SANDERSON STEWART

TRAFFIC IMPACT STUDY

FOR

LAUREL TIF DISTRICT

LAUREL, MONTANA

PREPARED FOR
CITY OF LAUREL
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TRAFFIC IMPACT STUDY

LAUREL TIF DISTRICT

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INTRODUCTION

The purpose of this study is to provide traffic analysis and street corridor planning for several streets and intersections, and for parking within the Laurel Tax Increment Finance (TIF) District boundary in Laurel, Montana. This study considered existing traffic volumes and projected future traffic from anticipated development in the area. This report is supplemental to the Laurel Gateway Plan, which was prepared to guide development in the Laurel TIF District.

The methodology and analysis procedures used in this study employ the latest methods and nationally accepted standards in the areas of site development and transportation impact assessment. Recommendations made in this report are based on professional judgment and these principles.

SITE LOCATION AND DESCRIPTION

The study area included properties within the TIF boundary and streets bounded by SE 4th Street on the south side to 1st Street on the north, and from 1st Avenue on the west side to Bernhardt Road on the east.

The parking evaluation encompasses the stretch of East Main Street from 4th Avenue to Wyoming Avenue, and the intersecting side streets to the north.

Figure 1 shows the location of the project area.

FIGURE 1. PROJECT LOCATION

EXISTING CONDITIONS

Streets

Future development-generated traffic within the study area could cause impacts to adjacent and nearby streets and intersections. The following section describes the existing roadways within the study area. The existing speed limit is posted at 25 miles per hour (mph) for all streets within the study area.

1st Street

1st Street is a local street that provides direct local access to businesses and some private residences. Within the study area limits, the paved road has a single lane in each direction and an unmarked parking lane on both sides of the street. 1st Street has been improved to an urban standard with curb and gutter and sidewalks on both sides of the roadway.

East/West Main Street

East of its intersection with 1st Avenue, East Main Street is classified as a principal arterial in the Montana Department of Transportation (MDT) functional classification system. East Main Street has two lanes in each direction, a parking lane on each side, and a center two-way left-turn lane (TWLTL). West of its intersection with 1st Avenue, West Main Street is classified as a minor arterial by MDT. From 3rd Avenue to 1st Avenue, West Main Street has two travel lanes in the eastbound direction. Parking is allowed in the eastbound direction at marked locations. There is one travel lane and one parking lane in the westbound direction. Main Street is built to urban standards with curb and gutter and sidewalks. Sidewalks are continuous on the north side, but are lacking on portions of the south side.

East Railroad Street

East Railroad Street is considered a major collector in the MDT functional classification system. The paved road has a single travel lane in each direction within the study limits. East Railroad Street has not been improved to an urban standard. It lacks curb and gutter and has no sidewalks or other improved pedestrian facilities.

SE 4th Street

SE 4th Street is a local street that provides direct access to an area of significant commercial development. The 51-foot wide paved road has no pavement markings, but observations indicate that it operates as a 2-lane road with on-street parking on both sides.

1st Avenue

1st Avenue is classified as a principal arterial by MDT. The paved road has a single lane in each direction and a TWLTL from SE 4th Street to East Railroad Street. No on-street parking is allowed in this section. The roadway has a single lane in each direction north of East Railroad Street. On-street parking is allowed north of Main Street. It is improved to urban standards with curb and gutter and continuous sidewalks on both sides.

South Washington Avenue

South Washington Avenue is a local street. It is improved to an urban street standard with curb and gutter but lacks continuous sidewalks. It has no pavement markings but operates with one travel lane in each direction and on-street parking is allowed.

Bernhardt Road

Bernhardt Road is a local street. It is improved to an urban standard with curb and gutter and is marked with a centerline for a single travel lane in each direction. It is a relatively narrow road and as such is signed 'no parking.' There is a continuous sidewalk on the east side of the road, but no sidewalk on the west side.

Intersections

The following section describes the existing condition of the intersections within the study area that would most likely be impacted by future development.

1st Street and 1st Avenue

Located within the central business district, the intersection of 1st Street and 1st Avenue is an offset 4-leg intersection. The 1st Avenue approaches are offset by approximately 80 feet, but the intersection effectively operates as a single all-way stop controlled intersection. All four approaches are marked for a single travel lane. No parking is allowed within the extent of the intersection.

East/West Main Street and 1st Avenue

The intersection of East/West Main Street and 1st Avenue is a 4-leg signalized intersection. The northbound approach has a shared left-turn/through lane and a slip lane for right-turning traffic. The southbound approach has a single lane to accommodate all movements. The east- and westbound approaches each have a right-turn lane, through lane, and left-turn lane.

East Railroad Street and 1st Avenue

The intersection of East Railroad Street and 1st Avenue is a 4-leg intersection with two-way stop control on the east- and westbound approaches. The northbound approach has a shared right-turn/through lane and a left-turn lane. The southbound approach has a single travel lane for all movements. The east- and westbound approaches each have a shared left-turn/through lane and a right-turn lane.

SE 4th Street and 1st Avenue

The intersection of SE 4th Street and 1st Avenue is a 4-leg signalized intersection. The northbound approach has a right-turn lane, through lane, and left-turn lane. The southbound approach has a shared right-turn/through lane and a left-turn lane. The westbound approach has a left-turn lane and a through/right-turn lane. The eastbound approach, which is essentially a commercial parking lot access, is marked as a single-lane approach combined for all movements.

East Railroad Street and South Washington Avenue

The intersection of East Railroad Street and South Washington Avenue is a 3-leg intersection with stop control on the northbound leg. All three approaches (east-, west-, and northbound) have a single lane for all movements.

East Railroad Street and Bernhardt Road

The intersection of East Railroad Street and Bernhardt Road is a 3-leg intersection with stop control on the northbound leg. The north- and westbound approaches have a single lane for all movements. The eastbound approach has a through lane and a marked right-turn lane.

SE 4th Street and South Washington Avenue

The intersection of SE 4th Street and South Washington Avenue is a 3-leg intersection with stop control on the southbound leg. There are no turn lanes marked on the three approaches (eastbound, westbound, and southbound).

Traffic Volumes

Existing weekday peak hour turning movement counts were collected for the traffic study area intersections in July 2014. The traffic counts at the intersection of SE 4th Street and 1st Avenue and the intersection of East Railroad Street and 1st Avenue were provided by Robert Peccia & Associates, which they had previously conducted for the City of Laurel Long Range Transportation Plan-2014.

Based on the data collected, the AM peak hour was found to be from 7:30 to 8:30 AM and the PM peak hour from 4:45 to 5:45 PM. MDT seasonal adjustment factors for the month of July were applied to the existing traffic volumes. Figure 2 summarizes the annualized peak hour turning movement volumes. Detailed traffic count data are included in Attachment 1.

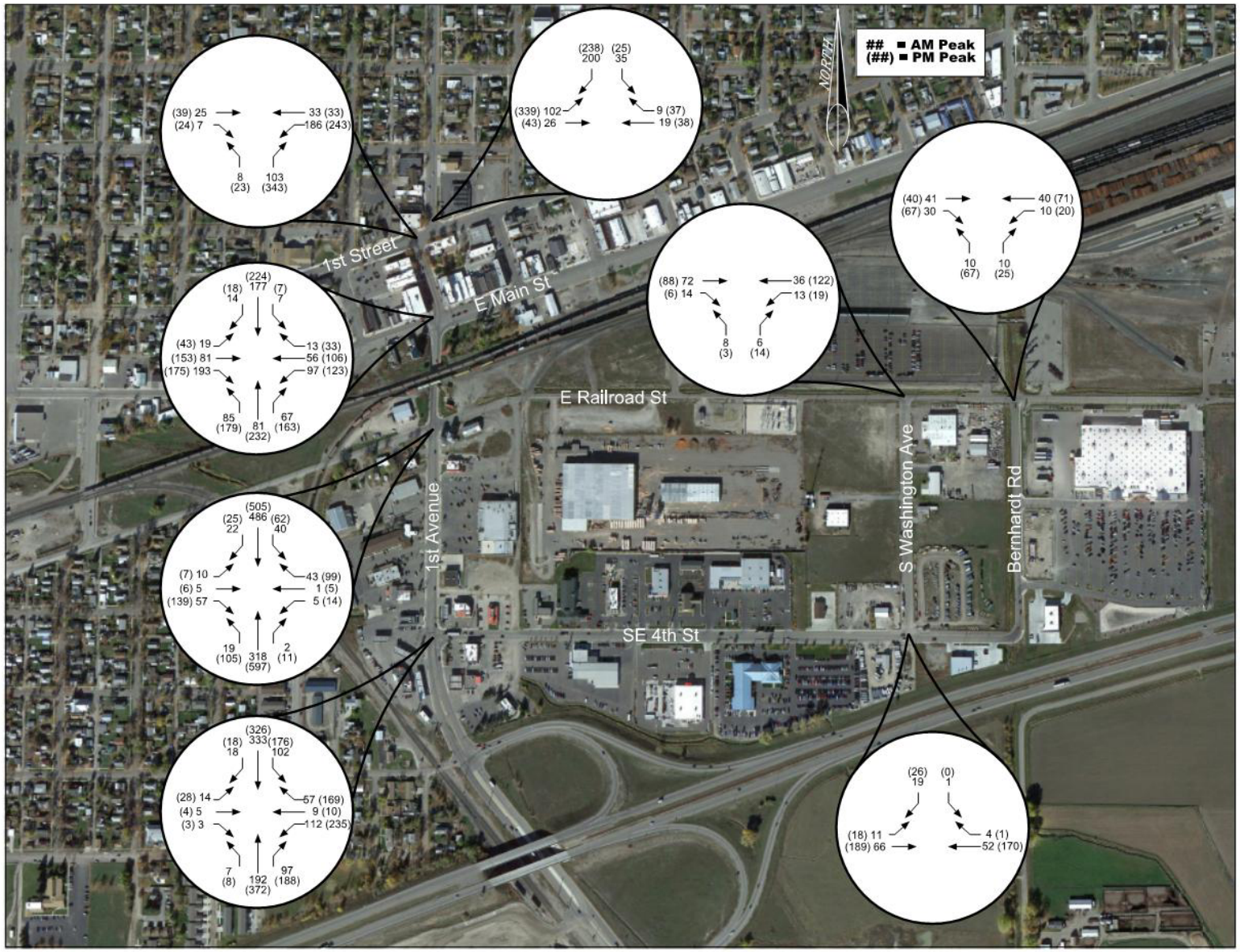


FIGURE 2. EXISTING (2014) PEAK HOUR TRAFFIC VOLUMES

Intersection Capacity

Capacity calculations were performed for the intersections using Synchro v.8.0, which is based on the 2010 Highway Capacity Manual (HCM2010) (Transportation Research Board, 2010) methodologies. The HCM2010 defines level of service (LOS) as "a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience." LOS is a qualitative measure of the performance of an intersection with values ranging from LOS A, indicating good operation and low vehicle delays, to LOS F, which indicates congestion and longer vehicle delays.

Most jurisdictions, including MDT, generally consider LOS C as the minimum standard for acceptable peak hour intersection operations. As shown in Table 1, the study area intersections currently operate at LOS C or better during the PM peak hour with the exception of SE 4th Street and 1st Avenue, which operates at LOS D during the PM peak hour. A few minor approaches of the study area intersections operate below the desired LOS C threshold. This is not uncommon because intersections are often designed to handle the major approaches' high traffic volumes and minor movements will suffer as a consequence. Detailed capacity calculation worksheets for existing conditions are provided in Attachment 2.

Table 1. Existing Conditions Capacity Calculation Summary

Intersection	Approach	Existing (2014)					
		AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	Max Queue (veh)	Avg Delay (s/veh)	LOS	Max Queue (veh)
Intersection Control		*Signalized*					
SE 4th Street & S 1st Avenue	EB	22.2	C	2	22.1	C	2
	WB	26.1	C	5	28.8	C	10
	NB	9.8	A	5	22.1	C	13
	SB	13.6	B	6	65.5	E	12
	Intersection	15.0	B	--	39.4	D	--
Intersection Control		*One-way (SB) Stop Control*					
SE 4th Street & S Washington Avenue	EB	1.1	A	0	0.7	A	0
	WB	0.0	A	0	0.0	A	0
	SB	9.0	A	1	9.7	A	1
	Intersection	1.9	A	--	1.1	A	--
Intersection Control		*One-way (NB) Stop Control*					
E Railroad Street & S Washington Avenue	EB	0.0	A	0	0.0	A	0
	WB	2.0	A	1	1.0	A	0
	NB	9.7	A	1	9.1	A	1
	Intersection	2.0	A	--	1.4	A	--
Intersection Control		*One-way (NB) Stop Control*					
E Railroad Street & Bernhardt Road	EB	0.0	A	0	0.0	A	0
	WB	1.5	A	0	1.6	A	0
	NB	9.1	A	1	9.9	A	1
	Intersection	2.1	A	--	4.0	A	--
Intersection Control		*Two-way (EB & WB) Stop Control*					
Railroad Street & S 1st Avenue	EB	17.0	C	1	29.9	D	4
	WB	13.7	B	1	55.5	F	3
	NB	0.5	A	1	1.4	A	1
	SB	0.6	A	1	1.0	A	1
	Intersection	2.9	A	--	9.6	A	--
Intersection Control		*Signalized*					
1st Avenue & Main Street	EB	23.1	C	4	22.4	C	6
	WB	22.2	C	4	24.1	C	5
	NB	2.3	A	4	2.5	A	9
	SB	8.7	A	6	8.9	A	7
	Intersection	13.8	B	--	12.6	B	--
Intersection Control		*All-way Stop Control*					
1st Avenue & 1st Street	EB	6.0	A	1	7.2	A	1
	WB	6.5	A	1	7.0	A	1
	NB	9.6	A	1	12.1	B	3
	SB	10.3	B	2	12.8	B	2
	Intersection	9.5	A	--	11.4	B	--

Parking Inventory

A parking inventory was conducted along Main Street through the downtown business district from 1st Avenue to Wyoming Avenue and including the intersecting side streets to the north. For the inventory, this area was divided into thirty separate parking zones, each consisting of a one-block segment. For each zone, on-street parking capacity was determined by a linear measurement of the available parking area, which was then divided by 20 feet per parked vehicle to estimate the number of parking spaces available. The inventory was conducted for two hours over the noon and PM peak periods on a typical weekday and typical weekend day. The observed parking numbers are an average of six independent measured inventories for all thirty parking zones observed over the respective 2-hour peak periods. Maximum observed demand (calculated as the maximum from the four collection periods) was divided by the observed parking capacity to arrive at a maximum demand percent of capacity.

At eight of the thirty zones, the maximum demand percentage of capacity was found to be over fifty percent with only three zones over seventy percent of capacity. None of the zones were found to be at capacity. The three zones that were over seventy percent were the east and west blocks of Montana Avenue between Main Street and East 1st Street, and the north block of Main Street between Montana Avenue and Colorado Avenue. The parking inventory and summary table are provided in Attachment 3.

Parking Observations on SE 4th Street

A parking inventory like that conducted in the downtown business district, was not conducted on SE 4th Street, but parking activities and driver behaviors were observed on several different days and times to gauge parking utilization and typical behaviors. It was observed that there is very little use of on-street parking along the SE 4th Street corridor. The businesses along the corridor have significant amounts of off-street parking available, and it was observed that most drivers choose to park on-site. The exception was the occasional oversize vehicle (semi tractor-trailer or pickup with trailer) that parked on-street to avoid maneuvering in/out of an on-site parking lot. While not directly observed during our investigation, adjacent property owners have noted that trucks delivering new cars to the automobile dealerships sometimes use the street to park and off-load cargo.

TRIP GENERATION

An accurate estimate of site-generated traffic must be made in order to analyze the impacts of a new development. This study estimated the amount and type of various land uses that could potentially develop in the area. To calculate trip generation rates, development intensity was estimated based on Sanderson Stewart's experience with commercial and residential land development. It was assumed that future development would consist of a mix of the following uses: industrial, automobile sales, fast-food restaurant, shopping center, office buildings, industrial park, residential condominium/townhouse, and single-family detached housing. Trip rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual were used to estimate the number of vehicle trips produced by the projected development. The resulting trip generation estimates are summarized in Table 2.

ITE trip generation data provides an estimate of the total number of trips that would be generated by a proposed development. However, in order to estimate the net number of new trips made by personal vehicles external to the site, adjustments must often be made to account for internal capture trips. Internal capture trips are vehicle trips that are made within a site using internal roadways. Internal capture trips are generally attributed only to mixed-use developments such as the proposed development for this project area.

The results of the trip generation analysis for this study show that the proposed development would generate approximately 6777 new external personal trips and 643 internal capture trips during an average weekday. Of these new external personal vehicle trips, 571 would occur during the AM peak hour and 563 would occur during the PM peak hour.

Table 2. Trip Generation, Mode & Classification

		Average Weekday			AM Peak Hour			PM Peak Hour		
Land Use	**Intensity**	**total**	**enter**	**exit**	**total**	**enter**	**exit**	**total**	**enter**	**exit**
General Heavy Industrial (1)	6.2	42	21	21	12	10	2	13	3	10
New External Personal Vehicle		42	21	21	12	10	2	13	3	10
Automobile Sales (2)	40	1292	646	646	77	58	19	105	42	63
New External Personal Vehicle		1292	646	646	77	58	19	105	42	63
Fast-food Restaurant with Drive-through Window (3)	8	3969	1985	1984	363	185	178	261	136	125
Internal Capture	10%	397	199	198	36	19	18	26	14	13
New External Personal Vehicle		3572	1786	1786	327	166	160	235	122	112
Shopping Center (4)	25	1068	534	534	24	15	9	93	45	48
Internal Capture	23%	246	123	123	6	3	2	21	10	11
New External Personal Vehicle		822	411	411	18	12	7	72	35	37
General Office Building (5)	50	552	276	276	78	69	9	75	13	62
Internal Capture	12%	66	33	33	9	8	1	9	2	7
New External Personal Vehicle		486	243	243	69	61	8	66	11	55
Industrial Park (6)	7	428	214	214	57	47	10	60	13	47
New External Personal Vehicle		428	214	214	57	47	10	60	13	47
Residential Condominium/Townhouse (7)	20	116	58	58	9	2	7	10	7	3
New External Personal Vehicle		116	58	58	9	2	7	10	7	3
Single-Family Detached Housing (8)	2	19	10	9	2	1	1	2	1	1
New External Personal Vehicle		19	10	9	2	1	1	2	1	1
Total		7486	3744	3742	622	387	235	619	260	359
Total Internal Capture		643	322	321	42	22	20	47	24	24
Total New External Personal Vehicle		6777	3389	3388	571	357	214	563	234	328

(1) General Heavy Industrial - Land Use 120* — Units = Acres
- Average Weekday: — Average Rate = 6.75 — (50% entering, 50% exiting)
- Peak Hour of the Adjacent Street, One Hour between 7 and 9 .. — Average Rate = 1.98 — (83% entering, 17% exiting)
- Peak Hour of the Adjacent Street, One Hour between 4 and 6 .. — Average Rate = 2.16 — (21% entering, 79% exiting)

(2) Automobile Sales - Land Use 841* — Units = 1000 SF Gross Floor Area
- Average Weekday: — Average Rate = 32.30 — (50% entering, 50% exiting)
- Peak Hour of the Adjacent Street, One Hour between 7 and 9 .. — Average Rate = 1.92 — (75% entering, 25% exiting)
- Peak Hour of the Adjacent Street, One Hour between 4 and 6 .. — Average Rate = 2.62 — (40% entering, 60% exiting)

(3) Fast-food Restaurant with Drive-through Window - Land Use — Units = 1000 SF Gross Floor Area
- Average Weekday: — Average Rate = 496.12 — (50% entering, 50% exiting)
- Peak Hour of the Adjacent Street, One Hour between 7 and 9 .. — Average Rate = 45.42 — (51% entering, 49% exiting)
- Peak Hour of the Adjacent Street, One Hour between 4 and 6 .. — Average Rate = 32.65 — (52% entering, 48% exiting)

(4) Shopping Center - Land Use 820* — Units = 1000 SF Gross Leaseable Area
- Average Weekday: — Average Rate = 42.70 — (50% entering, 50% exiting)
- Peak Hour of the Adjacent Street, One Hour between 7 and 9 .. — Average Rate = 0.96 — (62% entering, 38% exiting)
- Peak Hour of the Adjacent Street, One Hour between 4 and 6 .. — Average Rate = 3.71 — (48% entering, 52% exiting)

(5) General Office Building - Land Use 710* — Units = 1000 SF Gross Floor Area
- Average Weekday: — Average Rate = 11.03 — (50% entering, 50% exiting)
- Peak Hour of the Adjacent Street, One Hour between 7 and 9 .. — Average Rate = 1.56 — (88% entering, 12% exiting)
- Peak Hour of the Adjacent Street, One Hour between 4 and 6 .. — Average Rate = 1.49 — (17% entering, 83% exiting)

(6) Industrial Park - Land Use 130* — Units = Acres
- Average Weekday: — Average Rate = 61.17 — (50% entering, 50% exiting)
- Peak Hour of the Adjacent Street, One Hour between 7 and 9 .. — Average Rate = 8.20 — (83% entering, 17% exiting)
- Peak Hour of the Adjacent Street, One Hour between 4 and 6 .. — Average Rate = 8.53 — (21% entering, 79% exiting)

(7) Residential Condominium/Townhouse - Land Use 230* — Units = Dwelling Units
- Average Weekday: — Average Rate = 5.81 — (50% entering, 50% exiting)
- Peak Hour of the Adjacent Street, One Hour between 7 and 9 .. — Average Rate = 0.44 — (17% entering, 83% exiting)
- Peak Hour of the Adjacent Street, One Hour between 4 and 6 .. — Average Rate = 0.52 — (67% entering, 33% exiting)

(8) Single-Family Detached Housing - Land Use 210* — Units = Dwelling Units
- Average Weekday: — Average Rate = 9.52 — (50% entering, 50% exiting)
- Peak Hour of the Adjacent Street, One Hour between 7 and 9 .. — Average Rate = 0.75 — (25% entering, 75% exiting)
- Peak Hour of the Adjacent Street, One Hour between 4 and 6 .. — Average Rate = 1.00 — (63% entering, 37% exiting)

**Trip Generation, 9th Edition,* Institute of Transportation Engineers, 2012

TRIP DISTRIBUTION

Trip distribution is an estimate of site-generated trip origin and destination locations, which can be determined by several methods such as computerized travel demand models or simple inspection of existing traffic patterns within the project area. For this study, the trip distribution was primarily based on the distribution of existing traffic volumes at the study area intersections and the engineer's judgment of minor traffic shifts with the proposed development in place. The projected trip distribution for the project area is illustrated in Figure 3.

