10	0	1	186	2	33	16	0	0	51	7	69	6	0	0	82	5	56	11	0	0	72	391
5:30 PM	26	126	19	0	0	171	1	29	17	0	0	47	7	60	5	0	0	72	6	72	5	0	0	83	373
5:45 PM	24	116	17	0	4	157	4	20	11	0	5	35	7	78	6	0	2	91	8	54	3	0	1	65	348
6:00 PM	20	125	8	0	1	153	6	27	23	0	1	56	3	68	6	0	0	77	5	43	10	0	2	58	344
Total	96	517	54	0	6	667	13	109	67	0	6	189	24	275	23	0	2	322	24	225	29	0	3	278	1456
Approach %	14.4	77.5	8.1	0.0	-	-	6.9	57.7	35.4	0.0	-	-	7.5	85.4	7.1	0.0	-	-	8.6	80.9	10.4	0.0	-	-	-
Total %	6.6	35.5	3.7	0.0	-	45.8	0.9	7.5	4.6	0.0	-	13.0	1.6	18.9	1.6	0.0	-	22.1	1.6	15.5	2.0	0.0	-	19.1	-
PHF	0.923	0.862	0.711	0.000	-	0.897	0.542	0.826	0.728	0.000	-	0.844	0.857	0.881	0.958	0.000	-	0.885	0.750	0.781	0.659	0.000	-	0.837	0.931
All Vehicles (no classification)	96	517	54	0	-	667	13	109	67	0	-	189	24	275	23	0	-	322	24	225	29	0	-	278	1456
% All Vehicles (no classification)	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	-	6	-	-	-	-	-	6	-	-	-	-	-	2	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



C. J. Hensch & Associates Inc.
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Count Name: N Henderson
Avenue at Belmont Avenue
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Turning Movement Peak Hour Data Plot (5:15 PM)



C. J. Hensch & Associates Inc.
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Count Name: N Henderson
Avenue at Belmont Avenue
Site Code: 1
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Page No: 7

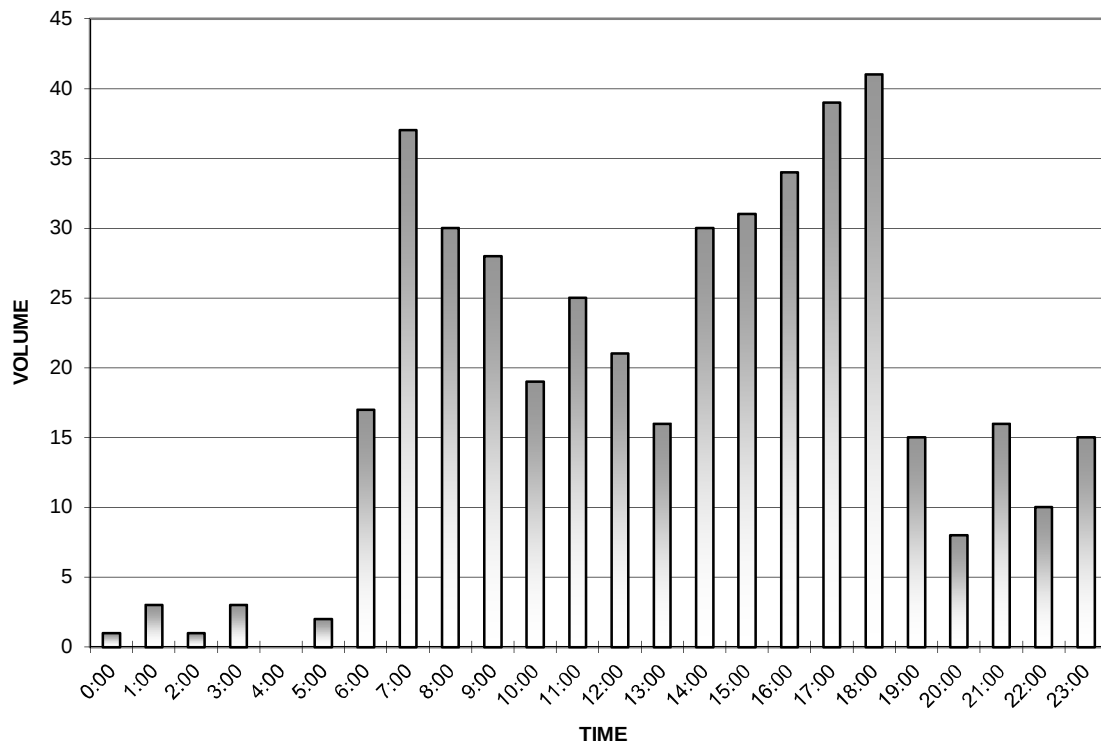
EB Fuqua Street between Henderson Avenue and Moser Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	1	0	0	0	1
1:00	1	0	1	1	3
2:00	0	0	0	1	1
3:00	1	2	0	0	3
4:00	0	0	0	0	0
5:00	0	1	1	0	2
6:00	1	7	6	3	17
7:00	2	8	12	15	37
8:00	8	10	8	4	30
9:00	6	7	7	8	28
10:00	3	9	2	5	19
11:00	4	7	8	6	25
12:00	4	3	4	10	21
13:00	5	3	3	5	16
14:00	5	5	12	8	30
15:00	13	3	8	7	31
16:00	14	4	10	6	34
17:00	8	10	9	12	39
18:00	14	11	11	5	41
19:00	4	4	2	5	15
20:00	2	1	1	4	8
21:00	2	4	8	2	16
22:00	3	2	3	2	10
23:00	5	2	6	2	15

TOTAL: 442

The A.M. peak hour from 7:30 to 8:30 is 45
The P.M. peak hour from 17:45 to 18:45 is 48



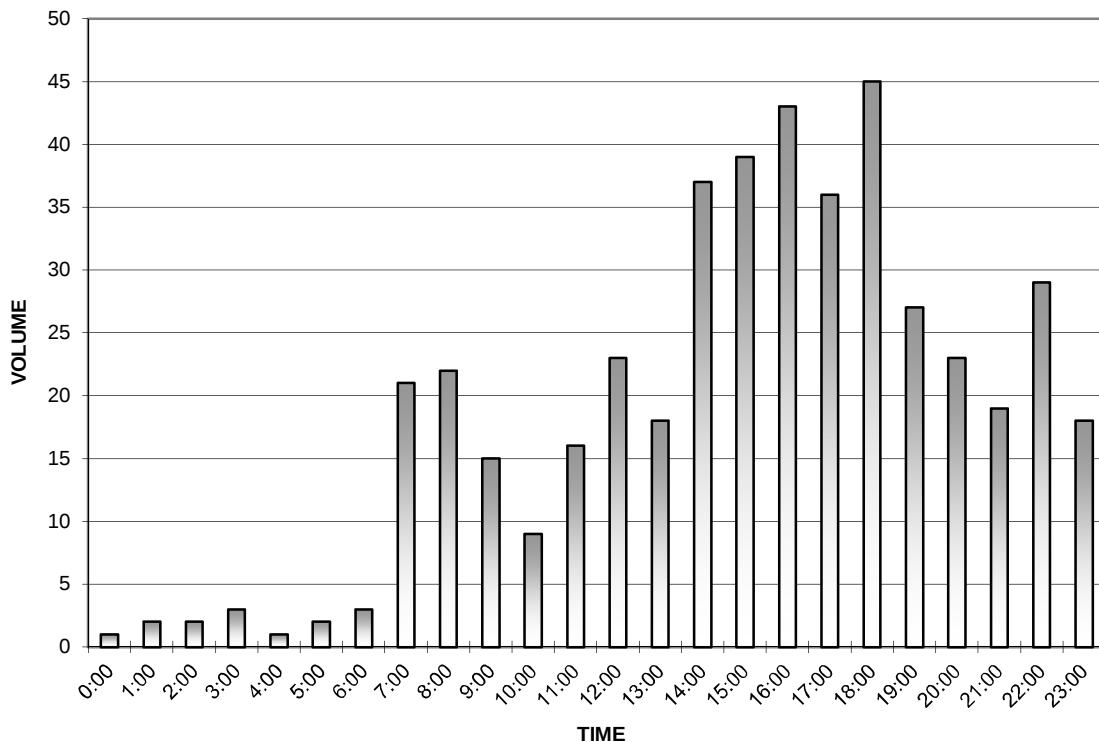
WB Fuqua Street between Henderson Avenue and Moser Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	0	1	0	0	1
1:00	0	1	1	0	2
2:00	1	1	0	0	2
3:00	0	1	1	1	3
4:00	0	1	0	0	1
5:00	0	2	0	0	2
6:00	1	0	1	1	3
7:00	5	4	8	4	21
8:00	8	4	6	4	22
9:00	5	5	3	2	15
10:00	3	2	0	4	9
11:00	4	4	6	2	16
12:00	5	2	8	8	23
13:00	4	4	5	5	18
14:00	7	2	14	14	37
15:00	8	11	10	10	39
16:00	12	8	10	13	43
17:00	6	14	9	7	36
18:00	9	11	7	18	45
19:00	10	6	4	7	27
20:00	5	4	6	8	23
21:00	4	3	7	5	19
22:00	8	10	5	6	29
23:00	6	6	3	3	18

TOTAL: 454

The A.M. peak hour from 7:30 to 8:30 is 24
The P.M. peak hour from 14:30 to 15:30 is 47





C. J. Hensch & Associates Inc.
5215 Sycamore Ave.
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Count Name: N Henderson
Avenue at Fuqua Street
Site Code: 4
Start Date: 12/02/2014
Page No: 1

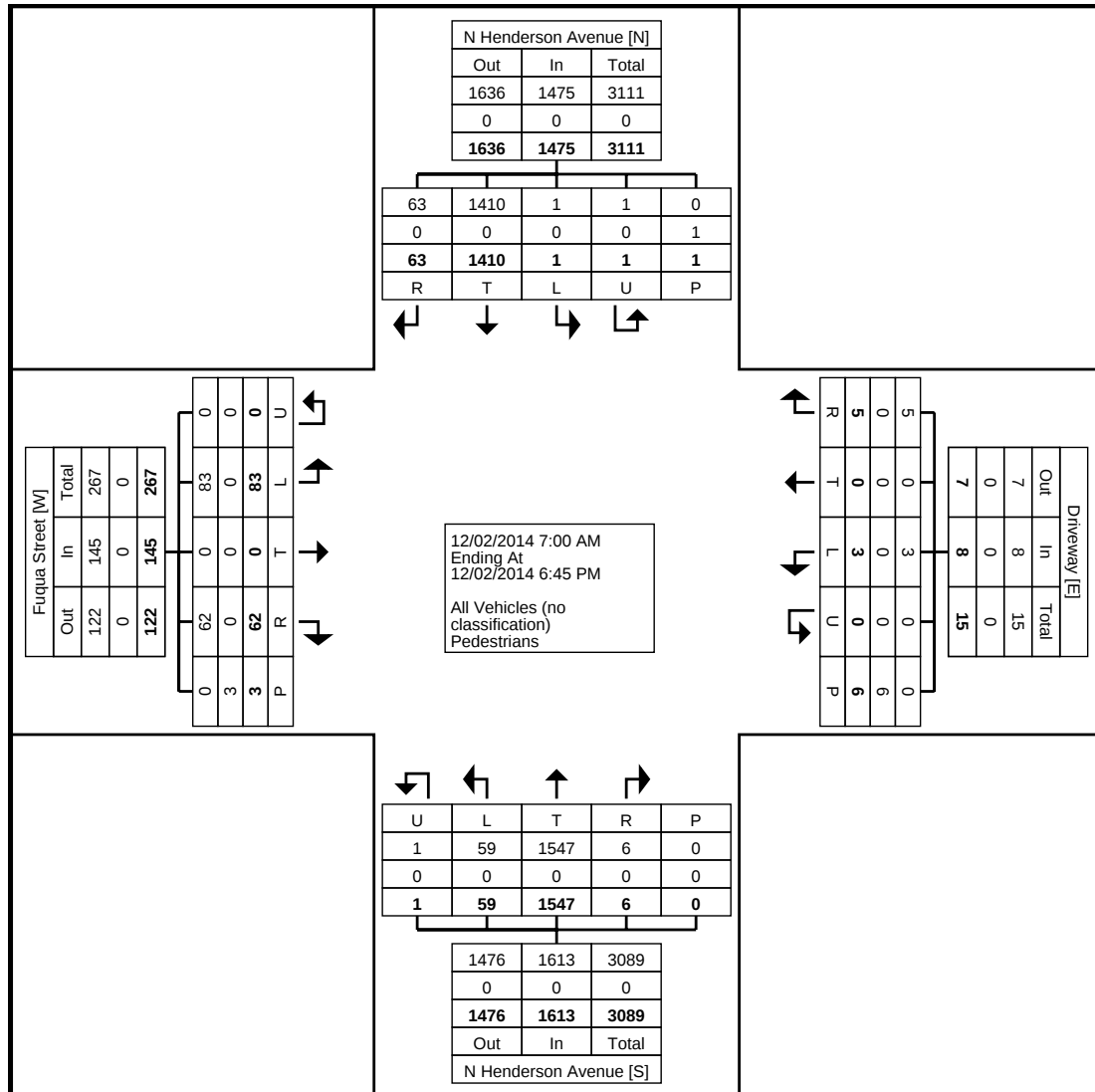
Turning Movement Data

Start Time	N Henderson Avenue Southbound						Driveway Westbound						N Henderson Avenue Northbound						Fuqua Street Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	27	4	0	0	31	0	0	0	0	0	0	1	87	0	0	0	88	1	0	1	0	0	2	121
7:15 AM	0	31	2	0	0	33	0	0	0	0	0	0	1	99	0	0	0	100	6	0	3	0	0	9	142
7:30 AM	0	33	3	0	0	36	0	0	1	0	0	1	4	115	0	0	0	119	11	0	1	0	0	12	168
7:45 AM	0	42	0	0	0	42	0	0	1	0	1	1	4	138	4	0	0	146	10	0	5	0	0	15	204
Hourly Total	0	133	9	0	0	142	0	0	2	0	1	2	10	439	4	0	0	453	28	0	10	0	0	38	635
8:00 AM	0	47	4	0	0	51	0	0	0	0	0	0	2	134	0	1	0	137	5	0	5	0	0	10	198
8:15 AM	0	49	3	0	0	52	0	0	1	0	0	1	2	127	2	0	0	131	7	0	2	0	0	9	193
8:30 AM	0	48	1	0	0	49	0	0	0	0	0	0	3	123	0	0	0	126	5	0	1	0	0	6	181
8:45 AM	0	44	1	0	0	45	0	0	0	0	0	0	3	115	0	0	0	118	1	0	2	0	0	3	166
Hourly Total	0	188	9	0	0	197	0	0	1	0	0	1	10	499	2	1	0	512	18	0	10	0	0	28	738
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	128	5	0	0	133	0	0	0	0	2	0	6	67	0	0	0	73	6	0	3	0	0	9	215
4:45 PM	1	133	8	0	0	142	0	0	1	0	0	1	5	72	0	0	0	77	3	0	3	0	1	6	226
Hourly Total	1	261	13	0	0	275	0	0	1	0	2	1	11	139	0	0	0	150	9	0	6	0	1	15	441
5:00 PM	0	132	2	0	0	134	2	0	0	0	0	2	7	69	0	0	0	76	4	0	4	0	0	8	220
5:15 PM	0	161	7	0	0	168	1	0	0	0	0	1	4	68	0	0	0	72	6	0	3	0	0	9	250
5:30 PM	0	131	5	0	1	136	0	0	0	0	3	0	3	82	0	0	0	85	2	0	6	0	2	8	229
5:45 PM	0	125	4	1	0	130	0	0	0	0	0	0	5	92	0	0	0	97	3	0	9	0	0	12	239
Hourly Total	0	549	18	1	1	568	3	0	0	0	3	3	19	311	0	0	0	330	15	0	22	0	2	37	938
6:00 PM	0	146	6	0	0	152	0	0	1	0	0	1	4	71	0	0	0	75	6	0	9	0	0	15	243
6:15 PM	0	133	8	0	0	141	0	0	0	0	0	0	5	88	0	0	0	93	7	0	4	0	0	11	245
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Grand Total	1	1410	63	1	1	1475	3	0	5	0	6	8	59	1547	6	1	0	1613	83	0	62	0	3	145	3241
Approach %	0.1	95.6	4.3	0.1	-	-	37.5	0.0	62.5	0.0	-	-	3.7	95.9	0.4	0.1	-	-	57.2	0.0	42.8	0.0	-	-	-
Total %	0.0	43.5	1.9	0.0	-	45.5	0.1	0.0	0.2	0.0	-	0.2	1.8	47.7	0.2	0.0	-	49.8	2.6	0.0	1.9	0.0	-	4.5	-
All Vehicles (no classification)	1	1410	63	1	-	1475	3	0	5	0	-	8	59	1547	6	1	-	1613	83	0	62	0	-	145	3241
% All Vehicles (no classification)	100.0	100.0	100.0	100.0	-	100.0	100.0	-	100.0	-	-	100.0	100.0	100.0	100.0	100.0	-	100.0	100.0	-	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	-	1	-	-	-	-	6	-	-	-	-	-	-	0	-	-	-	-	3	-	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-

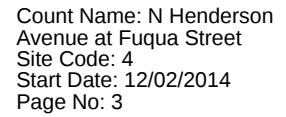


C. J. Hensch & Associates Inc.
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Count Name: N Henderson
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Site Code: 4
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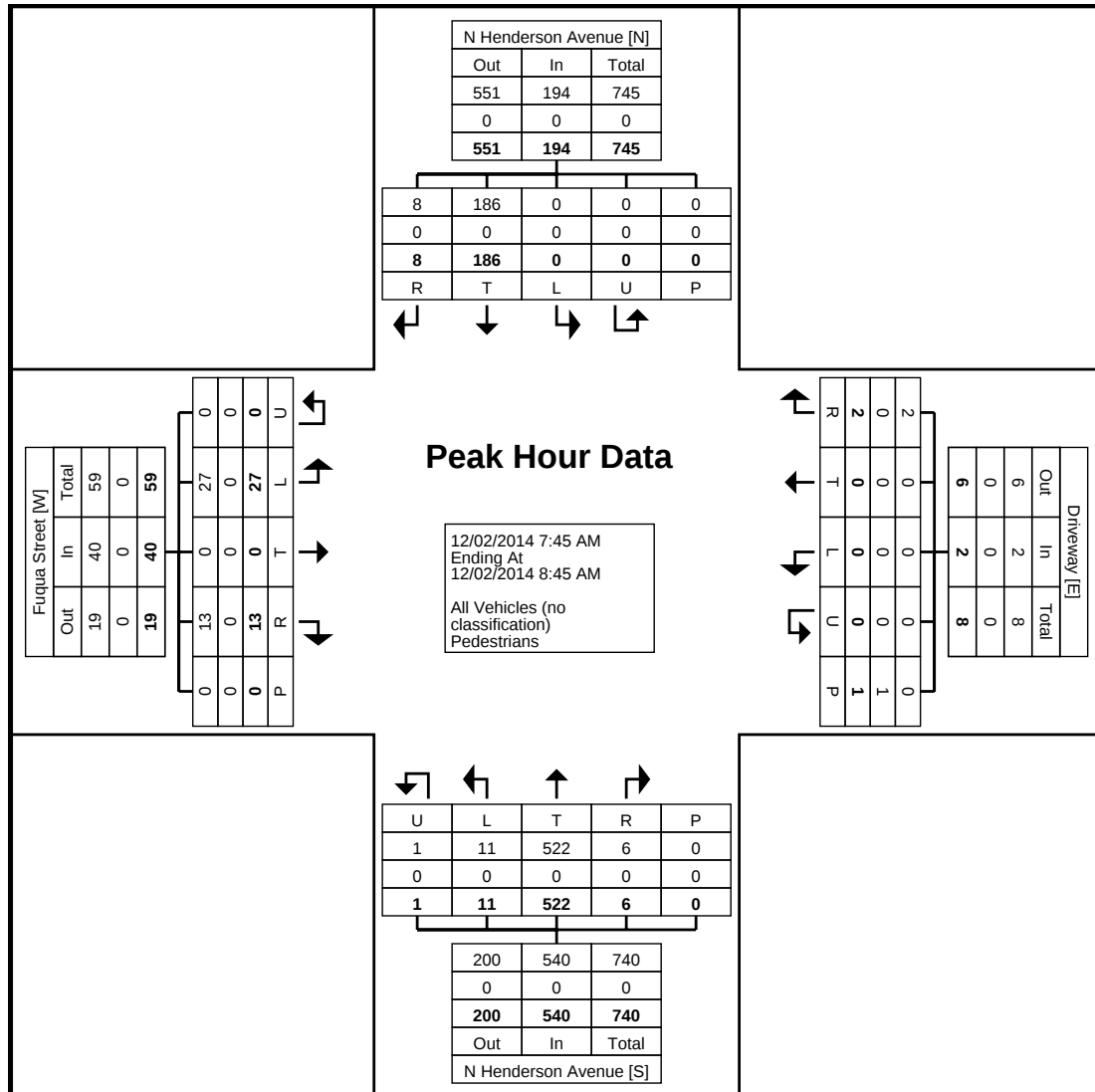
Turning Movement Data Plot





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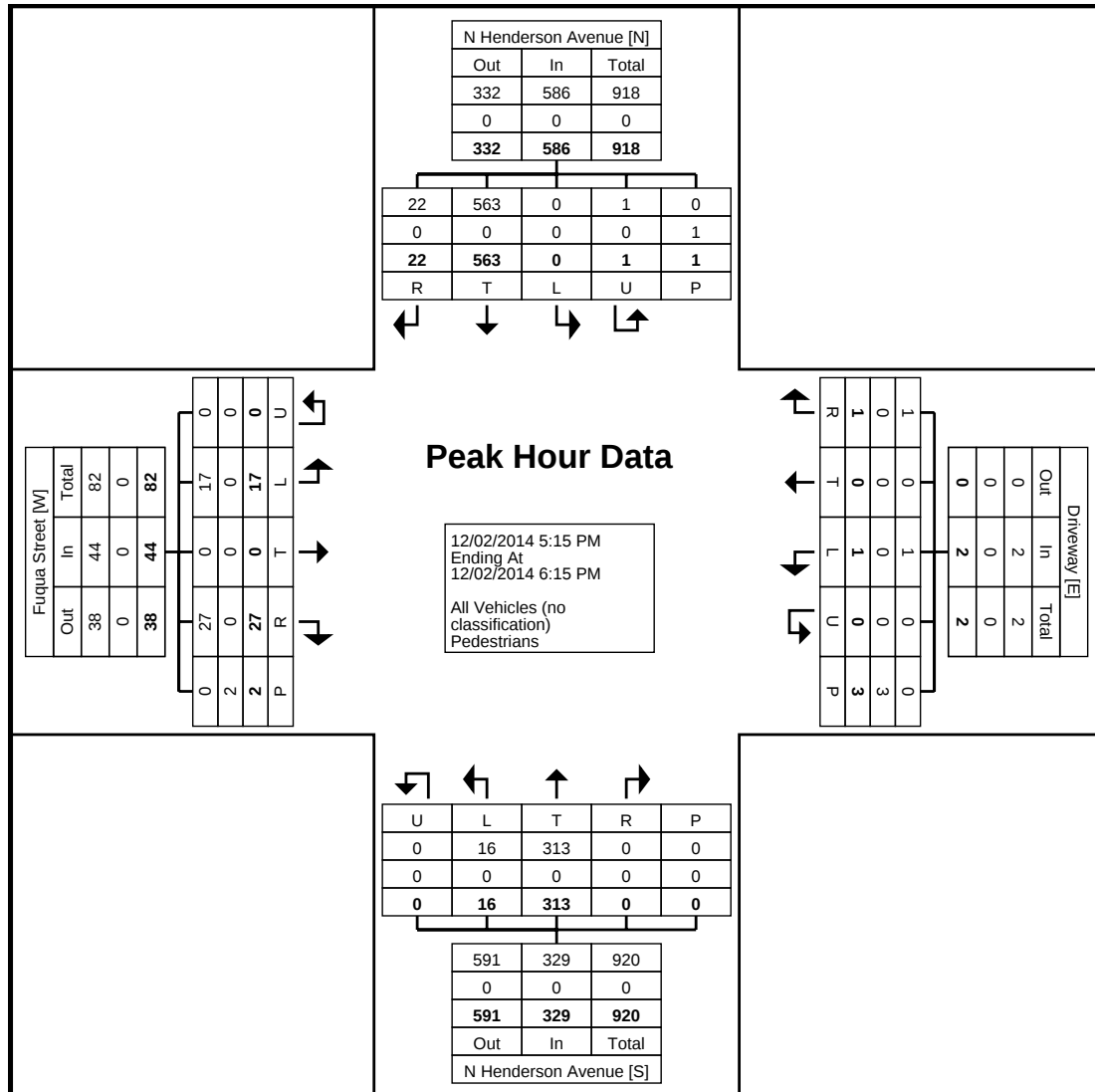
Turning Movement Peak Hour Data (5:15 PM)

Start Time	N Henderson Avenue Southbound						Driveway Westbound						N Henderson Avenue Northbound						Fuqua Street Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
5:15 PM	0	161	7	0	0	168	1	0	0	0	0	1	4	68	0	0	0	72	6	0	3	0	0	9	250
5:30 PM	0	131	5	0	1	136	0	0	0	0	3	0	3	82	0	0	0	85	2	0	6	0	2	8	229
5:45 PM	0	125	4	1	0	130	0	0	0	0	0	0	5	92	0	0	0	97	3	0	9	0	0	12	239
6:00 PM	0	146	6	0	0	152	0	0	1	0	0	1	4	71	0	0	0	75	6	0	9	0	0	15	243
Total	0	563	22	1	1	586	1	0	1	0	3	2	16	313	0	0	0	329	17	0	27	0	2	44	961
Approach %	0.0	96.1	3.8	0.2	-	-	50.0	0.0	50.0	0.0	-	-	4.9	95.1	0.0	0.0	-	-	38.6	0.0	61.4	0.0	-	-	-
Total %	0.0	58.6	2.3	0.1	-	61.0	0.1	0.0	0.1	0.0	-	0.2	1.7	32.6	0.0	0.0	-	34.2	1.8	0.0	2.8	0.0	-	4.6	-
PHF	0.000	0.874	0.786	0.250	-	0.872	0.250	0.000	0.250	0.000	-	0.500	0.800	0.851	0.000	0.000	-	0.848	0.708	0.000	0.750	0.000	-	0.733	0.961
All Vehicles (no classification)	0	563	22	1	-	586	1	0	1	0	-	2	16	313	0	0	-	329	17	0	27	0	-	44	961
% All Vehicles (no classification)	-	100.0	100.0	100.0	-	100.0	100.0	-	100.0	-	-	100.0	100.0	100.0	-	-	-	100.0	100.0	-	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Count Name: N Henderson
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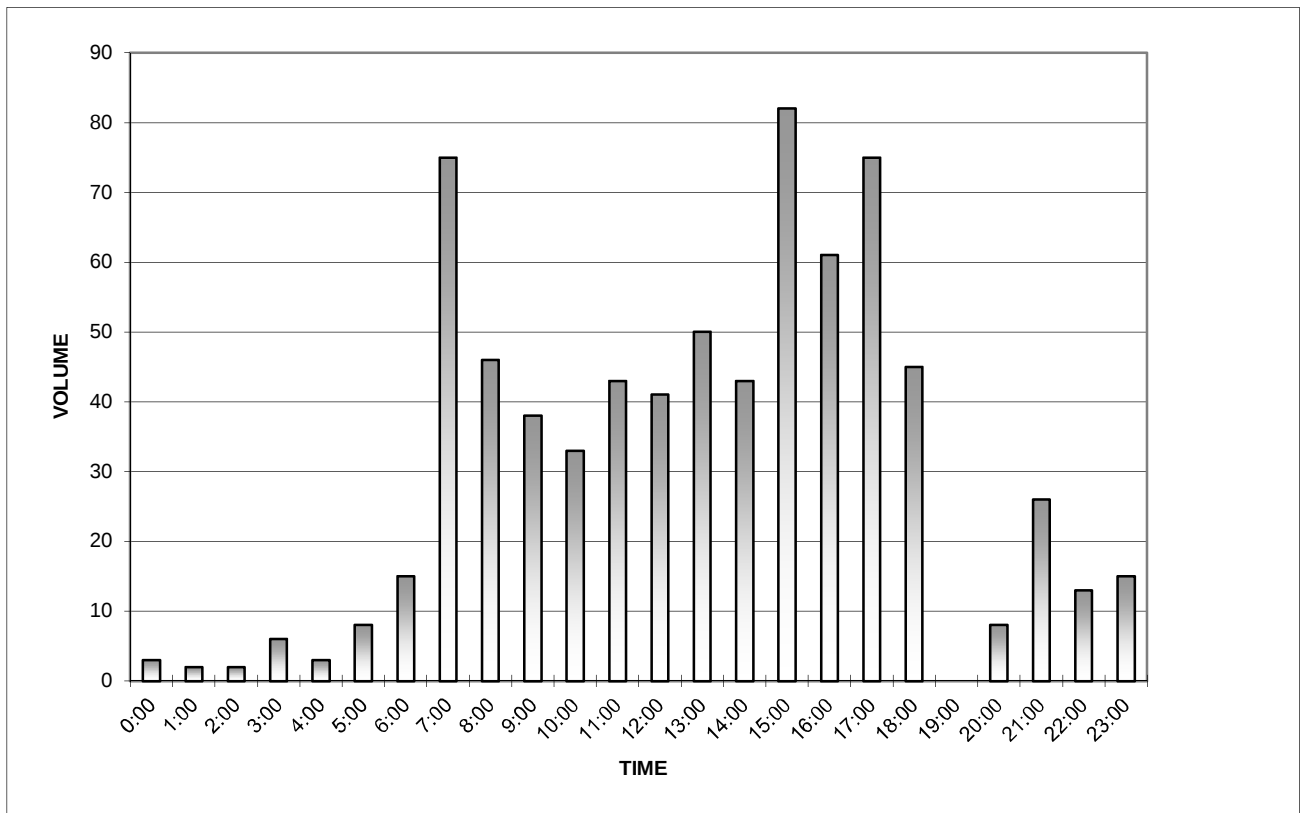
Count Name: N Henderson
Avenue at Fuqua Street
Site Code: 4
Start Date: 12/02/2014
Page No: 7