TRAFFIC ASSIGNMENT

Traffic assignment is the procedure whereby site-generated vehicle trips are assigned to study area streets, intersections, and site access driveways. The assignment of site-generated traffic is based on the calculated trip distribution, the physical attributes of the project site, and the surrounding street system. Based on this approach, the site-generated trips were assigned to the study area roadway network as illustrated in Figure 3.

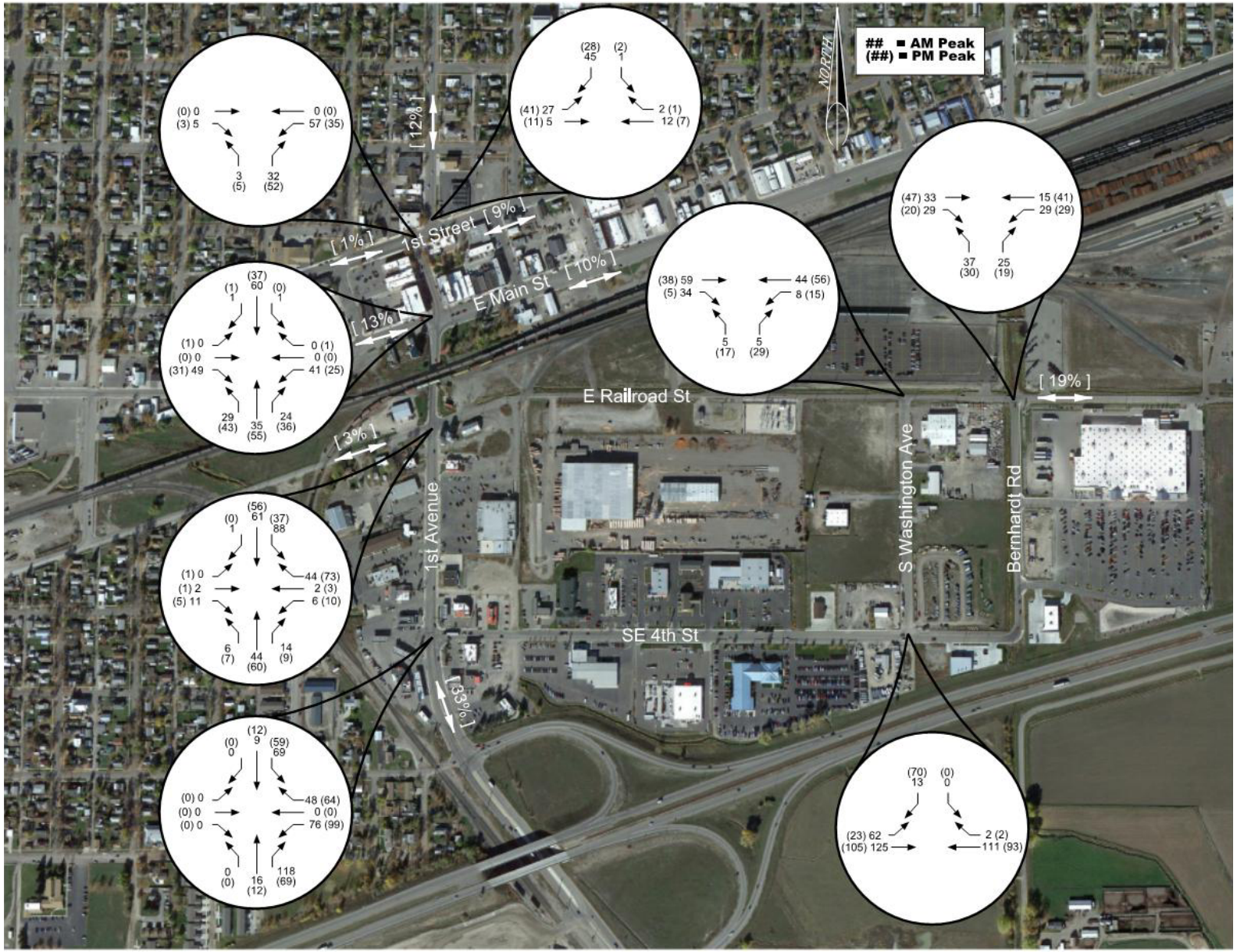


FIGURE 3. TRIP DISTRIBUTION AND ASSIGNMENT

TRAFFIC IMPACTS

Future Conditions Traffic Volumes

Future conditions traffic volumes represent an estimate of the traffic volumes forecasted to be on the street network when the projected developments are expected to be fully constructed. For the purposes of this study, construction of all of the future development in the study area was predicted to be completed within a 20-year timeframe. Therefore, the future build-out year of 2034 was used for this analysis. Based on historic traffic count data from MDT for several project intersections, no additional background growth rate was applied beyond the future development traffic already projected. The future year (2034) peak hour traffic volumes are illustrated in Figure 4.

Future Conditions Capacity Analysis

Intersection operations for future conditions were evaluated using the same methodologies discussed in the evaluation of existing conditions. The LOS analysis is based on the future year (2034) traffic volumes shown in Figure 4 and utilizing existing intersection geometry and traffic control at all intersections. Table 3 summarizes the AM and PM peak hour future conditions LOS results for the study area intersections. The results for existing conditions are also provided for comparison purposes.

As shown in Table 3, the addition of traffic generated by the proposed development would result in increases in approach delay and intersection delay at various study-area intersections. The intersection of SE 4th Street and S 1st Avenue is projected to operate at LOS F, which is driven by the poor LOS values for the WB and SB approaches. The intersection of Railroad Street and S 1st Avenue is projected to operate at LOS D, which is driven by the poor LOS values for the WB and EB approaches. Detailed capacity calculation worksheets for the future conditions scenario are provided in Attachment 4.

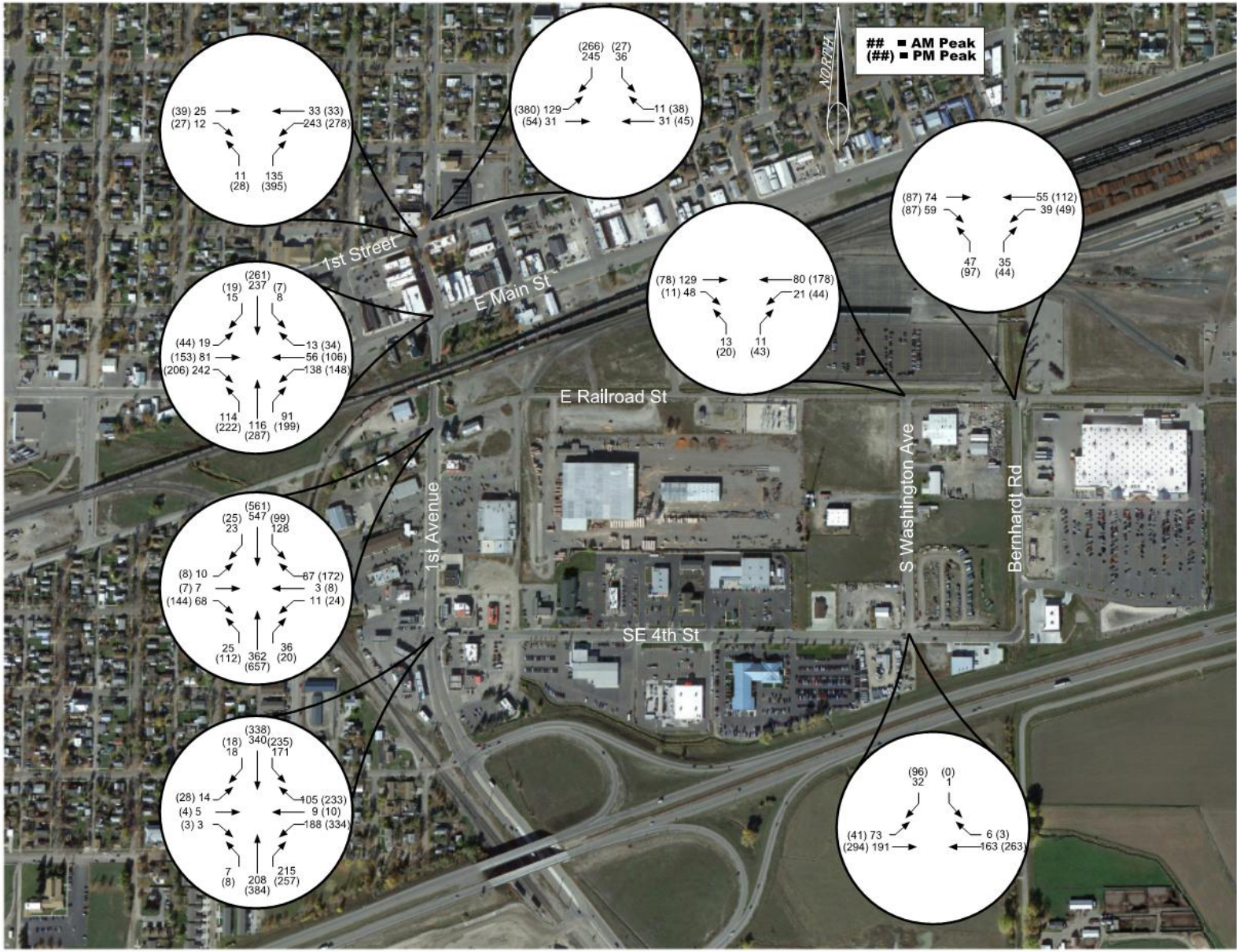


FIGURE 4. FUTURE (2034) PEAK HOUR TRAFFIC VOLUMES

Table 3. Future Conditions Capacity Calculation Summary

Intersection	Approach	Existing (2014)						Future (2034)					
		AM Peak			PM Peak			AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	Max Queue (veh)	Avg Delay (s/veh)	LOS	Max Queue (veh)	Avg Delay (s/veh)	LOS	Max Queue (veh)	Avg Delay (s/veh)	LOS	Max Queue (veh)
Intersection Control		*Signalized*						*Signalized*					
SE 4th Street & S 1st Avenue	EB	22.2	C	2	22.1	C	2	19.8	B	1	24.0	C	2
	WB	26.1	C	5	28.8	C	10	26.4	C	7	83.2	F	16
	NB	9.8	A	5	22.1	C	13	16.1	B	4	23.3	C	14
	SB	13.6	B	6	65.5	E	12	48.7	D	11	143.5	F	16
	Intersection	15.0	B	--	39.4	D	--	32.6	C	--	82.2	F	--
Intersection Control		*One-way (SB) Stop Control*						*One-way (SB) Stop Control*					
SE 4th Street & S Washington Avenue	EB	1.1	A	0	0.7	A	0	2.3	A	1	1.0	A	1
	WB	0.0	A	0	0.0	A	0	0.0	A	0	0.0	A	0
	SB	9.0	A	1	9.7	A	1	10.1	B	1	11.4	B	1
	Intersection	1.9	A	--	1.1	A	--	2.2	A	--	2.2	A	--
Intersection Control		*One-way (NB) Stop Control*						*One-way (NB) Stop Control*					
E Railroad Street & S Washington Avenue	EB	0.0	A	0	0.0	A	0	0.0	A	0	0.0	A	0
	WB	2.0	A	1	1.0	A	0	1.6	A	1	1.5	A	1
	NB	9.7	A	1	9.1	A	1	11.1	B	1	10.2	B	1
	Intersection	2.0	A	--	1.4	A	--	1.8	A	--	3.1	A	--
Intersection Control		*One-way (NB) Stop Control*						*One-way (NB) Stop Control*					
E Railroad Street & Bernhardt Road	EB	0.0	A	0	0.0	A	0	0.0	A	0	0.0	A	0
	WB	1.5	A	0	1.6	A	0	3.2	A	1	2.3	A	1
	NB	9.1	A	1	9.9	A	1	10.9	B	1	12.0	B	2
	Intersection	2.1	A	--	4.0	A	--	4.3	A	--	4.8	A	--
Intersection Control		*Two-way (EB & WB) Stop Control*						*Two-way (EB & WB) Stop Control*					
Railroad Street & S 1st Avenue	EB	17.0	C	1	29.9	D	4	27.6	D	2	65.6	F	5
	WB	13.7	B	1	55.5	F	3	22.7	C	2	215.4	F	6
	NB	0.5	A	1	1.4	A	1	0.5	A	1	1.4	A	1
	SB	0.6	A	1	1.0	A	1	1.6	A	1	1.4	A	1
	Intersection	2.9	A	--	9.6	A	--	5.6	A	--	32.9	D	--
Intersection Control		*Signalized*						*Signalized*					
1st Avenue & Main Street	EB	23.1	C	4	22.4	C	6	25.6	C	4	23.2	C	6
	WB	22.2	C	4	24.1	C	5	24.8	C	6	25.9	C	3
	NB	2.3	A	4	2.5	A	9	2.3	A	5	2.6	A	8
	SB	8.7	A	6	8.9	A	7	9.3	A	8	9.3	A	8
	Intersection	13.8	B	--	12.6	B	--	14.5	B	--	12.7	B	--
Intersection Control		*All-way Stop Control*						*All-way Stop Control*					
1st Avenue & 1st Street	EB	6.0	A	1	7.2	A	1	6.2	A	1	7.3	A	2
	WB	6.5	A	1	7.0	A	1	6.9	A	1	7.2	A	1
	NB	9.6	A	1	12.1	B	3	10.2	B	1	13.7	B	4
	SB	10.3	B	2	12.8	B	2	11.1	B	2	14.5	B	3
	Intersection	9.5	A	--	11.4	B	--	8.7	A	--	10.6	B	--

CONCLUSIONS AND RECOMMENDATIONS

This report documents the results of an evaluation of traffic impacts from future development within the Laurel TIF District. Impacts to pedestrians were also considered, as was parking availability and usage. The recommendations that follow describe key areas of the TIF District that will need to be addressed by the horizon year (2034) when the proposed development is anticipated to be completed.

SE 4th Street Corridor

The SE 4th Street corridor connects the traffic on 1st Avenue, in the vicinity of the I-90 interchange, to several commercial and retail developments to the east. The existing 51-foot wide roadway is not delineated by pavement markings. With the increased traffic demand the projected future development would generate, it is recommended that the existing street section be upgraded to include a marked two-way left-turn lane leaving adequate width for both a standard driving lane and on-street parking in both directions (see Figure 5).

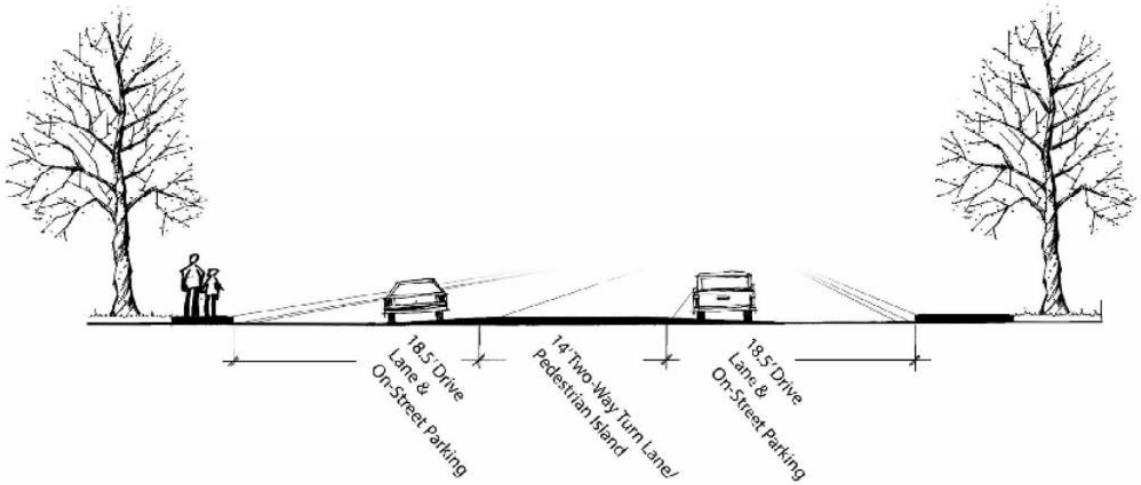


FIGURE 5. SE 4TH STREET PROPOSED TYPICAL SECTION

The existing SE 4th Street corridor has only a single delineated crosswalk at the intersection at 1st Avenue. With the projected future development and increased pedestrian and vehicular traffic volumes, it is recommended that enhanced pedestrian facilities be installed along the corridor. Because of the number and spacing of existing and future access driveways, mid-block crossings should be considered as shown in Figure 6. The mid-block crossings would ideally include a protected refuge area in the middle of the road to create a safer two-stage crossing maneuver. As part of the pedestrian crossing facilities, appropriate signage, pavement markings, and lighting should also be installed.

E Railroad Street

The E Railroad Street corridor also serves as a connection between 1st Avenue and the east end of the TIF District; however, it does not carry the volume of traffic that SE 4th Street currently does. This is mainly due to the undeveloped or not fully developed land adjacent to the roadway, and because it is not constructed to an urban standard. It is recommended that E Railroad Street be upgraded to a full urban standard (curb, gutter, sidewalk, etc.), to accommodate the future traffic that will be generated by commercial development within the TIF District.

1st Avenue

The 1st Avenue corridor serves as a north-south connection to many area businesses and residential areas, including a direct connection from I-90 to the downtown area. Existing businesses are adjacent to 1st Avenue on both the east and west sides of the street; however, there are limited pedestrian facilities to allow a safe crossing of 1st Avenue. Therefore, it is recommended that a mid-block crossing be installed along the corridor north of SE 4th Street, as shown in Figure 6. The mid-block crossing should include a protected refuge area in the middle of the road to create a safer two-stage crossing maneuver. As part of the pedestrian crossing facility, appropriate signage, pavement markings, and lighting should be installed.

FIGURE 6. SE 4TH STREET AND 1ST AVENUE PEDESTRIAN FACILITIES

Intersection Improvements

The intersection of SE 4th Street and 1st Avenue currently operates at LOS D during the existing PM peak hour. This is mainly due to the existing signal timing not giving adequate green time to the southbound left-turns. With projected future development, the intersection is anticipated to operate at LOS F, with both the southbound and westbound legs operating at LOS F. One solution to address this capacity issue is to change the westbound lane configurations from dedicated left-turn and a combined thru/right-turn lane to a combined left-turn/thru lane and a right-turn-only lane. This relatively minor traffic control change, along with some signal controller timing changes, would bring the intersection up to LOS C for the future year (2034) volume scenario.

A second option for the intersection of SE 4th Street and 1st Avenue is a single-lane roundabout. With the proposed development traffic, the north, south and east approaches have nearly the same traffic volumes which is generally ideal for a roundabout to operate efficiently. A single-lane roundabout would also bring the intersection up to a LOS C for the future year (2034) scenario.

The intersection of E Railroad Street and S 1st Avenue currently operates at LOS A for the existing PM peak hour scenario but the east approach operates at LOS F. With the existing two-way intersection stop control at the intersection, the majority of traffic from east end of the TIF District traveling towards the interstate or destinations to the south currently uses SE 4th Avenue and not Railroad Street. SE 4th Avenue currently serves nearly four times the traffic of E Railroad Street. With projected future development, more traffic from the east end of the TIF district will use the intersection of E Railroad Street and S 1st Avenue and the intersection will drop to LOS D. This is mainly due to both the east and west stop-controlled approaches falling to LOS F. With the installation of a traffic signal or a single-lane roundabout (see Figure 7), the intersection would operate at LOS C. If signalizing the intersection is the preferred alternative, the new signal must be coordinated with the 1st Avenue and Main Street signal to ensure the queues between the intersections do not exceed the capacity.

The intersection of Main Street and 1st Avenue currently operates at LOS B for the existing PM peak hour scenario and is anticipated to continue to operate at LOS B for the future year (2034) volume scenario. Although the intersection operates at an

adequate LOS, the east and west approaches are projected to operate near the LOS D threshold for the future year (2034) volume scenario, and future intersection improvements may need to be considered should these volumes be realized or exceeded. If a roundabout is the chosen design alternative at the intersection of E Railroad Street and S 1st Avenue in the future, then a roundabout could also be considered at the Main Street and 1st Avenue intersection. It would be ideal to have a roundabout at both intersections because there is great potential for spillback of vehicles queued up at the signal that would extend back into the roundabout at E Railroad Street; this kind of spillback will gridlock the roundabout. Capacity calculations indicate a single-lane roundabout at both locations would accommodate existing and future traffic volumes; the single-lane roundabout is the best roundabout configuration in terms of providing the maximum safety benefits for pedestrians and motorists while minimizing right-of-way, cost, traffic speeds, etc. See Figure 7 for an illustration of the double roundabout concept. From the analyses, the maximum queues in the design year would be limited to only a few vehicles on any single approach to either roundabout with substantial reserve capacity if volume projections should be exceeded. For the roundabout at Main Street, the existing lane configuration would need to drop down to a single entering lane on each approach and would require further analysis of the traffic patterns and volumes at several of the intersections along Main Street on either side of 1st Avenue to determine where and how a lane-drop should be accomplished.

The intersection of 1st Avenue and 1st Street operates as if it were two separate three-leg intersections with a skew in the 1st Avenue alignment through the intersection. The intersection is anticipated to operate at an acceptable LOS for both the existing and future conditions and queues are not anticipated to block any portion of the intersection.