EB Monarch Street between Henderson Avenue and Moser Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	1	2	0	0	3
1:00	0	0	0	2	2
2:00	1	0	1	0	2
3:00	0	2	2	2	6
4:00	1	0	0	2	3
5:00	4	0	1	3	8
6:00	1	2	8	4	15
7:00	4	18	27	26	75
8:00	17	5	16	8	46
9:00	10	11	8	9	38
10:00	9	4	12	8	33
11:00	5	8	16	14	43
12:00	10	7	13	11	41
13:00	5	15	16	14	50
14:00	8	4	17	14	43
15:00	34	15	16	17	82
16:00	14	16	15	16	61
17:00	14	15	24	22	75
18:00	19	17	9	0	45
19:00	0	0	0	0	0
20:00	0	0	2	6	8
21:00	8	8	6	4	26
22:00	3	4	2	4	13
23:00	5	6	3	1	15
	TOTAL:				733

The A.M. peak hour from 7:15 to 8:15 is 88
The P.M. peak hour from 17:30 to 18:30 is 82



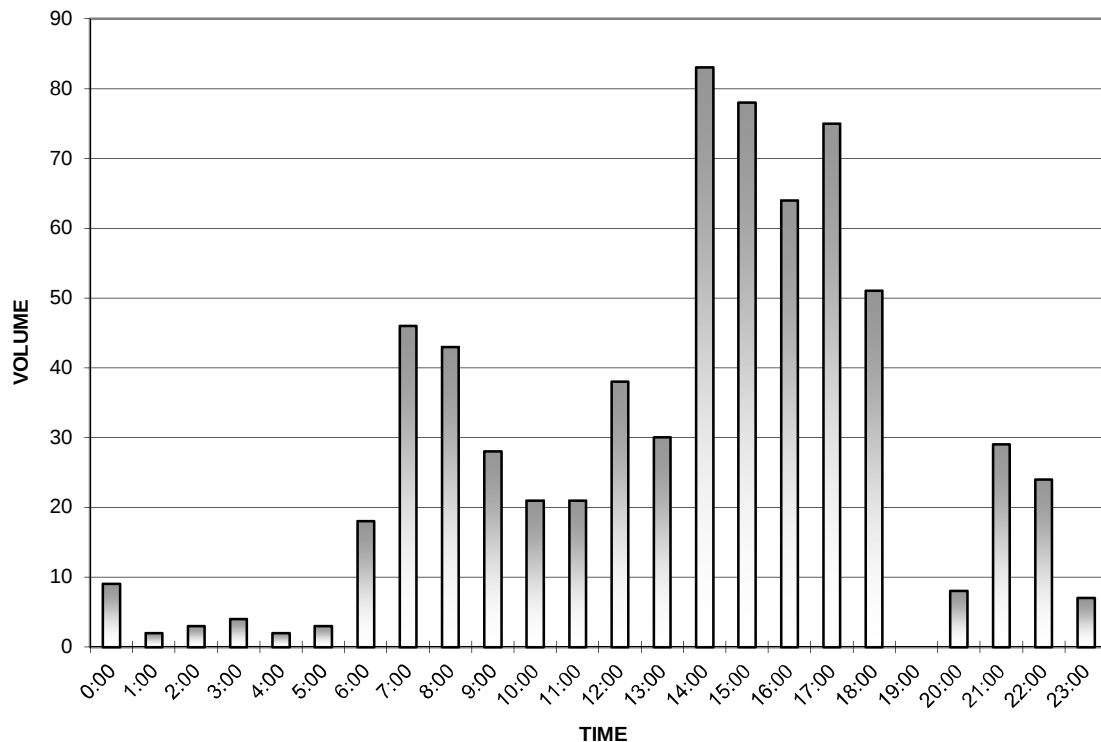
WB Monarch Street between Henderson Avenue and Moser Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	6	3	0	0	9
1:00	0	2	0	0	2
2:00	0	0	1	2	3
3:00	0	1	1	2	4
4:00	0	2	0	0	2
5:00	1	0	2	0	3
6:00	6	3	2	7	18
7:00	8	9	10	19	46
8:00	15	10	10	8	43
9:00	8	9	2	9	28
10:00	7	6	5	3	21
11:00	5	4	6	6	21
12:00	8	8	10	12	38
13:00	12	4	7	7	30
14:00	20	9	27	27	83
15:00	29	24	11	14	78
16:00	14	15	21	14	64
17:00	14	24	23	14	75
18:00	17	22	12	0	51
19:00	0	0	0	0	0
20:00	0	0	2	6	8
21:00	6	10	1	12	29
22:00	5	4	11	4	24
23:00	2	1	4	0	7

TOTAL: 687

The A.M. peak hour from 7:45 to 8:45 is 54
The P.M. peak hour from 14:30 to 15:30 is 107





C. J. Hensch & Associates Inc.
5215 Sycamore Ave.
Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at Monarch Street
Site Code: 6
Start Date: 12/02/2014
Page No: 1

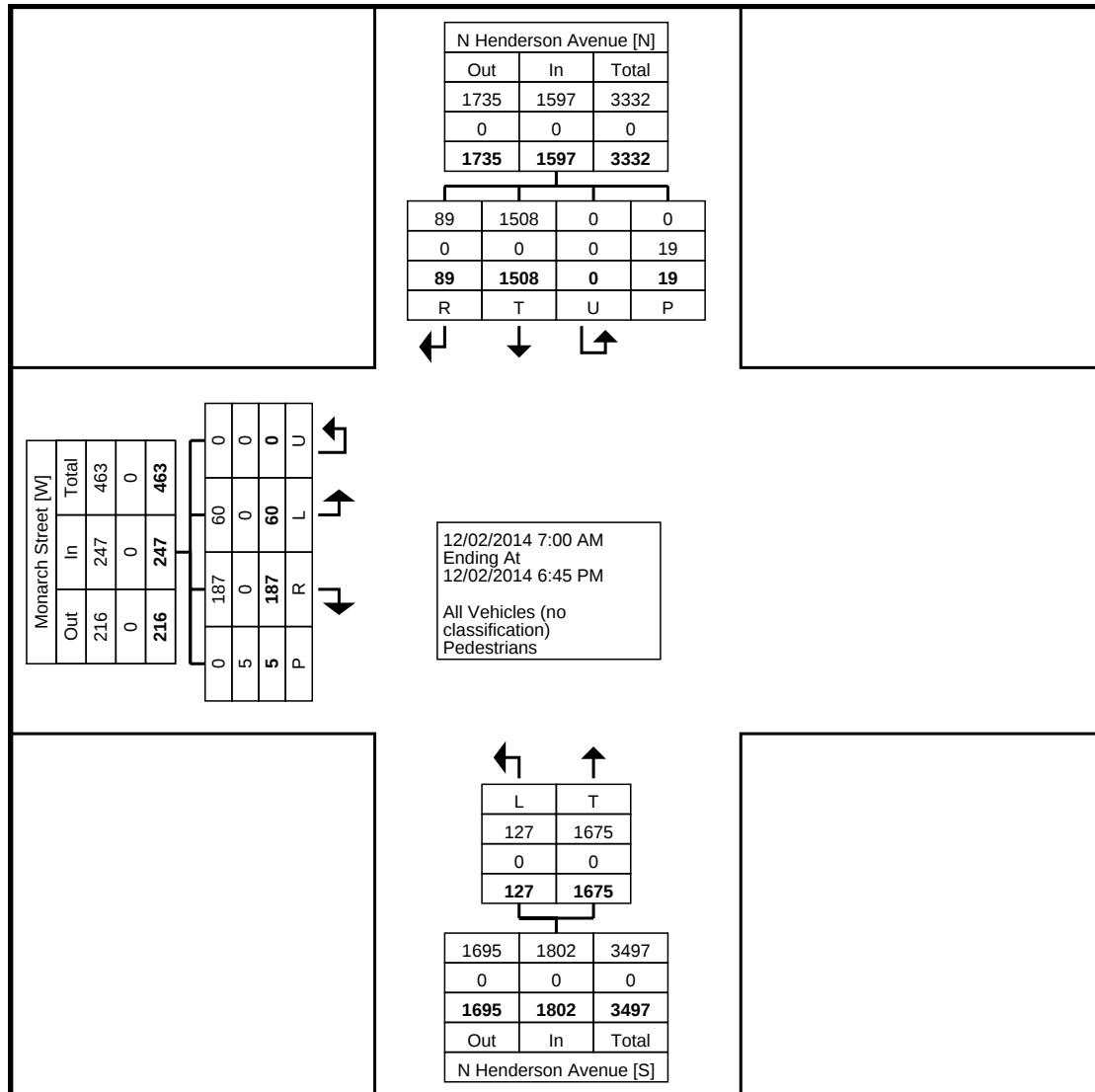
Turning Movement Data

Start Time	N Henderson Avenue Southbound					N Henderson Avenue Northbound			Monarch Street Eastbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	25	6	0	1	31	4	90	94	1	4	0	0	5	130
7:15 AM	43	2	0	1	45	7	90	97	6	12	0	1	18	160
7:30 AM	44	9	0	0	53	1	128	129	7	20	0	0	27	209
7:45 AM	50	8	0	0	58	9	140	149	5	20	0	0	25	232
Hourly Total	162	25	0	2	187	21	448	469	19	56	0	1	75	731
8:00 AM	59	2	0	1	61	7	138	145	4	7	0	0	11	217
8:15 AM	56	2	0	2	58	8	128	136	0	5	0	0	5	199
8:30 AM	52	2	0	1	54	7	133	140	4	11	0	0	15	209
8:45 AM	47	3	0	1	50	3	118	121	1	8	0	0	9	180
Hourly Total	214	9	0	5	223	25	517	542	9	31	0	0	40	805
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	132	3	0	3	135	13	87	100	4	13	0	0	17	252
4:45 PM	132	8	0	4	140	8	73	81	3	8	0	3	11	232
Hourly Total	264	11	0	7	275	21	160	181	7	21	0	3	28	484
5:00 PM	144	6	0	0	150	6	86	92	5	12	0	0	17	259
5:15 PM	161	10	0	0	171	14	83	97	4	14	0	1	18	286
5:30 PM	134	7	0	2	141	13	100	113	5	13	0	0	18	272
5:45 PM	145	7	0	1	152	11	100	111	5	17	0	0	22	285
Hourly Total	584	30	0	3	614	44	369	413	19	56	0	1	75	1102
6:00 PM	149	8	0	2	157	8	90	98	2	11	0	0	13	268
6:15 PM	135	6	0	0	141	8	91	99	4	12	0	0	16	256
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1508	89	0	19	1597	127	1675	1802	60	187	0	5	247	3646
Approach %	94.4	5.6	0.0	-	-	7.0	93.0	-	24.3	75.7	0.0	-	-	-
Total %	41.4	2.4	0.0	-	43.8	3.5	45.9	49.4	1.6	5.1	0.0	-	6.8	-
All Vehicles (no classification)	1508	89	0	-	1597	127	1675	1802	60	187	0	-	247	3646
% All Vehicles (no classification)	100.0	100.0	-	-	100.0	100.0	100.0	100.0	100.0	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	19	-	-	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	100.0	-	-



C. J. Hensch & Associates Inc.
5215 Sycamore Ave.
Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at Monarch Street
Site Code: 6
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Page No: 2



Turning Movement Data Plot

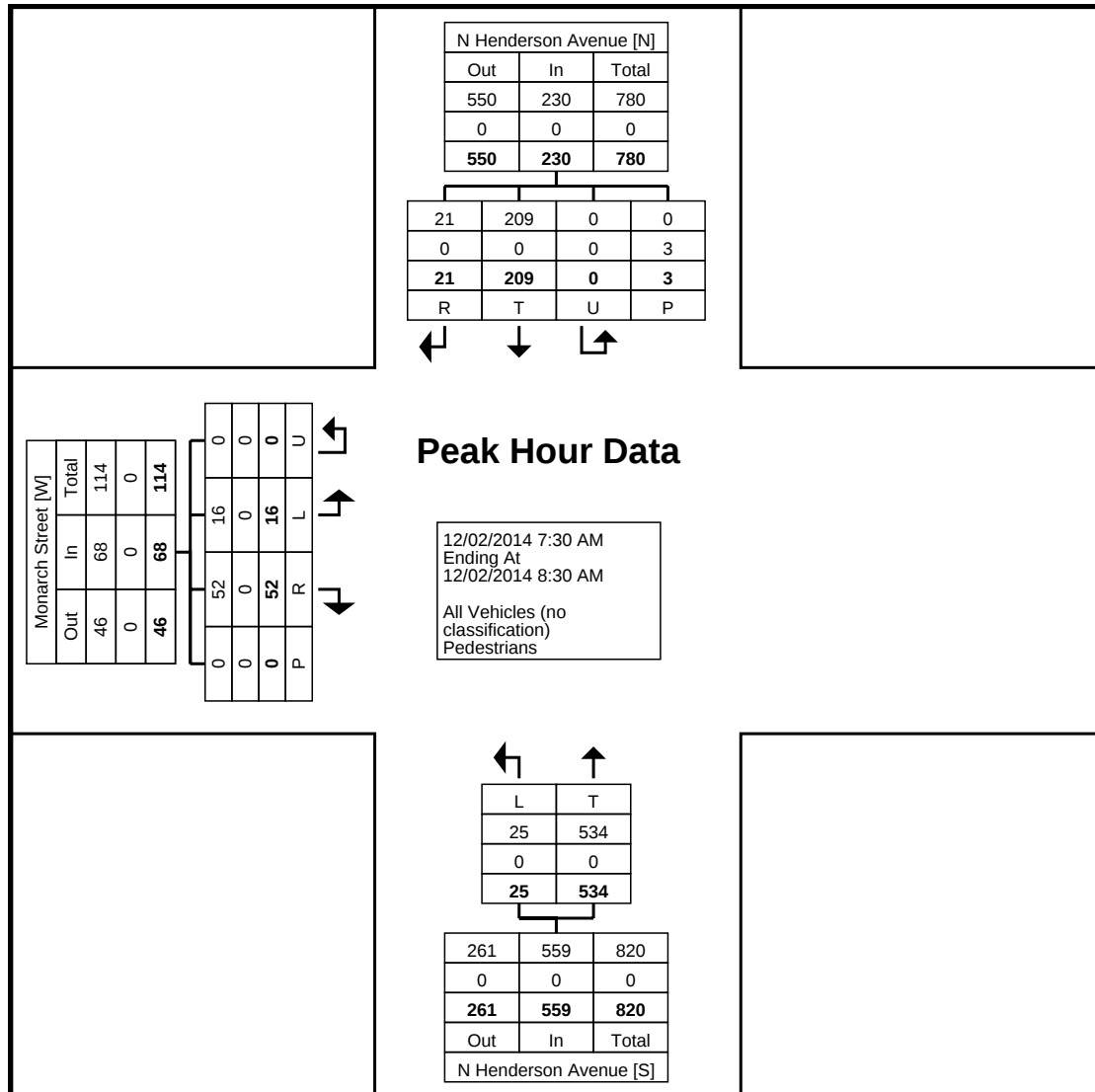
C. J. Hensch & Associates Inc.
5215 Sycamore Ave.

Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at Monarch Street
Site Code: 6
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Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

[illegible]



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5215 Sycamore Ave.

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Count Name: N Henderson
Avenue at Monarch Street
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Start Date: 12/02/2014
Page No: 5

Turning Movement Peak Hour Data (5:15 PM)

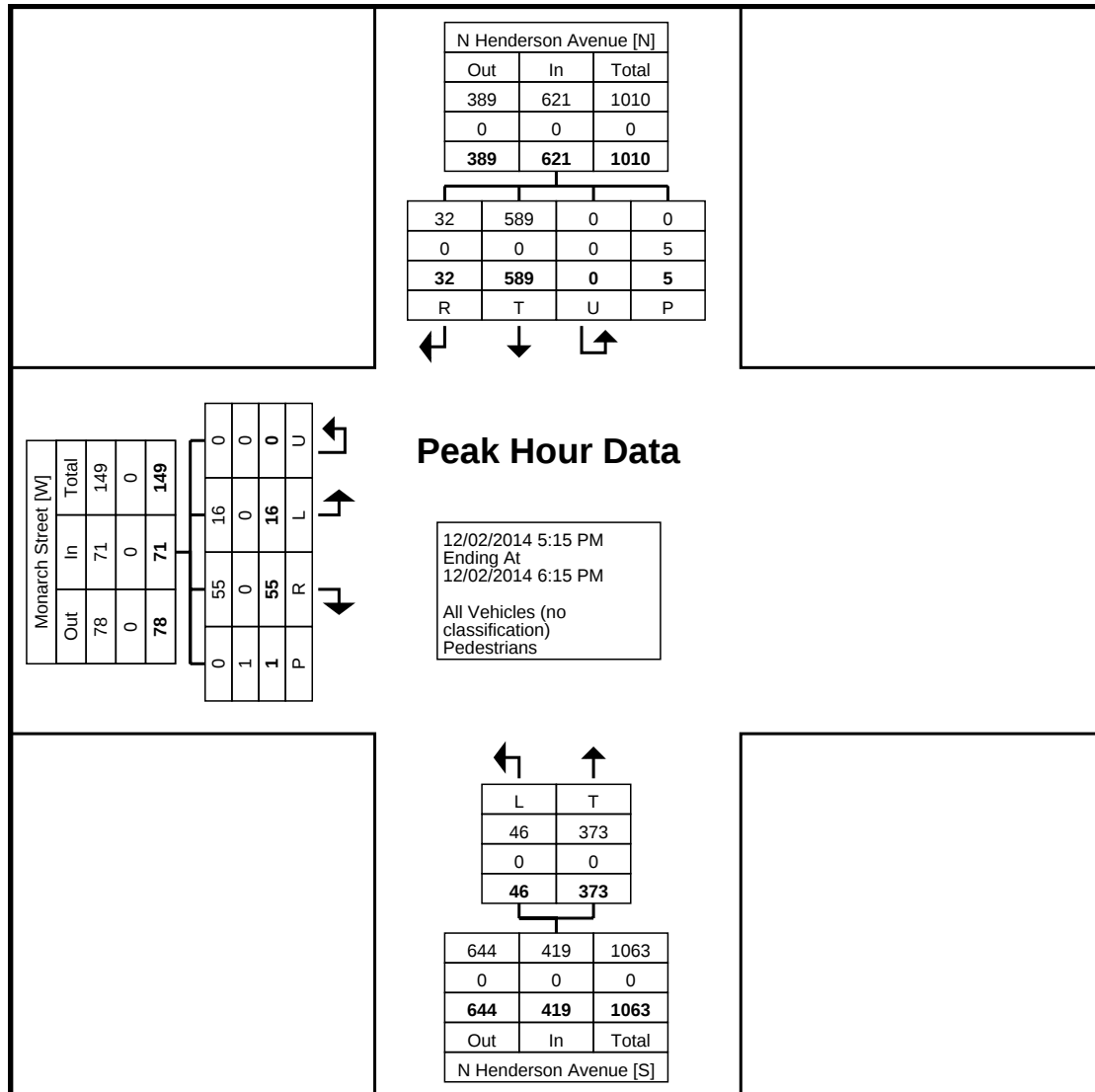
Start Time	N Henderson Avenue Southbound					N Henderson Avenue Northbound			Monarch Street Eastbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	App. Total	Left	Right	U-Turn	Peds	App. Total	
5:15 PM	161	10	0	0	171	14	83	97	4	14	0	1	18	286
5:30 PM	134	7	0	2	141	13	100	113	5	13	0	0	18	272
5:45 PM	145	7	0	1	152	11	100	111	5	17	0	0	22	285
6:00 PM	149	8	0	2	157	8	90	98	2	11	0	0	13	268
Total	589	32	0	5	621	46	373	419	16	55	0	1	71	1111
Approach %	94.8	5.2	0.0	-	-	11.0	89.0	-	22.5	77.5	0.0	-	-	-
Total %	53.0	2.9	0.0	-	55.9	4.1	33.6	37.7	1.4	5.0	0.0	-	6.4	-
PHF	0.915	0.800	0.000	-	0.908	0.821	0.933	0.927	0.800	0.809	0.000	-	0.807	0.971
All Vehicles (no classification)	589	32	0	-	621	46	373	419	16	55	0	-	71	1111
% All Vehicles (no classification)	100.0	100.0	-	-	100.0	100.0	100.0	100.0	100.0	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	5	-	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	100.0	-	-



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Avenue at Monarch Street
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Page No: 7

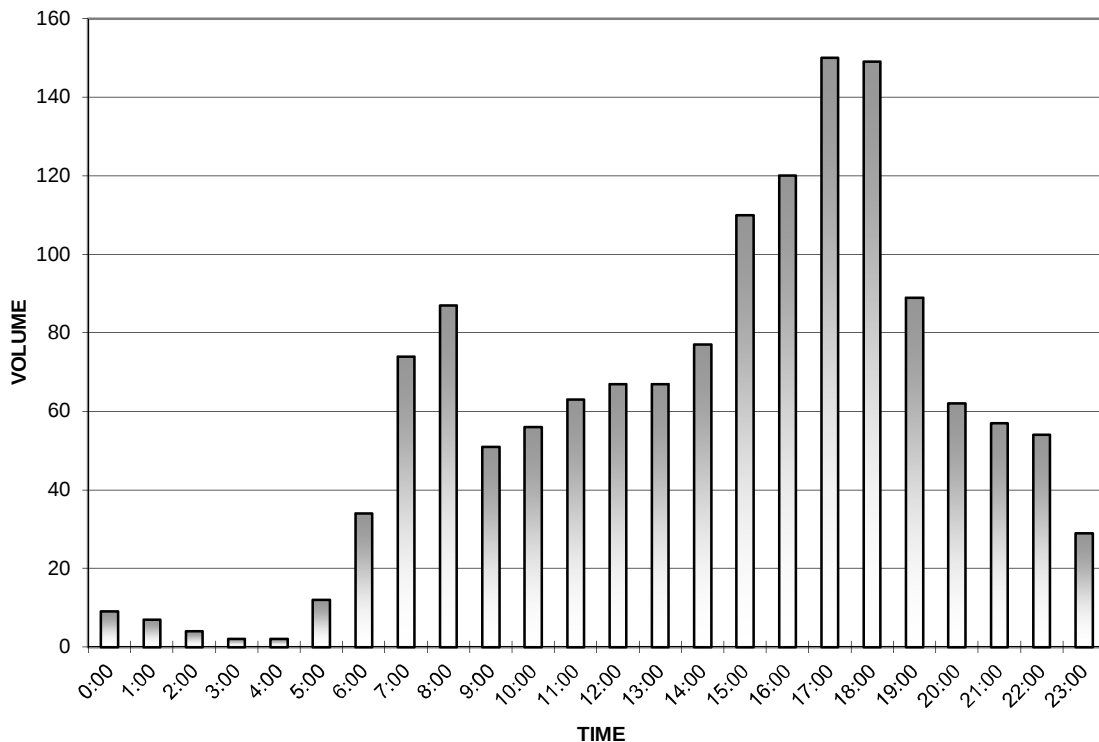
EB Capitol Avenue between Henderson Avenue and Moser Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	4	2	2	1	9
1:00	2	1	2	2	7
2:00	0	4	0	0	4
3:00	1	0	1	0	2
4:00	1	0	0	1	2
5:00	0	3	6	3	12
6:00	8	8	6	12	34
7:00	20	11	24	19	74
8:00	12	24	37	14	87
9:00	17	12	11	11	51
10:00	12	17	11	16	56
11:00	8	28	16	11	63
12:00	18	12	21	16	67
13:00	20	15	18	14	67
14:00	18	14	26	19	77
15:00	36	30	18	26	110
16:00	23	27	33	37	120
17:00	38	38	25	49	150
18:00	46	38	37	28	149
19:00	23	24	25	17	89
20:00	18	18	14	12	62
21:00	12	16	13	16	57
22:00	16	16	14	8	54
23:00	10	6	10	3	29

TOTAL: 1432

The A.M. peak hour from 8:15 to 9:15 is 92
The P.M. peak hour from 17:45 to 18:45 is 170



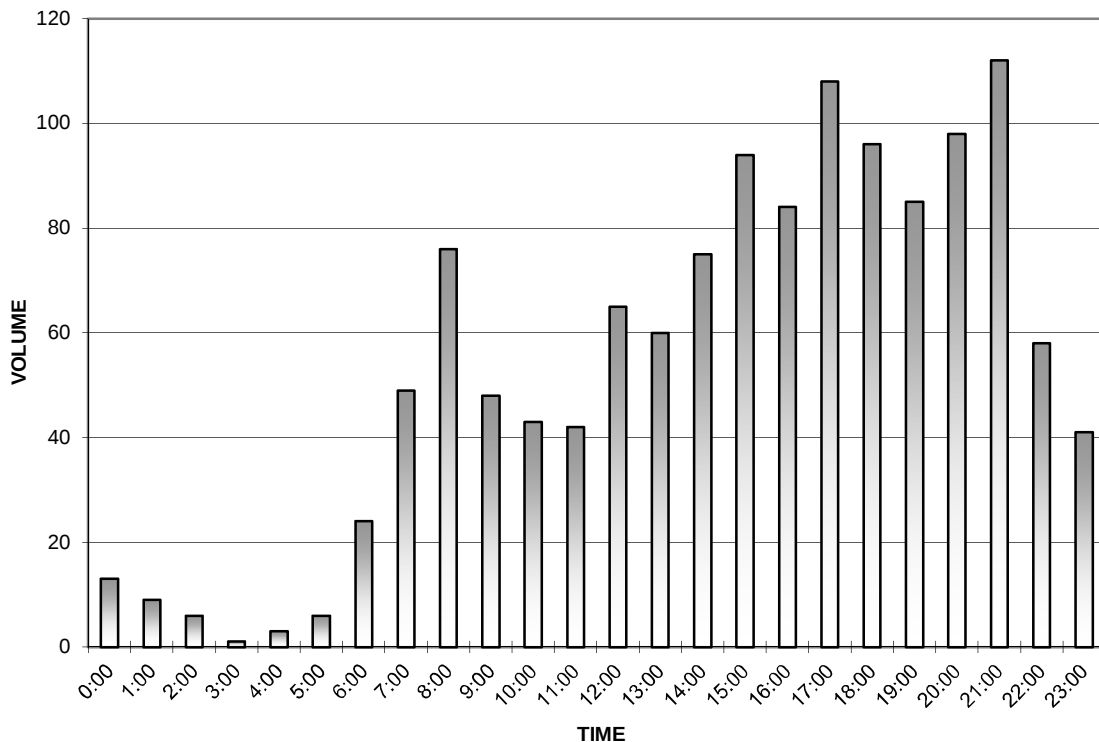
WB Capitol Avenue between Henderson Avenue and Moser Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	3	4	2	4	13
1:00	4	2	0	3	9
2:00	2	4	0	0	6
3:00	0	1	0	0	1
4:00	1	0	1	1	3
5:00	0	4	2	0	6
6:00	2	9	1	12	24
7:00	6	11	14	18	49
8:00	20	22	18	16	76
9:00	13	12	11	12	48
10:00	13	11	11	8	43
11:00	6	11	14	11	42
12:00	13	20	15	17	65
13:00	16	13	10	21	60
14:00	13	16	18	28	75
15:00	21	27	26	20	94
16:00	25	18	20	21	84
17:00	17	29	27	35	108
18:00	26	26	23	21	96
19:00	16	19	26	24	85
20:00	18	25	17	38	98
21:00	22	35	26	29	112
22:00	20	10	20	8	58
23:00	12	9	10	10	41

TOTAL: 1296

The A.M. peak hour from 7:45 to 8:45 is 78
The P.M. peak hour from 17:15 to 18:15 is 117