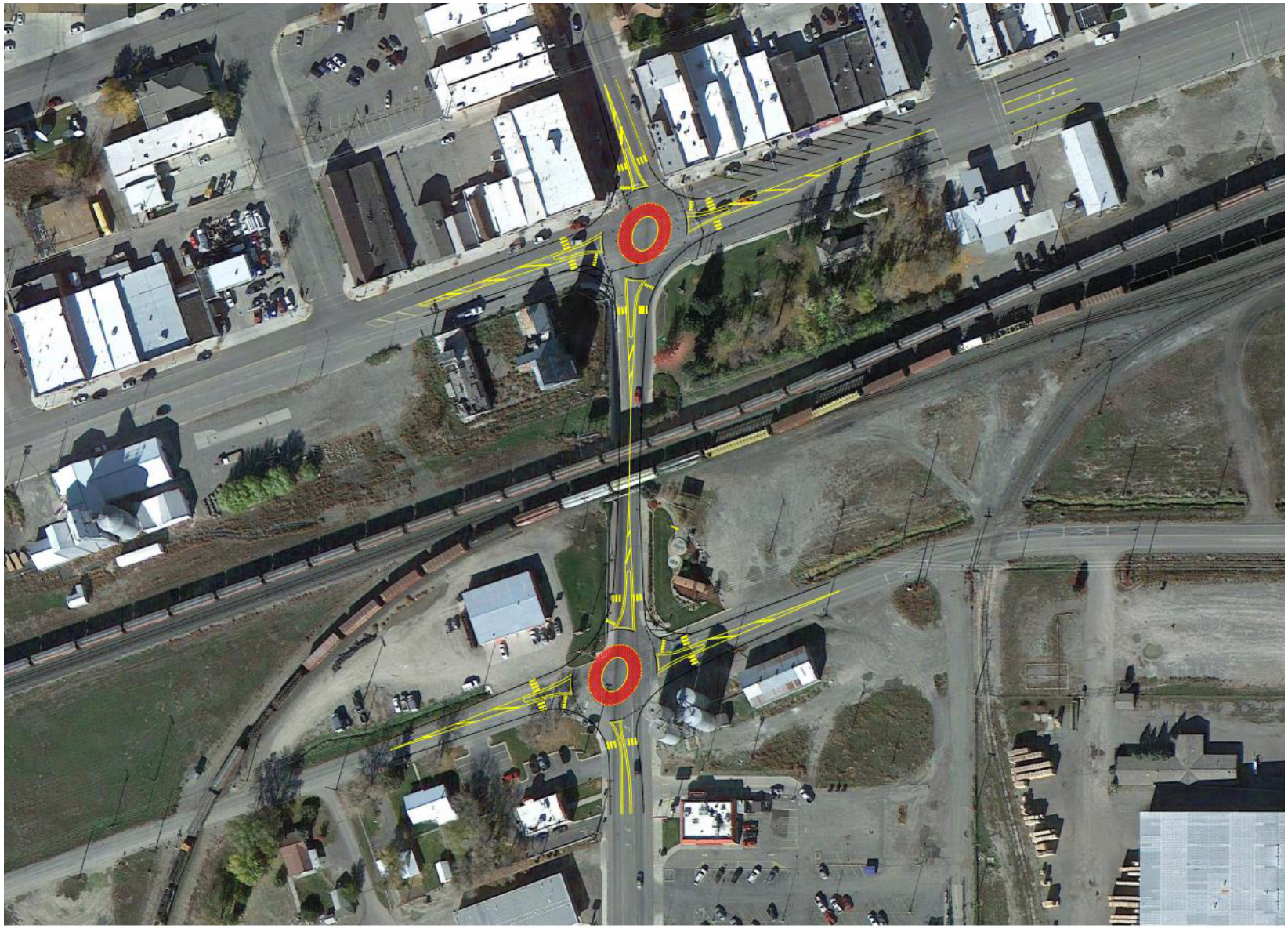


FIGURE 7. SCHEMATIC DOUBLE ROUNDABOUT DESIGN

Parking Conclusions and Recommendations

The parking study in the downtown business district showed that parking demand uses less than 40 percent of the area's capacity. There are several blocks that are near capacity during peak hours, but there is still substantial available parking on adjacent blocks. Therefore, the available parking could accommodate significant additional development in the downtown area, and there is no immediate need to provide additional on-street or off-street parking. When parking is mostly full in a central business district, there is a perception of the downtown area as a popular destination. Drivers then may be more willing to park further away and walk to their destination, which is generally desirable for economic activity in a central business district. At some point in the future, when parking demand increases and available parking becomes scarce, given Laurel's wide streets, additional parking could be generated by converting more of the on-street parking to angle parking.

ATTACHMENT 1
TRAFFIC VOLUME DATA

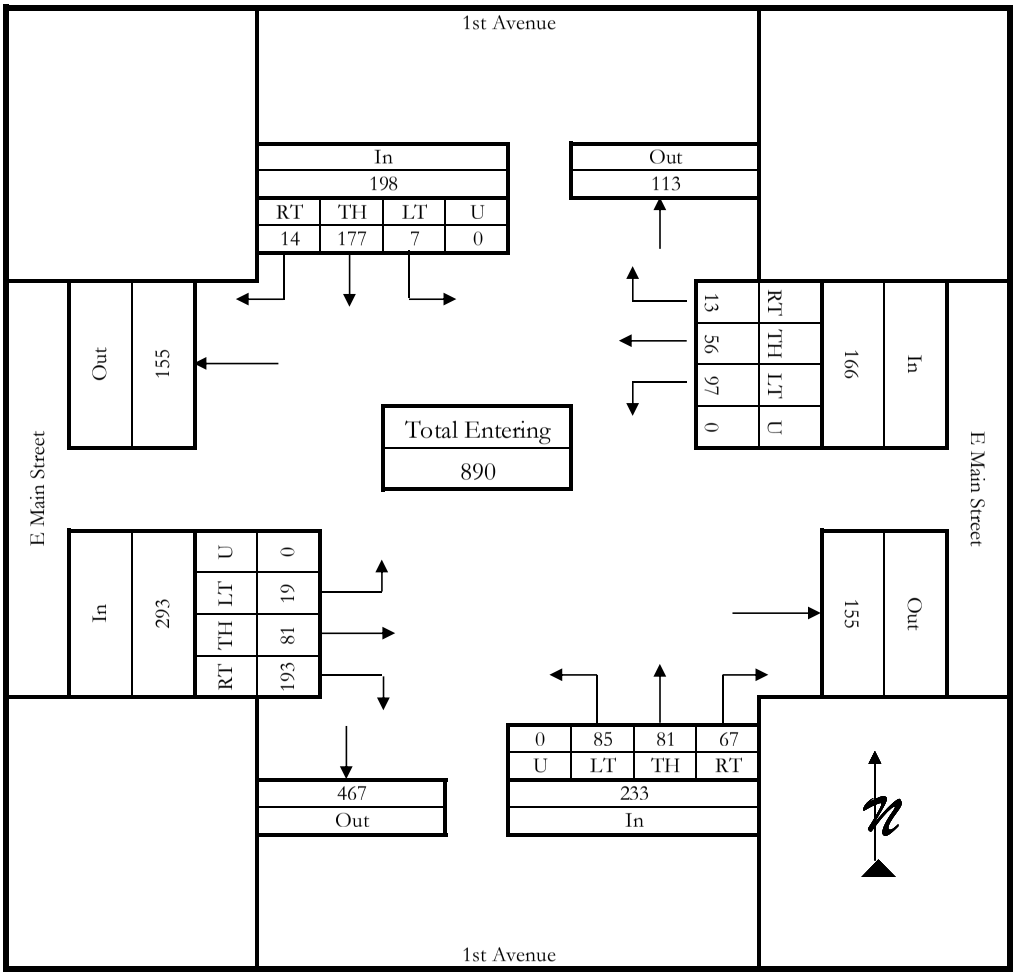
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	V. Morasko	Intersection:	1st Ave & E Main St
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, July 29, 2014	Jurisdiction:	City of Laurel
Count Time Period:	AM Peak Hour (7:30 - 8:30 AM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
East/West Street:	1st Avenue	North/South Street:	E Main Street

Vehicle Volumes and Adjustments

	1st Avenue Southbound					1st Avenue Northbound					E Main Street Eastbound					E Main Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.06	1.06	1.06	1.06		0.94	0.94	0.94	0.94		1.06	1.06	1.06	1.06		0.94	0.94	0.94	0.94		
7:30 AM	2	54	1	0	57	15	15	20	0	50	67	22	4	0	93	5	9	24	0	38	238
7:45 AM	4	37	1	0	42	18	35	29	0	82	42	23	8	0	73	1	17	23	0	41	238
8:00 AM	4	46	4	0	54	17	12	24	0	53	47	21	5	0	73	4	13	28	0	45	225
8:15 AM	4	40	1	0	45	17	19	12	0	48	37	15	2	0	54	3	17	22	0	42	189
Grand Total	14	177	7	0	198	67	81	85	0	233	193	81	19	0	293	13	56	97	0	166	890
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	14.3	0.0	0.5	0.0	1.2	2.4	0.0	1.3	0.0	9.9	15.8	0.0	3.8	53.8	10.7	0.0	0.0	7.8	
Total Truck %	0.0	0.0	14.3	0.0	0.5	0.0	1.2	2.4	0.0	1.3	0.0	9.9	15.8	0.0	3.8	53.8	10.7	0.0	0.0	7.8	
Total %	1.6	19.9	0.8	0.0	22.2	7.5	9.1	9.6	0.0	26.2	21.7	9.1	2.1	0.0	32.9	1.5	6.3	10.9	0.0	18.7	100.0
PHF	0.87	0.87	0.87			0.71	0.71	0.71			0.79	0.79	0.79			0.92	0.92	0.92			0.93



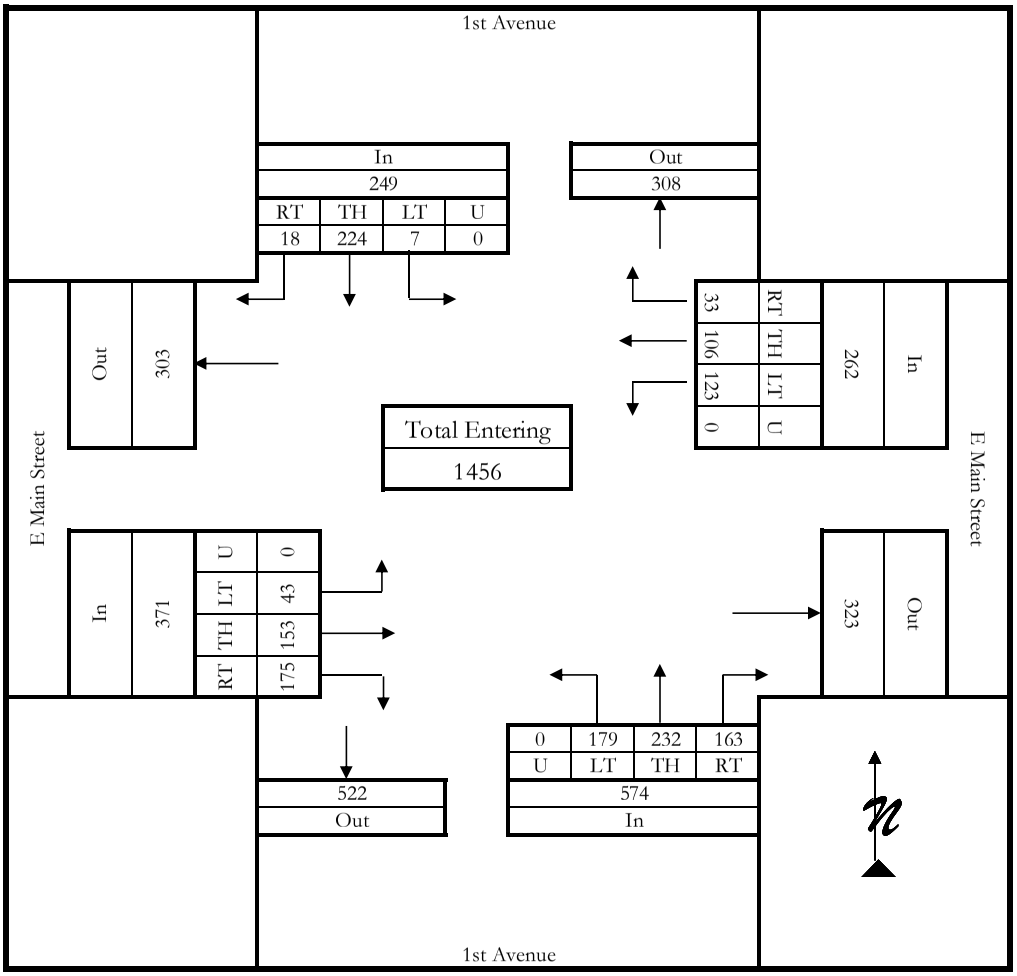
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	V. Morasko	Intersection:	1st Ave & E Main St
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, July 29, 2014	Jurisdiction:	City of Laurel
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
North/South Street:	1st Avenue	East/West Street:	East Main Street

Vehicle Volumes and Adjustments

	1st Avenue Southbound					1st Avenue Northbound					E Main Street Eastbound					E Main Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.06	1.06	1.06	1.06		0.94	0.94	0.94	0.94		1.06	1.06	1.06	1.06		0.94	0.94	0.94	0.94		
4:45 PM	5	54	1	0	60	43	58	43	0	144	28	27	7	0	62	12	29	29	0	70	336
5:00 PM	2	60	1	0	63	39	55	36	0	130	54	40	11	0	105	6	25	28	0	59	357
5:15 PM	7	51	3	0	61	47	60	55	0	162	48	33	12	0	93	8	27	32	0	67	383
5:30 PM	4	59	2	0	65	34	59	45	0	138	45	53	13	0	111	7	25	34	0	66	380
Grand Total	18	224	7	0	249	163	232	179	0	574	175	153	43	0	371	33	106	123	0	262	1456
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.4	0.0	0.0	0.4	0.6	0.0	1.1	0.0	0.5	0.0	3.3	2.3	0.0	1.6	0.0	5.7	0.0	0.0	2.3	
Total Truck %	0.0	0.4	0.0	0.0	0.4	0.6	0.0	1.1	0.0	0.5	0.0	3.3	2.3	0.0	1.6	0.0	5.7	0.0	0.0	2.3	
Total %	1.2	15.4	0.5	0.0	17.1	11.2	15.9	12.3	0.0	39.4	12.0	10.5	3.0	0.0	25.5	2.3	7.3	8.4	0.0	18.0	100.0
PHF	0.96	0.96	0.96			0.89	0.89	0.89			0.84	0.84	0.84			0.94	0.94	0.94			0.95



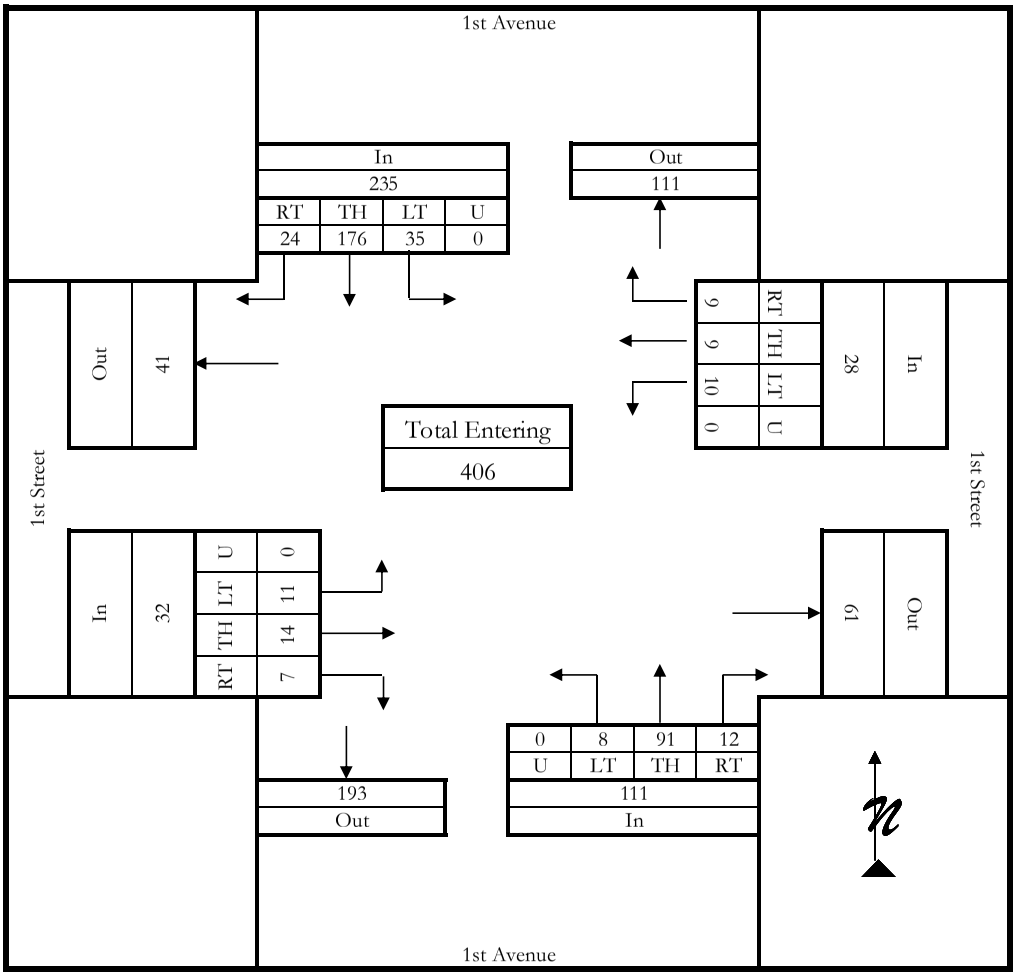
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	V. Morasko	Intersection:	1st Ave & 1st St
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, July 29, 2014	Jurisdiction:	City of Laurel
Count Time Period:	AM Peak Hour (7:30 - 8:30 AM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
East/West Street:	1st Avenue	North/South Street:	1st Street

Vehicle Volumes and Adjustments

	1st Avenue Southbound					1st Avenue Northbound					1st Street Eastbound					1st Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.06	1.06	1.06	1.06		1.06	1.06	1.06	1.06		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		
7:30 AM	6	49	8	0	63	3	19	5	0	27	2	3	1	0	6	3	1	2	0	6	102
7:45 AM	6	43	10	0	59	4	36	3	0	43	1	6	3	0	10	3	2	3	0	8	120
8:00 AM	6	46	10	0	62	4	14	0	0	18	2	0	3	0	5	1	1	2	0	4	89
8:15 AM	6	38	7	0	51	1	22	0	0	23	2	5	4	0	11	2	5	3	0	10	95
Grand Total	24	176	35	0	235	12	91	8	0	111	7	14	11	0	32	9	9	10	0	28	406
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	4.2	0.6	0.0	0.0	0.9	0.0	1.1	0.0	0.0	0.9	0.0	0.0	9.1	0.0	3.1	11.1	0.0	0.0	0.0	3.6	
Total Truck %	4.2	0.6	0.0	0.0	0.9	0.0	1.1	0.0	0.0	0.9	0.0	0.0	9.1	0.0	3.1	11.1	0.0	0.0	0.0	3.6	
Total %	5.9	43.3	8.6	0.0	57.9	3.0	22.4	2.0	0.0	27.3	1.7	3.4	2.7	0.0	7.9	2.2	2.2	2.5	0.0	6.9	100.0
PHF	0.93	0.93	0.93			0.65	0.65	0.65			0.73	0.73	0.73			0.70	0.70	0.70			0.85



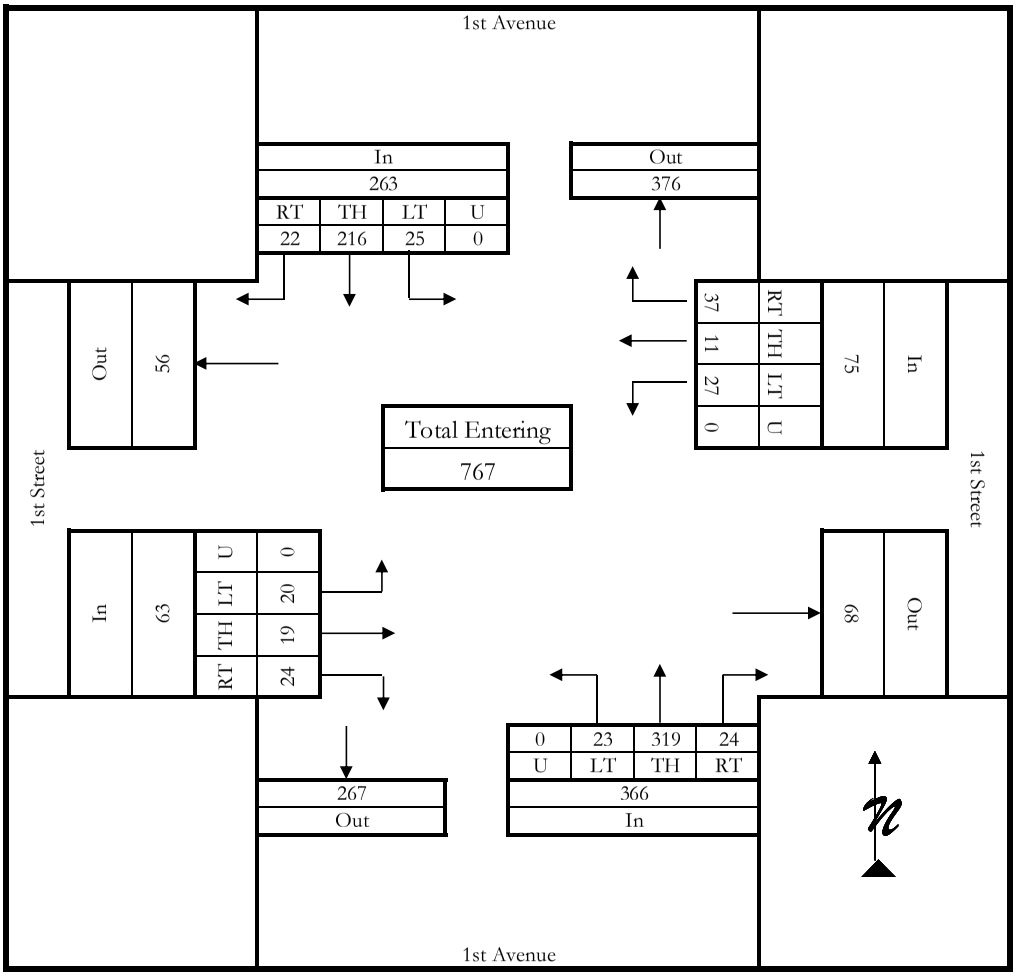
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	V. Morasko	Intersection:	1st Ave & 1st St
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, July 29, 2014	Jurisdiction:	City of Laurel
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
North/South Street:	1st Avenue	East/West Street:	1st Street