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Page No: 1

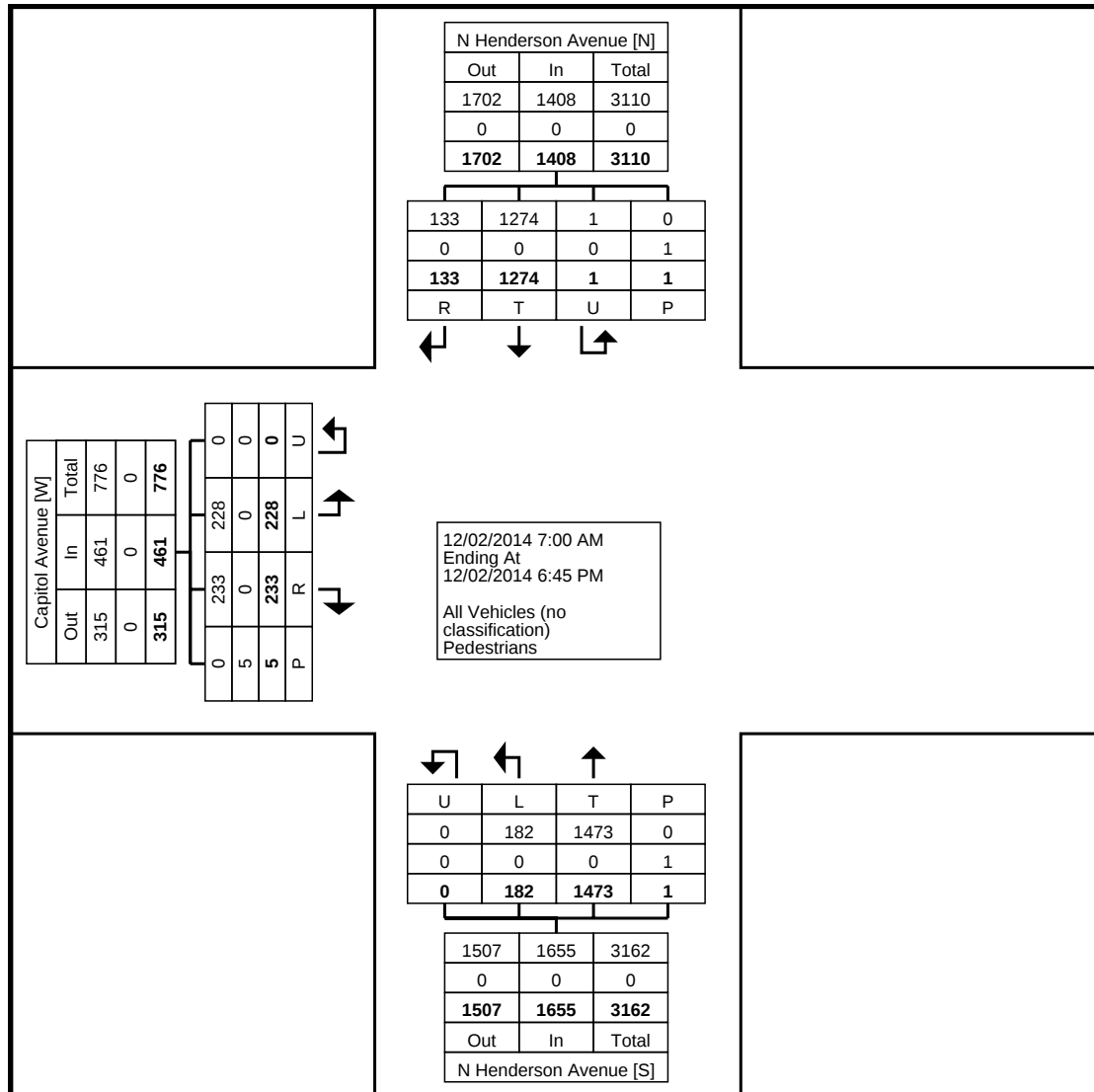
Turning Movement Data

Start Time	N Henderson Avenue Southbound					N Henderson Avenue Northbound					Capitol Avenue Eastbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	24	2	0	0	26	4	81	0	0	85	13	4	0	0	17	128
7:15 AM	31	1	0	0	32	9	96	0	0	105	9	2	0	1	11	148
7:30 AM	30	6	0	0	36	7	117	0	0	124	17	5	0	1	22	182
7:45 AM	36	6	0	0	42	13	135	0	0	148	17	4	0	0	21	211
Hourly Total	121	15	0	0	136	33	429	0	0	462	56	15	0	2	71	669
8:00 AM	44	5	0	0	49	14	133	0	0	147	10	6	0	0	16	212
8:15 AM	42	3	0	0	45	15	124	0	0	139	16	7	0	0	23	207
8:30 AM	45	3	0	0	48	11	115	0	0	126	27	9	0	0	36	210
8:45 AM	40	2	0	0	42	10	107	0	1	117	8	2	0	0	10	169
Hourly Total	171	13	0	0	184	50	479	0	1	529	61	24	0	0	85	798
9:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:30 PM	115	10	0	0	125	11	68	0	0	79	14	22	0	0	36	240
4:45 PM	111	6	0	1	117	10	70	0	0	80	11	27	0	0	38	235
Hourly Total	226	16	0	1	242	21	138	0	0	159	25	49	0	0	74	475
5:00 PM	130	13	1	0	144	7	67	0	0	74	15	20	0	0	35	253
5:15 PM	146	17	0	0	163	13	70	0	0	83	13	26	0	0	39	285
5:30 PM	120	17	0	0	137	15	64	0	0	79	8	16	0	2	24	240
5:45 PM	105	13	0	0	118	16	76	0	0	92	17	30	0	0	47	257
Hourly Total	501	60	1	0	562	51	277	0	0	328	53	92	0	2	145	1035
6:00 PM	131	13	0	0	144	15	62	0	0	77	17	28	0	0	45	266
6:15 PM	124	16	0	0	140	12	87	0	0	99	16	25	0	1	41	280
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1274	133	1	1	1408	182	1473	0	1	1655	228	233	0	5	461	3524
Approach %	90.5	9.4	0.1	-	-	11.0	89.0	0.0	-	-	49.5	50.5	0.0	-	-	-
Total %	36.2	3.8	0.0	-	40.0	5.2	41.8	0.0	-	47.0	6.5	6.6	0.0	-	13.1	-
All Vehicles (no classification)	1274	133	1	-	1408	182	1473	0	-	1655	228	233	0	-	461	3524
% All Vehicles (no classification)	100.0	100.0	100.0	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	1	-	-	-	-	1	-	-	-	-	5	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



C. J. Hensch & Associates Inc.
5215 Sycamore Ave.
Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at Capitol Avenue
Site Code: 2
Start Date: 12/02/2014
Page No: 2



Turning Movement Data Plot

C. J. Hensch & Associates Inc.
5215 Sycamore Ave.

Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at Capitol Avenue
Site Code: 2
Start Date: 12/02/2014
Page No: 3

Turning Movement Peak Hour Data (7:45 AM)

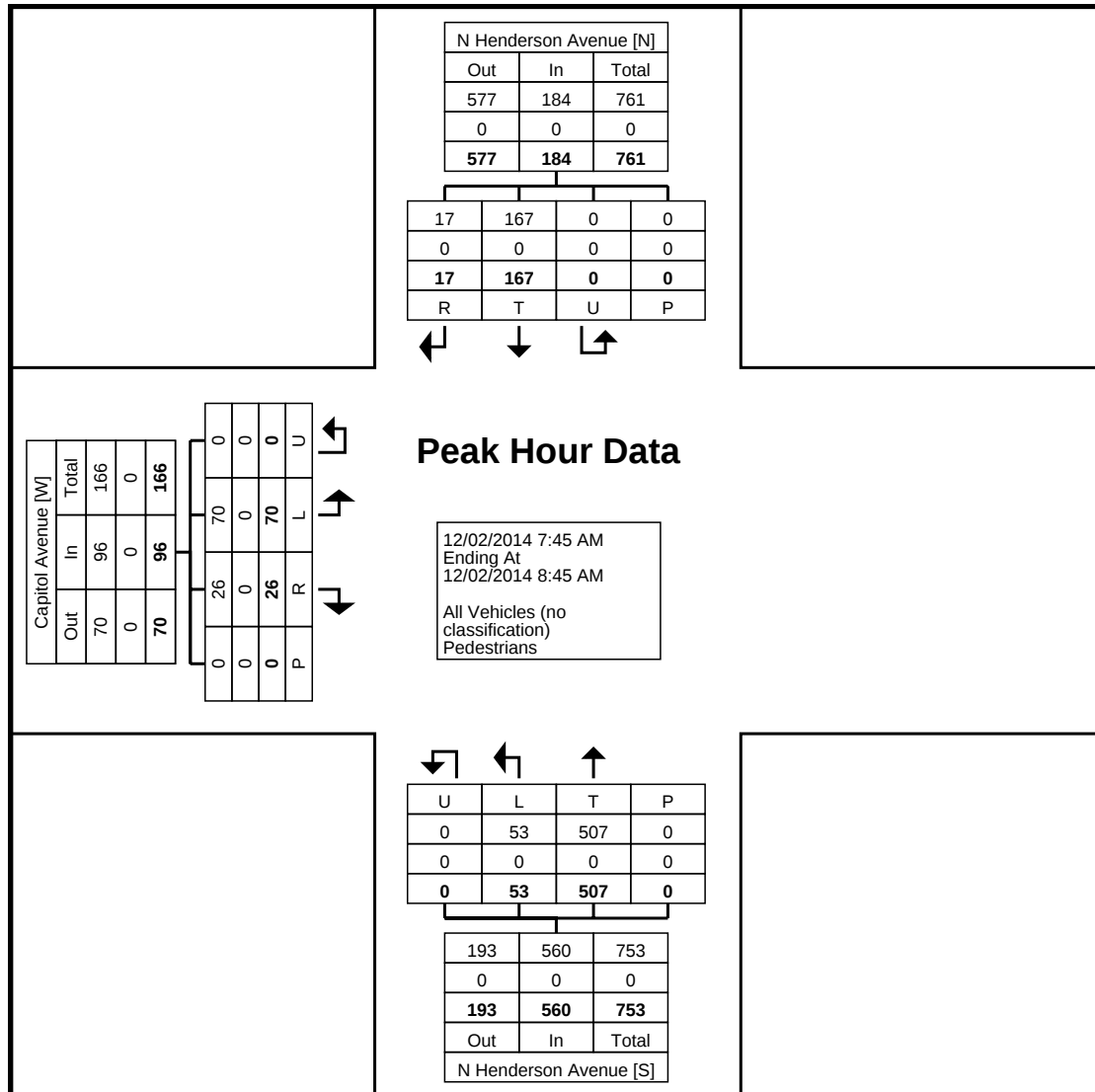
[illegible]



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Count Name: N Henderson
Avenue at Capitol Avenue
Site Code: 2
Start Date: 12/02/2014
Page No: 4



Turning Movement Peak Hour Data Plot (7:45 AM)



C. J. Hensch & Associates Inc.
5215 Sycamore Ave.
Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at Capitol Avenue
Site Code: 2
Start Date: 12/02/2014
Page No: 5

Turning Movement Peak Hour Data (5:15 PM)

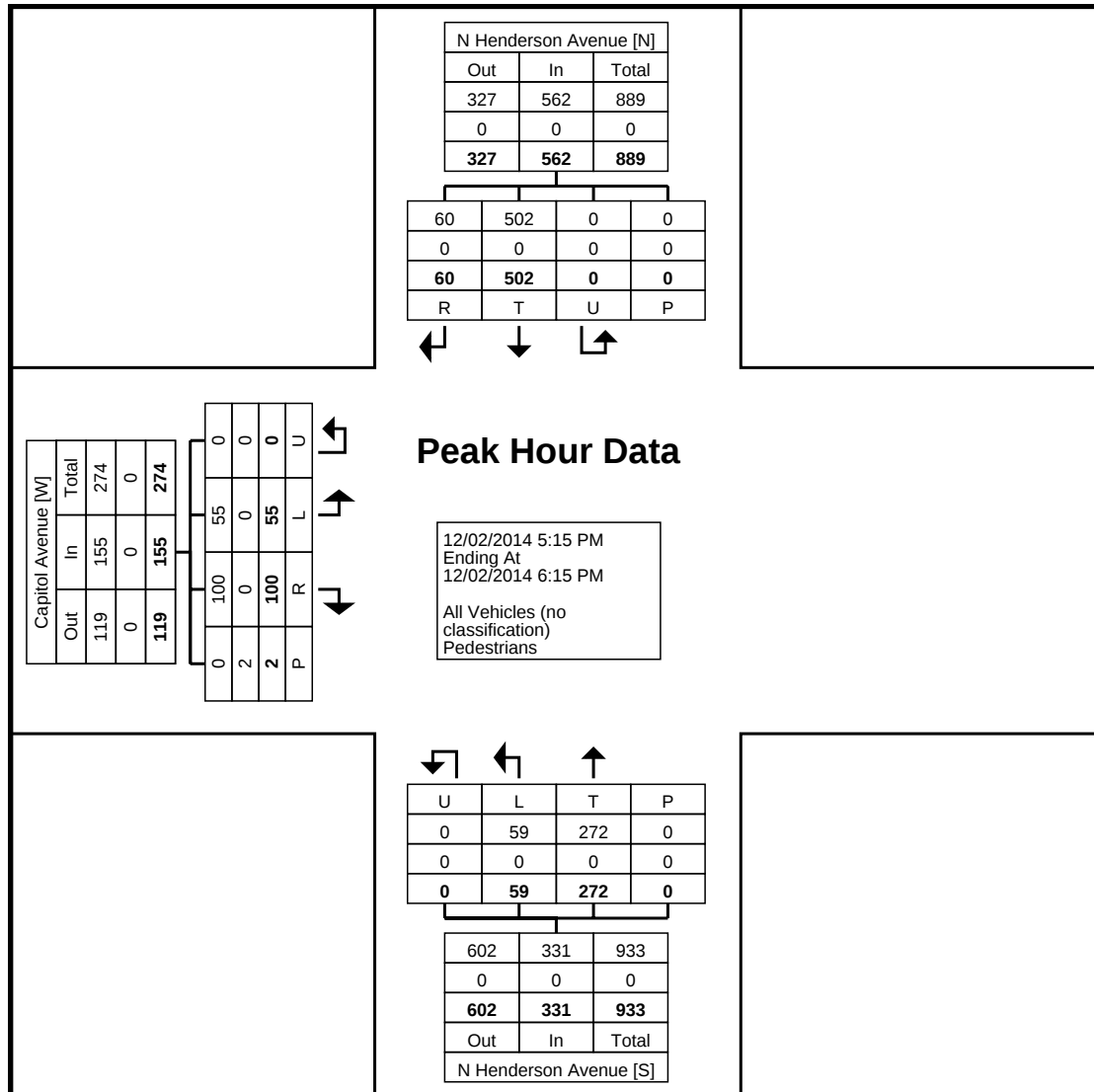
Start Time	N Henderson Avenue Southbound					N Henderson Avenue Northbound					Capitol Avenue Eastbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
5:15 PM	146	17	0	0	163	13	70	0	0	83	13	26	0	0	39	285
5:30 PM	120	17	0	0	137	15	64	0	0	79	8	16	0	2	24	240
5:45 PM	105	13	0	0	118	16	76	0	0	92	17	30	0	0	47	257
6:00 PM	131	13	0	0	144	15	62	0	0	77	17	28	0	0	45	266
Total	502	60	0	0	562	59	272	0	0	331	55	100	0	2	155	1048
Approach %	89.3	10.7	0.0	-	-	17.8	82.2	0.0	-	-	35.5	64.5	0.0	-	-	-
Total %	47.9	5.7	0.0	-	53.6	5.6	26.0	0.0	-	31.6	5.2	9.5	0.0	-	14.8	-
PHF	0.860	0.882	0.000	-	0.862	0.922	0.895	0.000	-	0.899	0.809	0.833	0.000	-	0.824	0.919
All Vehicles (no classification)	502	60	0	-	562	59	272	0	-	331	55	100	0	-	155	1048
% All Vehicles (no classification)	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Count Name: N Henderson
Avenue at Capitol Avenue
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Start Date: 12/02/2014
Page No: 6



Turning Movement Peak Hour Data Plot (5:15 PM)



C. J. Hensch & Associates Inc.
5215 Sycamore Ave.
Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at Capitol Avenue
Site Code: 2
Start Date: 12/02/2014
Page No: 7

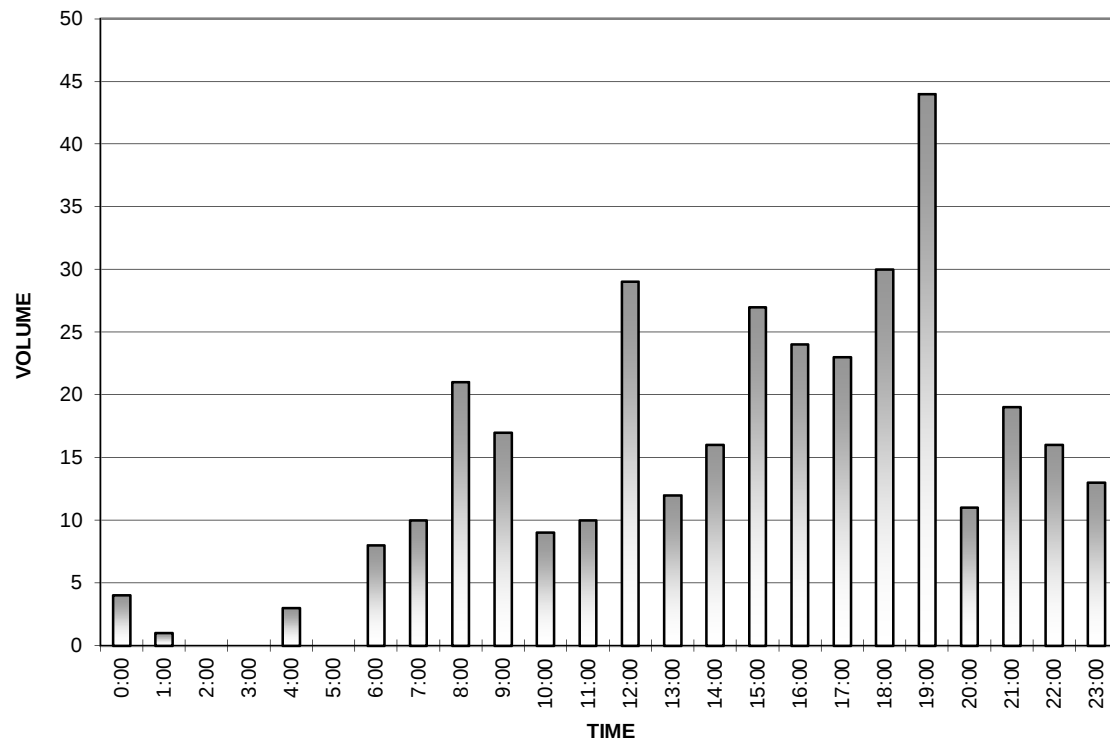
NB Glencoe Street between Henderson Avenue and Madera Street

Date Began:
12/4/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	2	2	0	0	4
1:00	0	0	1	0	1
2:00	0	0	0	0	0
3:00	0	0	0	0	0
4:00	1	0	2	0	3
5:00	0	0	0	0	0
6:00	2	0	2	4	8
7:00	1	3	2	4	10
8:00	4	8	6	3	21
9:00	5	5	4	3	17
10:00	2	4	2	1	9
11:00	2	0	4	4	10
12:00	8	4	8	9	29
13:00	6	2	2	2	12
14:00	3	5	4	4	16
15:00	5	12	6	4	27
16:00	4	8	8	4	24
17:00	8	4	5	6	23
18:00	8	6	10	6	30
19:00	14	14	7	9	44
20:00	1	4	4	2	11
21:00	7	2	6	4	19
22:00	4	4	6	2	16
23:00	4	6	2	1	13

TOTAL: 347

The A.M. peak hour from 8:15 to 9:15 is 22
The P.M. peak hour from 19:00 to 20:00 is 44



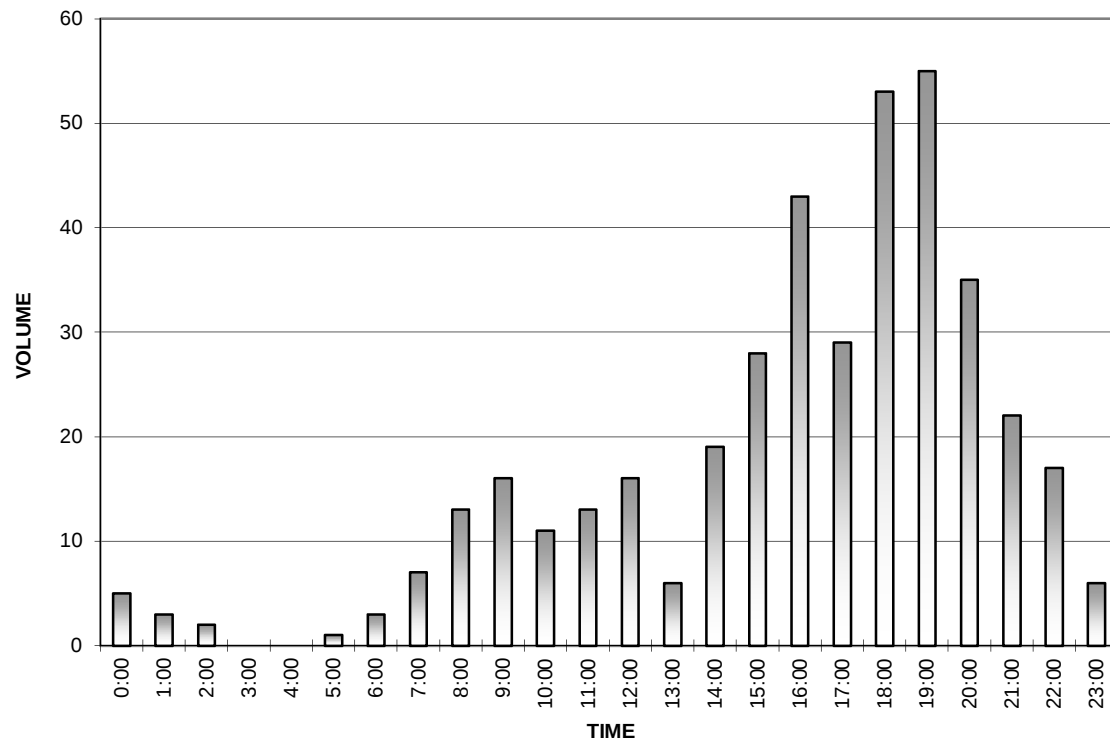
SB Glencoe Street between N Henderson Avenue and Madera Street

Date Began:
12/4/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	1	4	0	0	5
1:00	0	1	0	2	3
2:00	1	0	1	0	2
3:00	0	0	0	0	0
4:00	0	0	0	0	0
5:00	0	0	0	1	1
6:00	0	0	3	0	3
7:00	0	0	3	4	7
8:00	1	7	4	1	13
9:00	6	6	2	2	16
10:00	4	2	3	2	11
11:00	4	2	3	4	13
12:00	3	6	3	4	16
13:00	2	1	0	3	6
14:00	2	6	5	6	19
15:00	8	7	3	10	28
16:00	12	13	10	8	43
17:00	6	7	5	11	29
18:00	9	16	14	14	53
19:00	14	18	14	9	55
20:00	11	10	6	8	35
21:00	6	4	6	6	22
22:00	5	6	2	4	17
23:00	1	2	2	1	6

TOTAL: 403

The A.M. peak hour from 8:15 to 9:15 is 18
The P.M. peak hour from 18:45 to 19:45 is 60





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Count Name: N Henderson
Avenue at Glencoe Street
Site Code: 3
Start Date: 12/02/2014
Page No: 1

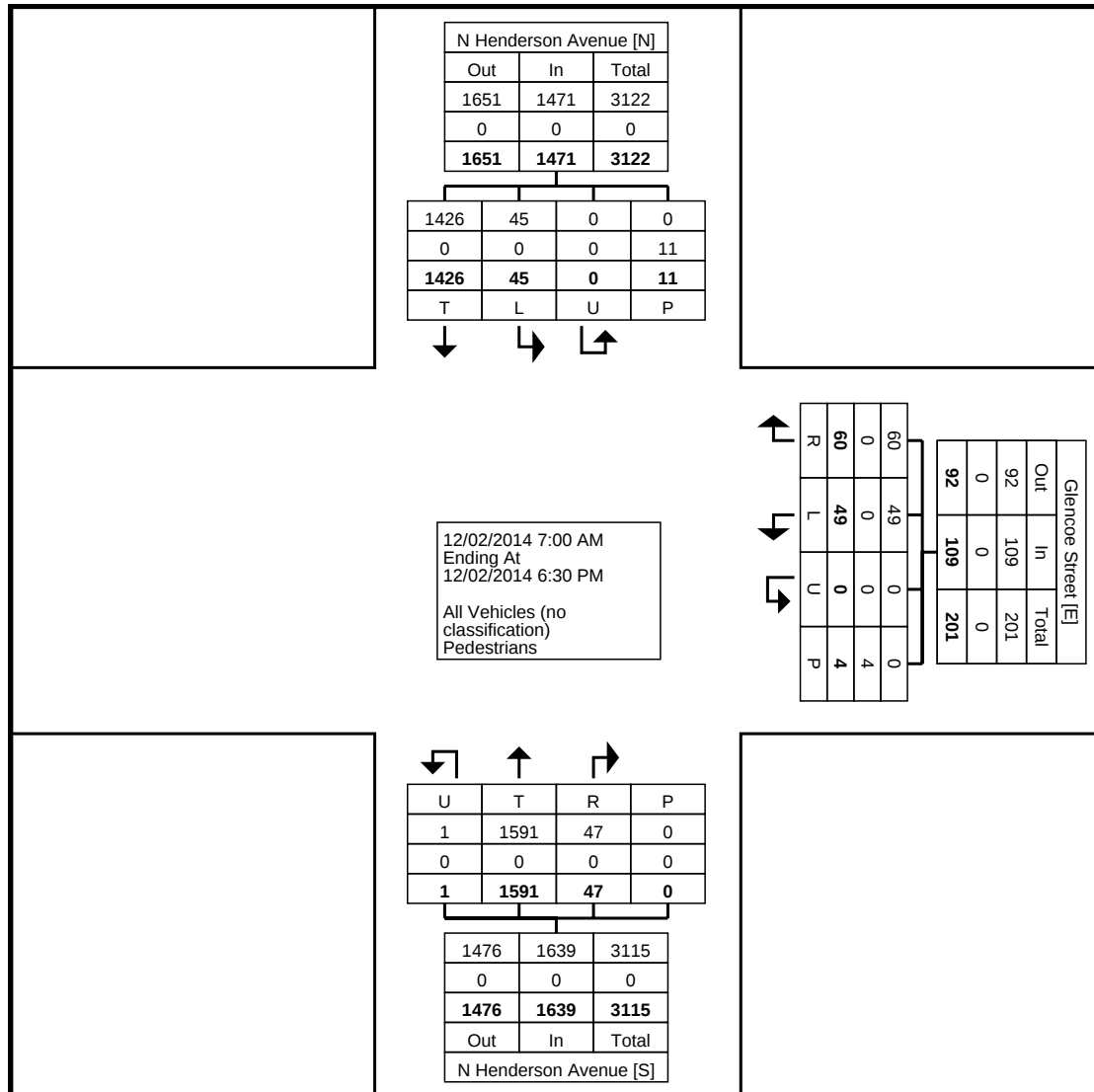
Turning Movement Data

Start Time	N Henderson Avenue Southbound					Glencoe Street Westbound					N Henderson Avenue Northbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	1	31	0	0	32	1	1	0	0	2	90	0	0	0	90	124
7:15 AM	1	30	0	0	31	0	4	0	0	4	102	5	0	0	107	142
7:30 AM	0	39	0	2	39	2	1	0	0	3	130	4	0	0	134	176
7:45 AM	1	39	0	0	40	3	4	0	0	7	146	1	0	0	147	194
Hourly Total	3	139	0	2	142	6	10	0	0	16	468	10	0	0	478	636
8:00 AM	1	45	0	1	46	2	3	0	0	5	136	0	0	0	136	187
8:15 AM	2	50	0	2	52	3	7	0	1	10	133	1	0	0	134	196
8:30 AM	3	46	0	1	49	1	3	0	0	4	122	2	1	0	125	178
8:45 AM	1	44	0	0	45	4	4	0	0	8	109	6	0	0	115	168
Hourly Total	7	185	0	4	192	10	17	0	1	27	500	9	1	0	510	729
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:30 PM	2	129	0	0	131	3	6	0	1	9	74	3	0	0	77	217
4:45 PM	5	135	0	1	140	6	6	0	0	12	69	3	0	0	72	224
Hourly Total	7	264	0	1	271	9	12	0	1	21	143	6	0	0	149	441
5:00 PM	5	135	0	2	140	3	3	0	0	6	72	2	0	0	74	220
5:15 PM	8	158	0	2	166	6	5	0	0	11	69	5	0	0	74	251
5:30 PM	3	128	0	0	131	4	3	0	0	7	76	6	0	0	82	220
5:45 PM	1	133	0	0	134	4	3	0	2	7	93	4	0	0	97	238
Hourly Total	17	554	0	4	571	17	14	0	2	31	310	17	0	0	327	929
6:00 PM	10	144	0	0	154	4	4	0	0	8	79	1	0	0	80	242
6:15 PM	1	140	0	0	141	3	3	0	0	6	91	4	0	0	95	242
Grand Total	45	1426	0	11	1471	49	60	0	4	109	1591	47	1	0	1639	3219
Approach %	3.1	96.9	0.0	-	-	45.0	55.0	0.0	-	-	97.1	2.9	0.1	-	-	-
Total %	1.4	44.3	0.0	-	45.7	1.5	1.9	0.0	-	3.4	49.4	1.5	0.0	-	50.9	-
All Vehicles (no classification)	45	1426	0	-	1471	49	60	0	-	109	1591	47	1	-	1639	3219
% All Vehicles (no classification)	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	100.0	100.0
Pedestrians	-	-	-	11	-	-	-	-	4	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-



C. J. Hensch & Associates Inc.
5215 Sycamore Ave.
Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at Glencoe Street
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Turning Movement Data Plot