Vehicle Volumes and Adjustments

	1st Avenue Southbound					1st Avenue Northbound					1st Street Eastbound					1st Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.06	1.06	1.06	1.06		1.06	1.06	1.06	1.06		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		
4:45 PM	11	58	5	0	74	8	83	6	0	97	5	4	5	0	14	8	4	8	0	20	205
5:00 PM	6	45	6	0	57	5	75	5	0	85	7	8	5	0	20	13	3	8	0	24	186
5:15 PM	2	49	4	0	55	8	78	6	0	92	8	3	4	0	15	6	2	4	0	12	174
5:30 PM	3	64	10	0	77	3	83	6	0	92	4	4	6	0	14	10	2	7	0	19	202
Grand Total	22	216	25	0	263	24	319	23	0	366	24	19	20	0	63	37	11	27	0	75	767
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	22.7	0.0	4.0	0.0	2.3	0.0	1.3	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	22.7	0.0	4.0	0.0	2.3	0.0	1.3	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total %	2.9	28.2	3.3	0.0	34.3	3.1	41.6	3.0	0.0	47.7	3.1	2.5	2.6	0.0	8.2	4.8	1.4	3.5	0.0	9.8	100.0
PHF	0.85	0.85	0.85			0.94	0.94	0.94			0.79	0.79	0.79			0.78	0.78	0.78			0.94



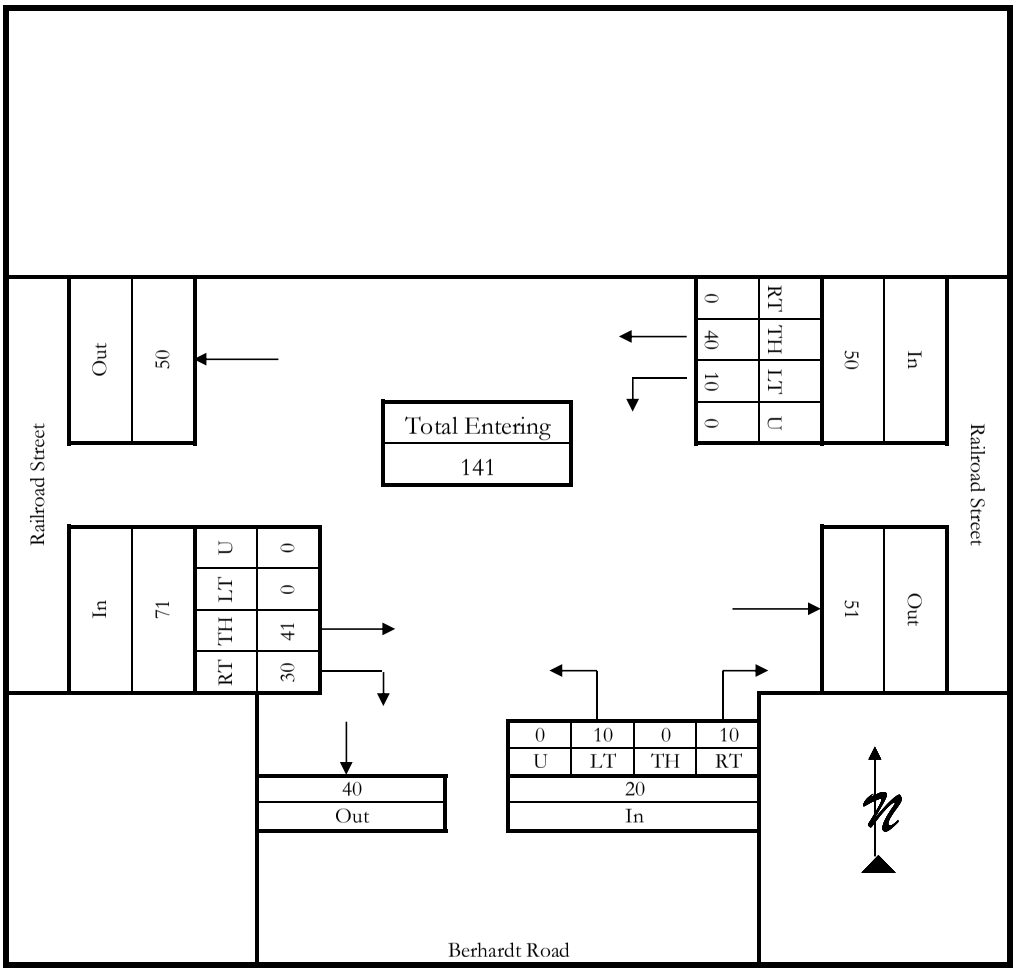
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	V. Morasko	Intersection:	Railroad St & Bernhardt Road
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, July 29, 2014	Jurisdiction:	City of Laurel
Count Time Period:	AM Peak Hour (7:30 - 8:30 AM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
East/West Street:	Berhardt Road	North/South Street:	Railroad Street

Vehicle Volumes and Adjustments

	Southbound					Berhardt Road Northbound					Railroad Street Eastbound					Railroad Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.06	1.06	1.06	1.06		1.06	1.06	1.06	1.06		
7:30 AM	0	0	0	0	0	1	0	0	0	1	2	14	0	0	16	0	4	3	0	7	24
7:45 AM	0	0	0	0	0	3	0	5	0	8	8	13	0	0	21	0	19	4	0	23	52
8:00 AM	0	0	0	0	0	3	0	2	0	5	7	7	0	0	14	0	10	2	0	12	31
8:15 AM	0	0	0	0	0	3	0	3	0	6	13	7	0	0	20	0	7	1	0	8	34
Grand Total	0	0	0	0	0	10	0	10	0	20	30	41	0	0	71	0	40	10	0	50	141
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	5.0	0.0	22.0	0.0	0.0	12.7	0.0	12.5	20.0	0.0	14.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	5.0	0.0	22.0	0.0	0.0	12.7	0.0	12.5	20.0	0.0	14.0	
Total %	0.0	0.0	0.0	0.0	0.0	7.1	0.0	7.1	0.0	14.2	21.3	29.1	0.0	0.0	50.4	0.0	28.4	7.1	0.0	35.5	100.0
PHF	0.00	0.00	0.00			0.63	0.63	0.63			0.85	0.85	0.85			0.54	0.54	0.54			0.68



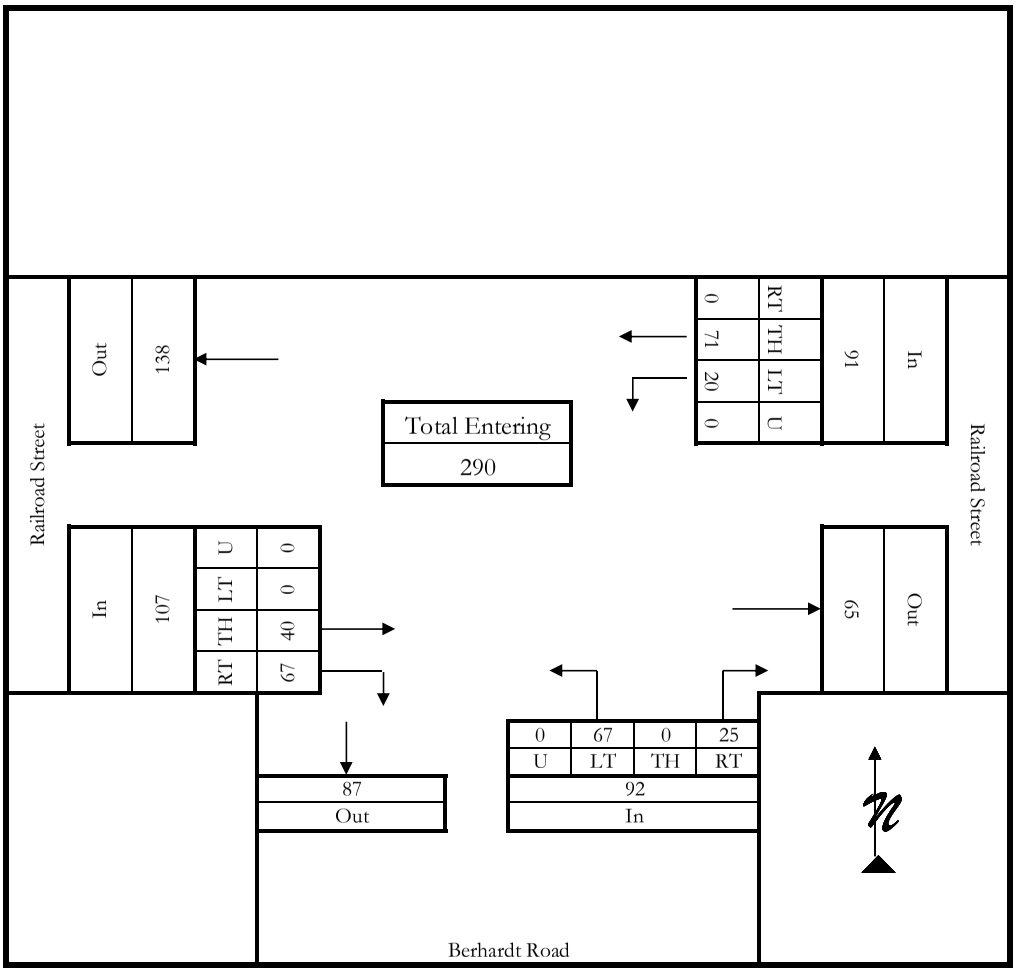
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	V. Morasko	Intersection:	Railroad St & Bernhardt Road
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, July 29, 2014	Jurisdiction:	City of Laurel
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
North/South Street:	Bernhardt Road	East/West Street:	Railroad Street

Vehicle Volumes and Adjustments

	Southbound					Berhardt Road Northbound					Railroad Street Eastbound					Railroad Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.06	1.06	1.06	1.06		1.06	1.06	1.06	1.06		
4:45 PM	0	0	0	0	0	7	0	10	0	17	16	16	0	0	32	0	20	3	0	23	72
5:00 PM	0	0	0	0	0	7	0	20	0	27	19	7	0	0	26	0	18	7	0	25	78
5:15 PM	0	0	0	0	0	9	0	23	0	32	14	7	0	0	21	0	15	5	0	20	73
5:30 PM	0	0	0	0	0	2	0	14	0	16	18	10	0	0	28	0	18	5	0	23	67
Grand Total	0	0	0	0	0	25	0	67	0	92	67	40	0	0	107	0	71	20	0	91	290
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	2.5	0.0	0.0	1.9	0.0	4.2	5.0	0.0	4.4	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	2.5	0.0	0.0	1.9	0.0	4.2	5.0	0.0	4.4	
Total %	0.0	0.0	0.0	0.0	0.0	8.6	0.0	23.1	0.0	31.7	23.1	13.8	0.0	0.0	36.9	0.0	24.5	6.9	0.0	31.4	100.0
PHF	0.00	0.00	0.00			0.72	0.72	0.72			0.84	0.84	0.84			0.91	0.91	0.91			0.93



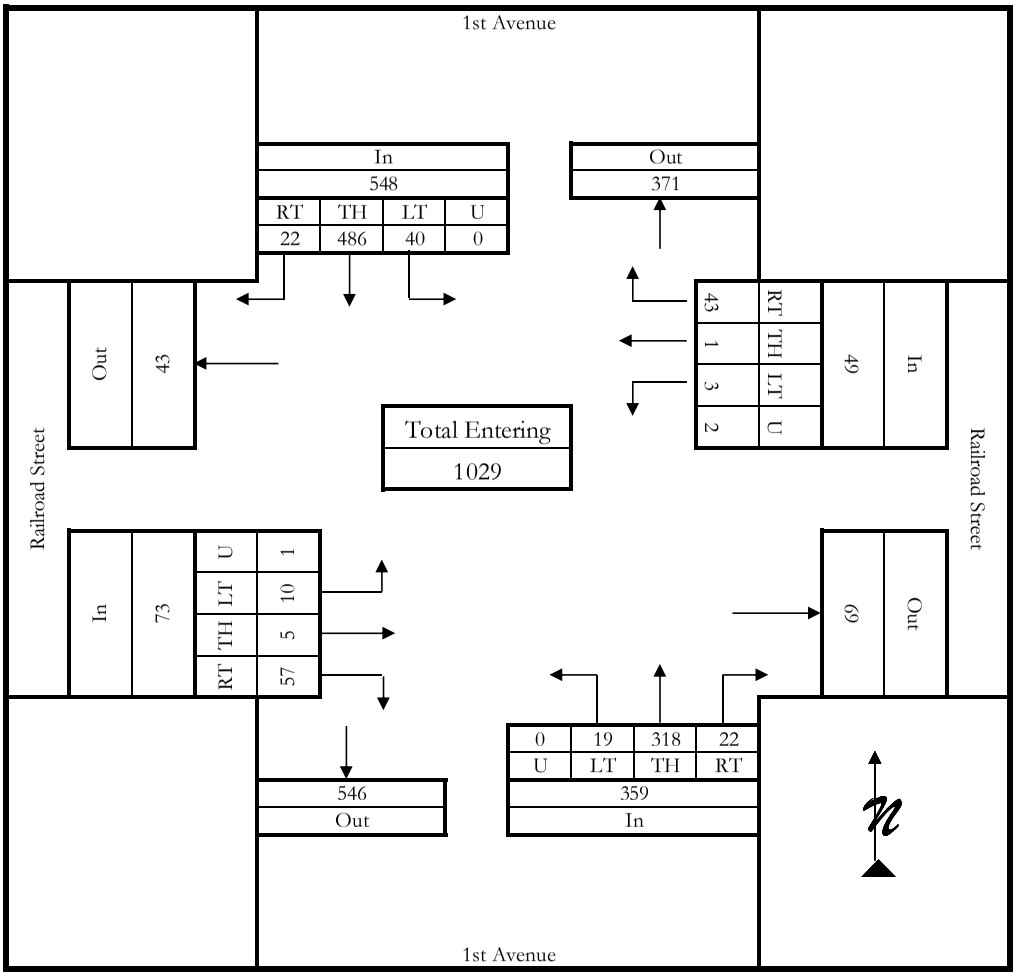
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	RPA	Intersection:	1st Ave & Railroad St
Agency/Company:	Sanderson Stewart		
Date Performed:	Wednesday, March 20, 2013	Jurisdiction:	City of Laurel
Count Time Period:	AM Peak Hour (7:30 - 8:30 AM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
East/West Street:	1st Avenue	North/South Street:	Railroad Street

Vehicle Volumes and Adjustments

	1st Avenue Southbound					1st Avenue Northbound					Railroad Street Eastbound					Railroad Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.01	1.01	1.01	1.01		1.01	1.01	1.01	1.01		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		
7:30 AM	1	149	8	0	158	2	77	3	0	82	26	1	1	1	29	5	0	2	0	7	276
7:45 AM	4	108	12	0	124	7	95	7	0	109	10	2	3	0	15	9	0	1	0	10	258
8:00 AM	3	117	9	0	129	7	84	3	0	94	13	2	4	0	19	19	0	0	1	20	262
8:15 AM	14	112	11	0	137	6	62	6	0	74	8	0	2	0	10	10	1	0	1	12	233
Grand Total	22	486	40	0	548	22	318	19	0	359	57	5	10	1	73	43	1	3	2	49	1029
Medium Truck %	0.0	1.4	0.0	0.0	1.3	0.0	1.3	0.0	0.0	1.1	5.3	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.8	0.0	0.0	0.7	13.6	1.3	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	2.3	0.0	0.0	2.0	13.6	2.5	0.0	0.0	3.1	5.3	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	
Total %	2.1	47.2	3.9	0.0	53.3	2.1	30.9	1.8	0.0	34.9	5.5	0.5	1.0	0.1	7.1	4.2	0.1	0.3	0.2	4.8	100.0
PHF	0.87	0.87	0.87			0.82	0.82	0.82			0.63	0.63	0.63			0.61	0.61	0.61			0.93



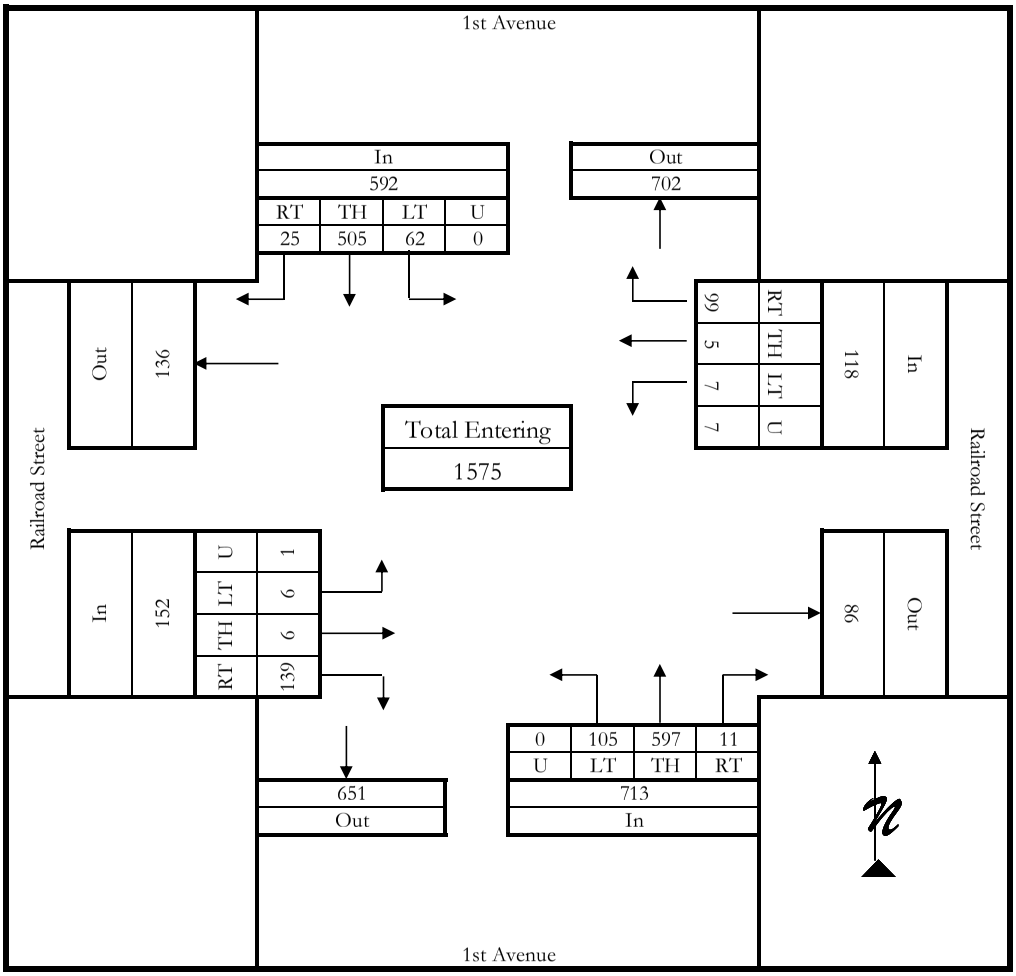
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	RPA	Intersection:	1st Ave & Railroad St
Agency/Company:	Sanderson Stewart		
Date Performed:	Wednesday, March 20, 2013	Jurisdiction:	City of Laurel
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
North/South Street:	1st Avenue	East/West Street:	Railroad Street

Vehicle Volumes and Adjustments

	1st Avenue Southbound					1st Avenue Northbound					Railroad Street Eastbound					Railroad Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.01	1.01	1.01	1.01		1.01	1.01	1.01	1.01		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		
4:45 PM	2	131	15	0	148	5	129	18	0	152	12	1	1	1	15	24	2	2	2	30	345
5:00 PM	15	143	17	0	175	0	164	23	0	187	14	0	4	0	18	20	2	3	0	25	405
5:15 PM	5	107	10	0	122	2	158	34	0	194	38	2	1	0	41	25	0	0	5	30	387
5:30 PM	3	124	20	0	147	4	146	30	0	180	75	3	0	0	78	30	1	2	0	33	438
Grand Total	25	505	62	0	592	11	597	105	0	713	139	6	6	1	152	99	5	7	7	118	1575
Medium Truck %	0.0	1.4	0.0	0.0	1.2	0.0	1.3	5.7	0.0	2.0	5.8	0.0	0.0	0.0	5.3	0.0	0.0	0.0	28.6	1.7	
Heavy Truck %	0.0	0.8	0.0	0.0	0.7	18.2	1.2	1.0	0.0	1.4	1.4	0.0	0.0	0.0	1.3	0.0	0.0	0.0	28.6	1.7	
Total Truck %	0.0	2.2	0.0	0.0	1.9	18.2	2.5	6.7	0.0	3.4	7.2	0.0	0.0	0.0	6.6	0.0	0.0	0.0	57.1	3.4	
Total %	1.6	32.1	3.9	0.0	37.6	0.7	37.9	6.7	0.0	45.3	8.8	0.4	0.4	0.1	9.7	6.3	0.3	0.4	0.4	7.5	100.0
PHF	0.85	0.85	0.85			0.92	0.92	0.92			0.49	0.49	0.49			0.89	0.89	0.89			0.90