C. J. Hensch & Associates Inc.
5215 Sycamore Ave.
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(281) 487-5417

Count Name: N Henderson
Avenue at Glencoe Street
Site Code: 3
Start Date: 12/02/2014
Page No: 3

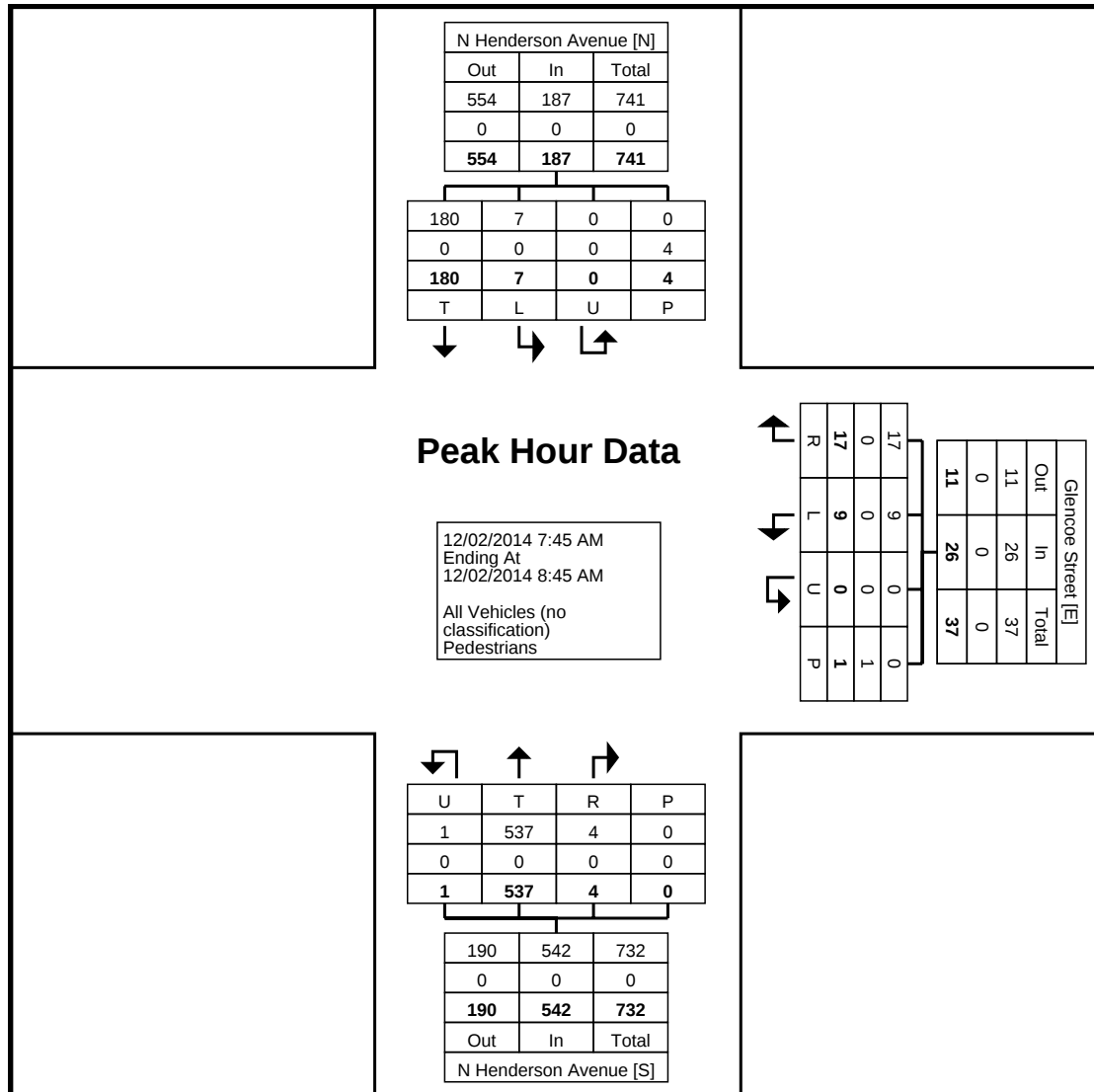
Turning Movement Peak Hour Data (7:45 AM)

Start Time	N Henderson Avenue Southbound					Glencoe Street Westbound					N Henderson Avenue Northbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	
7:45 AM	1	39	0	0	40	3	4	0	0	7	146	1	0	0	147	194
8:00 AM	1	45	0	1	46	2	3	0	0	5	136	0	0	0	136	187
8:15 AM	2	50	0	2	52	3	7	0	1	10	133	1	0	0	134	196
8:30 AM	3	46	0	1	49	1	3	0	0	4	122	2	1	0	125	178
Total	7	180	0	4	187	9	17	0	1	26	537	4	1	0	542	755
Approach %	3.7	96.3	0.0	-	-	34.6	65.4	0.0	-	-	99.1	0.7	0.2	-	-	-
Total %	0.9	23.8	0.0	-	24.8	1.2	2.3	0.0	-	3.4	71.1	0.5	0.1	-	71.8	-
PHF	0.583	0.900	0.000	-	0.899	0.750	0.607	0.000	-	0.650	0.920	0.500	0.250	-	0.922	0.963
All Vehicles (no classification)	7	180	0	-	187	9	17	0	-	26	537	4	1	-	542	755
% All Vehicles (no classification)	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	100.0	100.0
Pedestrians	-	-	-	4	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-



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Count Name: N Henderson
Avenue at Glencoe Street
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Turning Movement Peak Hour Data Plot (7:45 AM)



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5215 Sycamore Ave.
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(281) 487-5417

Count Name: N Henderson
Avenue at Glencoe Street
Site Code: 3
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Page No: 5

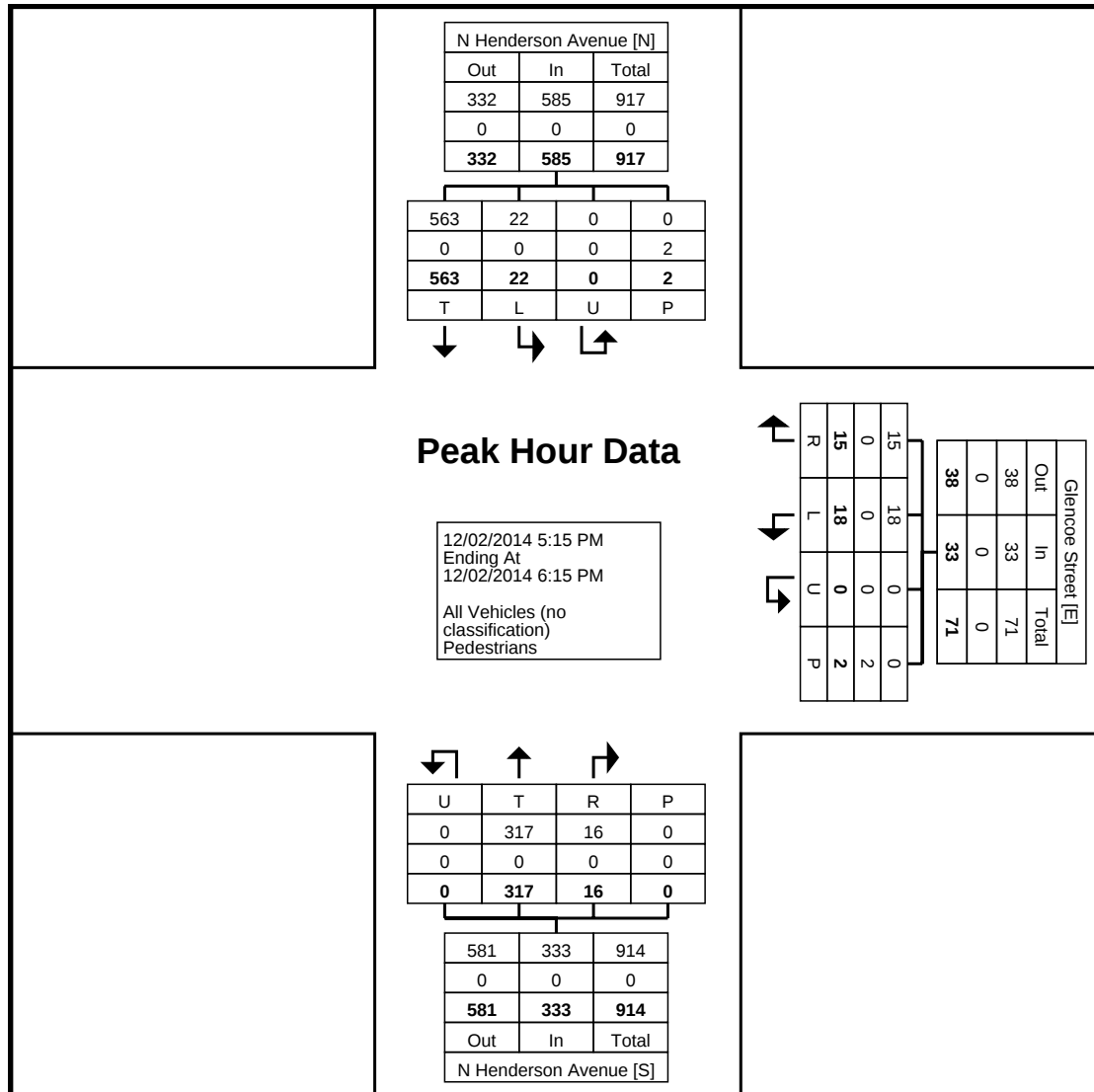
Turning Movement Peak Hour Data (5:15 PM)

Start Time	N Henderson Avenue Southbound					Glencoe Street Westbound					N Henderson Avenue Northbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	
5:15 PM	8	158	0	2	166	6	5	0	0	11	69	5	0	0	74	251
5:30 PM	3	128	0	0	131	4	3	0	0	7	76	6	0	0	82	220
5:45 PM	1	133	0	0	134	4	3	0	2	7	93	4	0	0	97	238
6:00 PM	10	144	0	0	154	4	4	0	0	8	79	1	0	0	80	242
Total	22	563	0	2	585	18	15	0	2	33	317	16	0	0	333	951
Approach %	3.8	96.2	0.0	-	-	54.5	45.5	0.0	-	-	95.2	4.8	0.0	-	-	-
Total %	2.3	59.2	0.0	-	61.5	1.9	1.6	0.0	-	3.5	33.3	1.7	0.0	-	35.0	-
PHF	0.550	0.891	0.000	-	0.881	0.750	0.750	0.000	-	0.750	0.852	0.667	0.000	-	0.858	0.947
All Vehicles (no classification)	22	563	0	-	585	18	15	0	-	33	317	16	0	-	333	951
% All Vehicles (no classification)	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	2	-	-	-	-	2	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-



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Count Name: N Henderson
Avenue at Glencoe Street
Site Code: 3
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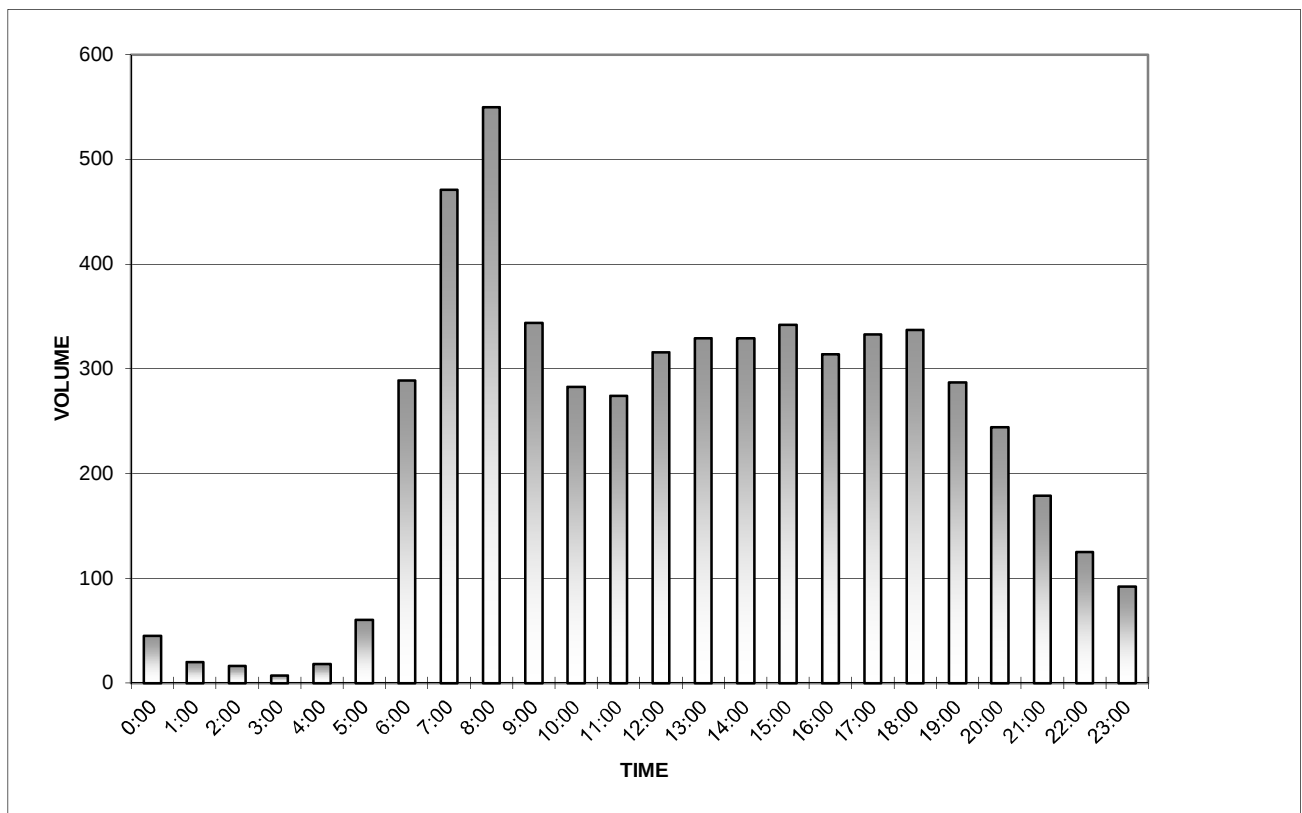
Count Name: N Henderson
Avenue at Glencoe Street
Site Code: 3
Start Date: 12/02/2014
Page No: 7

NB Henderson Avenue between Glencoe Street and Moser Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	14	8	12	11	45
1:00	6	4	6	4	20
2:00	3	4	5	4	16
3:00	2	2	2	1	7
4:00	6	2	5	5	18
5:00	7	14	19	20	60
6:00	40	80	87	82	289
7:00	90	104	134	143	471
8:00	154	144	127	125	550
9:00	92	80	88	84	344
10:00	70	58	85	70	283
11:00	62	57	70	85	274
12:00	80	82	72	82	316
13:00	70	79	90	90	329
14:00	80	78	91	80	329
15:00	100	68	98	76	342
16:00	78	79	83	74	314
17:00	72	82	92	87	333
18:00	86	95	86	70	337
19:00	72	74	68	73	287
20:00	80	50	58	56	244
21:00	54	45	44	36	179
22:00	48	24	29	24	125
23:00	29	20	21	22	92
TOTAL:					5604

The A.M. peak hour from 7:30 to 8:30 is 575
The P.M. peak hour from 17:30 to 18:30 is 360



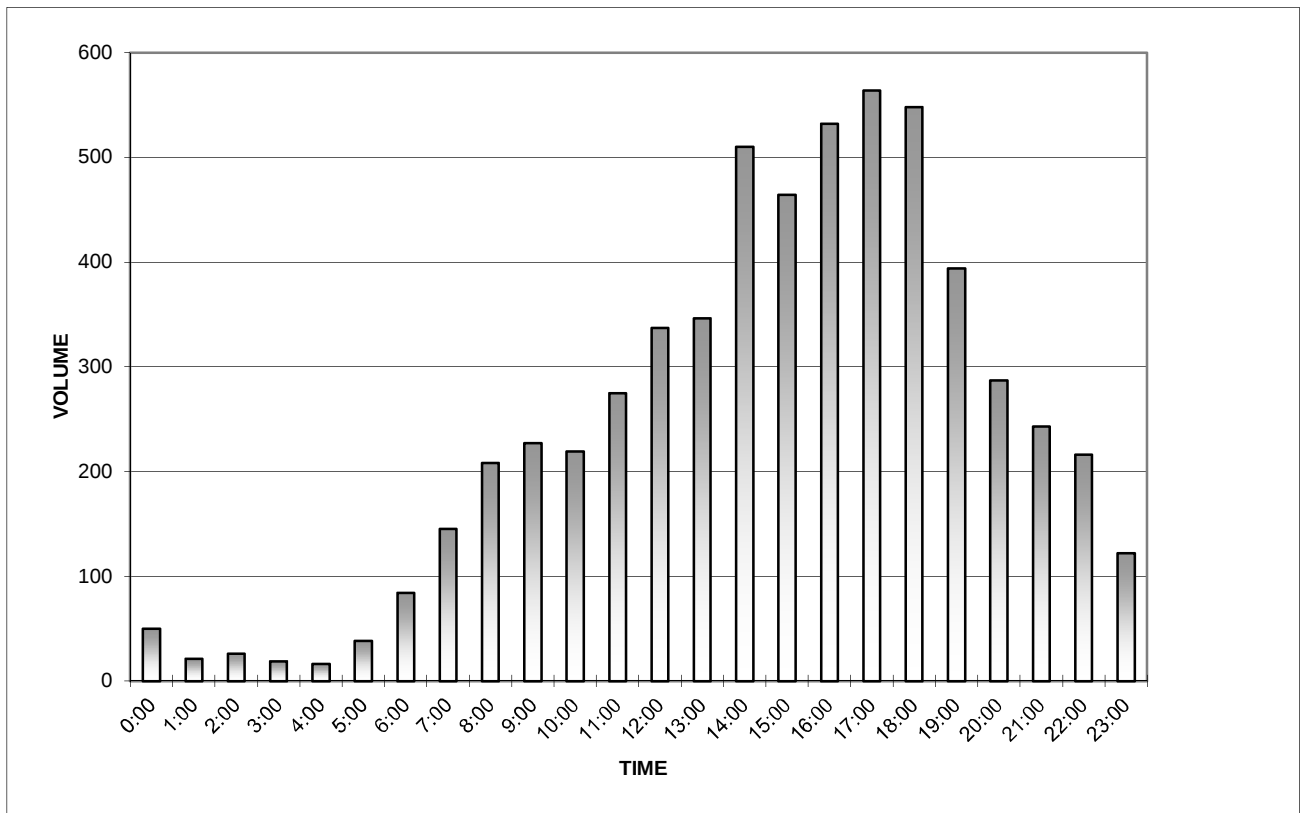
SB Henderson Avenue between Glencoe Street and Moser Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	18	12	12	8	50
1:00	11	6	2	2	21
2:00	10	8	4	4	26
3:00	3	2	6	8	19
4:00	3	2	4	7	16
5:00	5	13	6	14	38
6:00	14	18	16	36	84
7:00	33	36	38	38	145
8:00	54	52	54	48	208
9:00	52	60	45	70	227
10:00	42	61	50	66	219
11:00	58	74	68	75	275
12:00	84	65	94	94	337
13:00	91	62	97	96	346
14:00	100	122	154	134	510
15:00	138	118	104	104	464
16:00	128	136	130	138	532
17:00	134	166	134	130	564
18:00	156	142	140	110	548
19:00	108	100	102	84	394
20:00	78	71	72	66	287
21:00	66	73	60	44	243
22:00	65	59	54	38	216
23:00	36	39	23	24	122

TOTAL: 5891

The A.M. peak hour from 9:00 to 10:00 is 227
The P.M. peak hour from 17:15 to 18:15 is 586



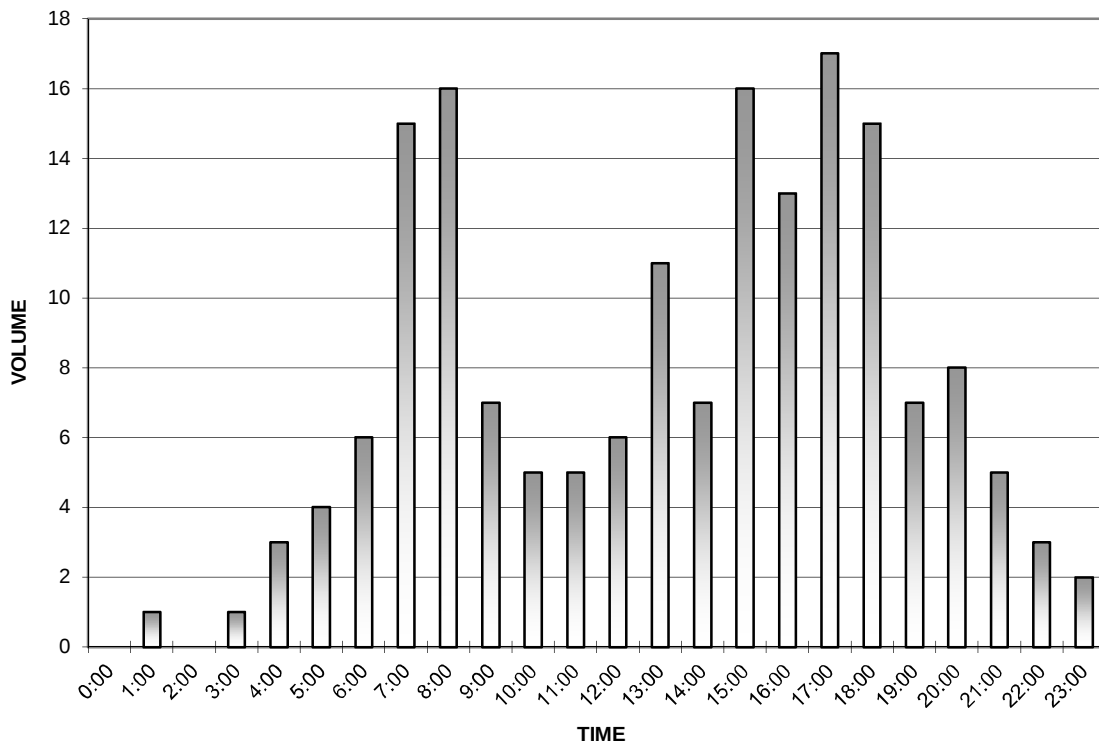
NB Madera Street between Glencoe Street and McMillan Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	0	0	0	0	0
1:00	0	0	0	1	1
2:00	0	0	0	0	0
3:00	0	1	0	0	1
4:00	0	2	0	1	3
5:00	1	2	1	0	4
6:00	2	0	2	2	6
7:00	3	3	6	3	15
8:00	1	6	5	4	16
9:00	3	1	2	1	7
10:00	2	0	1	2	5
11:00	1	1	1	2	5
12:00	4	1	1	0	6
13:00	0	3	2	6	11
14:00	0	1	2	4	7
15:00	6	4	3	3	16
16:00	6	2	4	1	13
17:00	6	3	6	2	17
18:00	3	4	4	4	15
19:00	3	2	0	2	7
20:00	0	2	4	2	8
21:00	0	1	3	1	5
22:00	1	0	2	0	3
23:00	0	1	1	0	2

TOTAL: 173

The A.M. peak hour from 8:15 to 9:15 is 18
The P.M. peak hour from 17:00 to 18:00 is 17



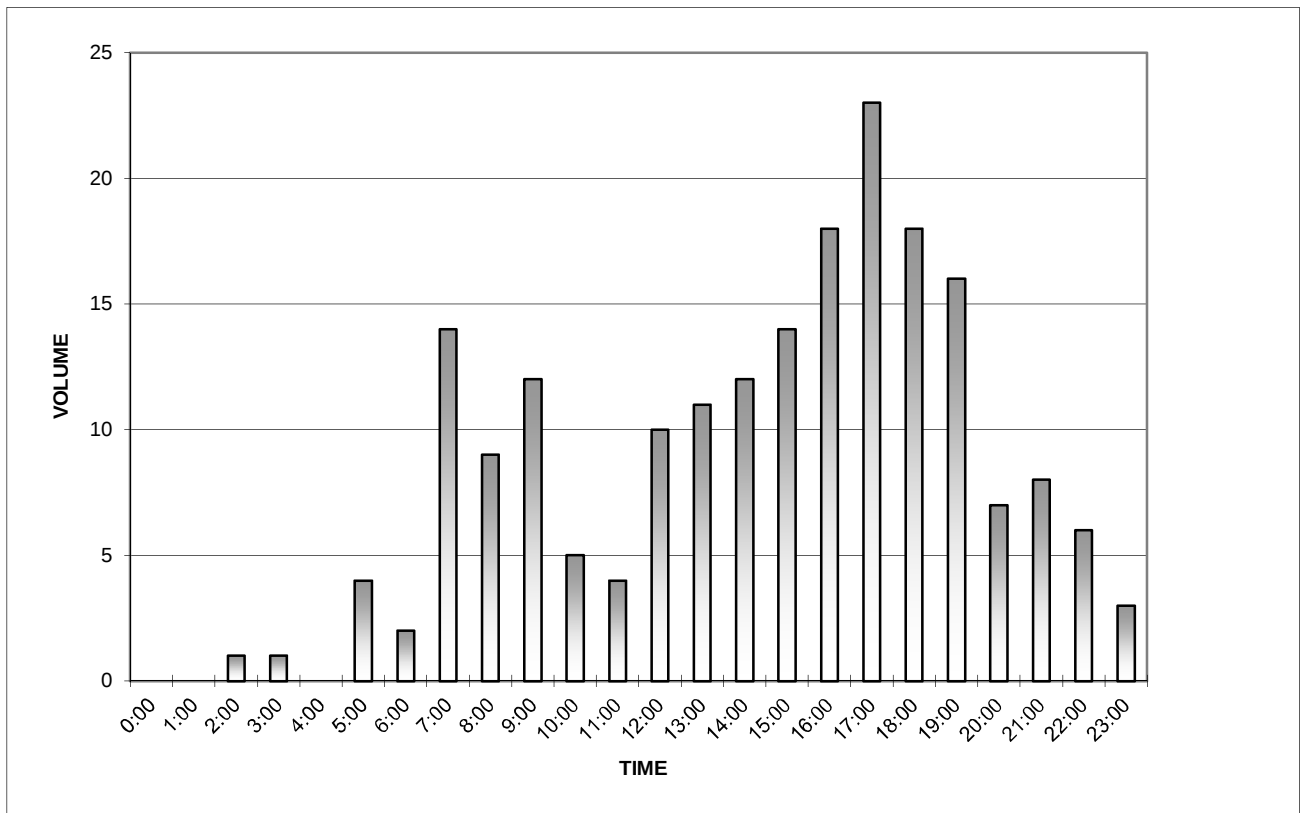
SB Madera Street between Glencoe Street and McMillan Avenue

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	0	0	0	0	0
1:00	0	0	0	0	0
2:00	0	1	0	0	1
3:00	0	0	0	1	1
4:00	0	0	0	0	0
5:00	0	2	1	1	4
6:00	0	0	0	2	2
7:00	4	3	5	2	14
8:00	2	2	4	1	9
9:00	2	4	4	2	12
10:00	1	1	1	2	5
11:00	1	0	1	2	4
12:00	4	4	0	2	10
13:00	1	3	4	3	11
14:00	0	4	4	4	12
15:00	2	5	2	5	14
16:00	4	6	5	3	18
17:00	2	8	8	5	23
18:00	2	7	5	4	18
19:00	5	1	5	5	16
20:00	2	2	0	3	7
21:00	2	3	2	1	8
22:00	0	1	3	2	6
23:00	0	2	0	1	3

TOTAL: 198

The A.M. peak hour from 7:00 to 8:00 is 14
The P.M. peak hour from 17:15 to 18:15 is 23



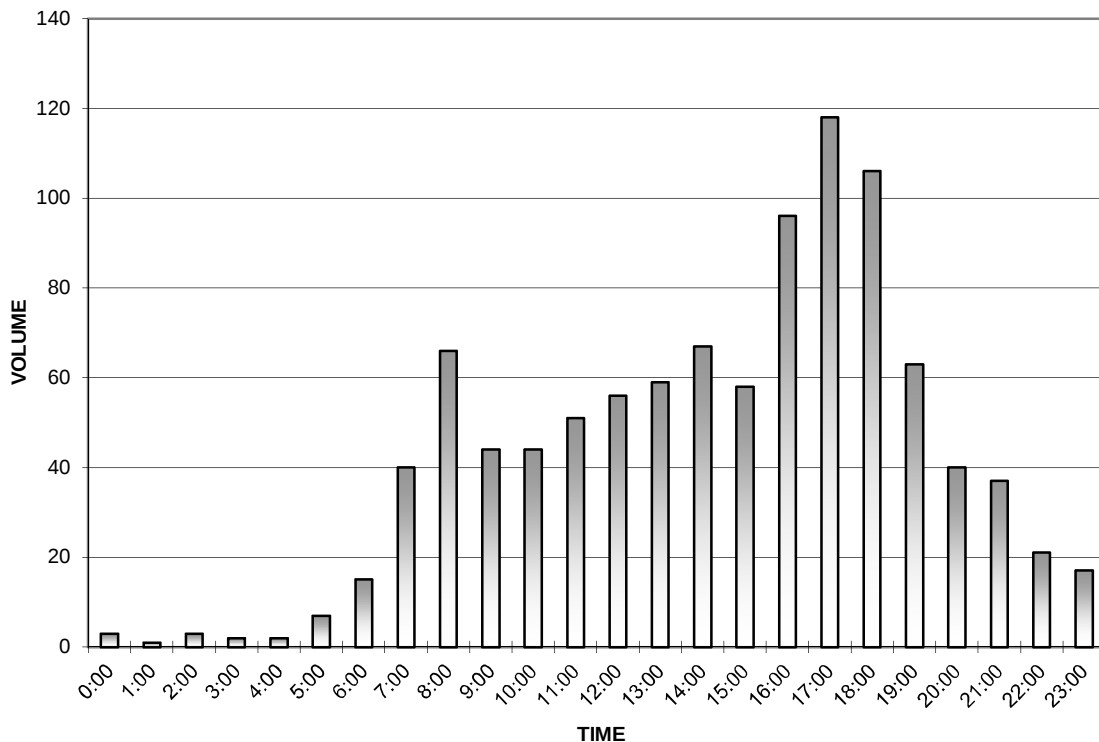
NB McMillan Avenue between Henderson Avenue and Madera Street