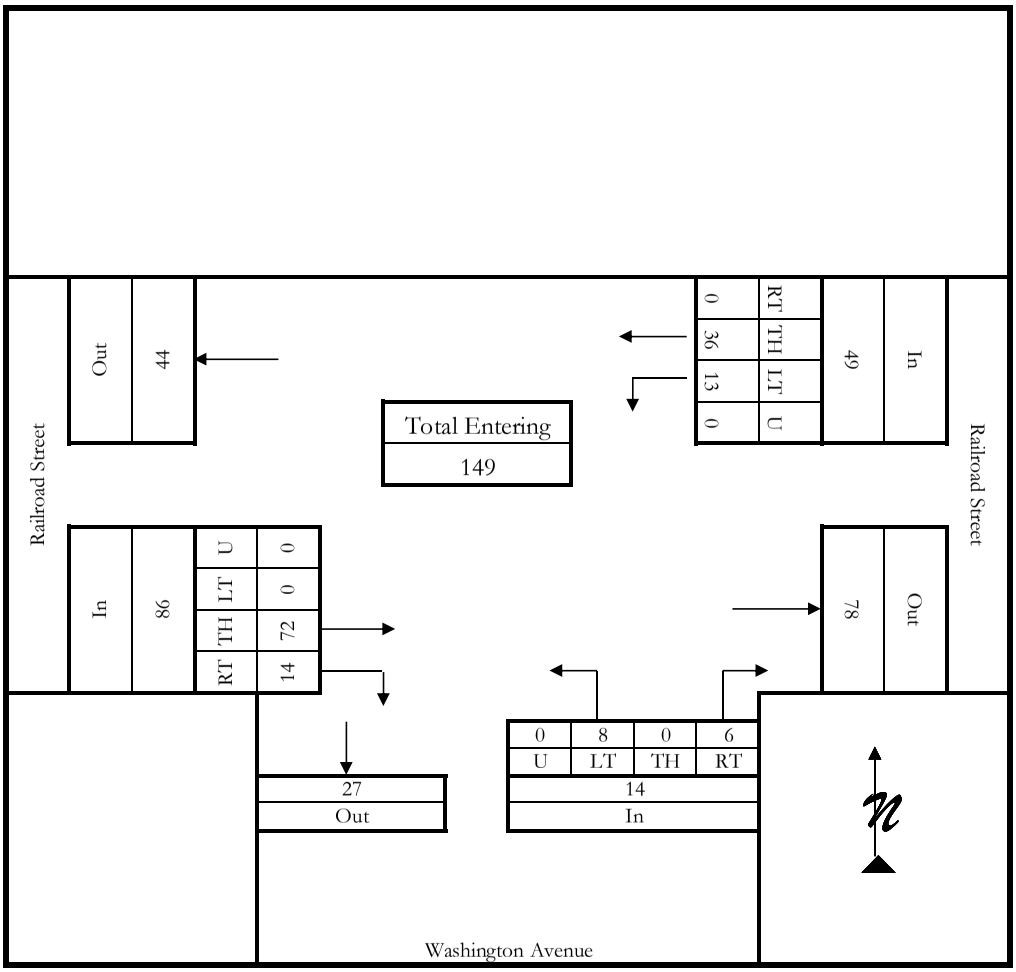
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	V. Morasko	Intersection:	Railroad St & Washington Ave
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, July 29, 2014	Jurisdiction:	City of Laurel
Count Time Period:	AM Peak Hour (7:30 - 8:30 AM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
East/West Street:	Washington Avenue	North/South Street:	Railroad Street

Vehicle Volumes and Adjustments

	Southbound					Washington Avenue Northbound					Railroad Street Eastbound					Railroad Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.06	1.06	1.06	1.06		1.06	1.06	1.06	1.06		
7:30 AM	0	0	0	0	0	3	0	1	0	4	2	18	0	0	20	0	1	2	0	3	27
7:45 AM	0	0	0	0	0	1	0	1	0	2	5	17	0	0	22	0	21	5	0	26	50
8:00 AM	0	0	0	0	0	2	0	4	0	6	5	16	0	0	21	0	10	2	0	12	39
8:15 AM	0	0	0	0	0	0	0	2	0	2	2	21	0	0	23	0	4	4	0	8	33
Grand Total	0	0	0	0	0	6	0	8	0	14	14	72	0	0	86	0	36	13	0	49	149
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	16.7	0.0	25.0	0.0	21.4	14.3	9.7	0.0	0.0	10.5	0.0	8.3	15.4	0.0	10.2	
Total Truck %	0.0	0.0	0.0	0.0	0.0	16.7	0.0	25.0	0.0	21.4	14.3	9.7	0.0	0.0	10.5	0.0	8.3	15.4	0.0	10.2	
Total %	0.0	0.0	0.0	0.0	0.0	4.0	0.0	5.4	0.0	9.4	9.4	48.3	0.0	0.0	57.7	0.0	24.2	8.7	0.0	32.9	100.0
PHF	0.00	0.00	0.00			0.58	0.58	0.58			0.93	0.93	0.93			0.47	0.47	0.47			0.75



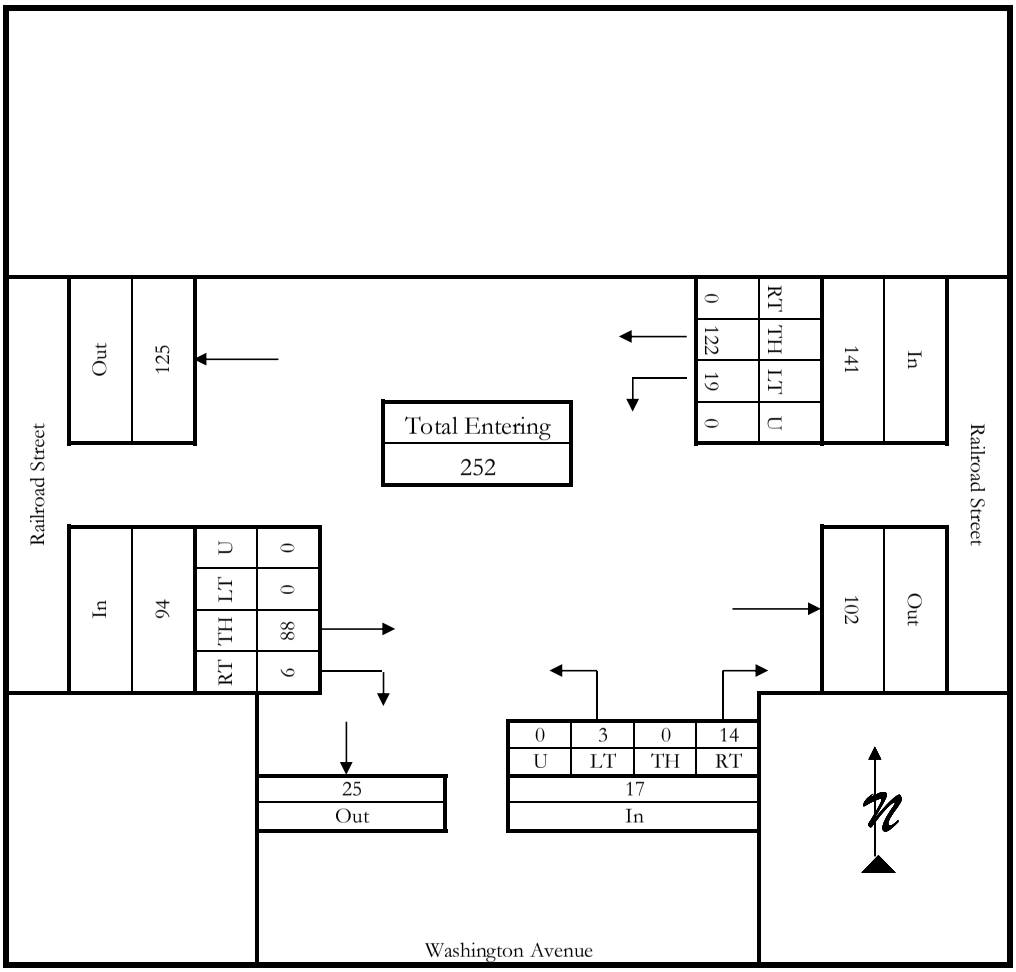
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	V. Morasko	Intersection:	Railroad St & Washington Ave
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, July 29, 2014	Jurisdiction:	City of Laurel
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
North/South Street:	Washington Avenue	East/West Street:	Railroad Street

Vehicle Volumes and Adjustments

	Southbound					Washington Avenue Northbound					Railroad Street Eastbound					Railroad Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.06	1.06	1.06	1.06		1.06	1.06	1.06	1.06		
4:45 PM	0	0	0	0	0	5	0	0	0	5	0	21	0	0	21	0	29	5	0	34	60
5:00 PM	0	0	0	0	0	3	0	1	0	4	3	22	0	0	25	0	28	5	0	33	62
5:15 PM	0	0	0	0	0	1	0	0	0	1	2	23	0	0	25	0	37	5	0	42	68
5:30 PM	0	0	0	0	0	5	0	2	0	7	1	22	0	0	23	0	28	4	0	32	62
Grand Total	0	0	0	0	0	14	0	3	0	17	6	88	0	0	94	0	122	19	0	141	252
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	2.3	0.0	0.0	3.2	0.0	0.8	5.3	0.0	1.4	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	2.3	0.0	0.0	3.2	0.0	0.8	5.3	0.0	1.4	
Total %	0.0	0.0	0.0	0.0	0.0	5.6	0.0	1.2	0.0	6.7	2.4	34.9	0.0	0.0	37.3	0.0	48.4	7.5	0.0	56.0	100.0
PHF	0.00	0.00	0.00			0.61	0.61	0.61			0.94	0.94	0.94			0.84	0.84	0.84			0.93



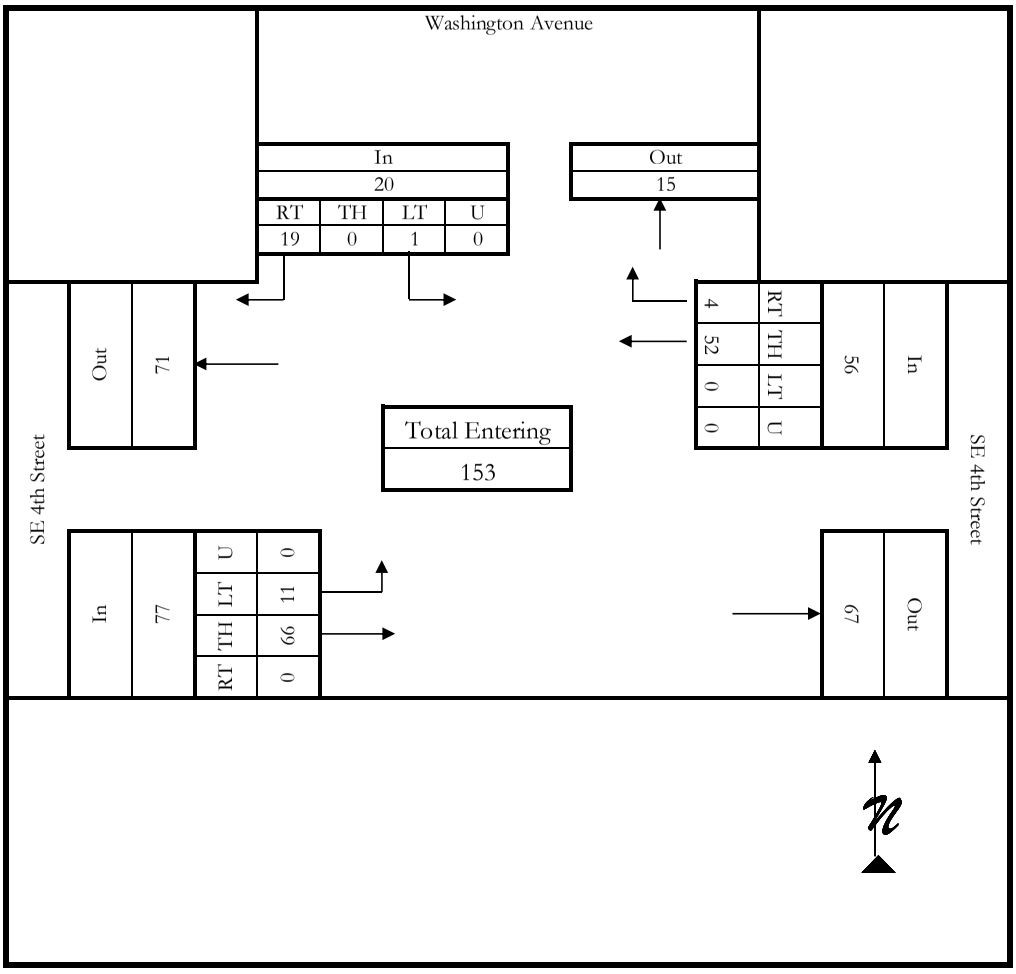
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	V. Morasko	Intersection:	SE 4th St & Washington Ave
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, July 29, 2014	Jurisdiction:	City of Laurel
Count Time Period:	AM Peak Hour (7:30 - 8:30 AM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
East/West Street:	Washington Avenue	North/South Street:	SE 4th Street

Vehicle Volumes and Adjustments

	Washington Avenue Southbound					Northbound					SE 4th Street Eastbound					SE 4th Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		
7:30 AM	1	0	0	0	1	0	0	0	0	0	0	15	2	0	17	0	13	0	0	13	31
7:45 AM	6	0	0	0	6	0	0	0	0	0	0	14	0	0	14	2	14	0	0	16	36
8:00 AM	6	0	1	0	7	0	0	0	0	0	0	17	5	0	22	2	14	0	0	16	45
8:15 AM	6	0	0	0	6	0	0	0	0	0	0	20	4	0	24	0	11	0	0	11	41
Grand Total	19	0	1	0	20	0	0	0	0	0	0	66	11	0	77	4	52	0	0	56	153
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	26.3	0.0	100.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	36.4	0.0	13.0	50.0	13.5	0.0	0.0	16.1	
Total Truck %	26.3	0.0	100.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	36.4	0.0	13.0	50.0	13.5	0.0	0.0	16.1	
Total %	12.4	0.0	0.7	0.0	13.1	0.0	0.0	0.0	0.0	0.0	0.0	43.1	7.2	0.0	50.3	2.6	34.0	0.0	0.0	36.6	100.0
PHF	0.71	0.71	0.71			0.00	0.00	0.00			0.80	0.80	0.80			0.88	0.88	0.88			0.85



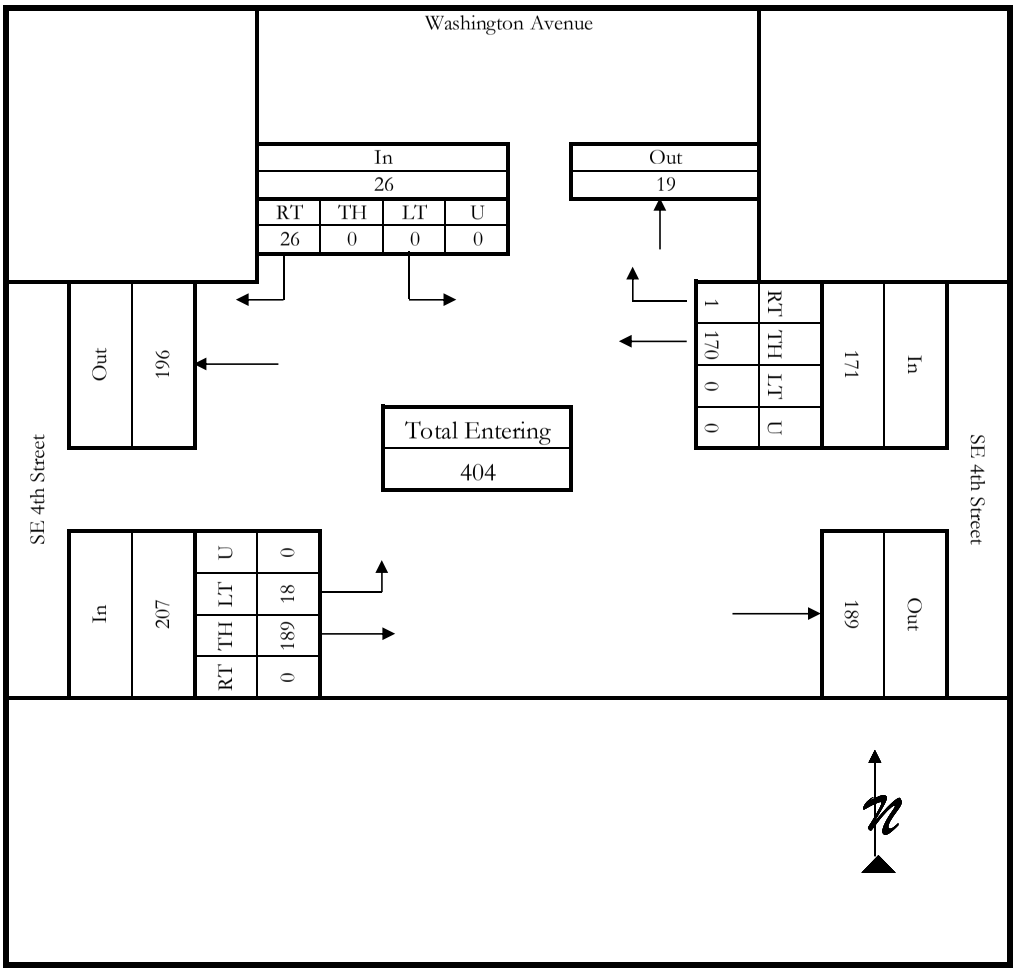
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	V. Morasko	Intersection:	SE 4th St & Washington Ave
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, July 29, 2014	Jurisdiction:	City of Laurel
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
North/South Street:	Washington Avenue	East/West Street:	SE 4th Street

Vehicle Volumes and Adjustments

	Washington Avenue Southbound					Northbound					SE 4th Street Eastbound					SE 4th Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		
4:45 PM	5	0	0	0	5	0	0	0	0	0	0	41	7	0	48	1	51	0	0	52	105
5:00 PM	9	0	0	0	9	0	0	0	0	0	0	46	2	0	48	0	43	0	0	43	100
5:15 PM	6	0	0	0	6	0	0	0	0	0	0	58	3	0	61	0	40	0	0	40	107
5:30 PM	6	0	0	0	6	0	0	0	0	0	0	44	6	0	50	0	36	0	0	36	92
Grand Total	26	0	0	0	26	0	0	0	0	0	0	189	18	0	207	1	170	0	0	171	404
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	11.5	0.0	0.0	0.0	11.5	0.0	0.0	0.0	0.0	0.0	0.0	3.7	5.6	0.0	3.9	0.0	3.5	0.0	0.0	3.5	
Total Truck %	11.5	0.0	0.0	0.0	11.5	0.0	0.0	0.0	0.0	0.0	0.0	3.7	5.6	0.0	3.9	0.0	3.5	0.0	0.0	3.5	
Total %	6.4	0.0	0.0	0.0	6.4	0.0	0.0	0.0	0.0	0.0	0.0	46.8	4.5	0.0	51.2	0.2	42.1	0.0	0.0	42.3	100.0
PHF	0.72	0.72	0.72			0.00	0.00	0.00			0.85	0.85	0.85			0.82	0.82	0.82			0.94



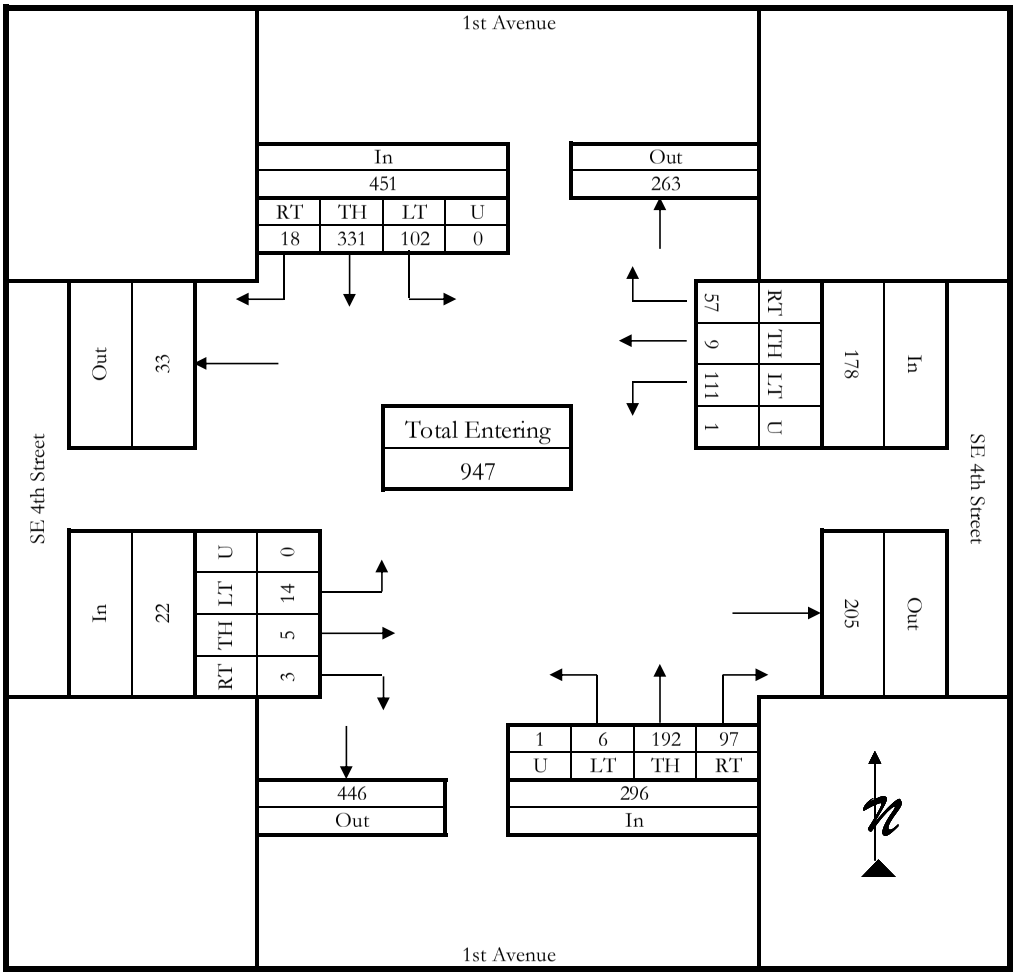
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	RPA	Intersection:	1st Ave & SE 4th St
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, June 04, 2013	Jurisdiction:	City of Laurel
Count Time Period:	AM Peak Hour (7:30 - 8:30 AM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
East/West Street:	1st Avenue	North/South Street:	SE 4th Street