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	0	1	1	1	3
1:00	0	1	0	0	1
2:00	1	0	0	2	3
3:00	1	0	1	0	2
4:00	0	1	0	1	2
5:00	0	1	2	4	7
6:00	2	5	1	7	15
7:00	3	12	11	14	40
8:00	19	18	21	8	66
9:00	14	8	10	12	44
10:00	10	10	6	18	44
11:00	8	14	13	16	51
12:00	14	16	14	12	56
13:00	12	14	18	15	59
14:00	11	12	20	24	67
15:00	20	14	7	17	58
16:00	22	24	19	31	96
17:00	26	24	30	38	118
18:00	35	31	24	16	106
19:00	19	16	15	13	63
20:00	11	11	13	5	40
21:00	9	7	13	8	37
22:00	4	8	4	5	21
23:00	7	1	6	3	17

TOTAL: 1016

The A.M. peak hour from 7:45 to 8:45 is 72
The P.M. peak hour from 17:30 to 18:30 is 134

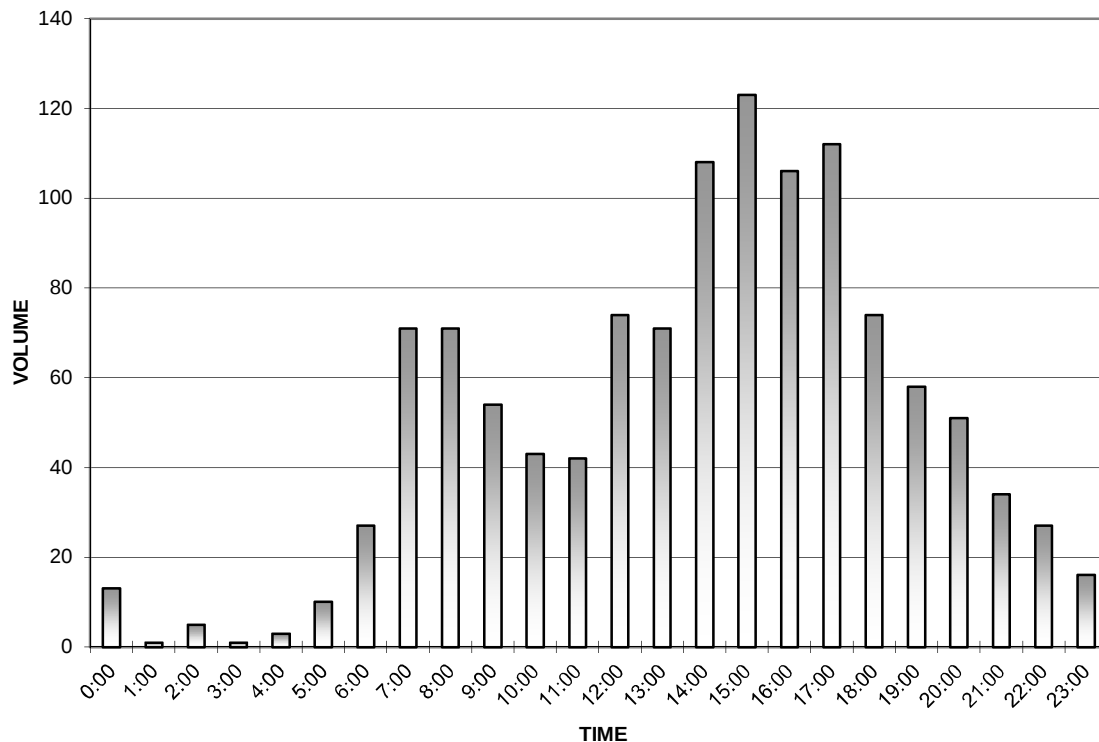


SB McMillan Avenue between Henderson Avenue and Madera Street

Date Began:
12/2/2014

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	6	2	1	4	13
1:00	1	0	0	0	1
2:00	0	3	1	1	5
3:00	0	0	0	1	1
4:00	0	2	0	1	3
5:00	0	0	5	5	10
6:00	3	10	6	8	27
7:00	10	14	19	28	71
8:00	16	25	18	12	71
9:00	18	16	10	10	54
10:00	14	11	8	10	43
11:00	12	4	8	18	42
12:00	22	18	16	18	74
13:00	20	22	19	10	71
14:00	19	12	27	50	108
15:00	39	37	28	19	123
16:00	31	19	30	26	106
17:00	24	30	18	40	112
18:00	18	18	22	16	74
19:00	14	16	11	17	58
20:00	15	13	13	10	51
21:00	12	9	7	6	34
22:00	8	8	10	1	27
23:00	6	2	6	2	16
TOTAL:					1195

The A.M. peak hour from 7:30 to 8:30 is 88
The P.M. peak hour from 14:45 to 15:45 is 154





C. J. Hensch & Associates Inc.
5215 Sycamore Ave.

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Count Name: N Henderson
Avenue at McMillan Avenue
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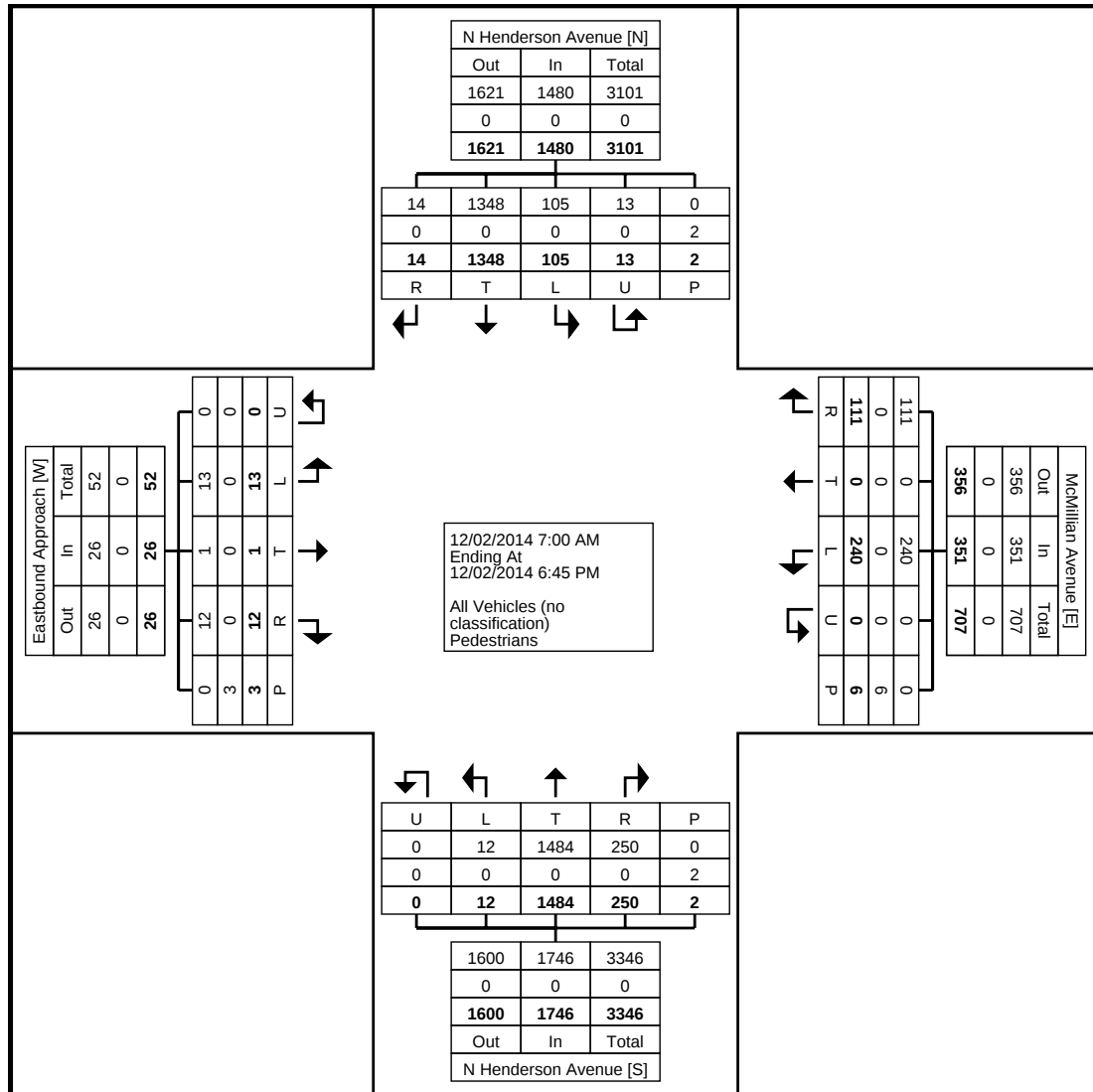
Turning Movement Data

Start Time	N Henderson Avenue Southbound						McMillian Avenue Westbound						N Henderson Avenue Northbound						Eastbound Approach Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	3	23	0	0	0	26	6	0	4	0	0	10	0	85	3	0	0	88	0	0	1	0	0	1	125
7:15 AM	3	38	1	0	0	42	10	0	3	0	0	13	0	90	7	0	0	97	1	0	0	0	1	1	153
7:30 AM	2	32	0	1	0	35	19	0	4	0	0	23	2	123	10	0	0	135	0	0	1	0	0	1	194
7:45 AM	3	41	0	5	0	49	14	0	10	0	1	24	0	133	15	0	0	148	0	0	0	0	0	0	221
Hourly Total	11	134	1	6	0	152	49	0	21	0	1	70	2	431	35	0	0	468	1	0	2	0	1	3	693
8:00 AM	4	46	3	2	0	55	13	0	5	0	0	18	1	127	13	0	0	141	0	0	0	0	0	0	214
8:15 AM	4	46	2	2	0	54	15	0	9	0	0	24	2	120	9	0	0	131	0	0	1	0	0	1	210
8:30 AM	6	42	2	2	0	52	11	0	7	0	0	18	1	115	19	0	0	135	1	0	2	0	0	3	208
8:45 AM	6	38	0	1	0	45	9	0	5	0	0	14	1	111	12	0	0	124	0	0	0	0	0	0	183
Hourly Total	20	172	7	7	0	206	48	0	26	0	0	74	5	473	53	0	0	531	1	0	3	0	0	4	815
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	4	122	0	0	2	126	19	0	6	0	2	25	1	72	18	0	1	91	0	0	0	0	1	0	242
4:45 PM	13	118	0	0	0	131	16	0	8	0	1	24	0	68	15	0	0	83	1	1	2	0	1	4	242
Hourly Total	17	240	0	0	2	257	35	0	14	0	3	49	1	140	33	0	1	174	1	1	2	0	2	4	484
5:00 PM	8	134	1	0	0	143	17	0	8	0	1	25	1	67	18	0	0	86	1	0	0	0	0	1	255
5:15 PM	9	145	1	0	0	155	24	0	4	0	1	28	0	68	17	0	0	85	0	0	0	0	0	0	268
5:30 PM	7	135	2	0	0	144	10	0	13	0	0	23	0	74	30	0	1	104	3	0	1	0	0	4	275
5:45 PM	10	121	0	0	0	131	27	0	10	0	0	37	1	85	25	0	0	111	3	0	1	0	0	4	283
Hourly Total	34	535	4	0	0	573	78	0	35	0	2	113	2	294	90	0	1	386	7	0	2	0	0	9	1081
6:00 PM	12	140	2	0	0	154	15	0	4	0	0	19	1	70	18	0	0	89	2	0	3	0	0	5	267
6:15 PM	11	127	0	0	0	138	15	0	11	0	0	26	1	76	21	0	0	98	1	0	0	0	0	1	263
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	105	1348	14	13	2	1480	240	0	111	0	6	351	12	1484	250	0	2	1746	13	1	12	0	3	26	3603
Approach %	7.1	91.1	0.9	0.9	-	-	68.4	0.0	31.6	0.0	-	-	0.7	85.0	14.3	0.0	-	-	50.0	3.8	46.2	0.0	-	-	-
Total %	2.9	37.4	0.4	0.4	-	41.1	6.7	0.0	3.1	0.0	-	9.7	0.3	41.2	6.9	0.0	-	48.5	0.4	0.0	0.3	0.0	-	0.7	-
All Vehicles (no classification)	105	1348	14	13	-	1480	240	0	111	0	-	351	12	1484	250	0	-	1746	13	1	12	0	-	26	3603
% All Vehicles (no classification)	100.0	100.0	100.0	100.0	-	100.0	100.0	-	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	-	2	-	-	-	-	6	-	-	-	-	-	-	2	-	-	-	-	3	-	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-

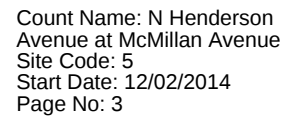


C. J. Hensch & Associates Inc.
5215 Sycamore Ave.
Pasadena, Texas, United States 77503
(281) 487-5417

Count Name: N Henderson
Avenue at McMillan Avenue
Site Code: 5
Start Date: 12/02/2014
Page No: 2



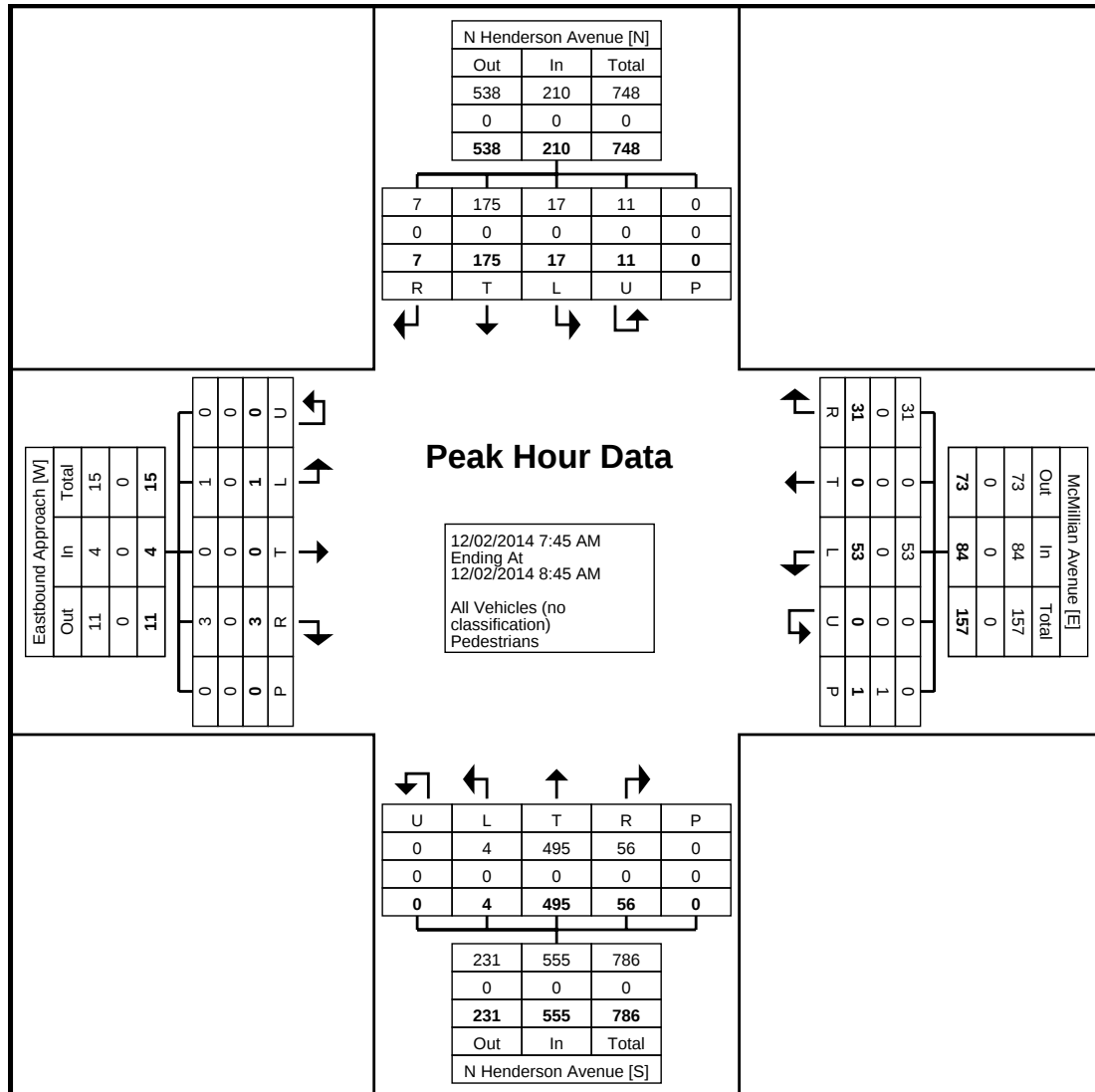
Turning Movement Data Plot





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Turning Movement Peak Hour Data Plot (7:45 AM)



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Page No: 5

Turning Movement Peak Hour Data (5:15 PM)

Start Time	N Henderson Avenue Southbound						McMillan Avenue Westbound						N Henderson Avenue Northbound						Eastbound Approach Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
5:15 PM	9	145	1	0	0	155	24	0	4	0	1	28	0	68	17	0	0	85	0	0	0	0	0	0	268
5:30 PM	7	135	2	0	0	144	10	0	13	0	0	23	0	74	30	0	1	104	3	0	1	0	0	4	275
5:45 PM	10	121	0	0	0	131	27	0	10	0	0	37	1	85	25	0	0	111	3	0	1	0	0	4	283
6:00 PM	12	140	2	0	0	154	15	0	4	0	0	19	1	70	18	0	0	89	2	0	3	0	0	5	267
Total	38	541	5	0	0	584	76	0	31	0	1	107	2	297	90	0	1	389	8	0	5	0	0	13	1093
Approach %	6.5	92.6	0.9	0.0	-	-	71.0	0.0	29.0	0.0	-	-	0.5	76.3	23.1	0.0	-	-	61.5	0.0	38.5	0.0	-	-	-
Total %	3.5	49.5	0.5	0.0	-	53.4	7.0	0.0	2.8	0.0	-	9.8	0.2	27.2	8.2	0.0	-	35.6	0.7	0.0	0.5	0.0	-	1.2	-
PHF	0.792	0.933	0.625	0.000	-	0.942	0.704	0.000	0.596	0.000	-	0.723	0.500	0.874	0.750	0.000	-	0.876	0.667	0.000	0.417	0.000	-	0.650	0.966
All Vehicles (no classification)	38	541	5	0	-	584	76	0	31	0	-	107	2	297	90	0	-	389	8	0	5	0	-	13	1093
% All Vehicles (no classification)	100.0	100.0	100.0	-	-	100.0	100.0	-	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	-	100.0	-	-	100.0	100.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-





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Excerpt – Hourly Capacity per Lane Reference

**NCTCOG, *Dallas-Fort Worth Regional Travel Model (DFWRTM):
Model Description, September 2009***

DALLAS-FORT WORTH REGIONAL TRAVEL MODEL (DFWRTM): MODEL DESCRIPTION

Roadway Preparation

The Roadway Preparation program imports a TransCAD roadway file which contains approach links, and prepares the roadway for skimming by creating fields that will be used downstream in the model run and initializing values of some of these fields.

Inputs

APPRDWY.DBD – A TransCAD geographic file that contains the approach links.

ACTRDWY.DBD – A TransCAD geographic file from another model run from which initial times will be borrowed.

FreeSpeedParameters.DBF – a Free Speed Parameters file which relates functional class, area type, control A and control B with a value for delay in the AB and BA direction.

CPIFactors.DBF – A CPI Factors file where each row lists a year and the Consumer Price Index for that year.

TSZ.DBD – The zone layer file which will be used to identify the TSZ which each link belongs to; this process is called tagging in TransCAD.

PATRIPS.DBF – A file produced from the Trip Generation module which associates the TSZ with an area type. This PATRIPS.DBF used will correspond to the Zonal Activity folder chosen.

Toll Value Year – A year for which toll values are adjusted to 1999 based on CPI Factors. It should represent the year for which toll values have been coded.

Steps

The Roadway Preparation Program proceeds through the following steps.

1. Set up the data arrays.
 - a. AMFactor, PMFactor, OPFactor – These factors are used in the conversion of capacity from hourly to time period. Factors are defined by functional class 1-8 and listed in Exhibit 3-11. These factors were changed in July 2005 and documented in “Capacity factors_RE 1999 New Run vs. Run 243 Comparison.”

Exhibit 3-11: Capacity Conversion of Factors from Hourly to Time Period

TIME PERIOD	FUNCTIONAL CLASS						
	Freeway	Principal Arterial	Minor Arterial	Collector	Freeway Ramp	Frontage Road	HOV
AM	2.3	2.1	2.1	2.1	2.3	2.1	2.3
PM	3.2	2.9	2.9	2.9	3.2	2.9	3.2
OP	10.0	9.2	9.2	9.2	10.0	9.2	10.0

- b. Roadway Approach Link Speeds – The Roadway Approach Link speeds are off-peak and peak speeds for each area type; the speeds are listed in Exhibit 3-12.

Exhibit 3-12: Centroid Speed by Area Type and Time Period

Area Type	Off-Peak Speed	Peak Speed
Central Business District (CBD)	15	11
Outer Business District	23	13
Urban Residential	27	17
Suburban Residential	33	21
Rural	39	23

- c. Hourly Capacity Per Lane (Divided or One-Way Roads) – The hourly capacity per lane for divided roads is given by area type and functional class in Exhibit 3-13.¹

Exhibit 3-13: Hourly Capacity Per Lane – Divided or One-Way Roads¹

Area Type	Functional Class						
	Freeway	Principal Arterial	Minor Arterial	Collector	Freeway Ramp	Frontage Road	HOV
CBD	2050	725	725	475	1250	725	2050
Outer Business District	2125	775	775	500	1375	775	2125
Urban Residential	2150	850	825	525	1425	850	2150
Suburban Residential	2225	925	900	575	1600	900	2225
Rural	2300	1025	975	600	1725	975	2300

- d. Hourly Capacity Per Lane (Undivided Roads) – The hourly capacity per lane for undivided roads is given by area type and functional class in Exhibit 3-14.

¹ The values in the body of the table are expressed in passenger cars per hour per lane (pcphpl). They correspond to volumes at level-of-service (LOS) E. The calculation of LOS requires the conversion of the model volume to passenger car equivalents (PCE). These adjustments are treated in an aggregate manner in the travel model based on the actual field data on the freeway network as follows:

LOS	AM Volume Adjustment Factor	PM Volume Adjustment Factor	Upper Threshold for Volume to Capacity Ratio
A, B, C	1.06	1.00	0.65
D or E	1.18	1.25	1.00

The model volumes are taken from the AMHRVOL_AB / AMHRVOL_BA or PMHRVOL_AB / PMHRVOL_BA fields. The corresponding capacity values are taken from the AMHRCAP_AB / AMHRCAP_BA or PMHRCAP_AB / PMHRCAP_BA fields respectively.

Exhibit 3-14: Hourly Capacity Per Lane – Undivided Roads¹

Area Type	Functional Class						
	Freeway	Principal Arterial	Minor Arterial	Collector	Freeway Ramp	Frontage Road	HOV
CBD	N/A	650	650	425	1250	650	N/A
Outer Business District	N/A	725	725	450	1375	725	N/A
Urban Residential	N/A	775	750	475	1425	750	N/A
Suburban Residential	N/A	875	825	525	1600	825	N/A
Rural	N/A	925	875	550	1725	875	N/A

- e. Peak and off-peak ratios are used for estimating the initial loaded travel times. The peak and off-peak ratios are calculated for each functional class and area type pair.

$$pkRatio_{fa} = \begin{cases} \frac{\sum \lfloor Old PKFRTIME \rfloor_{fa}}{\sum \lfloor Old PKTIME \rfloor_{fa}}, & \text{if } \sum \lfloor Old PKTIME \rfloor_{fa} > \sum \lfloor Old PKFRTIME \rfloor_{fa} \text{ and } \sum \lfloor Old PKTIME \rfloor_{fa} > 0, \\ 0.999 & , \text{Otherwise} \end{cases} \quad (3-1)$$

$$opRatio_{fa} = \begin{cases} \frac{\sum \lfloor Old OPFRTIME \rfloor_{fa}}{\sum \lfloor Old OPTIME \rfloor_{fa}}, & \text{if } \sum \lfloor Old OPTIME \rfloor_{fa} > \sum \lfloor Old OPFRTIME \rfloor_{fa} \text{ and } \sum \lfloor Old OPTIME \rfloor_{fa} > 0, \\ 0.999 & , \text{Otherwise} \end{cases} \quad (3-2)$$

where

f = functional class between 1 and 8.

a = area type.

$\sum \lfloor Old PKFRTIME \rfloor_{fa}$ = Sum of peak free travel time from the “Copy From” roadway for functional class f and area type a . The peak free travel times are taken from the PKFRTIME_AB and PKFRTIME_BA fields from the ACTRDWY.DBD.

$\sum \lfloor Old PKTIME \rfloor_{fa}$ = Sum of peak loaded travel time from the “Copy From” roadway for functional class f and area type a . The peak loaded travel times are taken from the PKTIME_AB and PKTIME_BA fields from the ACTRDWY.DBD.



SynchroTM Output - 2014 Existing Traffic

HCM 2010 Signalized Intersection Summary

2014 AM Existing
3: Belmont Ave. & Henderson Ave.

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (veh/h)	25	178	17	12	556	15	50	64	11	5	173	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	190.0	186.3	190.0	186.3	190.0	190.0
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Cap, veh/h	251	742	69	553	798	21	296	359	55	65	489	250
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	800	1679	157	1166	1806	48	498	848	130	7	1157	591
Grp Volume(v), veh/h	27	0	211	13	0	620	136	0	0	291	0	0
Grp Sat Flow(s),veh/h/ln	800	0	1835	1166	0	1854	1477	0	0	1755	0	0
Q Serve(g_s), s	1.7	0.0	4.3	0.4	0.0	16.6	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	18.3	0.0	4.3	4.7	0.0	16.6	2.7	0.0	0.0	6.8	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.03	0.40		0.09	0.02		0.34
Lane Grp Cap(c), veh/h	251	0	811	553	0	820	709	0	0	804	0	0
V/C Ratio(X)	0.11	0.00	0.26	0.02	0.00	0.76	0.19	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	466	0	1303	865	0	1317	709	0	0	804	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.5	0.0	10.4	11.9	0.0	13.8	10.6	0.0	0.0	11.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.2	0.0	0.0	1.5	0.6	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.3	0.0	1.7	0.1	0.0	7.0	1.3	0.0	0.0	2.9	0.0	0.0
Lane Grp Delay (d), s/veh	21.7	0.0	10.6	11.9	0.0	15.3	11.2	0.0	0.0	13.1	0.0	0.0
Lane Grp LOS	C		B	B		B	B			B		
Approach Vol, veh/h	238				633			136			291	
Approach Delay, s/veh	11.8				15.2			11.2			13.1	
Approach LOS	B				B			B			B	
Timer												
Assigned Phs	4				8			2			6	
Phs Duration (G+Y+Rc), s	30.1				30.1			29.0			29.0	
Change Period (Y+Rc), s	4.0				4.0			4.0			4.0	
Max Green Setting (Gmax), s	42.0				42.0			25.0			25.0	
Max Q Clear Time (g_c+H1), s	20.3				18.6			4.7			8.8	
Green Ext Time (p_c), s	5.8				6.0			2.5			2.3	
Intersection Summary												
HCM 2010 Ctrl Delay					13.7							
HCM 2010 LOS					B							
Notes												

HCM 2010 Signalized Intersection Summary

2014 AM Existing
13: Henderson Ave. & McMillan Ave.

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	EBL	EBT	WBT	WBR	SBL	SBR
Volume (veh/h)	28	175	509	56	53	31
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	1	1	0	1	1
Cap, veh/h	290	857	759	84	684	610
Arrive On Green	0.46	0.46	0.46	0.46	0.39	0.39
Sat Flow, veh/h	805	1863	1649	182	1774	1583
Grp Volume(v), veh/h	30	190	0	614	58	34
Grp Sat Flow(s),veh/h/ln	805	1863	0	1831	1774	1583
Q Serve(g_s), s	1.6	3.2	0.0	14.1	1.1	0.7
Cycle Q Clear(g_c), s	15.8	3.2	0.0	14.1	1.1	0.7
Prop In Lane	1.00			0.10	1.00	1.00
Lane Grp Cap(c), veh/h	290	857	0	843	684	610
V/C Ratio(X)	0.10	0.22	0.00	0.73	0.08	0.06
Avail Cap(c_a), veh/h	649	1687	0	1658	684	610
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	8.4	0.0	11.4	10.1	10.0
Incr Delay (d2), s/veh	0.2	0.1	0.0	1.2	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.3	1.2	0.0	5.6	0.4	0.3
Lane Grp Delay (d), s/veh	17.9	8.5	0.0	12.6	10.4	10.2
Lane Grp LOS	B	A		B	B	B
Approach Vol, veh/h	220	614			92	
Approach Delay, s/veh	9.8	12.6			10.3	
Approach LOS	A	B			B	
Timer						
Assigned Phs	4	8				
Phs Duration (G+Y+Rc), s	27.9	27.9				
Change Period (Y+Rc), s	4.0	4.0				
Max Green Setting (Gmax), s	47.0	47.0				
Max Q Clear Time (g_c+H1), s	17.8	16.1				
Green Ext Time (p_c), s	6.1	6.2				
Intersection Summary						
HCM 2010 Ctrl Delay					11.7	
HCM 2010 LOS					B	
Notes						

HCM 2010 TWSC

2014 AM Existing
6: Capitol Ave. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	177	17	53	513	70	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	192	18	58	558	76	28
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	211	0	875	202
Stage 1	-	-	-	-	202	-
Stage 2	-	-	-	-	673	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1360	-	320	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	507	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1360	-	300	839
Mov Capacity-2 Maneuver	-	-	-	-	300	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	476	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.7		18.9	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	363	-	-	1360	-	
HCM Lane V/C Ratio	0.287	-	-	0.042	-	
HCM Control Delay (s)	18.9	-	-	7.764	0	
HCM Lane LOS	C			A	A	
HCM 95th %tile Q(veh)	1.168	-	-	0.133	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2014 AM Existing
8: Henderson Ave. & Glencoe St.

Intersection						
Intersection Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	7	196	549	4	9	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	213	597	4	10	18
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	601	0	-	0	827	599
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	228	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	976	-	-	-	341	502
Stage 1	-	-	-	-	549	-
Stage 2	-	-	-	-	810	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	976	-	-	-	338	502
Mov Capacity-2 Maneuver	-	-	-	-	338	-
Stage 1	-	-	-	-	549	-
Stage 2	-	-	-	-	803	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		14	
HCM LOS					B	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	976	-	-	-	430	
HCM Lane V/C Ratio	0.008	-	-	-	0.066	
HCM Control Delay (s)	8.718	0	-	-	14	
HCM Lane LOS	A	A			B	
HCM 95th %tile Q(veh)	0.024	-	-	-	0.21	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2014 AM Existing
10: Fuqua St. & Henderson Ave.

Intersection												
Intersection Delay, s/veh		1										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	197	8	11	524	6	27	0	13	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	214	9	12	570	7	29	0	14	0	0	2
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	576	0	0	223	0	0	816	818	218	823	820	573
Stage 1	-	-	-	-	-	-	218	218	-	597	597	-
Stage 2	-	-	-	-	-	-	598	600	-	226	223	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	997	-	-	1346	-	-	296	311	822	292	310	519
Stage 1	-	-	-	-	-	-	784	723	-	490	491	-
Stage 2	-	-	-	-	-	-	489	490	-	777	719	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	997	-	-	1346	-	-	292	307	822	284	306	519
Mov Capacity-2 Maneuver	-	-	-	-	-	-	292	307	-	284	306	-
Stage 1	-	-	-	-	-	-	784	723	-	490	485	-
Stage 2	-	-	-	-	-	-	481	484	-	764	719	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0		0.2			16.1			12			
HCM LOS						C			B			
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	369	997	-	-	1346	-	-	519				
HCM Lane V/C Ratio	0.118	-	-	-	0.009	-	-	0.004				
HCM Control Delay (s)	16.1	0	-	-	7.699	0	-	12				
HCM Lane LOS	C	A			A	A		B				
HCM 95th %tile Q(veh)	0.397	0	-	-	0.027	-	-	0.013				
Notes												
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

HCM 2010 TWSC

2014 AM Existing
14: Monarch St. & Henderson Ave.

Intersection						
Intersection Delay, s/veh		1.1				
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	210	21	25	553	16	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	228	23	27	601	17	57
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	251	0	895	240
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	655	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1314	-	311	799
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	517	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1314	-	301	799
Mov Capacity-2 Maneuver	-	-	-	-	301	-
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	501	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.3		12.2	
HCM LOS					B	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	575	-	-	1314	-	
HCM Lane V/C Ratio	0.129	-	-	0.021	-	
HCM Control Delay (s)	12.2	-	-	7.798	0	
HCM Lane LOS	B			A	A	
HCM 95th %tile Q(veh)	0.439	-	-	0.063	-	
Notes						
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 Signalized Intersection Summary

2014 PM Existing
3: Belmont Ave. & Henderson Ave.

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (veh/h)	96	508	54	24	286	23	24	225	29	13	109	67
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	190.0	186.3	190.0	186.3	190.0
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Cap, veh/h	462	748	80	263	769	62	95	635	78	82	444	255
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	1040	1655	177	807	1702	137	72	1528	189	43	1068	614
Grp Volume(v), veh/h	104	0	611	26	0	336	303	0	0	205	0	0
Grp Sat Flow(s),veh/h/ln	1040	0	1832	807	0	1839	1789	0	0	1725	0	0
Q Serve(g_s), s	4.5	0.0	16.5	1.6	0.0	7.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	11.9	0.0	16.5	18.2	0.0	7.4	7.0	0.0	0.0	4.7	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.07	0.09		0.11	0.07		0.36
Lane Grp Cap(c), veh/h	462	0	828	263	0	831	808	0	0	780	0	0
V/C Ratio(X)	0.23	0.00	0.74	0.10	0.00	0.40	0.38	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	718	0	1278	461	0	1283	808	0	0	780	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.0	0.0	13.6	21.0	0.0	11.1	12.3	0.0	0.0	11.7	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	1.3	0.2	0.0	0.3	1.3	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.1	0.0	6.9	0.3	0.0	3.0	3.2	0.0	0.0	2.0	0.0	0.0
Lane Grp Delay (d), s/veh	15.3	0.0	14.9	21.2	0.0	11.4	13.7	0.0	0.0	12.5	0.0	0.0
Lane Grp LOS	B		B	C		B	B			B		
Approach Vol, veh/h	715			362			303			205		
Approach Delay, s/veh	14.9			12.1			13.7			12.5		
Approach LOS	B			B			B			B		
Timer												
Assigned Phs	4			8			2			6		
Phs Duration (G+Y+Rc), s	31.2			31.2			29.0			29.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	42.0			42.0			25.0			25.0		
Max Q Clear Time (g_c+H1), s	18.5			20.2			9.0			6.7		
Green Ext Time (p_c), s	7.2			7.0			2.8			3.0		
Intersection Summary												
HCM 2010 Ctrl Delay		13.7										
HCM 2010 LOS		B										
Notes												

HCM 2010 Signalized Intersection Summary

2014 PM Existing
13: Henderson Ave. & McMillan Ave.

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	EBL	EBT	WBT	WBR	SBL	SBR
Volume (veh/h)	38	559	297	90	76	31
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	1	1	0	1	1
Cap, veh/h	432	867	639	194	667	596
Arrive On Green	0.47	0.47	0.47	0.47	0.38	0.38
Sat Flow, veh/h	962	1863	1373	416	1774	1583
Grp Volume(v), veh/h	41	608	0	421	83	34
Grp Sat Flow(s),veh/h/ln	962	1863	0	1789	1774	1583
Q Serve(g_s), s	1.6	13.1	0.0	8.3	1.5	0.7
Cycle Q Clear(g_c), s	9.9	13.1	0.0	8.3	1.5	0.7
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	432	867	0	833	667	596
V/C Ratio(X)	0.09	0.70	0.00	0.51	0.12	0.06
Avail Cap(c_a), veh/h	899	1770	0	1701	667	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	10.7	0.0	9.4	10.3	10.0
Incr Delay (d2), s/veh	0.1	1.0	0.0	0.5	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.4	5.1	0.0	3.2	0.7	0.3
Lane Grp Delay (d), s/veh	13.0	11.8	0.0	9.9	10.7	10.2
Lane Grp LOS	B	B		A	B	B
Approach Vol, veh/h	649	421		117		
Approach Delay, s/veh	11.8	9.9		10.6		
Approach LOS	B	A		B		
Timer						
Assigned Phs	4	8				
Phs Duration (G+Y+Rc), s	27.5	27.5				
Change Period (Y+Rc), s	4.0	4.0				
Max Green Setting (Gmax), s	48.0	48.0				
Max Q Clear Time (g_c+H1), s	15.1	10.3				
Green Ext Time (p_c), s	8.4	8.7				
Intersection Summary						
HCM 2010 Ctrl Delay		11.0				
HCM 2010 LOS		B				
Notes						

HCM 2010 TWSC

2014 PM Existing
6: Capitol Ave. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	3.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	490	60	59	278	55	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	533	65	64	302	60	109
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	598	0	995	565
Stage 1	-	-	-	-	565	-
Stage 2	-	-	-	-	430	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	979	-	271	524
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	656	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	979	-	250	524
Mov Capacity-2 Maneuver	-	-	-	-	250	-
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	604	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.6		22	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	377	-	-	979	-	
HCM Lane V/C Ratio	0.447	-	-	0.066	-	
HCM Control Delay (s)	22	-	-	8.935	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	2.233	-	-	0.21	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2014 PM Existing
8: Henderson Ave. & Glencoe St.

Intersection						
Intersection Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	22	568	322	16	18	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	617	350	17	20	16
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	367	0	-	0	1024	359
Stage 1	-	-	-	-	359	-
Stage 2	-	-	-	-	665	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1192	-	-	-	261	685
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	511	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1192	-	-	-	253	685
Mov Capacity-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	495	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		16.3	
HCM LOS					C	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1192	-	-	-	355	
HCM Lane V/C Ratio	0.02	-	-	-	0.101	
HCM Control Delay (s)	8.082	0	-	-	16.3	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.061	-	-	-	0.334	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2014 PM Existing
10: Fuqua St. & Henderson Ave.

Intersection												
Intersection Delay, s/veh		1										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	563	22	16	320	0	17	0	27	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	612	24	17	348	0	18	0	29	1	0	1
Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	348	0	0	636	0	0	1009	1009	624	1024	1021	348
Stage 1	-	-	-	-	-	-	626	626	-	383	383	-
Stage 2	-	-	-	-	-	-	383	383	-	641	638	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1211	-	-	947	-	-	219	240	485	214	236	695
Stage 1	-	-	-	-	-	-	472	477	-	640	612	-
Stage 2	-	-	-	-	-	-	640	612	-	463	471	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1211	-	-	947	-	-	215	234	485	198	231	695
Mov Capacity-2 Maneuver	-	-	-	-	-	-	215	234	-	198	231	-
Stage 1	-	-	-	-	-	-	472	477	-	639	599	-
Stage 2	-	-	-	-	-	-	625	599	-	435	471	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	0		0.4		17.9		16.8					
HCM LOS					C		C					
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	327	1211	-	-	947	-	-	308				
HCM Lane V/C Ratio	0.146	0.001	-	-	0.018	-	-	0.007				
HCM Control Delay (s)	17.9	7.975	0	-	8.873	0	-	16.8				
HCM Lane LOS	C	A	A		A	A		C				
HCM 95th %tile Q(veh)	0.507	0.003	-	-	0.056	-	-	0.021				
Notes												
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

HCM 2010 TWSC

2014 PM Existing
14: Monarch St. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	608	32	46	373	16	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	661	35	50	405	17	60
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	696	0	1183	678
Stage 1	-	-	-	-	678	-
Stage 2	-	-	-	-	505	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	900	-	209	452
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	606	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	900	-	194	452
Mov Capacity-2 Maneuver	-	-	-	-	194	-
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	562	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1		18.3	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	348	-	-	900	-	
HCM Lane V/C Ratio	0.222	-	-	0.056	-	
HCM Control Delay (s)	18.3	-	-	9.235	0	
HCM Lane LOS	C			A	A	
HCM 95th %tile Q(veh)	0.834	-	-	0.176	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						



SynchroTM Output – 2016 Background Traffic

HCM 2010 Signalized Intersection Summary

2016 AM Background
3: Belmont Ave. & Henderson Ave.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	185	18	12	578	16	52	67	11	5	180	94
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Cap. veh/h	247	758	75	558	821	22	287	343	50	63	478	244
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	782	1668	166	1155	1805	49	492	830	122	7	1157	591
Grp Volume(v), veh/h	28	0	221	13	0	645	142	0	0	303	0	0
Grp Sat Flow(s),veh/h/ln	782	0	1833	1155	0	1854	1445	0	0	1755	0	0
Q Serve(g_s), s	1.9	0.0	4.5	0.4	0.0	17.6	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	19.5	0.0	4.5	4.9	0.0	17.6	3.0	0.0	0.0	7.4	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.03	0.40		0.08	0.02		0.34
Lane Grp Cap(c), veh/h	247	0	834	558	0	843	680	0	0	786	0	0
V/C Ratio(X)	0.11	0.00	0.27	0.02	0.00	0.77	0.21	0.00	0.00	0.39	0.00	0.00
Avail Cap(c_a), veh/h	434	0	1273	834	0	1287	680	0	0	786	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.9	0.0	10.2	11.8	0.0	13.8	11.3	0.0	0.0	12.6	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.2	0.0	0.0	1.5	0.7	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.4	0.0	1.8	0.1	0.0	7.3	1.4	0.0	0.0	3.3	0.0	0.0
Lane Grp Delay (d), s/veh	22.1	0.0	10.4	11.8	0.0	15.3	12.0	0.0	0.0	14.0	0.0	0.0
Lane Grp LOS	C		B	B		B	B			B		
Approach Vol, veh/h	249			658			142			303		
Approach Delay, s/veh	11.7			15.2			12.0			14.0		
Approach LOS	B			B			B			B		
Timer												
Assigned Phs	4			8			2			6		
Phs Duration (G+Y+Rc), s	31.5			31.5			29.0			29.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	42.0			42.0			25.0			25.0		
Max Q Clear Time (g_c+H1), s	21.5			19.6			5.0			9.4		
Green Ext Time (p_c), s	6.0			6.2			2.7			2.4		
Intersection Summary												
HCM 2010 Ctrl Delay				14.0								
HCM 2010 LOS				B								
Notes												

HCM 2010 Signalized Intersection Summary

2016 AM Background
13: Henderson Ave. & McMillan Ave.

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	29	182	530	58	55	32
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	1	1	0	1	1
Cap, veh/h	286	883	783	86	666	595
Arrive On Green	0.47	0.47	0.47	0.47	0.38	0.38
Sat Flow, veh/h	786	1863	1650	181	1774	1583
Grp Volume(v), veh/h	32	198	0	639	60	35
Grp Sat Flow(s),veh/h/ln	786	1863	0	1831	1774	1583
Q Serve(g_s), s	1.8	3.3	0.0	15.0	1.2	0.8
Cycle Q Clear(g_c), s	16.8	3.3	0.0	15.0	1.2	0.8
Prop In Lane	1.00			0.10	1.00	1.00
Lane Grp Cap(c), veh/h	286	883	0	868	666	595
V/C Ratio(X)	0.11	0.22	0.00	0.74	0.09	0.06
Avail Cap(c_a), veh/h	608	1644	0	1616	666	595
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	8.2	0.0	11.3	10.7	10.6
Incr Delay (d2), s/veh	0.2	0.1	0.0	1.2	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.4	1.3	0.0	6.0	0.5	0.3
Lane Grp Delay (d), s/veh	18.3	8.4	0.0	12.5	11.0	10.8
Lane Grp LOS	B	A		B	B	B
Approach Vol, veh/h	230		639		95	
Approach Delay, s/veh	9.7		12.5		10.9	
Approach LOS	A		B		B	
Timer						
Assigned Phs	4		8			
Phs Duration (G+Y+Rc), s	29.3		29.3			
Change Period (Y+Rc), s	4.0		4.0			
Max Green Setting (Gmax), s	47.0		47.0			
Max Q Clear Time (g_c+I1), s	18.8		17.0			
Green Ext Time (p_c), s	6.4		6.5			
Intersection Summary						
HCM 2010 Ctrl Delay			11.7			
HCM 2010 LOS			B			
Notes						

HCM 2010 TWSC

2016 AM Background
6: Capitol Ave. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	184	18	55	534	73	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	200	20	60	580	79	29
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	220	0	910	210
Stage 1	-	-	-	-	210	-
Stage 2	-	-	-	-	700	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1349	-	305	830
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	493	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1349	-	285	830
Mov Capacity-2 Maneuver	-	-	-	-	285	-
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	460	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.7		20.1	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	346	-	-	1349	-	
HCM Lane V/C Ratio	0.314	-	-	0.044	-	
HCM Control Delay (s)	20.1	-	-	7.792	0	
HCM Lane LOS	C			A	A	
HCM 95th %tile Q(veh)	1.316	-	-	0.139	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2016 AM Background
8: Henderson Ave. & Glencoe St.

Intersection						
Intersection Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	7	204	571	4	9	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	222	621	4	10	20
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	625	0	-	0	860	623
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	237	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	956	-	-	-	326	486
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	802	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	956	-	-	-	323	486
Mov Capacity-2 Maneuver	-	-	-	-	323	-
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	794	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		14.3	
HCM LOS					B	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	956	-	-	-	416	
HCM Lane V/C Ratio	0.008	-	-	-	0.071	
HCM Control Delay (s)	8.796	0	-	-	14.3	
HCM Lane LOS	A	A			B	
HCM 95th %tile Q(veh)	0.024	-	-	-	0.227	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2016 AM Background
10: Fuqua St. & Henderson Ave.

Intersection												
Intersection Delay, s/veh		1										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	205	8	11	545	6	28	0	14	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	223	9	12	592	7	30	0	15	0	0	2
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	599	0	0	232	0	0	848	850	227	855	852	596
Stage 1	-	-	-	-	-	-	227	227	-	620	620	-
Stage 2	-	-	-	-	-	-	621	623	-	235	232	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	978	-	-	1336	-	-	281	298	812	278	297	504
Stage 1	-	-	-	-	-	-	776	716	-	476	480	-
Stage 2	-	-	-	-	-	-	475	478	-	768	713	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	978	-	-	1336	-	-	277	294	812	270	293	504
Mov Capacity-2 Maneuver	-	-	-	-	-	-	277	294	-	270	293	-
Stage 1	-	-	-	-	-	-	776	716	-	476	474	-
Stage 2	-	-	-	-	-	-	467	472	-	754	713	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.2			16.6			12.2		
HCM LOS							C			B		
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	355	978	-	-	1336	-	-	504				
HCM Lane V/C Ratio	0.129	-	-	-	0.009	-	-	0.004				
HCM Control Delay (s)	16.6	0	-	-	7.719	0	-	12.2				
HCM Lane LOS	C	A	-	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.438	0	-	-	0.027	-	-	0.013				
Notes												
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

HCM 2010 TWSC

2016 AM Background
14: Monarch St. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	218	22	26	575	17	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	237	24	28	625	18	59
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	261	0	931	249
Stage 1	-	-	-	-	249	-
Stage 2	-	-	-	-	682	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1303	-	296	790
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	502	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1303	-	286	790
Mov Capacity-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	485	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.3		12.5	
HCM LOS					B	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	556	-	-	1303	-	
HCM Lane V/C Ratio	0.139	-	-	0.022	-	
HCM Control Delay (s)	12.5	-	-	7.824	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.48	-	-	0.066	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 Signalized Intersection Summary

2016 PM Background
3: Belmont Ave. & Henderson Ave.

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (veh/h)	100	529	56	25	298	24	25	234	30	14	113	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	190.0	186.3	190.0	186.3	190.0
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Cap, veh/h	456	761	81	250	782	63	93	630	78	80	440	253
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	1027	1656	176	789	1702	137	74	1525	188	45	1065	612
Grp Volume(v), veh/h	109	0	636	27	0	350	314	0	0	214	0	0
Grp Sat Flow(s),veh/h/ln	1027	0	1832	789	0	1839	1787	0	0	1722	0	0
Q Serve(g_s), s	5.0	0.0	18.1	1.8	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.0	0.0	18.1	19.9	0.0	8.0	7.7	0.0	0.0	5.1	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.07	0.09		0.11	0.07		0.36
Lane Grp Cap(c), veh/h	456	0	842	250	0	845	800	0	0	773	0	0
V/C Ratio(X)	0.24	0.00	0.76	0.11	0.00	0.41	0.39	0.00	0.00	0.28	0.00	0.00
Avail Cap(c_a), veh/h	653	0	1193	402	0	1198	800	0	0	773	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.7	0.0	14.1	22.3	0.0	11.3	13.1	0.0	0.0	12.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	1.7	0.2	0.0	0.3	1.4	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.2	0.0	7.6	0.4	0.0	3.3	3.5	0.0	0.0	2.2	0.0	0.0
Lane Grp Delay (d), s/veh	15.9	0.0	15.8	22.5	0.0	11.7	14.5	0.0	0.0	13.2	0.0	0.0
Lane Grp LOS	B		B	C		B	B			B		
Approach Vol, veh/h	745				377			314			214	
Approach Delay, s/veh	15.8				12.4			14.5			13.2	
Approach LOS	B				B			B			B	
Timer												
Assigned Phs	4				8			2			6	
Phs Duration (G+Y+Rc), s	32.9				32.9			30.0			30.0	
Change Period (Y+Rc), s	4.0				4.0			4.0			4.0	
Max Green Setting (Gmax), s	41.0				41.0			26.0			26.0	
Max Q Clear Time (g_c+H1), s	20.1				21.9			9.7			7.1	
Green Ext Time (p_c), s	7.3				7.0			3.0			3.1	
Intersection Summary												
HCM 2010 Ctrl Delay					14.5							
HCM 2010 LOS					B							
Notes												

HCM 2010 Signalized Intersection Summary

2016 PM Background
13: Henderson Ave. & McMillan Ave.

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	EBL	EBT	WBT	WBR	SBL	SBR
Volume (veh/h)	40	582	309	94	79	32
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	1	1	0	1	1
Cap, veh/h	432	891	657	199	651	581
Arrive On Green	0.48	0.48	0.48	0.48	0.37	0.37
Sat Flow, veh/h	947	1863	1373	417	1774	1583
Grp Volume(v), veh/h	43	633	0	438	86	35
Grp Sat Flow(s),veh/h/ln	947	1863	0	1789	1774	1583
Q Serve(g_s), s	1.7	13.9	0.0	8.8	1.7	0.7
Cycle Q Clear(g_c), s	10.5	13.9	0.0	8.8	1.7	0.7
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	432	891	0	856	651	581
V/C Ratio(X)	0.10	0.71	0.00	0.51	0.13	0.06
Avail Cap(c_a), veh/h	857	1727	0	1659	651	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	10.7	0.0	9.3	10.9	10.6
Incr Delay (d2), s/veh	0.1	1.1	0.0	0.5	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.4	5.5	0.0	3.3	0.7	0.3
Lane Grp Delay (d), s/veh	13.0	11.7	0.0	9.8	11.3	10.8
Lane Grp LOS	B	B		A	B	B
Approach Vol, veh/h	676	438			121	
Approach Delay, s/veh	11.8	9.8			11.2	
Approach LOS	B	A			B	
Timer						
Assigned Phs	4		8			
Phs Duration (G+Y+Rc), s	28.8		28.8			
Change Period (Y+Rc), s	4.0		4.0			
Max Green Setting (Gmax), s	48.0		48.0			
Max Q Clear Time (g_c+H1), s	15.9		10.8			
Green Ext Time (p_c), s	8.9		9.2			
Intersection Summary						
HCM 2010 Ctrl Delay					11.0	
HCM 2010 LOS					B	
Notes						

HCM 2010 TWSC

2016 PM Background
6: Capitol Ave. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	4.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	510	62	61	289	57	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	554	67	66	314	62	113
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	622	0	1035	588
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	447	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	959	-	257	509
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	644	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	959	-	236	509
Mov Capacity-2 Maneuver	-	-	-	-	236	-
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	591	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.6		24	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	361	-	-	959	-	
HCM Lane V/C Ratio	0.485	-	-	0.069	-	
HCM Control Delay (s)	24	-	-	9.033	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	2.544	-	-	0.222	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2016 PM Background
8: Henderson Ave. & Glencoe St.

Intersection						
Intersection Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	23	591	335	17	19	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	642	364	18	21	17
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	383	0	-	0	1065	373
Stage 1	-	-	-	-	373	-
Stage 2	-	-	-	-	692	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1175	-	-	-	246	673
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	497	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1175	-	-	-	238	673
Mov Capacity-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	481	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		17	
HCM LOS					C	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1175	-	-	-	338	
HCM Lane V/C Ratio	0.021	-	-	-	0.113	
HCM Control Delay (s)	8.13	0	-	-	17	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.065	-	-	-	0.377	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2016 PM Background
10: Fuqua St. & Henderson Ave.

Intersection												
Intersection Delay, s/veh		1										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	586	23	17	333	0	18	0	28	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	637	25	18	362	0	20	0	30	1	0	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	362	0	0	662	0	0	1051	1051	649	1066	1063	362
Stage 1	-	-	-	-	-	-	652	652	-	399	399	-
Stage 2	-	-	-	-	-	-	399	399	-	667	664	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1197	-	-	927	-	-	205	227	470	200	223	683
Stage 1	-	-	-	-	-	-	457	464	-	627	602	-
Stage 2	-	-	-	-	-	-	627	602	-	448	458	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1197	-	-	927	-	-	201	221	470	183	217	683
Mov Capacity-2 Maneuver	-	-	-	-	-	-	201	221	-	183	217	-
Stage 1	-	-	-	-	-	-	457	464	-	626	588	-
Stage 2	-	-	-	-	-	-	611	588	-	419	458	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.4			18.9			17.6		
HCM LOS							C			C		
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	308	1197	-	-	927	-	-	289				
HCM Lane V/C Ratio	0.162	0.001	-	-	0.02	-	-	0.008				
HCM Control Delay (s)	18.9	8.01	0	-	8.962	0	-	17.6				
HCM Lane LOS	C	A	A		A	A		C				
HCM 95th %tile Q(veh)	0.571	0.003	-	-	0.061	-	-	0.023				
Notes												
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

HCM 2010 TWSC

2016 PM Background
14: Monarch St. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	633	33	48	388	17	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	688	36	52	422	18	62
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	724	0	1232	706
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	526	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	879	-	196	436
Stage 1	-	-	-	-	489	-
Stage 2	-	-	-	-	593	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	879	-	181	436
Mov Capacity-2 Maneuver	-	-	-	-	181	-
Stage 1	-	-	-	-	489	-
Stage 2	-	-	-	-	547	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1		19.4	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	329	-	-	879	-	
HCM Lane V/C Ratio	0.244	-	-	0.059	-	
HCM Control Delay (s)	19.4	-	-	9.354	0	
HCM Lane LOS	C			A	A	
HCM 95th %tile Q(veh)	0.942	-	-	0.189	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						



SynchroTM Output - 2016 Background Plus Site Traffic

2016 AM Background + Site
3: Belmont Ave. & Henderson Ave.

HCM 2010 Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	289	18	15	607	16	52	67	20	5	180	94
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Cap, veh/h	246	824	52	489	859	22	259	314	84	61	460	235
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.48	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	759	1733	110	1042	1808	47	455	789	210	7	1157	591
Grp Volume(v), veh/h	28	0	334	16	0	677	152	0	0	303	0	0
Grp Sat Flow(s),veh/h/ln	759	0	1843	1042	0	1855	1454	0	0	1755	0	0
Q Serve(g_s), s	2.0	0.0	7.3	0.6	0.0	19.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	21.0	0.0	7.3	7.9	0.0	19.0	3.5	0.0	0.0	7.9	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.03	0.37		0.14	0.02		0.34
Lane Grp Cap(c), veh/h	246	0	876	489	0	881	657	0	0	756	0	0
V/C Ratio(X)	0.11	0.00	0.38	0.03	0.00	0.77	0.23	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	392	0	1231	689	0	1238	657	0	0	756	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.3	0.0	10.6	13.1	0.0	13.6	12.5	0.0	0.0	13.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	1.9	0.8	0.0	0.0	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.4	0.0	2.9	0.2	0.0	8.0	1.5	0.0	0.0	3.4	0.0	0.0
Lane Grp Delay (d), s/veh	22.5	0.0	10.8	13.1	0.0	15.6	13.3	0.0	0.0	15.4	0.0	0.0
Lane Grp LOS	C		B	B		B	B			B		
Approach Vol, veh/h	362			693			152			303		
Approach Delay, s/veh	11.7			15.5			13.3			15.4		
Approach LOS	B			B			B			B		
Timer												
Assigned Phs	4			8			2			6		
Phs Duration (G+Y+Rc), s	33.9			33.9			29.0			29.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	42.0			42.0			25.0			25.0		
Max Q Clear Time (g_c+H1), s	23.0			21.0			5.5			9.9		
Green Ext Time (p_c), s	6.9			7.2			2.7			2.4		
Intersection Summary												
HCM 2010 Ctrl Delay	14.4											
HCM 2010 LOS	B											
Notes												

2016 AM Background + Site
13: Henderson Ave. & McMillan Ave.

HCM 2010 Signalized Intersection Summary

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	30	199	591	58	55	36
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	1	1	0	1	1
Cap, veh/h	273	943	846	83	626	558
Arrive On Green	0.51	0.51	0.51	0.51	0.35	0.35
Sat Flow, veh/h	740	1863	1670	164	1774	1583
Grp Volume(v), veh/h	33	216	0	705	60	39
Grp Sat Flow(s),veh/h/ln	740	1863	0	1834	1774	1583
Q Serve(g_s), s	2.1	3.7	0.0	17.5	1.3	0.9
Cycle Q Clear(g_c), s	19.6	3.7	0.0	17.5	1.3	0.9
Prop In Lane	1.00			0.09	1.00	1.00
Lane Grp Cap(c), veh/h	273	943	0	929	626	558
V/C Ratio(X)	0.12	0.23	0.00	0.76	0.10	0.07
Avail Cap(c_a), veh/h	512	1543	0	1519	626	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	7.8	0.0	11.2	12.3	12.2
Incr Delay (d2), s/veh	0.2	0.1	0.0	1.3	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.4	1.4	0.0	7.0	0.6	0.4
Lane Grp Delay (d), s/veh	19.3	7.9	0.0	12.5	12.6	12.4
Lane Grp LOS	B	A		B	B	B
Approach Vol, veh/h	249		705		99	
Approach Delay, s/veh	9.4		12.5		12.5	
Approach LOS	A		B		B	
Timer						
Assigned Phs	4		8			
Phs Duration (G+Y+Rc), s	32.7		32.7			
Change Period (Y+Rc), s	4.0		4.0			
Max Green Setting (Gmax), s	47.0		47.0			
Max Q Clear Time (g_c+H1), s	21.6		19.5			
Green Ext Time (p_c), s	7.1		7.3			
Intersection Summary						
HCM 2010 Ctrl Delay			11.8			
HCM 2010 LOS			B			
Notes						

HCM 2010 TWSC

2016 AM Background + Site
6: Capitol Ave. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	2.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	298	18	56	565	73	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	324	20	61	614	79	34
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	343	0	1070	334
Stage 1	-	-	-	-	334	-
Stage 2	-	-	-	-	736	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1216	-	245	708
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	474	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1216	-	226	708
Mov Capacity-2 Maneuver	-	-	-	-	226	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	438	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.7		23.6	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	226	708	-	-	1216	-
HCM Lane V/C Ratio	0.351	0.048	-	-	0.05	-
HCM Control Delay (s)	29.3	10.3	-	-	8.116	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	1.5	0.15	-	-	0.158	-
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2016 AM Background + Site
8: Henderson Ave. & Glencoe St.