Vehicle Volumes and Adjustments

	1st Avenue Southbound					1st Avenue Northbound					SE 4th Street Eastbound					SE 4th Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	0.96	0.96	0.96	0.96		0.96	0.96	0.96	0.96		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		
7:30 AM	5	120	21	0	146	28	36	0	1	65	1	1	3	0	5	11	2	35	0	48	264
7:45 AM	4	81	35	0	120	21	66	0	0	87	1	2	5	0	8	14	0	22	1	37	252
8:00 AM	4	66	17	0	87	19	47	5	0	71	1	0	1	0	2	22	6	26	0	54	214
8:15 AM	5	64	29	0	98	29	43	1	0	73	0	2	5	0	7	10	1	28	0	39	217
Grand Total	18	331	102	0	451	97	192	6	1	296	3	5	14	0	22	57	9	111	1	178	947
Medium Truck %	0.0	1.8	0.0	0.0	1.3	2.1	2.1	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	2.2	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	1.8	0.0	0.0	1.3	2.1	2.1	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	2.2	
Total %	1.9	35.0	10.8	0.0	47.6	10.2	20.3	0.6	0.1	31.3	0.3	0.5	1.5	0.0	2.3	6.0	1.0	11.7	0.1	18.8	100.0
PHF	0.77	0.77	0.77			0.85	0.85	0.85			0.69	0.69	0.69			0.82	0.82	0.82			0.90



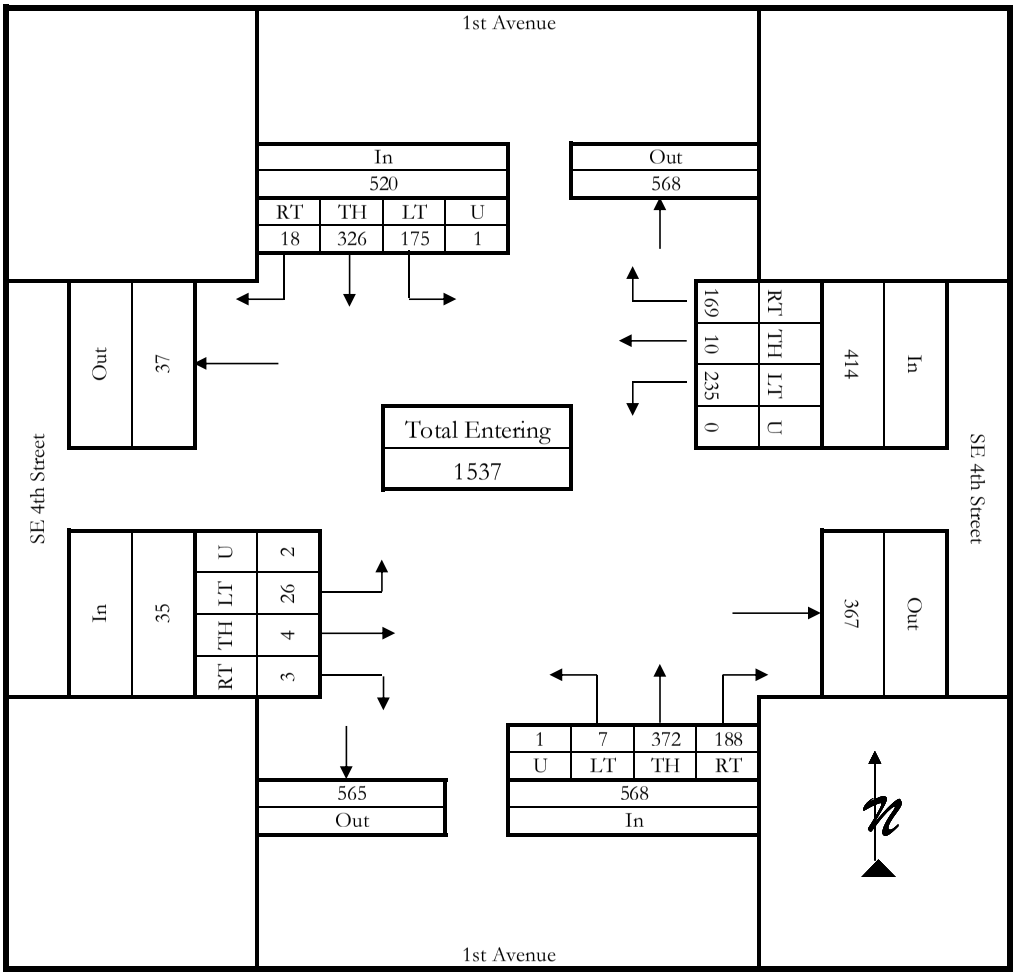
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	RPA	Intersection:	1st Ave & SE 4th St
Agency/Company:	Sanderson Stewart		
Date Performed:	Tuesday, June 04, 2013	Jurisdiction:	City of Laurel
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	14031.01	Project Description:	Laurel TIF District
North/South Street:	1st Avenue	East/West Street:	SE 4th Street

Vehicle Volumes and Adjustments

	1st Avenue Southbound					1st Avenue Northbound					SE 4th Street Eastbound					SE 4th Street Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	0.96	0.96	0.96	0.96		0.96	0.96	0.96	0.96		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		
4:45 PM	4	79	35	1	119	50	87	1	0	138	3	1	6	2	12	35	3	64	0	102	371
5:00 PM	5	70	47	0	122	34	85	2	0	121	0	1	5	0	6	56	3	59	0	118	367
5:15 PM	3	69	45	0	117	51	107	1	0	159	0	2	11	0	13	44	2	45	0	91	380
5:30 PM	6	108	48	0	162	53	93	3	1	150	0	0	4	0	4	34	2	67	0	103	419
Grand Total	18	326	175	1	520	188	372	7	1	568	3	4	26	2	35	169	10	235	0	414	1537
Medium Truck %	0.0	1.8	0.0	0.0	1.2	2.1	2.2	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	1.9	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	1.8	0.0	0.0	1.2	2.1	2.2	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	1.9	
Total %	1.2	21.2	11.4	0.1	33.8	12.2	24.2	0.5	0.1	37.0	0.2	0.3	1.7	0.1	2.3	11.0	0.7	15.3	0.0	26.9	100.0
PHF	0.80	0.80	0.80			0.89	0.89	0.89			0.67	0.67	0.67			0.88	0.88	0.88			0.92



ATTACHMENT 2

CAPACITY CALCULATIONS: EXISTING

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	5	3	112	9	57	7	192	97	102	331	18
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	1900	1900	1900	1827	1900	1900	1900	1863	1863	1900	1865	1900
Adj Flow Rate, veh/h	20	7	4	137	11	70	8	226	114	132	430	23
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.69	0.69	0.69	0.82	0.82	0.82	0.85	0.85	0.85	0.77	0.77	0.77
Percent Heavy Veh, %	0	0	0	4	0	0	0	2	2	0	2	2
Cap, veh/h	224	74	30	301	41	259	581	919	781	169	1165	62
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.49	0.49	0.49	0.09	0.66	0.66
Sat Flow, veh/h	727	405	168	1371	224	1425	953	1863	1583	1810	1754	94
Grp Volume(v), veh/h	31	0	0	137	0	81	8	226	114	132	0	453
Grp Sat Flow(s),veh/h/ln	1300	0	0	1371	0	1649	953	1863	1583	1810	0	1848
Q Serve(g_s), s	0.0	0.0	0.0	6.2	0.0	2.7	0.3	4.5	2.5	4.6	0.0	7.1
Cycle Q Clear(g_c), s	2.8	0.0	0.0	9.0	0.0	2.7	0.3	4.5	2.5	4.6	0.0	7.1
Prop In Lane	0.65		0.13	1.00		0.86	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	328	0	0	301	0	299	581	919	781	169	0	1227
V/C Ratio(X)	0.09	0.00	0.00	0.45	0.00	0.27	0.01	0.25	0.15	0.78	0.00	0.37
Avail Cap(c_a), veh/h	673	0	0	624	0	687	581	919	781	224	0	1227
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.1	0.0	0.0	26.7	0.0	22.8	8.4	9.5	9.0	28.7	0.0	4.8
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.1	0.0	0.5	0.0	0.6	0.4	12.2	0.0	0.9
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 BackOfQ(50%),veh/ln	0.5	0.0	0.0	2.4	0.0	1.3	0.1	2.5	1.2	2.9	0.0	3.8
LnGrp Delay(d),s/veh	22.2	0.0	0.0	27.8	0.0	23.3	8.4	10.1	9.3	40.9	0.0	5.7
LnGrp LOS	C			C		C	A	B	A	D		A
Approach Vol, veh/h		31			218			348			585	
Approach Delay, s/veh		22.2			26.1			9.8			13.6	
Approach LOS		C			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	11.0	37.0		16.8		48.0		16.8
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	8.0	30.0		27.0		43.0		27.0
Max Q Clear Time (g_c+I1), s	6.6	6.5		4.8		9.1		11.0
Green Ext Time (p_c), s	0.0	5.2		1.0		5.6		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	81	193	97	56	13	85	81	67	7	177	14
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	1638	1727	1900	1900	1712	1234	1900	1872	1900	1900	1891	1900
Adj Flow Rate, veh/h	24	103	244	105	61	14	120	114	94	8	203	16
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	0
Peak Hour Factor	0.79	0.79	0.79	0.92	0.92	0.92	0.71	0.71	0.71	0.87	0.87	0.87
Percent Heavy Veh, %	16	10	0	0	11	54	1	1	0	0	0	0
Cap, veh/h	422	530	495	372	525	322	138	110	904	61	955	73
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	1160	1727	1615	1050	1712	1049	117	196	1615	20	1705	131
Grp Volume(v), veh/h	24	103	244	105	61	14	234	0	94	227	0	0
Grp Sat Flow(s),veh/h/ln	1160	1727	1615	1050	1712	1049	314	0	1615	1856	0	0
Q Serve(g_s), s	1.1	3.3	9.3	6.1	1.9	0.7	6.5	0.0	2.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.1	3.3	9.3	9.4	1.9	0.7	6.5	0.0	2.0	4.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.51		1.00	0.04		0.07
Lane Grp Cap(c), veh/h	422	530	495	372	525	322	0	0	904	1089	0	0
V/C Ratio(X)	0.06	0.19	0.49	0.28	0.12	0.04	0.00	0.00	0.10	0.21	0.00	0.00
Avail Cap(c_a), veh/h	422	530	495	372	525	322	0	0	904	1089	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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.8	19.2	21.2	22.7	18.7	18.3	0.0	0.0	7.7	8.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.8	3.5	1.9	0.5	0.3	0.0	0.0	0.2	0.4	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 BackOfQ(50%),veh/ln	0.4	1.7	4.6	2.0	1.0	0.2	0.0	0.0	0.9	2.5	0.0	0.0
LnGrp Delay(d),s/veh	20.1	20.0	24.7	24.5	19.1	18.5	0.0	0.0	7.9	8.7	0.0	0.0
LnGrp LOS	C	B	C	C	B	B			A	A		
Approach Vol, veh/h		371			180			328			227	
Approach Delay, s/veh		23.1			22.2			2.3			8.7	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		47.0		28.0		47.0		28.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		42.0		23.0		31.0		23.0
Max Q Clear Time (g_c+I1), s		8.5		11.3		6.6		11.4
Green Ext Time (p_c), s		3.7		2.0		3.5		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	11	66	52	4	1	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	80	80	88	88	71	71
Heavy Vehicles, %	36	9	14	50	100	26
Mvmt Flow	14	82	59	5	1	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	64	0	-	0	171	61
Stage 1	-	-	-	-	61	-
Stage 2	-	-	-	-	110	-
Critical Hdwy	4.46	-	-	-	7.4	6.46
Critical Hdwy Stg 1	-	-	-	-	6.4	-
Critical Hdwy Stg 2	-	-	-	-	6.4	-
Follow-up Hdwy	2.524	-	-	-	4.4	3.534
Pot Cap-1 Maneuver	1347	-	-	-	638	941
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	719	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1347	-	-	-	631	941
Mov Cap-2 Maneuver	-	-	-	-	631	-
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	711	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1347	-	-	-	918
HCM Lane V/C Ratio	0.01	-	-	-	0.031
HCM Control Delay (s)	7.7	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	72	14	13	36	8	6
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	93	93	47	47	58	58
Heavy Vehicles, %	10	14	15	8	25	17
Mvmt Flow	77	15	28	77	14	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	92	0	217	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	132	-
Critical Hdwy	-	-	4.25	-	6.65	6.37
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	-	-	2.335	-	3.725	3.453
Pot Cap-1 Maneuver	-	-	1425	-	723	934
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	840	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1425	-	708	934
Mov Cap-2 Maneuver	-	-	-	-	708	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	822	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	790	-	-	1425	-
HCM Lane V/C Ratio	0.031	-	-	0.019	-
HCM Control Delay (s)	9.7	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	41	30	10	40	10	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	-	130	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	54	54	63	63
Heavy Vehicles, %	22	0	20	13	0	10
Mvmt Flow	48	35	19	74	16	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	48	0	159	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	111	-
Critical Hdwy	-	-	4.3	-	6.4	6.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.38	-	3.5	3.39
Pot Cap-1 Maneuver	-	-	1451	-	837	999
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	919	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1451	-	825	999
Mov Cap-2 Maneuver	-	-	-	-	825	-
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	906	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	904	-	-	1451	-
HCM Lane V/C Ratio	0.035	-	-	0.013	-
HCM Control Delay (s)	9.1	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	5	57	5	1	43	19	318	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	Yeild	-	-	None	-	-	None
Storage Length	-	-	50	-	-	100	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	61	61	61	82	82	82
Heavy Vehicles, %	0	0	5	0	0	0	0	3	14
Mvmt Flow	16	8	90	8	2	70	23	388	27

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1111	1124	571	1115	1124	401	584	0	0
Stage 1	663	663	-	448	448	-	-	-	-
Stage 2	448	461	-	667	676	-	-	-	-
Critical Hdwy	7.1	6.5	6.25	7.1	6.5	6.2	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.345	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	188	207	515	187	207	653	1001	-	-
Stage 1	454	462	-	594	576	-	-	-	-
Stage 2	594	569	-	451	456	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	156	190	515	140	190	653	1001	-	-
Mov Cap-2 Maneuver	156	190	-	140	190	-	-	-	-
Stage 1	444	435	-	580	563	-	-	-	-
Stage 2	516	556	-	343	429	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	17	13.7	0.5
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1001	-	-	166	515	146	653	1155	-	-
HCM Lane V/C Ratio	0.023	-	-	0.143	0.176	0.067	0.108	0.04	-	-
HCM Control Delay (s)	8.7	-	-	30.3	13.5	31.4	11.2	8.2	0	-
HCM Lane LOS	A	-	-	D	B	D	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.6	0.2	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	40	486	22
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	87	87	87
Heavy Vehicles, %	0	2	0
Mvmt Flow	46	559	25

Major/Minor	Major2		
Conflicting Flow All	415	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1155	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1155	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.6
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	25	7	186	33	8	103
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	73	73	91	91	65	65
Heavy Vehicles, %	4	0	5	3	0	1
Mvmt Flow	34	10	204	36	12	158

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	44	0	484	39
Stage 1	-	-	-	-	39	-
Stage 2	-	-	-	-	445	-
Critical Hdwy	-	-	4.15	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.245	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1545	-	545	1035
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	650	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1545	-	471	1035
Mov Cap-2 Maneuver	-	-	-	-	471	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	562	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.5	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	953	-	-	1545	-
HCM Lane V/C Ratio	0.179	-	-	0.132	-
HCM Control Delay (s)	9.6	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.5	-

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	102	26	19	9	35	200
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	67	67	70	70	93	93
Heavy Vehicles, %	2	0	0	11	0	1
Mvmt Flow	152	39	27	13	38	215

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	40	0	-	0	377	34
Stage 1	-	-	-	-	34	-
Stage 2	-	-	-	-	343	-
Critical Hdwy	4.12	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	1570	-	-	-	629	1042
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1570	-	-	-	567	1042
Mov Cap-2 Maneuver	-	-	-	-	567	-
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	651	-

Approach	EB	WB	SB
HCM Control Delay, s	6	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1570	-	-	-	926
HCM Lane V/C Ratio	0.097	-	-	-	0.273
HCM Control Delay (s)	7.5	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	4	3	235	10	169	8	372	188	176	326	18
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	1900	1900	1900	1845	1900	1900	1900	1863	1863	1900	1865	1900
Adj Flow Rate, veh/h	42	6	4	267	11	192	9	418	211	220	408	22
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.67	0.67	0.67	0.88	0.88	0.88	0.89	0.89	0.89	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	3	0	0	0	2	2	0	2	2
Cap, veh/h	328	46	24	389	29	513	458	703	598	182	948	51
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.38	0.38	0.38	0.10	0.54	0.54
Sat Flow, veh/h	738	137	73	1385	88	1540	973	1863	1583	1810	1753	95
Grp Volume(v), veh/h	52	0	0	267	0	203	9	418	211	220	0	430
Grp Sat Flow(s),veh/h/ln	947	0	0	1385	0	1628	973	1863	1583	1810	0	1848
Q Serve(g_s), s	1.8	0.0	0.0	14.9	0.0	7.5	0.5	14.3	7.6	8.0	0.0	11.1
Cycle Q Clear(g_c), s	9.4	0.0	0.0	24.3	0.0	7.5	0.5	14.3	7.6	8.0	0.0	11.1
Prop In Lane	0.81		0.08	1.00		0.95	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	398	0	0	389	0	543	458	703	598	182	0	1000
V/C Ratio(X)	0.13	0.00	0.00	0.69	0.00	0.37	0.02	0.59	0.35	1.21	0.00	0.43
Avail Cap(c_a), veh/h	406	0	0	398	0	553	458	703	598	182	0	1000
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.0	0.0	0.0	30.3	0.0	20.2	15.6	19.9	17.8	35.7	0.0	10.9
Incr Delay (d2), s/veh	0.1	0.0	0.0	4.8	0.0	0.4	0.1	3.7	1.6	133.8	0.0	1.4
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 BackOfQ(50%),veh/ln	0.9	0.0	0.0	6.2	0.0	3.4	0.1	8.0	3.6	10.7	0.0	6.0
LnGrp Delay(d),s/veh	22.1	0.0	0.0	35.1	0.0	20.6	15.6	23.5	19.4	169.6	0.0	12.3
LnGrp LOS	C			D		C	B	C	B	F		B
Approach Vol, veh/h		52			470			638			650	
Approach Delay, s/veh		22.1			28.8			22.1			65.5	
Approach LOS		C			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	13.0	35.0		31.5		48.0		31.5
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	8.0	30.0		27.0		43.0		27.0
Max Q Clear Time (g_c+I1), s	10.0	16.3		11.4		13.1		26.3
Green Ext Time (p_c), s	0.0	5.5		2.3		7.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	39.4
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	153	175	123	106	33	179	232	163	7	224	18
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	1863	1845	1900	1900	1792	1900	1900	1892	1881	1900	1900	1900
Adj Flow Rate, veh/h	51	182	208	131	113	35	201	261	183	7	233	19
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.94	0.94	0.94	0.89	0.89	0.89	0.96	0.96	0.96
Percent Heavy Veh, %	2	3	0	0	6	0	0	0	1	0	0	0
Cap, veh/h	417	566	495	329	550	495	130	119	895	57	959	77
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	1235	1845	1615	1010	1792	1615	109	212	1599	14	1713	137
Grp Volume(v), veh/h	51	182	208	131	113	35	462	0	183	259	0	0
Grp Sat Flow(s),veh/h/ln	1235	1845	1615	1010	1792	1615	321	0	1599	1863	0	0
Q Serve(g_s), s	2.4	5.7	7.7	8.6	3.5	1.2	15.1	0.0	4.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.9	5.7	7.7	14.3	3.5	1.2	15.1	0.0	4.3	5.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.44		1.00	0.03		0.07
Lane Grp Cap(c), veh/h	417	566	495	329	550	495	0	0	895	1092	0	0
V/C Ratio(X)	0.12	0.32	0.42	0.40	0.21	0.07	0.00	0.00	0.20	0.24	0.00	0.00
Avail Cap(c_a), veh/h	417	566	495	329	550	495	0	0	895	1092	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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.4	20.0	20.7	25.5	19.2	18.4	0.0	0.0	8.2	8.4	0.0	0.0
Incr Delay (d2), s/veh	0.6	1.5	2.6	3.6	0.8	0.3	0.0	0.0	0.5	0.5	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 BackOfQ(50%),veh/ln	0.9	3.1	3.8	2.7	1.9	0.6	0.0	0.0	2.0	2.9	0.0	0.0
LnGrp Delay(d),s/veh	22.0	21.5	23.3	29.1	20.1	18.7	0.0	0.0	8.7	8.9	0.0	0.0
LnGrp LOS	C	C	C	C	C	B			A	A		
Approach Vol, veh/h		441			279			645			259	
Approach Delay, s/veh		22.4			24.1			2.5			8.9	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		47.0		28.0		47.0		28.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		42.0		23.0		31.0		23.0
Max Q Clear Time (g_c+I1), s		17.1		9.7		7.3		16.3
Green Ext Time (p_c), s		6.2		3.0		6.1		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	18	189	170	1	0	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	85	85	82	82	72	72
Heavy Vehicles, %	6	4	4	0	0	12
Mvmt Flow	21	222	207	1	0	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	209	0	-	0	473	208
Stage 1	-	-	-	-	208	-
Stage 2	-	-	-	-	265	-
Critical Hdwy	4.16	-	-	-	6.4	6.32
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.408
Pot Cap-1 Maneuver	1338	-	-	-	553	808
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	784	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1338	-	-	-	543	808
Mov Cap-2 Maneuver	-	-	-	-	543	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	770	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1338	-	-	-	808
HCM Lane V/C Ratio	0.016	-	-	-	0.045
HCM Control Delay (s)	7.7	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	88	6	19	122	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	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	84	84	61	61
Heavy Vehicles, %	2	17	5	1	0	0
Mvmt Flow	94	6	23	145	5	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	100	0	287	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	190	-
Critical Hdwy	-	-	4.15	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.245	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1474	-	708	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	847	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1474	-	696	965
Mov Cap-2 Maneuver	-	-	-	-	696	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	833	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	903	-	-	1474	-
HCM Lane V/C Ratio	0.031	-	-	0.015	-
HCM Control Delay (s)	9.1	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	40	67	20	71	67	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	130	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	91	91	72	72
Heavy Vehicles, %	3	2	5	4	0	0
Mvmt Flow	48	80	22	78	93	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	48	0	170	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	122	-
Critical Hdwy	-	-	4.15	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.245	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1540	-	825	1027
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	908	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1540	-	813	1027
Mov Cap-2 Maneuver	-	-	-	-	813	-
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	894	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	862	-	-	1540	-
HCM Lane V/C Ratio	0.148	-	-	0.014	-
HCM Control Delay (s)	9.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	9.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	7	6	139	14	5	99	105	597	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	Yeild	-	-	None	-	-	None
Storage Length	-	-	50	-	-	100	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	49	49	49	89	89	89	92	92	92
Heavy Vehicles, %	0	0	7	0	0	0	7	3	18
Mvmt Flow	14	12	284	16	6	111	114	649	12