Intersection						
Intersection Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	7	321	603	5	13	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	349	655	5	14	20
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	661	0	-	0	1022	658
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	364	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	927	-	-	-	261	464
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	703	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	927	-	-	-	259	464
Mov Capacity-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	697	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.2		0		16.5	
HCM LOS					C	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	927	-	-	-	348	
HCM Lane V/C Ratio	0.008	-	-	-	0.097	
HCM Control Delay (s)	8.916	-	-	-	16.5	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.025	-	-	-	0.319	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2016 AM Background + Site
10: Fuqua St./Drive D & Henderson Ave.

Intersection												
Intersection Delay, s/veh		1.6										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	30	238	8	11	568	17	28	4	14	3	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	259	9	12	617	18	30	4	15	3	1	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	636	0	0	267	0	0	979	988	263	989	984	627
Stage 1	-	-	-	-	-	-	328	328	-	651	651	-
Stage 2	-	-	-	-	-	-	651	660	-	338	333	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	947	-	-	1297	-	-	229	247	776	226	248	484
Stage 1	-	-	-	-	-	-	685	647	-	457	465	-
Stage 2	-	-	-	-	-	-	457	460	-	676	644	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	947	-	-	1297	-	-	215	235	776	210	236	484
Mov Capacity-2 Maneuver	-	-	-	-	-	-	215	235	-	210	236	-
Stage 1	-	-	-	-	-	-	661	624	-	441	458	-
Stage 2	-	-	-	-	-	-	439	454	-	635	622	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			0.1			20.8			15.3		
HCM LOS							C			C		
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	278	947	-	-	1297	-	-	289	484			
HCM Lane V/C Ratio	0.18	0.034	-	-	0.009	-	-	0.028	0.015			
HCM Control Delay (s)	20.8	8.937	-	-	7.801	0	-	17.8	12.6			
HCM Lane LOS	C	A			A	A		C	B			
HCM 95th %tile Q(veh)	0.643	0.107	-	-	0.028	-	-	0.085	0.046			
Notes												
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

HCM 2010 TWSC

2016 AM Background + Site
14: Monarch St. & Henderson Ave.

Intersection						
Intersection Delay, s/veh		1.1				
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	235	22	26	636	17	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	255	24	28	691	18	59
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	279	0	1015	267
Stage 1	-	-	-	-	267	-
Stage 2	-	-	-	-	748	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1284	-	264	772
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	468	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1284	-	255	772
Mov Capacity-2 Maneuver	-	-	-	-	255	-
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	452	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.3		13.1	
HCM LOS					B	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	520	-	-	1284	-	
HCM Lane V/C Ratio	0.148	-	-	0.022	-	
HCM Control Delay (s)	13.1	-	-	7.867	0	
HCM Lane LOS	B			A	A	
HCM 95th %tile Q(veh)	0.518	-	-	0.067	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2016 AM Background + Site
18: Henderson Ave. & Drive A

HCM 2010 TWSC

Intersection						
Intersection Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	49	285	595	9	3	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	310	647	10	3	15
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	657	0	-	0	1068	652
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	416	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	931	-	-	-	245	468
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	666	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	931	-	-	-	231	468
Mov Capacity-2 Maneuver	-	-	-	-	231	-
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	628	-
Approach	EB		WB		SB	
HCM Control Delay, s	1.3		0		14.5	
HCM LOS					B	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	931	-	-	-	396	
HCM Lane V/C Ratio	0.057	-	-	-	0.047	
HCM Control Delay (s)	9.101	-	-	-	14.5	
HCM Lane LOS	A				B	
HCM 95th %tile Q(veh)	0.182	-	-	-	0.146	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2016 AM Background + Site
21: Drive C & Henderson Ave.

HCM 2010 TWSC

Intersection						
Intersection Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	274	0	0	606	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	298	0	0	659	4	2
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	298	0	957	298
Stage 1	-	-	-	-	298	-
Stage 2	-	-	-	-	659	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1263	-	286	741
Stage 1	-	-	-	-	753	-
Stage 2	-	-	-	-	515	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1263	-	286	741
Mov Capacity-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	753	-
Stage 2	-	-	-	-	515	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		15.2	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	360	-	-	1263	-	
HCM Lane V/C Ratio	0.018	-	-	-	-	
HCM Control Delay (s)	15.2	-	-	0	-	
HCM Lane LOS	C			A		
HCM 95th %tile Q(veh)	0.055	-	-	0	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2016 AM Background + Site

26: Henderson Ave. & Drive E

HCM 2010 TWSC

Intersection						
Intersection Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	28	225	590	38	10	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	245	641	41	11	9
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	683	0	-	0	967	662
Stage 1	-	-	-	-	662	-
Stage 2	-	-	-	-	305	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	910	-	-	-	282	462
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	748	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	910	-	-	-	273	462
Mov Capacity-2 Maneuver	-	-	-	-	273	-
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	723	-
Approach	EB		WB		SB	
HCM Control Delay, s	1		0		16.4	
HCM LOS					C	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	910	-	-	-	334	
HCM Lane V/C Ratio	0.033	-	-	-	0.059	
HCM Control Delay (s)	9.093	-	-	-	16.4	
HCM Lane LOS	A				C	
HCM 95th %tile Q(veh)	0.104	-	-	-	0.186	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2016 PM Background + Site
3: Belmont Ave. & Henderson Ave.

HCM 2010 Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	100	660	56	42	483	24	25	234	42	14	113	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Cap, veh/h	386	901	77	232	936	46	82	515	89	72	376	217
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	853	1693	144	691	1760	87	74	1452	250	48	1061	611
Grp Volume(v), veh/h	109	0	778	46	0	551	327	0	0	214	0	0
Grp Sat Flow(s),veh/h/ln	853	0	1837	691	0	1847	1776	0	0	1720	0	0
Q Serve(g_s), s	6.9	0.0	24.2	4.1	0.0	14.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	20.9	0.0	24.2	28.3	0.0	14.0	10.0	0.0	0.0	6.3	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.05	0.08		0.14	0.07		0.36
Lane Grp Cap(c), veh/h	386	0	977	232	0	983	685	0	0	665	0	0
V/C Ratio(X)	0.28	0.00	0.80	0.20	0.00	0.56	0.48	0.00	0.00	0.32	0.00	0.00
Avail Cap(c_a), veh/h	441	0	1095	276	0	1101	685	0	0	665	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.0	0.0	13.4	24.9	0.0	11.0	17.9	0.0	0.0	16.7	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	3.8	0.4	0.0	0.5	2.4	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.5	0.0	10.7	0.7	0.0	5.8	4.7	0.0	0.0	2.9	0.0	0.0
Lane Grp Delay (d), s/veh	18.4	0.0	17.2	25.3	0.0	11.5	20.3	0.0	0.0	18.0	0.0	0.0
Lane Grp LOS	B		B	C		B	C			B		
Approach Vol, veh/h	887			597			327			214		
Approach Delay, s/veh	17.3			12.6			20.3			18.0		
Approach LOS	B			B			C			B		
Timer												
Assigned Phs	4			8			2			6		
Phs Duration (G+Y+Rc), s	41.5			41.5			29.0			29.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	42.0			42.0			25.0			25.0		
Max Q Clear Time (g_c+H1), s	26.2			30.3			12.0			8.3		
Green Ext Time (p_c), s	8.8			7.2			2.8			3.1		
Intersection Summary												
HCM 2010 Ctrl Delay	16.5											
HCM 2010 LOS	B											
Notes												

2016 PM Background + Site
13: Henderson Ave. & McMillan Ave.

HCM 2010 Signalized Intersection Summary

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	47	690	385	94	79	37
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	1	1	0	1	1
Cap, veh/h	428	996	774	189	581	518
Arrive On Green	0.53	0.53	0.53	0.53	0.33	0.33
Sat Flow, veh/h	878	1863	1447	353	1774	1583
Grp Volume(v), veh/h	51	750	0	520	86	40
Grp Sat Flow(s),veh/h/ln	878	1863	0	1800	1774	1583
Q Serve(g_s), s	2.3	18.2	0.0	11.0	2.0	1.0
Cycle Q Clear(g_c), s	13.3	18.2	0.0	11.0	2.0	1.0
Prop In Lane	1.00			0.20	1.00	1.00
Lane Grp Cap(c), veh/h	428	996	0	963	581	518
V/C Ratio(X)	0.12	0.75	0.00	0.54	0.15	0.08
Avail Cap(c_a), veh/h	684	1540	0	1489	581	518
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.2	10.5	0.0	8.8	13.8	13.5
Incr Delay (d2), s/veh	0.1	1.2	0.0	0.5	0.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.5	7.2	0.0	4.2	0.9	0.4
Lane Grp Delay (d), s/veh	13.3	11.7	0.0	9.3	14.3	13.8
Lane Grp LOS	B	B		A	B	B
Approach Vol, veh/h	801		520	126		
Approach Delay, s/veh	11.8		9.3	14.2		
Approach LOS	B		A	B		
Timer						
Assigned Phs	4		8			
Phs Duration (G+Y+Rc), s	35.0		35.0			
Change Period (Y+Rc), s	4.0		4.0			
Max Green Setting (Gmax), s	48.0		48.0			
Max Q Clear Time (g_c+H1), s	20.2		13.0			
Green Ext Time (p_c), s	10.8		11.8			
Intersection Summary						
HCM 2010 Ctrl Delay			11.1			
HCM 2010 LOS			B			
Notes						

HCM 2010 TWSC

2016 PM Background + Site
6: Capitol Ave. & Henderson Ave.

Intersection						
Intersection Delay, s/veh 4						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	653	62	68	491	57	109
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	710	67	74	534	62	118
Major/Minor						
Conflicting Flow All	0	0	777	0	1425	743
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	682	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	839	-	149	415
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	502	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	839	-	130	415
Mov Capacity-2 Maneuver	-	-	-	-	130	-
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	439	-
Approach						
EB	WB			NB		
HCM Control Delay, s	0			1.2		
HCM LOS				D		
Minor Lane / Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	130	415	-	-	839	-
HCM Lane V/C Ratio	0.477	0.285	-	-	0.088	-
HCM Control Delay (s)	55.7	17.1	-	-	9.705	0
HCM Lane LOS	F	C			A	A
HCM 95th %tile Q(veh)	2.175	1.162	-	-	0.289	-
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2016 PM Background + Site
8: Henderson Ave. & Glencoe St.

Intersection						
Intersection Delay, s/veh 1						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	23	738	544	24	24	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	802	591	26	26	17
Major/Minor						
Conflicting Flow All	617	0	-	0	1456	604
Stage 1	-	-	-	-	604	-
Stage 2	-	-	-	-	852	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	963	-	-	-	143	498
Stage 1	-	-	-	-	546	-
Stage 2	-	-	-	-	418	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	963	-	-	-	139	498
Mov Capacity-2 Maneuver	-	-	-	-	139	-
Stage 1	-	-	-	-	546	-
Stage 2	-	-	-	-	407	-
Approach						
EB	WB			SB		
HCM Control Delay, s	0.3			0		
HCM LOS				D		
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	963	-	-	-	195	
HCM Lane V/C Ratio	0.026	-	-	-	0.223	
HCM Control Delay (s)	8.838	-	-	-	28.7	
HCM Lane LOS	A				D	
HCM 95th %tile Q(veh)	0.08	-	-	-	0.825	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2016 PM Background + Site
10: Fuqua St./Drive D & Henderson Ave.

Intersection												
Intersection Delay, s/veh		3.1										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	39	649	23	17	403	14	18	5	28	21	7	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	705	25	18	438	15	20	5	30	23	8	60
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	453	0	0	730	0	0	1289	1293	718	1304	1298	446
Stage 1	-	-	-	-	-	-	803	803	-	483	483	-
Stage 2	-	-	-	-	-	-	486	490	-	821	815	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1108	-	-	874	-	-	141	163	429	137	162	612
Stage 1	-	-	-	-	-	-	377	396	-	565	553	-
Stage 2	-	-	-	-	-	-	563	549	-	369	391	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1108	-	-	874	-	-	116	152	429	118	151	612
Mov Capacity-2 Maneuver	-	-	-	-	-	-	116	152	-	118	151	-
Stage 1	-	-	-	-	-	-	363	381	-	544	538	-
Stage 2	-	-	-	-	-	-	487	534	-	325	376	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.4			29.6			23		
HCM LOS							D			C		
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	201	1108	-	-	874	-	-	182	612			
HCM Lane V/C Ratio	0.276	0.038	-	-	0.021	-	-	0.277	0.065			
HCM Control Delay (s)	29.6	8.378	-	-	9.208	0	-	32.2	11.3			
HCM Lane LOS	D	A			A	A		D	B			
HCM 95th %tile Q(veh)	1.079	0.119	-	-	0.065	-	-	1.077	0.208			
Notes												
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

HCM 2010 TWSC

2016 PM Background + Site
14: Monarch St. & Henderson Ave.

Intersection						
Intersection Delay, s/veh		1.7				
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	741	33	48	464	17	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	805	36	52	504	18	62
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	841	0	1432	823
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	609	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	794	-	148	373
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	543	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	794	-	135	373
Mov Capacity-2 Maneuver	-	-	-	-	135	-
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	494	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.9		24.4	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	265	-	-	794	-	
HCM Lane V/C Ratio	0.304	-	-	0.066	-	
HCM Control Delay (s)	24.4	-	-	9.853	0	
HCM Lane LOS	C			A	A	
HCM 95th %tile Q(veh)	1.241	-	-	0.211	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

Intersection						
Intersection Delay, s/veh	1.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	62	700	480	12	17	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	761	522	13	18	96
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	535	0	-	0	1424	528
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	896	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1033	-	-	-	150	550
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	399	-
Time blocked-Platoon, %		-		-		
Mov Capacity-1 Maneuver	1033	-	-	-	140	550
Mov Capacity-2 Maneuver	-	-	-	-	140	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	373	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.7		0		18.9	
HCM LOS					C	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1033	-	-	-	373	
HCM Lane V/C Ratio	0.065	-	-	-	0.306	
HCM Control Delay (s)	8.728	-	-	-	18.9	
HCM Lane LOS	A				C	
HCM 95th %tile Q(veh)	0.209	-	-	-	1.273	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

Intersection						
Intersection Delay, s/veh		0.7				
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	701	0	0	476	24	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	762	0	0	517	26	11
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	762	0	1279	762
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	517	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	850	-	183	405
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	598	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	850	-	183	405
Mov Capacity-2 Maneuver	-	-	-	-	183	-
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	598	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		24.9	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	218	-	-	850	-	
HCM Lane V/C Ratio	0.17	-	-	-	-	
HCM Control Delay (s)	24.9	-	-	0	-	
HCM Lane LOS	C			A		
HCM 95th %tile Q(veh)	0.597	-	-	0	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2016 PM Background + Site

26: Henderson Ave. & Drive E

HCM 2010 TWSC

Intersection						
Intersection Delay, s/veh	3.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	36	673	383	48	67	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	732	416	52	73	55
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	468	0	-	0	1252	442
Stage 1	-	-	-	-	442	-
Stage 2	-	-	-	-	810	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1094	-	-	-	190	615
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	438	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1094	-	-	-	183	615
Mov Capacity-2 Maneuver	-	-	-	-	183	-
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	422	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.4		0		31.1	
HCM LOS					D	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1094	-	-	-	263	
HCM Lane V/C Ratio	0.036	-	-	-	0.488	
HCM Control Delay (s)	8.413	-	-	-	31.1	
HCM Lane LOS	A				D	
HCM 95th %tile Q(veh)	0.111	-	-	-	2.488	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						



SynchroTM Output – 2035 Background Traffic

HCM 2010 Signalized Intersection Summary

2035 AM Background
3: Belmont Ave. & Henderson Ave.

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (veh/h)	31	224	22	14	698	19	63	81	13	6	217	114
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Cap, veh/h	226	868	86	594	938	26	223	267	37	59	414	213
Arrive On Green	0.52	0.52	0.52	0.52	0.52	0.52	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	690	1669	165	1108	1804	50	410	741	103	10	1151	593
Grp Volume(v), veh/h	34	0	267	15	0	780	170	0	0	367	0	0
Grp Sat Flow(s),veh/h/ln	690	0	1834	1108	0	1854	1254	0	0	1754	0	0
Q Serve(g_s), s	2.9	0.0	5.5	0.5	0.0	23.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	26.1	0.0	5.5	6.0	0.0	23.2	6.4	0.0	0.0	11.3	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.03	0.40		0.08	0.02		0.34
Lane Grp Cap(c), veh/h	226	0	954	594	0	964	527	0	0	686	0	0
V/C Ratio(X)	0.15	0.00	0.28	0.03	0.00	0.81	0.32	0.00	0.00	0.53	0.00	0.00
Avail Cap(c_a), veh/h	312	0	1182	732	0	1195	527	0	0	686	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.1	0.0	9.0	10.7	0.0	13.3	15.3	0.0	0.0	17.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.2	0.0	0.0	3.5	1.6	0.0	0.0	3.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.5	0.0	2.2	0.1	0.0	10.2	2.1	0.0	0.0	5.2	0.0	0.0
Lane Grp Delay (d), s/veh	24.4	0.0	9.1	10.7	0.0	16.7	16.9	0.0	0.0	20.2	0.0	0.0
Lane Grp LOS	C		A	B		B	B			C		
Approach Vol, veh/h	301				795			170			367	
Approach Delay, s/veh	10.9				16.6			16.9			20.2	
Approach LOS	B				B			B			C	
Timer												
Assigned Phs	4				8			2			6	
Phs Duration (G+Y+Rc), s	38.7				38.7			28.0			28.0	
Change Period (Y+Rc), s	4.0				4.0			4.0			4.0	
Max Green Setting (Gmax), s	43.0				43.0			24.0			24.0	
Max Q Clear Time (g_c+H1), s	28.1				25.2			8.4			13.3	
Green Ext Time (p_c), s	6.6				7.2			3.0			2.5	
Intersection Summary												
HCM 2010 Ctrl Delay					16.4							
HCM 2010 LOS					B							
Notes												

HCM 2010 Signalized Intersection Summary

2035 AM Background
13: Henderson Ave. & McMillan Ave.

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	EBL	EBT	WBT	WBR	SBL	SBR
Volume (veh/h)	35	220	640	70	66	39
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	1	1	0	1	1
Cap, veh/h	278	1023	907	99	554	494
Arrive On Green	0.55	0.55	0.55	0.55	0.31	0.31
Sat Flow, veh/h	695	1863	1651	180	1774	1583
Grp Volume(v), veh/h	38	239	0	772	72	42
Grp Sat Flow(s),veh/h/ln	695	1863	0	1831	1774	1583
Q Serve(g_s), s	2.6	3.8	0.0	19.0	1.7	1.1
Cycle Q Clear(g_c), s	21.6	3.8	0.0	19.0	1.7	1.1
Prop In Lane	1.00			0.10	1.00	1.00
Lane Grp Cap(c), veh/h	278	1023	0	1006	554	494
V/C Ratio(X)	0.14	0.23	0.00	0.77	0.13	0.09
Avail Cap(c_a), veh/h	487	1582	0	1555	554	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	6.7	0.0	10.1	14.2	14.0
Incr Delay (d2), s/veh	0.2	0.1	0.0	1.3	0.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.4	1.4	0.0	7.2	0.8	0.4
Lane Grp Delay (d), s/veh	18.7	6.8	0.0	11.4	14.7	14.4
Lane Grp LOS	B	A		B	B	B
Approach Vol, veh/h	277	772			114	
Approach Delay, s/veh	8.5	11.4			14.6	
Approach LOS	A	B			B	
Timer						
Assigned Phs	4		8			
Phs Duration (G+Y+Rc), s	35.7		35.7			
Change Period (Y+Rc), s	4.0		4.0			
Max Green Setting (Gmax), s	49.0		49.0			
Max Q Clear Time (g_c+H1), s	23.6		21.0			
Green Ext Time (p_c), s	8.1		8.4			
Intersection Summary						
HCM 2010 Ctrl Delay					11.0	
HCM 2010 LOS					B	
Notes						

HCM 2010 TWSC

2035 AM Background
6: Capitol Ave. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	3.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	222	22	66	645	88	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	241	24	72	701	96	36
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	265	0	1098	253
Stage 1	-	-	-	-	253	-
Stage 2	-	-	-	-	845	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1299	-	235	786
Stage 1	-	-	-	-	789	-
Stage 2	-	-	-	-	421	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1299	-	214	786
Mov Capacity-2 Maneuver	-	-	-	-	214	-
Stage 1	-	-	-	-	789	-
Stage 2	-	-	-	-	383	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.7		30.9	
HCM LOS					D	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	267	-	-	1299	-	
HCM Lane V/C Ratio	0.493	-	-	0.055	-	
HCM Control Delay (s)	30.9	-	-	7.933	0	
HCM Lane LOS	D	-	-	A	A	
HCM 95th %tile Q(veh)	2.533	-	-	0.175	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2035 AM Background
8: Henderson Ave. & Glencoe St.

Intersection						
Intersection Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	8	246	690	5	11	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	267	750	5	12	24
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	755	0	-	0	1038	753
Stage 1	-	-	-	-	753	-
Stage 2	-	-	-	-	285	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	855	-	-	-	256	410
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	763	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	855	-	-	-	253	410
Mov Capacity-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	754	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		16.8	
HCM LOS					C	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	855	-	-	-	340	
HCM Lane V/C Ratio	0.01	-	-	-	0.105	
HCM Control Delay (s)	9.254	0	-	-	16.8	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.031	-	-	-	0.351	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2035 AM Background
10: Fuqua St. & Henderson Ave.

Intersection												
Intersection Delay, s/veh		1.3										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	248	10	13	658	7	34	0	17	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	270	11	14	715	8	37	0	18	0	0	2
Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	723	0	0	280	0	0	1023	1026	275	1031	1027	719
Stage 1	-	-	-	-	-	-	275	275	-	747	747	-
Stage 2	-	-	-	-	-	-	748	751	-	284	280	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	879	-	-	1283	-	-	214	235	764	211	234	428
Stage 1	-	-	-	-	-	-	731	683	-	405	420	-
Stage 2	-	-	-	-	-	-	404	418	-	723	679	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	879	-	-	1283	-	-	210	231	764	203	230	428
Mov Capacity-2 Maneuver	-	-	-	-	-	-	210	231	-	203	230	-
Stage 1	-	-	-	-	-	-	731	683	-	405	412	-
Stage 2	-	-	-	-	-	-	395	410	-	706	679	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	0		0.2		21.2		13.5					
HCM LOS					C		B					
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	277	879	-	-	1283	-	-	428				
HCM Lane V/C Ratio	0.2	-	-	-	0.011	-	-	0.005				
HCM Control Delay (s)	21.2	0	-	-	7.837	0	-	13.5				
HCM Lane LOS	C	A	-	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.731	0	-	-	0.033	-	-	0.015				
Notes												
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

HCM 2010 TWSC

2035 AM Background
14: Monarch St. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	263	27	31	695	21	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	286	29	34	755	23	71
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	315	0	1124	301
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	823	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1245	-	227	739
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	431	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1245	-	216	739
Mov Capacity-2 Maneuver	-	-	-	-	216	-
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	411	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.3		14.7	
HCM LOS					B	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	464	-	-	1245	-	
HCM Lane V/C Ratio	0.201	-	-	0.027	-	
HCM Control Delay (s)	14.7	-	-	7.972	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.745	-	-	0.083	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 Signalized Intersection Summary

2035 PM Background
3: Belmont Ave. & Henderson Ave.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	121	639	68	30	360	29	30	283	36	17	137	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Cap, veh/h	457	852	91	216	874	72	87	561	68	74	392	226
Arrive On Green	0.51	0.51	0.51	0.51	0.51	0.51	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	960	1655	176	697	1699	139	84	1511	182	50	1055	609
Grp Volume(v), veh/h	132	0	769	33	0	423	380	0	0	259	0	0
Grp Sat Flow(s),veh/h/ln	960	0	1832	697	0	1838	1777	0	0	1714	0	0
Q Serve(g_s), s	7.0	0.0	24.6	2.9	0.0	10.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	17.2	0.0	24.6	27.5	0.0	10.2	11.5	0.0	0.0	7.6	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.08	0.09		0.10	0.07		0.36
Lane Grp Cap(c), veh/h	457	0	942	216	0	946	716	0	0	692	0	0
V/C Ratio(X)	0.29	0.00	0.82	0.15	0.00	0.45	0.53	0.00	0.00	0.37	0.00	0.00
Avail Cap(c_a), veh/h	526	0	1073	266	0	1076	716	0	0	692	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.1	0.0	14.2	25.7	0.0	10.7	17.5	0.0	0.0	16.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	4.5	0.3	0.0	0.3	2.8	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.7	0.0	11.0	0.5	0.0	4.2	5.5	0.0	0.0	3.5	0.0	0.0
Lane Grp Delay (d), s/veh	16.5	0.0	18.7	26.1	0.0	11.1	20.3	0.0	0.0	17.8	0.0	0.0
Lane Grp LOS	B		B	C		B	C			B		
Approach Vol, veh/h	901			456			380			259		
Approach Delay, s/veh	18.4			12.1			20.3			17.8		
Approach LOS	B			B			C			B		
Timer												
Assigned Phs	4			8			2			6		
Phs Duration (G+Y+Rc), s	40.0			40.0			30.0			30.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	41.0			41.0			26.0			26.0		
Max Q Clear Time (g_c+H1), s	26.6			29.5			13.5			9.6		
Green Ext Time (p_c), s	7.5			6.5			3.2			3.7		
Intersection Summary												
HCM 2010 Ctrl Delay	17.2											
HCM 2010 LOS	B											
Notes												

HCM 2010 Signalized Intersection Summary

2035 PM Background
13: Henderson Ave. & McMillan Ave.

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	48	703	373	114	95	39
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	1	1	0	1	1
Cap, veh/h	447	1031	758	232	539	481
Arrive On Green	0.55	0.55	0.55	0.55	0.30	0.30
Sat Flow, veh/h	871	1863	1369	419	1774	1583
Grp Volume(v), veh/h	52	764	0	529	103	42
Grp Sat Flow(s),veh/h/ln	871	1863	0	1789	1774	1583
Q Serve(g_s), s	2.3	17.4	0.0	10.5	2.4	1.1
Cycle Q Clear(g_c), s	12.8	17.4	0.0	10.5	2.4	1.1
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	447	1031	0	990	539	481
V/C Ratio(X)	0.12	0.74	0.00	0.53	0.19	0.09
Avail Cap(c_a), veh/h	743	1664	0	1598	539	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	9.5	0.0	7.9	14.4	13.9
Incr Delay (d2), s/veh	0.1	1.1	0.0	0.5	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.4	6.7	0.0	3.8	1.1	0.4
Lane Grp Delay (d), s/veh	12.1	10.5	0.0	8.4	15.2	14.3
Lane Grp LOS	B	B		A	B	B
Approach Vol, veh/h	816		529		145	
Approach Delay, s/veh	10.6		8.4		14.9	
Approach LOS	B		A		B	
Timer						
Assigned Phs	4		8			
Phs Duration (G+Y+Rc), s	35.0		35.0			
Change Period (Y+Rc), s	4.0		4.0			
Max Green Setting (Gmax), s	50.0		50.0			
Max Q Clear Time (g_c+I1), s	19.4		12.5			
Green Ext Time (p_c), s	11.6		12.4			
Intersection Summary						
HCM 2010 Ctrl Delay			10.3			
HCM 2010 LOS			B			
Notes						

HCM 2010 TWSC

2035 PM Background
6: Capitol Ave. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	616	75	74	349	69	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	670	82	80	379	75	137
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	751	0	1250	710
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	540	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	858	-	191	434
Stage 1	-	-	-	-	487	-
Stage 2	-	-	-	-	584	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	858	-	168	434
Mov Capacity-2 Maneuver	-	-	-	-	168	-
Stage 1	-	-	-	-	487	-
Stage 2	-	-	-	-	515	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.7		49.9	
HCM LOS					E	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	278	-	-	858	-	
HCM Lane V/C Ratio	0.762	-	-	0.094	-	
HCM Control Delay (s)	49.9	-	-	9.629	0	
HCM Lane LOS	E			A	A	
HCM 95th %tile Q(veh)	5.697	-	-	0.309	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2035 PM Background
8: Henderson Ave. & Glencoe St.