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1641	1644	609	1644	1652	655	624	0	0
Stage 1	755	755	-	883	883	-	-	-	-
Stage 2	886	889	-	761	769	-	-	-	-
Critical Hdwy	7.1	6.5	6.27	7.1	6.5	6.2	4.17	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.363	3.5	4	3.3	2.263	-	-
Pot Cap-1 Maneuver	81	101	486	81	100	470	933	-	-
Stage 1	404	420	-	343	367	-	-	-	-
Stage 2	342	364	-	401	413	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	48	78	486	25	77	470	933	-	-
Mov Cap-2 Maneuver	48	78	-	25	77	-	-	-	-
Stage 1	355	370	-	301	322	-	-	-	-
Stage 2	225	320	-	142	363	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	29.9	55.5	1.4
HCM LOS	D	F	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	933	-	-	58	486	30	470	937	-	-
HCM Lane V/C Ratio	0.122	-	-	0.457	0.584	0.712	0.237	0.078	-	-
HCM Control Delay (s)	9.4	-	-	111.4	22.3	266.6	15	9.2	0	-
HCM Lane LOS	A	-	-	F	C	F	C	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	1.8	3.7	2.3	0.9	0.3	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	62	505	25
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	0	2	0
Mvmt Flow	73	594	29

Major/Minor	Major2		
Conflicting Flow All	661	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	937	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	937	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	1
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	8.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	39	24	243	33	23	343
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	79	79	84	84	94	94
Heavy Vehicles, %	0	0	0	15	0	1
Mvmt Flow	49	30	289	39	24	365

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	80	0	683	65
Stage 1	-	-	-	-	65	-
Stage 2	-	-	-	-	618	-
Critical Hdwy	-	-	4.1	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1531	-	418	1002
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	542	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1531	-	337	1002
Mov Cap-2 Maneuver	-	-	-	-	337	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	437	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	891	-	-	1531	-
HCM Lane V/C Ratio	0.437	-	-	0.189	-
HCM Control Delay (s)	12.1	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.7	-

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	339	43	38	37	25	238
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	78	78	85	85
Heavy Vehicles, %	1	0	0	0	4	2
Mvmt Flow	368	47	49	47	29	280

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	96	0	-	0	856	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	784	-
Critical Hdwy	4.11	-	-	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.209	-	-	-	3.536	3.318
Pot Cap-1 Maneuver	1504	-	-	-	326	990
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	446	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1504	-	-	-	244	990
Mov Cap-2 Maneuver	-	-	-	-	244	-
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	334	-

Approach	EB	WB	SB
HCM Control Delay, s	7.2	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1504	-	-	-	767
HCM Lane V/C Ratio	0.245	-	-	-	0.403
HCM Control Delay (s)	8.2	0	-	-	12.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	1	-	-	-	2

ATTACHMENT 3
PARKING INVENTORY

On-Street Parking Zones*	On-Street Parking Capacity[1]	Average Weekday (7/30/14)				Average Weekend (8/2/14)				Maximum Observed Demand[3]	Max Demand % of Capacity	Available Spots During Max Demand[4]
		Noon Peak Hour (11am-1pm)		PM Peak Hour (4-6pm)		Noon Peak Hour (11am-1pm)		PM Peak Hour (4-6pm)				
		Observed[2]	% of Capacity	Observed	% of Capacity	Observed	% of Capacity	Observed	% of Capacity			
Zone 1	7	3	43%	3	43%	2	29%	2	29%	3	43%	4
Zone 2	6	1	17%	2	33%	1	17%	2	33%	2	33%	4
Zone 3	15	4	27%	8	53%	0	0%	1	7%	8	53%	7
Zone 4	10	1	10%	1	10%	1	10%	2	20%	2	20%	8
Zone 5	10	3	30%	4	40%	5	50%	5	50%	5	50%	5
Zone 6	9	5	56%	3	33%	5	56%	5	56%	5	56%	4
Zone 7	9	3	33%	3	33%	3	33%	3	33%	3	33%	6
Zone 8	11	1	9%	1	9%	1	9%	1	9%	1	9%	10
Zone 9	8	4	50%	3	38%	2	25%	2	25%	4	50%	4
Zone 10	8	2	25%	2	25%	0	0%	0	0%	2	25%	6
Zone 11	12	3	25%	2	17%	1	8%	1	8%	3	25%	9
Zone 12	0	0	n/a	0	n/a	0	n/a	0	n/a	0	n/a	0
Zone 13	11	5	45%	5	45%	4	36%	4	36%	5	45%	6
Zone 14	11	5	45%	7	64%	5	45%	4	36%	7	64%	4
Zone 15	13	7	54%	8	62%	5	38%	4	31%	8	62%	5
Zone 16	11	5	45%	5	45%	3	27%	0	0%	5	45%	6
Zone 17	12	11	92%	10	83%	8	67%	4	33%	11	92%	1
Zone 18	11	9	82%	7	64%	6	55%	2	18%	9	82%	2
Zone 19	7	5	71%	2	29%	5	71%	1	14%	5	71%	2
Zone 20	9	1	11%	0	0%	1	11%	0	0%	1	11%	8
Zone 21	8	0	0%	1	13%	1	13%	2	25%	2	25%	6
Zone 22	16	7	44%	10	63%	5	31%	7	44%	10	63%	6
Zone 23	8	2	25%	3	38%	1	13%	2	25%	3	38%	5
Zone 24	18	0	0%	0	0%	0	0%	0	0%	0	0%	18
Zone 25	10	0	0%	1	10%	0	0%	0	0%	1	10%	9
Zone 26	11	2	18%	1	9%	1	9%	2	18%	2	18%	9
Zone 27	7	2	29%	1	14%	1	14%	0	0%	2	29%	5
Zone 28	15	0	0%	0	0%	0	0%	0	0%	0	0%	15
Zone 29	9	4	44%	1	11%	1	11%	0	0%	4	44%	5
Zone 30	9	2	22%	1	11%	1	11%	0	0%	2	22%	7
TOTAL	301	97	32%	95	32%	69	23%	56	19%	115	38%	186

[1]On-street Parking Capacity was determined through an inventory of measured available parking areas and divided by 20' per parked vehicle to calculate spaces

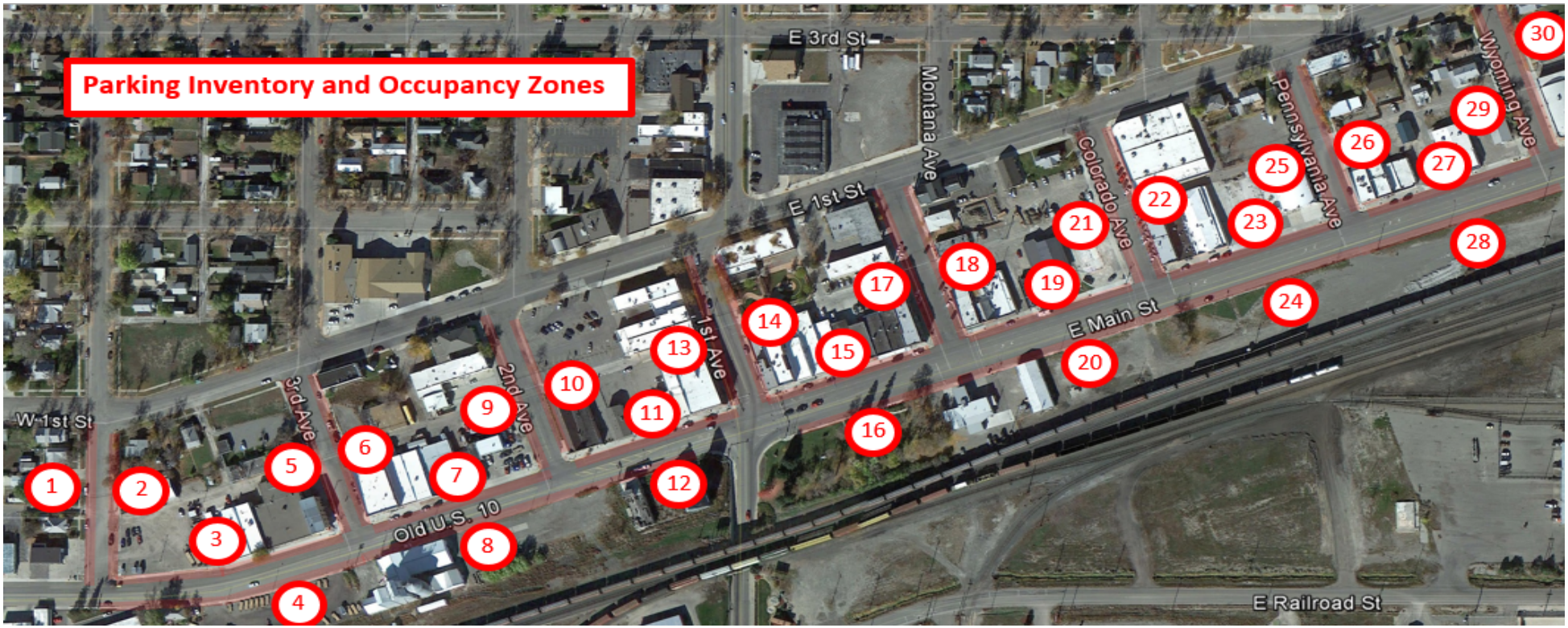
[2]Observed parking numbers are an average of six independent measured inventories for all 30 parking zones observed over the respective 2-hour peak periods

[3]Maximum Observed Demand is the highest observed parking between the Noon and PM peak hours for both the Weekday and Weekend day by zone

[4]Available Spots During Max Demand is calculated by taking the On-Street Parking Capacity and subtracting the Maximum Observed Demand by zone

*On-Street Parking Zones:

Zone 1 & Zone 2: The east and west blocks, respectively, of 4th Avenue between Old US 10 and W 1st Street
Zone 3 & Zone 4: The north and south blocks, respectively, of Old US 10 between 4th Avenue and 3rd Avenue
Zone 5 & Zone 6: The east and west blocks, respectively, of 3rd Avenue between Old US 10 and W 1st Street
Zone 7 & Zone 8: The north and south blocks, respectively, of Old US 10 between 3rd Avenue and 2nd Avenue
Zone 9 & Zone 10: The east and west blocks, respectively, of 2nd Avenue between Old US 10 and W 1st Street
Zone 11 & Zone 12: The north and south blocks, respectively, of Old US 10 between 2nd Avenue and 1st Avenue
Zone 13 & Zone 14: The east and west blocks, respectively, of 1st Avenue between E Main Street and E 1st Street
Zone 15 & Zone 16: The north and south blocks, respectively, of Main Street between E 1st Avenue and Montana Avenue
Zone 17 & Zone 18: The east and west blocks, respectively, of Montana Avenue between Main Street and E 1st Street
Zone 19 & Zone 20: The north and south blocks, respectively, of Main Street between Montana Avenue and Colorado Avenue
Zone 21 & Zone 22: The east and west blocks, respectively, of Colorado Avenue between Main Street and E 1st Street
Zone 23 & Zone 24: The north and south blocks, respectively, of Main Street between Colorado Avenue and Pennsylvania Avenue
Zone 25 & Zone 26: The east and west blocks, respectively, of Pennsylvania Avenue between Main Street and E 1st Street
Zone 27 & Zone 28: The north and south blocks, respectively, of Main Street between Pennsylvania Avenue and Wyoming Avenue
Zone 29 & Zone 30: The east and west blocks, respectively, of Wyoming Avenue between Main Street and E 1st Street


Parking Inventory and Occupancy Zones
E 3rd St
Montana Ave
Colorado Ave
Pennsylvania Ave
Wyoming Ave
E 1st St
1st Ave
2nd Ave
3rd Ave
W 1st St
E Main St
Old U.S. 10
E Railroad St
1
2
3
4
5
6
7
8
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10
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30

Data Collection: Weekday - Noon
7/30/2014
V. Morasko

		Parking Zone #1		#2		#3		#4		#5		#6		#7		#8		#9	
TRIAL NO.	START TIME	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.
1	11:10 AM	4	7	1	6	6	15	1	10	3	10	7	9	3	9	2	11	3	8
2	11:30 AM	3	--	2	--	5	--	1	--	3	--	6	--	3	--	1	--	3	--
3	11:50 AM	3	--	2	--	3	--	2	--	3	--	5	--	3	--	1	--	4	--
4	12:10 PM	3	--	1	--	2	--	1	--	3	--	3	--	2	--	0	--	3	--
5	12:30 PM	3	--	1	--	5	--	1	--	3	--	4	--	2	--	1	--	4	--
6	12:50 PM	3	--	0	--	2	--	2	--	4	--	4	--	3	--	1	--	4	--
Average		3	--	1	--	4	--	1	--	3	--	5	--	3	--	1	--	4	--

	Parking Zone #10		#11		#12		#13		#14		#15		#16		#17		#18		#19		#20		#21	
TRIAL NO.	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.
1	3	8	4	12	0	0	5	11	6	11	7	13	4	11	11	12	10	11	4	7	1	9	2	8
2	3	--	5	--	0	--	5	--	6	--	7	--	4	--	9	--	11	--	5	--	0	--	0	--
3	3	--	3	--	0	--	4	--	5	--	6	--	7	--	9	--	11	--	6	--	0	--	0	--
4	2	--	2	--	0	--	6	--	6	--	11	--	6	--	13	--	8	--	6	--	2	--	0	--
5	2	--	0	--	0	--	5	--	4	--	5	--	5	--	10	--	7	--	6	--	2	--	0	--
6	1	--	1	--	0	--	4	--	5	--	4	--	3	--	12	--	9	--	4	--	2	--	0	--
Average	2	--	3	--	0	--	5	--	5	--	7	--	5	--	11	--	9	--	5	--	1	--	0	--

	Parking Zone #22		#23		#24		#25		#26		#27		#28		#29		#30			
TRIAL NO.	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	END TIME	**Total**
1	10	16	0	8	1	18	0	10	2	11	1	7	0	15	4	9	2	9	11:20 AM	107
2	8	--	0	--	0	--	0	--	3	--	2	--	0	--	4	--	1	--	11:40 AM	100
3	7	--	2	--	0	--	0	--	3	--	1	--	0	--	4	--	1	--	12:00 PM	98
4	9	--	4	--	0	--	0	--	2	--	2	--	0	--	4	--	2	--	12:20 PM	103
5	5	--	4	--	0	--	0	--	2	--	2	--	0	--	4	--	2	--	12:40 PM	89
6	5	--	4	--	0	--	0	--	2	--	1	--	0	--	5	--	2	--	1:00 PM	87
Average	7	--	2	--	0	--	0	--	2	--	2	--	0	--	4	--	2	--		97

Data Collection: Weekday - PM
7/30/2014
V. Morasko

		Parking Zone #1		#2		#3		#4		#5		#6		#7		#8		#9	
TRIAL NO.	START TIME	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.
1	4:00 PM	3	7	2	6	6	15	1	10	6	10	2	9	2	9	1	11	3	8
2	4:20 PM	3	--	1	--	7	--	1	--	5	--	3	--	6	--	1	--	3	--
3	4:40 PM	4	--	2	--	9	--	1	--	4	--	3	--	4	--	1	--	3	--
4	5:00 PM	3	--	3	--	7	--	1	--	2	--	2	--	3	--	1	--	2	--
5	5:20 PM	3	--	2	--	8	--	1	--	3	--	3	--	1	--	0	--	2	--
6	5:40 PM	4	--	2	--	9	--	2	--	2	--	3	--	0	--	0	--	2	--
Average		3	--	2	--	8	--	1	--	4	--	3	--	3	--	1	--	3	--

	Parking Zone #10		#11		#12		#13		#14		#15		#16		#17		#18		#19		#20		#21	
TRIAL NO.	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.
1	2	8	3	12	0	0	6	11	7	11	9	13	6	11	14	12	9	11	2	7	0	9	0	8
2	3	--	3	--	0	--	8	--	7	--	8	--	8	--	8	--	9	--	3	--	0	--	0	--
3	3	--	1	--	0	--	7	--	8	--	9	--	4	--	11	--	7	--	4	--	0	--	1	--
4	3	--	2	--	0	--	4	--	7	--	8	--	4	--	10	--	5	--	1	--	0	--	1	--
5	3	--	2	--	0	--	4	--	8	--	8	--	4	--	11	--	8	--	0	--	0	--	1	--
6	0	--	0	--	0	--	3	--	7	--	7	--	5	--	8	--	5	--	2	--	0	--	2	--
Average	2	--	2	--	0	--	5	--	7	--	8	--	5	--	10	--	7	--	2	--	0	--	1	--

	Parking Zone #22		#23		#24		#25		#26		#27		#28		#29		#30			
TRIAL NO.	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	END TIME	**Total**
1	4	16	4	8	0	18	0	10	1	11	1	7	0	15	3	9	3	9	4:10 PM	100
2	10	--	3	--	0	--	0	--	2	--	1	--	0	--	2	--	3	--	4:30 PM	108
3	11	--	3	--	0	--	0	--	1	--	1	--	0	--	2	--	2	--	4:50 PM	106
4	10	--	2	--	0	--	2	--	1	--	0	--	0	--	0	--	0	--	5:10 PM	84
5	11	--	2	--	0	--	2	--	0	--	0	--	0	--	0	--	0	--	5:30 PM	87
6	11	--	2	--	0	--	1	--	1	--	0	--	0	--	0	--	0	--	5:50 PM	78
Average	10	--	3	--	0	--	1	--	1	--	1	--	0	--	1	--	1	--		95

Data Collection: Weekend - Noon
8/2/2014
V. Morasko

		Parking Zone #1		#2		#3		#4		#5		#6		#7		#8		#9	
TRIAL NO.	START TIME	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.
1	11:00 AM	2	7	0	6	0	15	1	10	5	10	6	9	4	9	1	11	2	8
2	11:20 AM	2	--	1	--	0	--	1	--	5	--	3	--	2	--	1	--	2	--
3	1:40 AM	2	--	3	--	0	--	1	--	5	--	6	--	4	--	1	--	2	--
4	12:00 PM	2	--	2	--	0	--	1	--	5	--	7	--	4	--	1	--	2	--
5	12:20 PM	2	--	0	--	1	--	1	--	5	--	5	--	1	--	1	--	2	--
6	12:40 PM	2	--	1	--	1	--	2	--	5	--	5	--	4	--	1	--	2	--
Average		2	--	1	--	0	--	1	--	5	--	5	--	3	--	1	--	2	--

	Parking Zone #10		#11		#12		#13		#14		#15		#16		#17		#18		#19		#20		#21	
TRIAL NO.	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.
1	0	8	0	12	0	0	2	11	4	11	5	13	5	11	8	12	6	11	2	7	2	9	1	8
2	0	--	2	--	0	--	1	--	4	--	4	--	4	--	7	--	3	--	4	--	0	--	1	--
3	0	--	1	--	0	--	5	--	4	--	4	--	2	--	8	--	5	--	4	--	1	--	1	--
4	0	--	1	--	0	--	5	--	6	--	6	--	1	--	9	--	8	--	4	--	1	--	1	--
5	0	--	1	--	0	--	4	--	6	--	6	--	1	--	9	--	6	--	6	--	2	--	2	--
6	0	--	1	--	0	--	6	--	5	--	5	--	2	--	8	--	7	--	7	--	2	--	2	--
Average	0	--	1	--	0	--	4	--	5	--	5	--	3	--	8	--	6	--	5	--	1	--	1	--

	Parking Zone #22		#23		#24		#25		#26		#27		#28		#29		#30			
TRIAL NO.	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	END TIME	**Total**
1	5	16	0	8	0	18	0	10	1	11	0	7	0	15	2	9	1	9	11:10 AM	65
2	6	--	0	--	0	--	0	--	1	--	0	--	0	--	2	--	2	--	11:30 AM	58
3	5	--	1	--	0	--	0	--	1	--	0	--	0	--	2	--	1	--	11:50 AM	69
4	7	--	0	--	0	--	0	--	1	--	0	--	0	--	2	--	1	--	12:10 PM	77
5	5	--	0	--	0	--	0	--	1	--	1	--	0	--	0	--	1	--	12:30 PM	69
6	4	--	2	--	0	--	0	--	1	--	2	--	0	--	0	--	1	--	12:50 PM	78
Average	5	--	1	--	0	--	0	--	1	--	1	--	0	--	1	--	1	--		69

Data Collection: Weekend - PM
8/2/2014
V. Morasko

		Parking Zone #1		#2		#3		#4		#5		#6		#7		#8		#9	
TRIAL NO.	START TIME	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.
1	4:00 PM	2	7	3	6	0	15	2	10	6	10	6	9	4	9	1	11	2	8
2	4:20 PM	2	--	2	--	1	--	2	--	6	--	6	--	4	--	1	--	2	--
3	4:40 PM	3	--	0	--	1	--	2	--	5	--	6	--	2	--	1	--	2	--
4	5:00 PM	3	--	2	--	2	--	2	--	5	--	5	--	2	--	0	--	2	--
5	5:20 PM	2	--	2	--	2	--	2	--	5	--	4	--	3	--	0	--	2	--
6	5:40 PM	2	--	0	--	2	--	3	--	5	--	3	--	3	--	0	--	2	--
Average		2	--	2	--	1	--	2	--	5	--	5	--	3	--	1	--	2	--

	Parking Zone #10		#11		#12		#13		#14		#15		#16		#17		#18		#19		#20		#21	
TRIAL NO.	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.
1	0	8	1	12	0	0	3	11	4	11	4	13	0	11	3	12	2	11	1	7	0	9	1	8
2	0	--	1	--	0	--	4	--	5	--	4	--	0	--	3	--	2	--	0	--	0	--	1	--
3	0	--	1	--	0	--	3	--	2	--	4	--	0	--	3	--	2	--	1	--	0	--	1	--
4	0	--	1	--	0	--	4	--	2	--	3	--	0	--	4	--	1	--	2	--	0	--	3	--
5	0	--	0	--	0	--	5	--	4	--	3	--	0	--	4	--	1	--	1	--	0	--	2	--
6	0	--	0	--	0	--	5	--	5	--	4	--	0	--	4	--	1	--	2	--	0	--	2	--
Average	0	--	1	--	0	--	4	--	4	--	4	--	0	--	4	--	2	--	1	--	0	--	2	--

	Parking Zone #22		#23		#24		#25		#26		#27		#28		#29		#30			
TRIAL NO.	Observed	Capacity	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	Ob.	Cap.	END TIME	**Total**
1	7	16	3	8	0	18	0	10	3	11	0	7	0	15	0	9	0	9	4:10 PM	58
2	6	--	3	--	0	--	0	--	2	--	0	--	0	--	0	--	0	--	4:30 PM	57
3	7	--	2	--	0	--	0	--	2	--	0	--	0	--	0	--	0	--	4:50 PM	50
4	11	--	2	--	0	--	0	--	2	--	0	--	0	--	0	--	0	--	5:10 PM	58
5	6	--	2	--	0	--	0	--	2	--	0	--	0	--	0	--	0	--	5:30 PM	52
6	6	--	2	--	0	--	0	--	2	--	0	--	0	--	0	--	0	--	5:50 PM	53
Average	7	--	2	--	0	--	0	--	2	--	0	--	0	--	0	--	0	--		56

ATTACHMENT 4

CAPACITY CALCULATIONS: EXISTING + PROJECT

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	5	3	188	9	105	7	208	215	171	340	18
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	1900	1900	1900	1827	1900	1900	1900	1863	1863	1900	1865	1900
Adj Flow Rate, veh/h	20	7	4	229	11	128	8	245	253	222	442	23
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.69	0.69	0.69	0.82	0.82	0.82	0.85	0.85	0.85	0.77	0.77	0.77
Percent Heavy Veh, %	0	0	0	4	0	0	0	2	2	0	2	2
Cap, veh/h	268	90	41	378	35	409	487	768	652	199	1038	54
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.41	0.41	0.41	0.11	0.59	0.59
Sat Flow, veh/h	686	330	150	1371	129	1505	942	1863	1583	1810	1757	91
Grp Volume(v), veh/h	31	0	0	229	0	139	8	245	253	222	0	465
Grp Sat Flow(s),veh/h/ln	1166	0	0	1371	0	1634	942	1863	1583	1810	0	1848
Q Serve(g_s), s	0.1	0.0	0.0	11.6	0.0	4.9	0.4	6.5	8.1	8.0	0.0	10.0
Cycle Q Clear(g_c), s	5.0	0.0	0.0	16.6	0.0	4.9	0.4	6.5	8.1	8.0	0.0	10.0
Prop In Lane	0.65		0.13	1.00		0.92	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	399	0	0	378	0	445	487	768	652	199	0	1092
V/C Ratio(X)	0.08	0.00	0.00	0.61	0.00	0.31	0.02	0.32	0.39	1.12	0.00	0.43
Avail Cap(c_a), veh/h	538	0	0	513	0	606	487	768	652	199	0	1092
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.7	0.0	0.0	27.7	0.0	21.1	12.7	14.5	15.0	32.4	0.0	8.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.6	0.0	0.4	0.1	1.1	1.7	98.6	0.0	1.2
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 BackOfQ(50%),veh/ln	0.5	0.0	0.0	4.6	0.0	2.2	0.1	3.6	3.8	9.4	0.0	5.4
LnGrp Delay(d),s/veh	19.8	0.0	0.0	29.3	0.0	21.5	12.8	15.6	16.7	131.0	0.0	9.4
LnGrp LOS	B			C		C	B	B	B	F		A
Approach Vol, veh/h		31			368			506			687	
Approach Delay, s/veh		19.8			26.4			16.1			48.7	
Approach LOS		B			C			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	13.0	35.0		24.8		48.0		24.8
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	8.0	30.0		27.0		43.0		27.0
Max Q Clear Time (g_c+I1), s	10.0	10.1		7.0		12.0		18.6
Green Ext Time (p_c), s	0.0	5.7		1.7		6.4		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	32.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	81	242	138	56	13	114	116	91	8	237	15
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	1638	1727	1900	1900	1712	1234	1900	1872	1900	1900	1892	1900
Adj Flow Rate, veh/h	24	103	306	150	61	14	161	163	128	9	272	17
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	0
Peak Hour Factor	0.79	0.79	0.79	0.92	0.92	0.92	0.71	0.71	0.71	0.87	0.87	0.87
Percent Heavy Veh, %	16	10	0	0	11	54	1	1	0	0	0	0
Cap, veh/h	422	530	495	357	525	322	135	114	904	59	973	59
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	1160	1727	1615	992	1712	1049	112	204	1615	17	1738	106
Grp Volume(v), veh/h	24	103	306	150	61	14	324	0	128	298	0	0
Grp Sat Flow(s),veh/h/ln	1160	1727	1615	992	1712	1049	316	0	1615	1861	0	0
Q Serve(g_s), s	1.1	3.3	12.2	9.9	1.9	0.7	10.1	0.0	2.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.1	3.3	12.2	13.1	1.9	0.7	10.1	0.0	2.8	6.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.50		1.00	0.03		0.06
Lane Grp Cap(c), veh/h	422	530	495	357	525	322	0	0	904	1092	0	0
V/C Ratio(X)	0.06	0.19	0.62	0.42	0.12	0.04	0.00	0.00	0.14	0.27	0.00	0.00
Avail Cap(c_a), veh/h	422	530	495	357	525	322	0	0	904	1092	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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.8	19.2	22.2	24.0	18.7	18.3	0.0	0.0	7.9	8.6	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.8	5.7	3.6	0.5	0.3	0.0	0.0	0.3	0.6	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 BackOfQ(50%),veh/ln	0.4	1.7	6.1	3.0	1.0	0.2	0.0	0.0	1.3	3.4	0.0	0.0
LnGrp Delay(d),s/veh	20.1	20.0	27.9	27.6	19.1	18.5	0.0	0.0	8.2	9.3	0.0	0.0
LnGrp LOS	C	B	C	C	B	B			A	A		
Approach Vol, veh/h		433			225			452			298	
Approach Delay, s/veh		25.6			24.8			2.3			9.3	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		47.0		28.0		47.0		28.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		42.0		23.0		31.0		23.0
Max Q Clear Time (g_c+I1), s		12.1		14.2		8.2		15.1
Green Ext Time (p_c), s		5.2		2.1		4.9		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	73	191	163	6	1	32
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	80	80	88	88	71	71
Heavy Vehicles, %	36	9	14	50	100	26
Mvmt Flow	91	239	185	7	1	45

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	192	0	-	0	610	189
Stage 1	-	-	-	-	189	-
Stage 2	-	-	-	-	421	-
Critical Hdwy	4.46	-	-	-	7.4	6.46
Critical Hdwy Stg 1	-	-	-	-	6.4	-
Critical Hdwy Stg 2	-	-	-	-	6.4	-
Follow-up Hdwy	2.524	-	-	-	4.4	3.534
Pot Cap-1 Maneuver	1202	-	-	-	331	795
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1202	-	-	-	302	795
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	452	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1202	-	-	-	758
HCM Lane V/C Ratio	0.076	-	-	-	0.061
HCM Control Delay (s)	8.2	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	129	48	21	80	13	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	93	93	47	47	58	58
Heavy Vehicles, %	10	14	15	8	25	17
Mvmt Flow	139	52	45	170	22	19

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	190	0	425	165
Stage 1	-	-	-	-	165	-
Stage 2	-	-	-	-	260	-
Critical Hdwy	-	-	4.25	-	6.65	6.37
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	-	-	2.335	-	3.725	3.453
Pot Cap-1 Maneuver	-	-	1309	-	545	842
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	733	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1309	-	524	842
Mov Cap-2 Maneuver	-	-	-	-	524	-
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	705	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	634	-	-	1309	-
HCM Lane V/C Ratio	0.065	-	-	0.034	-
HCM Control Delay (s)	11.1	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	74	59	39	55	47	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	130	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	54	54	63	63
Heavy Vehicles, %	22	0	20	13	0	10
Mvmt Flow	87	69	72	102	75	56

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	87	0	333	87
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	246	-
Critical Hdwy	-	-	4.3	-	6.4	6.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.38	-	3.5	3.39
Pot Cap-1 Maneuver	-	-	1403	-	666	950
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	800	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1403	-	630	950
Mov Cap-2 Maneuver	-	-	-	-	630	-
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	757	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	736	-	-	1403	-
HCM Lane V/C Ratio	0.177	-	-	0.051	-
HCM Control Delay (s)	10.9	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	7	68	11	3	87	25	362	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	Yeild	-	-	None	-	-	None
Storage Length	-	-	50	-	-	100	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	61	61	61	82	82	82
Heavy Vehicles, %	0	0	5	0	0	0	0	3	14
Mvmt Flow	16	11	108	18	5	143	30	441	44

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1463	1482	642	1466	1473	463	655	0	0
Stage 1	936	936	-	524	524	-	-	-	-
Stage 2	527	546	-	942	949	-	-	-	-
Critical Hdwy	7.1	6.5	6.25	7.1	6.5	6.2	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.345	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	108	126	469	107	128	603	942	-	-
Stage 1	321	346	-	540	533	-	-	-	-
Stage 2	538	521	-	318	342	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	65	96	469	62	98	603	942	-	-
Mov Cap-2 Maneuver	65	96	-	62	98	-	-	-	-
Stage 1	311	272	-	523	516	-	-	-	-
Stage 2	394	504	-	185	269	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	27.6	22.7	0.5
HCM LOS	D	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	942	-	-	75	469	67	603	1088	-	-
HCM Lane V/C Ratio	0.032	-	-	0.36	0.23	0.343	0.237	0.135	-	-
HCM Control Delay (s)	8.9	-	-	77.8	15	84.5	12.8	8.8	0	-
HCM Lane LOS	A	-	-	F	C	F	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	0.9	1.3	0.9	0.5	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	128	547	23
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	87	87	87
Heavy Vehicles, %	0	2	0
Mvmt Flow	147	629	26

Major/Minor	Major2		
Conflicting Flow All	485	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1088	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1088	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	1.6
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	7.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	25	12	243	33	11	135
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	73	73	91	91	65	65
Heavy Vehicles, %	4	0	5	3	0	1
Mvmt Flow	34	16	267	36	17	208

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	51	0	612	42
Stage 1	-	-	-	-	42	-
Stage 2	-	-	-	-	570	-
Critical Hdwy	-	-	4.15	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.245	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1536	-	460	1032
Stage 1	-	-	-	-	986	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1536	-	379	1032
Mov Cap-2 Maneuver	-	-	-	-	379	-
Stage 1	-	-	-	-	986	-
Stage 2	-	-	-	-	469	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.9	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	913	-	-	1536	-
HCM Lane V/C Ratio	0.246	-	-	0.174	-
HCM Control Delay (s)	10.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0.6	-

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	129	31	31	11	36	245
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	67	67	70	70	93	93
Heavy Vehicles, %	2	0	0	11	0	1
Mvmt Flow	193	46	44	16	39	263

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	60	0	-	0	483	52
Stage 1	-	-	-	-	52	-
Stage 2	-	-	-	-	431	-
Critical Hdwy	4.12	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	1544	-	-	-	546	1019
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	660	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1544	-	-	-	476	1019
Mov Cap-2 Maneuver	-	-	-	-	476	-
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	576	-

Approach	EB	WB	SB
HCM Control Delay, s	6.2	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1544	-	-	-	889
HCM Lane V/C Ratio	0.125	-	-	-	0.34
HCM Control Delay (s)	7.7	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	4	3	334	10	233	8	384	257	235	338	18
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	1900	1900	1900	1845	1900	1900	1900	1863	1863	1900	1865	1900
Adj Flow Rate, veh/h	42	6	4	380	11	265	9	431	289	294	422	22
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.67	0.67	0.67	0.88	0.88	0.88	0.89	0.89	0.89	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	3	0	0	0	2	2	0	2	2
Cap, veh/h	278	38	20	333	22	526	450	699	594	181	944	49
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.38	0.38	0.38	0.10	0.54	0.54
Sat Flow, veh/h	583	114	58	1385	65	1560	961	1863	1583	1810	1757	92
Grp Volume(v), veh/h	52	0	0	380	0	276	9	431	289	294	0	444
Grp Sat Flow(s),veh/h/ln	755	0	0	1385	0	1625	961	1863	1583	1810	0	1848
Q Serve(g_s), s	2.1	0.0	0.0	14.1	0.0	10.8	0.5	15.1	11.2	8.0	0.0	11.7
Cycle Q Clear(g_c), s	12.9	0.0	0.0	27.0	0.0	10.8	0.5	15.1	11.2	8.0	0.0	11.7
Prop In Lane	0.81		0.08	1.00		0.96	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	336	0	0	333	0	548	450	699	594	181	0	994
V/C Ratio(X)	0.15	0.00	0.00	1.14	0.00	0.50	0.02	0.62	0.49	1.62	0.00	0.45
Avail Cap(c_a), veh/h	336	0	0	333	0	548	450	699	594	181	0	994
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.8	0.0	0.0	34.9	0.0	21.1	15.8	20.3	19.1	36.0	0.0	11.3
Incr Delay (d2), s/veh	0.2	0.0	0.0	92.8	0.0	0.7	0.1	4.1	2.8	305.0	0.0	1.5
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 BackOfQ(50%),veh/ln	1.0	0.0	0.0	15.9	0.0	4.9	0.1	8.4	5.3	19.3	0.0	6.3
LnGrp Delay(d),s/veh	24.0	0.0	0.0	127.7	0.0	21.9	15.9	24.4	22.0	341.0	0.0	12.7
LnGrp LOS	C			F		C	B	C	C	F		B
Approach Vol, veh/h		52			656			729			738	
Approach Delay, s/veh		24.0			83.2			23.3			143.5	
Approach LOS		C			F			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	13.0	35.0		32.0		48.0		32.0
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	8.0	30.0		27.0		43.0		27.0
Max Q Clear Time (g_c+I1), s	10.0	17.1		14.9		13.7		29.0
Green Ext Time (p_c), s	0.0	5.7		2.9		8.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	82.2
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	44	153	206	148	106	34	222	287	199	7	261	19
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	1863	1845	1900	1900	1792	1900	1900	1892	1881	1900	1900	1900
Adj Flow Rate, veh/h	52	182	245	157	113	36	249	322	224	7	272	20
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.94	0.94	0.94	0.89	0.89	0.89	0.96	0.96	0.96
Percent Heavy Veh, %	2	3	0	0	6	0	0	0	1	0	0	0
Cap, veh/h	417	566	495	321	550	495	129	87	895	56	968	70
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	1234	1845	1615	976	1792	1615	106	155	1599	12	1728	125
Grp Volume(v), veh/h	52	182	245	157	113	36	571	0	224	299	0	0
Grp Sat Flow(s),veh/h/ln	1234	1845	1615	976	1792	1615	261	0	1599	1864	0	0
Q Serve(g_s), s	2.4	5.7	9.3	11.1	3.5	1.2	21.7	0.0	5.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.9	5.7	9.3	16.8	3.5	1.2	21.7	0.0	5.4	6.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.44		1.00	0.02		0.07
Lane Grp Cap(c), veh/h	417	566	495	321	550	495	0	0	895	1093	0	0
V/C Ratio(X)	0.12	0.32	0.49	0.49	0.21	0.07	0.00	0.00	0.25	0.27	0.00	0.00
Avail Cap(c_a), veh/h	417	566	495	321	550	495	0	0	895	1093	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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.4	20.0	21.3	26.4	19.2	18.4	0.0	0.0	8.4	8.6	0.0	0.0
Incr Delay (d2), s/veh	0.6	1.5	3.5	5.2	0.8	0.3	0.0	0.0	0.7	0.6	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 BackOfQ(50%),veh/ln	0.9	3.1	4.6	3.4	1.9	0.6	0.0	0.0	2.5	3.4	0.0	0.0
LnGrp Delay(d),s/veh	22.1	21.5	24.8	31.7	20.1	18.7	0.0	0.0	9.1	9.3	0.0	0.0
LnGrp LOS	C	C	C	C	C	B			A	A		
Approach Vol, veh/h		479			306			795			299	
Approach Delay, s/veh		23.2			25.9			2.6			9.3	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		47.0		28.0		47.0		28.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		42.0		23.0		31.0		23.0
Max Q Clear Time (g_c+I1), s		23.7		11.3		8.2		18.8
Green Ext Time (p_c), s		7.0		3.1		7.7		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	41	294	263	3	0	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	82	82	72	72
Heavy Vehicles, %	6	4	4	0	0	12
Mvmt Flow	48	346	321	4	0	133

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	324	0	-	0	765	323
Stage 1	-	-	-	-	323	-
Stage 2	-	-	-	-	442	-
Critical Hdwy	4.16	-	-	-	6.4	6.32
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.408
Pot Cap-1 Maneuver	1214	-	-	-	374	695
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	652	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1214	-	-	-	356	695
Mov Cap-2 Maneuver	-	-	-	-	356	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	620	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1214	-	-	-	695
HCM Lane V/C Ratio	0.04	-	-	-	0.192
HCM Control Delay (s)	8.1	0	-	-	11.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	78	11	44	178	20	43
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	94	94	84	84	61	61
Heavy Vehicles, %	2	17	5	1	0	0
Mvmt Flow	83	12	52	212	33	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	95	0	406	89
Stage 1	-	-	-	-	89	-
Stage 2	-	-	-	-	317	-
Critical Hdwy	-	-	4.15	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.245	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1480	-	605	975
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	743	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1480	-	581	975
Mov Cap-2 Maneuver	-	-	-	-	581	-
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	713	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	802	-	-	1480	-
HCM Lane V/C Ratio	0.129	-	-	0.035	-
HCM Control Delay (s)	10.2	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	87	87	49	112	97	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	130	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	91	91	72	72
Heavy Vehicles, %	3	2	5	4	0	0
Mvmt Flow	104	104	54	123	135	61

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	104	0	335	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	231	-
Critical Hdwy	-	-	4.15	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.245	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1469	-	664	956
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	812	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1469	-	638	956
Mov Cap-2 Maneuver	-	-	-	-	638	-
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	780	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	712	-	-	1469	-
HCM Lane V/C Ratio	0.275	-	-	0.037	-
HCM Control Delay (s)	12	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	32.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	8	7	144	24	8	172	112	657	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	Yeild	-	-	None	-	-	None
Storage Length	-	-	50	-	-	100	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	49	49	49	89	89	89	92	92	92
Heavy Vehicles, %	0	0	7	0	0	0	7	3	18
Mvmt Flow	16	14	294	27	9	193	122	714	22

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1881	1887	675	1883	1890	725	689	0	0
Stage 1	908	908	-	968	968	-	-	-	-
Stage 2	973	979	-	915	922	-	-	-	-
Critical Hdwy	7.1	6.5	6.27	7.1	6.5	6.2	4.17	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.363	3.5	4	3.3	2.263	-	-
Pot Cap-1 Maneuver	55	71	445	55	71	428	882	-	-
Stage 1	332	357	-	308	335	-	-	-	-
Stage 2	306	331	-	329	352	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	20	48	445	~ 11	48	428	882	-	-
Mov Cap-2 Maneuver	20	48	-	~ 11	48	-	-	-	-
Stage 1	286	280	-	265	289	-	-	-	-
Stage 2	140	285	-	83	276	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	65.6	215.4	1.4
HCM LOS	F	F	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	882	-	-	27	445	14	428	879	-	-
HCM Lane V/C Ratio	0.138	-	-	1.134	0.66	2.568	0.452	0.133	-	-
HCM Control Delay (s)	9.7	-	-	$ 431	27.5	$ 1264.4	20.2	9.7	0	-
HCM Lane LOS	A	-	-	F	D	F	C	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	3.6	4.7	5.3	2.3	0.5	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	99	561	25
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	0	2	0
Mvmt Flow	116	660	29

Major/Minor	Major2		
Conflicting Flow All	736	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	879	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	879	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	1.4
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	9.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	39	27	278	33	28	395
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	79	79	84	84	94	94
Heavy Vehicles, %	0	0	0	15	0	1
Mvmt Flow	49	34	331	39	30	420

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	84	0	767	66
Stage 1	-	-	-	-	66	-
Stage 2	-	-	-	-	701	-
Critical Hdwy	-	-	4.1	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1526	-	373	1001
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	496	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1526	-	290	1001
Mov Cap-2 Maneuver	-	-	-	-	290	-
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	386	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.2	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	861	-	-	1526	-
HCM Lane V/C Ratio	0.523	-	-	0.217	-
HCM Control Delay (s)	13.7	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	3.1	-	-	0.8	-

Intersection	
Int Delay, s/veh	9.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	380	54	45	38	27	266
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	78	78	85	85
Heavy Vehicles, %	1	0	0	0	4	2
Mvmt Flow	413	59	58	49	32	313

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	106	0	-	0	967	82
Stage 1	-	-	-	-	82	-
Stage 2	-	-	-	-	885	-
Critical Hdwy	4.11	-	-	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.209	-	-	-	3.536	3.318
Pot Cap-1 Maneuver	1491	-	-	-	280	978
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	400	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1491	-	-	-	200	978
Mov Cap-2 Maneuver	-	-	-	-	200	-
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	286	-

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1491	-	-	-	720
HCM Lane V/C Ratio	0.277	-	-	-	0.479
HCM Control Delay (s)	8.3	0	-	-	14.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	1.1	-	-	-	2.6