Intersection						
Intersection Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	28	714	405	21	23	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	776	440	23	25	21
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	463	0	-	0	1289	452
Stage 1	-	-	-	-	452	-
Stage 2	-	-	-	-	837	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1098	-	-	-	181	608
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	425	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1098	-	-	-	172	608
Mov Capacity-2 Maneuver	-	-	-	-	172	-
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	405	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		22.2	
HCM LOS					C	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1098	-	-	-	255	
HCM Lane V/C Ratio	0.028	-	-	-	0.179	
HCM Control Delay (s)	8.372	0	-	-	22.2	
HCM Lane LOS	A	A			C	
HCM 95th %tile Q(veh)	0.085	-	-	-	0.639	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2035 PM Background
10: Fuqua St. & Henderson Ave.

Intersection												
Intersection Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	708	28	21	402	0	22	0	34	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	770	30	23	437	0	24	0	37	1	0	1
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	437	0	0	800	0	0	1270	1270	785	1288	1285	437
Stage 1	-	-	-	-	-	-	787	787	-	483	483	-
Stage 2	-	-	-	-	-	-	483	483	-	805	802	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1123	-	-	823	-	-	145	168	393	141	165	620
Stage 1	-	-	-	-	-	-	385	403	-	565	553	-
Stage 2	-	-	-	-	-	-	565	553	-	376	396	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1123	-	-	823	-	-	140	161	393	124	159	620
Mov Capacity-2 Maneuver	-	-	-	-	-	-	140	161	-	124	159	-
Stage 1	-	-	-	-	-	-	384	402	-	564	533	-
Stage 2	-	-	-	-	-	-	543	533	-	340	395	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0		0.5			26.2			22.6			
HCM LOS						D			C			
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	230	1123	-	-	823	-	-	207				
HCM Lane V/C Ratio	0.265	0.001	-	-	0.028	-	-	0.011				
HCM Control Delay (s)	26.2	8.209	0	-	9.499	0	-	22.6				
HCM Lane LOS	D	A	A		A	A		C				
HCM 95th %tile Q(veh)	1.03	0.003	-	-	0.086	-	-	0.032				
Notes												
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

HCM 2010 TWSC

2035 PM Background
14: Monarch St. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	765	40	58	469	21	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	832	43	63	510	23	75
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	875	0	1489	853
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	636	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	771	-	136	359
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	527	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	771	-	120	359
Mov Capacity-2 Maneuver	-	-	-	-	120	-
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	467	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.1		29.1	
HCM LOS					D	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	245	-	-	771	-	
HCM Lane V/C Ratio	0.399	-	-	0.082	-	
HCM Control Delay (s)	29.1	-	-	10.085	0	
HCM Lane LOS	D			B	A	
HCM 95th %tile Q(veh)	1.815	-	-	0.266	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						



SynchroTM Output - 2035 Background Plus Site Traffic

2035 AM Background + Site
3: Belmont Ave. & Henderson Ave.

HCM 2010 Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	←	→	↘	←	→	↘	←	→	↘	←	→	↘
Lane Configurations	↘	↗		↘	↗			↕			↕	
Volume (veh/h)	31	328	22	17	727	19	63	81	22	6	217	114
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	190.0	186.3	190.0	186.3	190.0	190.0
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Cap, veh/h	211	912	61	508	955	25	209	253	60	56	411	212
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	670	1726	116	998	1806	48	386	707	168	10	1151	593
Grp Volume(v), veh/h	34	0	381	18	0	811	180	0	0	367	0	0
Grp Sat Flow(s),veh/h/ln	670	0	1842	998	0	1854	1262	0	0	1754	0	0
Q Serve(g_s), s	3.1	0.0	8.6	0.8	0.0	25.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	28.8	0.0	8.6	9.4	0.0	25.7	7.3	0.0	0.0	11.9	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.03	0.38		0.13	0.02		0.34
Lane Grp Cap(c), veh/h	211	0	974	508	0	980	522	0	0	679	0	0
V/C Ratio(X)	0.16	0.00	0.39	0.04	0.00	0.83	0.35	0.00	0.00	0.54	0.00	0.00
Avail Cap(c_a), veh/h	259	0	1105	579	0	1113	522	0	0	679	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.9	0.0	9.8	12.6	0.0	13.8	16.3	0.0	0.0	18.3	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.3	0.0	0.0	4.8	1.8	0.0	0.0	3.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.5	0.0	3.5	0.2	0.0	11.7	2.4	0.0	0.0	5.5	0.0	0.0
Lane Grp Delay (d), s/veh	26.2	0.0	10.1	12.6	0.0	18.6	18.1	0.0	0.0	21.4	0.0	0.0
Lane Grp LOS	C		B	B		B	B			C		
Approach Vol, veh/h	415				829			180			367	
Approach Delay, s/veh	11.4				18.5			18.1			21.4	
Approach LOS	B				B			B			C	
Timer												
Assigned Phs	4			8			2			6		
Phs Duration (G+Y+Rc), s	41.0			41.0			29.0			29.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	42.0			42.0			25.0			25.0		
Max Q Clear Time (g_c+H1), s	30.8			27.7			9.3			13.9		
Green Ext Time (p_c), s	6.2			7.3			3.1			2.6		
Intersection Summary												
HCM 2010 Ctrl Delay		17.4										
HCM 2010 LOS		B										
Notes												

2035 AM Background + Site
13: Henderson Ave. & McMillan Ave.

HCM 2010 Signalized Intersection Summary

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	←	→	←	↘	←	↘
Lane Configurations	↘	↗	↗		↘	↗
Volume (veh/h)	36	237	701	70	66	43
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	1	1	0	1	1
Cap, veh/h	244	1056	945	94	549	490
Arrive On Green	0.57	0.57	0.57	0.57	0.31	0.31
Sat Flow, veh/h	653	1863	1667	166	1774	1583
Grp Volume(v), veh/h	39	258	0	838	72	47
Grp Sat Flow(s),veh/h/ln	653	1863	0	1833	1774	1583
Q Serve(g_s), s	3.3	4.5	0.0	23.6	1.9	1.4
Cycle Q Clear(g_c), s	26.8	4.5	0.0	23.6	1.9	1.4
Prop In Lane	1.00			0.09	1.00	1.00
Lane Grp Cap(c), veh/h	244	1056	0	1040	549	490
V/C Ratio(X)	0.16	0.24	0.00	0.81	0.13	0.10
Avail Cap(c_a), veh/h	348	1354	0	1332	549	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.9	7.0	0.0	11.2	16.1	15.9
Incr Delay (d2), s/veh	0.3	0.1	0.0	2.9	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.5	1.8	0.0	9.7	0.9	0.6
Lane Grp Delay (d), s/veh	22.2	7.2	0.0	14.1	16.6	16.3
Lane Grp LOS	C	A		B	B	B
Approach Vol, veh/h	297	838		119		
Approach Delay, s/veh	9.1	14.1		16.5		
Approach LOS	A	B		B		
Timer						
Assigned Phs	4	8				
Phs Duration (G+Y+Rc), s	40.7	40.7				
Change Period (Y+Rc), s	4.0	4.0				
Max Green Setting (Gmax), s	47.0	47.0				
Max Q Clear Time (g_c+H1), s	28.8	25.6				
Green Ext Time (p_c), s	7.8	8.5				
Intersection Summary						
HCM 2010 Ctrl Delay		13.1				
HCM 2010 LOS		B				
Notes						

HCM 2010 TWSC

2035 AM Background + Site
6: Capitol Ave. & Henderson Ave.

Intersection							
Intersection Delay, s/veh		4.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Vol, veh/h	336	22	67	676	88	37	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	150	0	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	365	24	73	735	96	40	
Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	389	0	1257	377	
Stage 1	-	-	-	-	377	-	
Stage 2	-	-	-	-	880	-	
Follow-up Headway	-	-	2.218	-	3.518	3.318	
Pot Capacity-1 Maneuver	-	-	1170	-	189	670	
Stage 1	-	-	-	-	694	-	
Stage 2	-	-	-	-	406	-	
Time blocked-Platoon, %	-	-	-	-	-	-	
Mov Capacity-1 Maneuver	-	-	1170	-	169	670	
Mov Capacity-2 Maneuver	-	-	-	-	169	-	
Stage 1	-	-	-	-	694	-	
Stage 2	-	-	-	-	363	-	
Approach	EB		WB		NB		
HCM Control Delay, s	0		0.7		39.1		
HCM LOS					E		
Minor Lane / Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	
Capacity (veh/h)	169	670	-	-	1170	-	
HCM Lane V/C Ratio	0.566	0.06	-	-	0.062	-	
HCM Control Delay (s)	51	10.7	-	-	8.281	0	
HCM Lane LOS	F	B	-	-	A	A	
HCM 95th %tile Q(veh)	2.958	0.191	-	-	0.199	-	
Notes							
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined							

HCM 2010 TWSC

2035 AM Background + Site
8: Henderson Ave. & Glencoe St.

Intersection							
Intersection Delay, s/veh		0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Vol, veh/h	8	363	722	6	15	22	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	150	-	-	-	0	-	
Veh in Median Storage, #	-	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	9	395	785	7	16	24	
Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	791	0	-	0	1200	788	
Stage 1	-	-	-	-	788	-	
Stage 2	-	-	-	-	412	-	
Follow-up Headway	2.218	-	-	-	3.518	3.318	
Pot Capacity-1 Maneuver	829	-	-	-	204	391	
Stage 1	-	-	-	-	448	-	
Stage 2	-	-	-	-	669	-	
Time blocked-Platoon, %	-	-	-	-	-	-	
Mov Capacity-1 Maneuver	829	-	-	-	202	391	
Mov Capacity-2 Maneuver	-	-	-	-	202	-	
Stage 1	-	-	-	-	448	-	
Stage 2	-	-	-	-	662	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0.2		0		19.8		
HCM LOS					C		
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	829	-	-	-	283		
HCM Lane V/C Ratio	0.01	-	-	-	0.142		
HCM Control Delay (s)	9.389	-	-	-	19.8		
HCM Lane LOS	A	-	-	-	C		
HCM 95th %tile Q(veh)	0.032	-	-	-	0.489		
Notes							
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined							

HCM 2010 TWSC

2035 AM Background + Site
10: Fuqua St./Drive D & Henderson Ave.

Intersection												
Intersection Delay, s/veh		2										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	30	281	10	13	681	18	34	4	17	3	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	305	11	14	740	20	37	4	18	3	1	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	760	0	0	316	0	0	1155	1164	311	1166	1160	750
Stage 1	-	-	-	-	-	-	376	376	-	778	778	-
Stage 2	-	-	-	-	-	-	779	788	-	388	382	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	852	-	-	1244	-	-	174	194	729	171	195	411
Stage 1	-	-	-	-	-	-	645	616	-	389	407	-
Stage 2	-	-	-	-	-	-	389	402	-	636	613	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	852	-	-	1244	-	-	161	183	729	156	184	411
Mov Capacity-2 Maneuver	-	-	-	-	-	-	161	183	-	156	184	-
Stage 1	-	-	-	-	-	-	620	592	-	374	399	-
Stage 2	-	-	-	-	-	-	370	394	-	591	589	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0.1			28.1			18		
HCM LOS							D			C		
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	215	852	-	-	1244	-	-	224	411			
HCM Lane V/C Ratio	0.278	0.038	-	-	0.011	-	-	0.036	0.018			
HCM Control Delay (s)	28.1	9.393	-	-	7.927	0	-	21.7	13.9			
HCM Lane LOS	D	A			A	A		C	B			
HCM 95th %tile Q(veh)	1.094	0.119	-	-	0.034	-	-	0.11	0.054			
Notes												
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

HCM 2010 TWSC

2035 AM Background + Site
14: Monarch St. & Henderson Ave.

Intersection						
Intersection Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	280	27	31	756	21	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	304	29	34	822	23	71
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	334	0	1208	319
Stage 1	-	-	-	-	319	-
Stage 2	-	-	-	-	889	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1225	-	202	722
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	402	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1225	-	192	722
Mov Capacity-2 Maneuver	-	-	-	-	192	-
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	381	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.3		15.7	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	431	-	-	1225	-	
HCM Lane V/C Ratio	0.217	-	-	0.028	-	
HCM Control Delay (s)	15.7	-	-	8.022	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	0.815	-	-	0.085	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2035 AM Background + Site
18: Henderson Ave. & Drive A

HCM 2010 TWSC

Intersection						
Intersection Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	49	329	715	9	3	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	358	777	10	3	15
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	787	0	-	0	1246	782
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	464	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	832	-	-	-	192	394
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	633	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	832	-	-	-	180	394
Mov Capacity-2 Maneuver	-	-	-	-	180	-
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	593	-
Approach	EB		WB		SB	
HCM Control Delay, s	1.2		0		16.7	
HCM LOS					C	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	832	-	-	-	326	
HCM Lane V/C Ratio	0.064	-	-	-	0.057	
HCM Control Delay (s)	9.623	-	-	-	16.7	
HCM Lane LOS	A				C	
HCM 95th %tile Q(veh)	0.205	-	-	-	0.179	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2035 AM Background + Site
21: Drive C & Henderson Ave.

HCM 2010 TWSC

Intersection						
Intersection Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	318	0	0	726	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	346	0	0	789	4	2
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	346	0	1135	346
Stage 1	-	-	-	-	346	-
Stage 2	-	-	-	-	789	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1213	-	224	697
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	448	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1213	-	224	697
Mov Capacity-2 Maneuver	-	-	-	-	224	-
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	448	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		17.7	
HCM LOS					C	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	289	-	-	1213	-	
HCM Lane V/C Ratio	0.023	-	-	-	-	
HCM Control Delay (s)	17.7	-	-	0	-	
HCM Lane LOS	C			A		
HCM 95th %tile Q(veh)	0.069	-	-	0	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2035 AM Background + Site

26: Henderson Ave. & Drive E

HCM 2010 TWSC

Intersection						
Intersection Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	28	270	707	38	10	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	293	768	41	11	9
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	810	0	-	0	1143	789
Stage 1	-	-	-	-	789	-
Stage 2	-	-	-	-	354	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	816	-	-	-	221	391
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	710	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	816	-	-	-	213	391
Mov Capacity-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	684	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.9		0		19.5	
HCM LOS					C	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	816	-	-	-	267	
HCM Lane V/C Ratio	0.037	-	-	-	0.073	
HCM Control Delay (s)	9.583	-	-	-	19.5	
HCM Lane LOS	A				C	
HCM 95th %tile Q(veh)	0.116	-	-	-	0.235	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2035 PM Background + Site
3: Belmont Ave. & Henderson Ave.

HCM 2010 Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	121	783	68	48	562	29	30	283	49	17	137	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0
Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Cap, veh/h	350	946	82	164	982	51	80	482	79	69	351	203
Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	784	1690	147	602	1755	92	83	1447	238	52	1053	609
Grp Volume(v), veh/h	132	0	925	52	0	643	394	0	0	259	0	0
Grp Sat Flow(s),veh/h/ln	784	0	1837	602	0	1847	1768	0	0	1714	0	0
Q Serve(g_s), s	10.3	0.0	33.5	6.3	0.0	17.6	3.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	27.9	0.0	33.5	39.8	0.0	17.6	14.0	0.0	0.0	8.7	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.05	0.08		0.13	0.07		0.36
Lane Grp Cap(c), veh/h	350	0	1028	164	0	1034	641	0	0	623	0	0
V/C Ratio(X)	0.38	0.00	0.90	0.32	0.00	0.62	0.61	0.00	0.00	0.42	0.00	0.00
Avail Cap(c_a), veh/h	351	0	1029	164	0	1034	641	0	0	623	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.6	0.0	14.6	32.3	0.0	11.1	21.3	0.0	0.0	19.5	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	10.7	1.1	0.0	1.2	4.4	0.0	0.0	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.0	0.0	16.4	1.0	0.0	7.3	6.7	0.0	0.0	4.0	0.0	0.0
Lane Grp Delay (d), s/veh	21.2	0.0	25.3	33.4	0.0	12.3	25.6	0.0	0.0	21.6	0.0	0.0
Lane Grp LOS	C		C	C		B	C			C		
Approach Vol, veh/h	1057			695			394			259		
Approach Delay, s/veh	24.8			13.9			25.6			21.6		
Approach LOS	C			B			C			C		
Timer												
Assigned Phs	4			8			2			6		
Phs Duration (G+Y+Rc), s	46.0			46.0			29.0			29.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	42.0			42.0			25.0			25.0		
Max Q Clear Time (g_c+H1), s	35.5			41.8			16.0			10.7		
Green Ext Time (p_c), s	5.1			0.2			2.8			3.6		
Intersection Summary												
HCM 2010 Ctrl Delay	21.4											
HCM 2010 LOS	C											
Notes												

2035 PM Background + Site
13: Henderson Ave. & McMillan Ave.

HCM 2010 Signalized Intersection Summary

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	55	821	457	114	95	44
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	1	1	0	1	1
Cap, veh/h	408	1099	849	212	512	457
Arrive On Green	0.59	0.59	0.59	0.59	0.29	0.29
Sat Flow, veh/h	800	1863	1440	359	1774	1583
Grp Volume(v), veh/h	60	892	0	621	103	48
Grp Sat Flow(s),veh/h/ln	800	1863	0	1799	1774	1583
Q Serve(g_s), s	3.3	24.8	0.0	14.2	2.9	1.5
Cycle Q Clear(g_c), s	17.6	24.8	0.0	14.2	2.9	1.5
Prop In Lane	1.00			0.20	1.00	1.00
Lane Grp Cap(c), veh/h	408	1099	0	1061	512	457
V/C Ratio(X)	0.15	0.81	0.00	0.59	0.20	0.11
Avail Cap(c_a), veh/h	520	1358	0	1312	512	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	10.6	0.0	8.5	17.7	17.2
Incr Delay (d2), s/veh	0.2	3.1	0.0	0.5	0.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.6	10.4	0.0	5.3	1.3	0.6
Lane Grp Delay (d), s/veh	14.1	13.8	0.0	9.0	18.6	17.6
Lane Grp LOS	B	B		A	B	B
Approach Vol, veh/h	952		621	151		
Approach Delay, s/veh	13.8		9.0	18.3		
Approach LOS	B		A	B		
Timer						
Assigned Phs	4		8			
Phs Duration (G+Y+Rc), s	42.8		42.8			
Change Period (Y+Rc), s	4.0		4.0			
Max Green Setting (Gmax), s	48.0		48.0			
Max Q Clear Time (g_c+H1), s	26.8		16.2			
Green Ext Time (p_c), s	12.0		15.0			
Intersection Summary						
HCM 2010 Ctrl Delay			12.4			
HCM 2010 LOS			B			
Notes						

HCM 2010 TWSC

2035 PM Background + Site
6: Capitol Ave. & Henderson Ave.

Intersection						
Intersection Delay, s/veh		8.3				
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	773	75	81	570	69	131
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	840	82	88	620	75	142
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	922	0	1677	881
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	796	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	741	-	105	346
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	444	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	741	-	86	346
Mov Capacity-2 Maneuver	-	-	-	-	86	-
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	364	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.3		66.3	
HCM LOS					F	
Minor Lane / Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	86	346	-	-	741	-
HCM Lane V/C Ratio	0.872	0.412	-	-	0.119	-
HCM Control Delay (s)	149.4	22.5	-	-	10.512	0
HCM Lane LOS	F	C			B	A
HCM 95th %tile Q(veh)	4.66	1.949	-	-	0.403	-
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2035 PM Background + Site
8: Henderson Ave. & Glencoe St.

Intersection						
Intersection Delay, s/veh		1.5				
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	28	876	633	28	28	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	952	688	30	30	21
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	718	0	-	0	1716	703
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	1013	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	883	-	-	-	99	438
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	351	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	883	-	-	-	96	438
Mov Capacity-2 Maneuver	-	-	-	-	96	-
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	339	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		44.8	
HCM LOS					E	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	883	-	-	-	140	
HCM Lane V/C Ratio	0.034	-	-	-	0.365	
HCM Control Delay (s)	9.223	-	-	-	44.8	
HCM Lane LOS	A				E	
HCM 95th %tile Q(veh)	0.107	-	-	-	1.517	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2035 PM Background + Site
10: Fuqua St./Drive D & Henderson Ave.

Intersection												
Intersection Delay, s/veh		4.6										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	43	777	28	21	478	16	22	5	34	23	7	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	47	845	30	23	520	17	24	5	37	25	8	65
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	537	0	0	875	0	0	1531	1536	860	1548	1542	528
Stage 1	-	-	-	-	-	-	953	953	-	574	574	-
Stage 2	-	-	-	-	-	-	578	583	-	974	968	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1031	-	-	771	-	-	96	116	356	93	115	550
Stage 1	-	-	-	-	-	-	311	338	-	504	503	-
Stage 2	-	-	-	-	-	-	501	499	-	303	332	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1031	-	-	771	-	-	75	106	356	75	105	550
Mov Capacity-2 Maneuver	-	-	-	-	-	-	75	106	-	75	105	-
Stage 1	-	-	-	-	-	-	297	323	-	481	481	-
Stage 2	-	-	-	-	-	-	416	478	-	255	317	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.4			51.9			36.7		
HCM LOS							F			E		
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	140	1031	-	-	771	-	-	122	550			
HCM Lane V/C Ratio	0.474	0.045	-	-	0.03	-	-	0.445	0.079			
HCM Control Delay (s)	51.9	8.658	-	-	9.812	0	-	56.3	12.1			
HCM Lane LOS	F	A			A	A		F	B			
HCM 95th %tile Q(veh)	2.182	0.142	-	-	0.091	-	-	1.957	0.256			
Notes												
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

HCM 2010 TWSC

2035 PM Background + Site
14: Monarch St. & Henderson Ave.

Intersection						
Intersection Delay, s/veh		2.7				
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	883	40	58	553	21	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	960	43	63	601	23	75
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1003	0	1709	982
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	727	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	690	-	100	302
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	478	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	690	-	86	302
Mov Capacity-2 Maneuver	-	-	-	-	86	-
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	413	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1		42.5	
HCM LOS					E	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	190	-	-	690	-	
HCM Lane V/C Ratio	0.515	-	-	0.091	-	
HCM Control Delay (s)	42.5	-	-	10.741	0	
HCM Lane LOS	E	-	-	B	A	
HCM 95th %tile Q(veh)	2.598	-	-	0.301	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2035 PM Background + Site
18: Henderson Ave. & Drive A

Intersection						
Intersection Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	68	836	565	13	18	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	909	614	14	20	104
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	628	0	-	0	1678	621
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	1057	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	954	-	-	-	104	487
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	334	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	954	-	-	-	96	487
Mov Capacity-2 Maneuver	-	-	-	-	96	-
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	308	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.7		0		25.6	
HCM LOS					D	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	954	-	-	-	296	
HCM Lane V/C Ratio	0.077	-	-	-	0.419	
HCM Control Delay (s)	9.09	-	-	-	25.6	
HCM Lane LOS	A				D	
HCM 95th %tile Q(veh)	0.251	-	-	-	1.978	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

HCM 2010 TWSC

2035 PM Background + Site
21: Drive C & Henderson Ave.

Intersection						
Intersection Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	836	0	0	560	26	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	909	0	0	609	28	12
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	909	0	1518	909
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	609	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	749	-	131	333
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	543	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	749	-	131	333
Mov Capacity-2 Maneuver	-	-	-	-	131	-
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	543	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		34.9	
HCM LOS					D	
Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	160	-	-	749	-	
HCM Lane V/C Ratio	0.251	-	-	-	-	
HCM Control Delay (s)	34.9	-	-	0	-	
HCM Lane LOS	D			A		
HCM 95th %tile Q(veh)	0.947	-	-	0	-	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

2035 PM Background + Site

26: Henderson Ave. & Drive E

HCM 2010 TWSC

Intersection						
Intersection Delay, s/veh	5.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	39	808	460	52	74	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	878	500	57	80	60
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	557	0	-	0	1491	528
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	963	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1014	-	-	-	136	550
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	370	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1014	-	-	-	130	550
Mov Capacity-2 Maneuver	-	-	-	-	130	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	355	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.4		0		61.5	
HCM LOS					F	
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1014	-	-	-	193	
HCM Lane V/C Ratio	0.042	-	-	-	0.727	
HCM Control Delay (s)	8.705	-	-	-	61.5	
HCM Lane LOS	A				F	
HCM 95th %tile Q(veh)	0.131	-	-	-	4.668	
Notes						
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						



Henderson Corridor Trip Generation Comparisons

Henderson Corridor Trip Generation Comparisons

Houndstooth Coffee

Land Uses	Amount	Units	ITE Code	Daily One-Way Trips	AM Peak Hour One-Way Trips			PM Peak Hour One-Way Trips		
					IN	OUT	TOTAL	IN	OUT	TOTAL
ITE Standard Rates Coffee Shop w/o Drive-Thru Window	1,720	SF	936	1,408	95	91	186	35	35	70
Observations Houndstooth Coffee	1,720	SF	n/a	380	29	28	57	11	16	27
Observation Difference from ITE Standard:					-73%	-69%	-69%	-69%	-54%	-61%

Core Power Yoga

Land Uses	Amount	Units	ITE Code	Daily One-Way Trips	AM Peak Hour One-Way Trips			PM Peak Hour One-Way Trips		
					IN	OUT	TOTAL	IN	OUT	TOTAL
ITE Standard Rates Health/Fitness Club	5,000	SF	492	165	4	3	7	10	8	18
Observations Core Power Yoga	5,000	SF	n/a	102	1	4	5	11	14	25
Observation Difference from ITE Standard:				-38%	-75%	33%	-29%	10%	75%	39%

Bonobos

Land Uses	Amount	Units	ITE Code	Daily One-Way Trips	AM Peak Hour One-Way Trips			PM Peak Hour One-Way Trips		
					IN	OUT	TOTAL	IN	OUT	TOTAL
ITE Standard Rates Apparel Store	1,240	SF	876	82	1	0	1	3	2	5
Observations Bonobos	1,240	SF	n/a	30	0	0	0	2	3	5
Observation Difference from ITE Standard:				-63%	-100%		-100%	-33%	50%	0%

Warby Parker Classroom

Land Uses	Amount	Units	ITE Code	Daily One-Way Trips	AM Peak Hour One-Way Trips			PM Peak Hour One-Way Trips		
					IN	OUT	TOTAL	IN	OUT	TOTAL
ITE Standard Rates Specialty Retail Center - Equations	1,050	SF	876	83	0	0	0	11	13	24
Observations Warby Parker Classroom	1,050	SF	n/a	208	0	0	0	16	17	33
Observation Difference from ITE Standard:					151%			45%	31%	38%

Gemma

Land Uses	Amount	Units	ITE Code	Daily One-Way Trips	AM Peak Hour One-Way Trips			PM Peak Hour One-Way Trips		
					IN	OUT	TOTAL	IN	OUT	TOTAL
ITE Standard Rates Quality Restaurant	2,400	SF	931	216	1	1	2	12	6	18
Observations Gemma	2,400	SF	n/a	140	0	0	0	24	5	29
Observation Difference from ITE Standard:				-35%	-100%	-100%	-100%	100%	-17%	61%

Combined

Land Uses	Amount	Units	ITE Code	Daily One-Way Trips	AM Peak Hour One-Way Trips			PM Peak Hour One-Way Trips		
					IN	OUT	TOTAL	IN	OUT	TOTAL
ITE Standard Rates										
Coffee Shop w/o Drive-Thru Window	1,720	SF	936	1,408	95	91	186	35	35	70
Health/Fitness Club	5,000	SF	492	165	4	3	7	10	8	18
Apparel Store	1,240	SF	876	82	1	0	1	3	2	5
Specialty Retail Center - Equations	1,050	SF	876	83	0	0	0	11	13	24
Quality Restaurant	2,400	SF	931	216	1	1	2	12	6	18
Combined ITE Standard Totals:				1,954	101	95	196	71	64	135
Observations										
Houndstooth Coffee	1,720	SF	n/a	380	29	28	57	11	16	27
Core Power Yoga	5,000	SF	n/a	102	1	4	5	11	14	25
Bonobos	1,240	SF	n/a	30	0	0	0	2	3	5
Warby Parker Classroom	1,050	SF	n/a	208	0	0	0	16	17	33
Gemma	2,400	SF	n/a	140	0	0	0	24	5	29
Combined Observation Totals:				860	30	32	62	64	55	119
Combined Observation Difference from ITE Standard:				-56%	-70%	-66%	-68%	-10%	-14%	-12%



Alternate Development Plan Per City Design Studio

