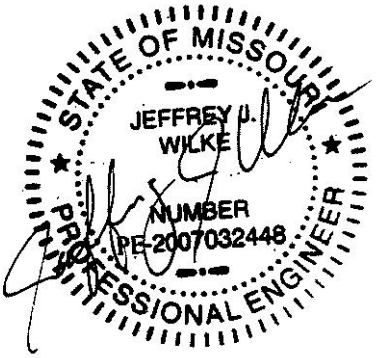
Traffic Impact Study

Arborwalk East Multifamily

LEE'S SUMMIT, MISSOURI

FEBRUARY 2023



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EXHIBITS (SEE APPENDIX A)

1.0 INTRODUCTION

This report serves as the traffic analysis for the Arborwalk East Multifamily development, generally located at the northwest corner of the Route 150 and Ward Road intersection in Lee's Summit, Missouri. The location of the development is shown on **Exhibit 1** in **Appendix A**.

1.1 REPORT PURPOSE AND OBJECTIVES

The purpose of this study is to address traffic and transportation impacts of the proposed development on surrounding streets and intersections. This traffic impact study was prepared based on criteria set forth by the City of Lee's Summit *Access Management Code*. The following information is provided.

- A description and map of the existing and proposed street network to be affected by the proposed development. This information includes existing and proposed roadway characteristics and existing traffic volumes.
- Trip generation calculations based on the Institute of Traffic Engineers (ITE) *Trip Generation Manual,* 11th Edition, for the proposed development. In addition, projected trip distributions onto the street network are provided.
- Analysis of impacts of the traffic generated by the proposed development on the street network, including analysis of peak period levels of service (LOS), delay times, and queuing at study area intersections.
- Evaluation of compliance with access management guidelines.
- Discussion of potential improvements and traffic management measures identified to mitigate operational concerns.

In summary, the study is to determine the trip generation of the Arborwalk East Multifamily development, assign new development trips to the street network, analyze various scenarios to determine the impacts of proposed site traffic, and identify potential mitigation measures needed to achieve acceptable operations at the study intersections.

2.0 EXISTING CONDITIONS

2.1 STUDY AREA

The development site is in the southern portion of Lee's Summit, Missouri, and consists of approximately 12 acres of undeveloped land. The land to the north of the site across Arborwalk Boulevard consists of single-family and multifamily neighborhoods. To the west of the site across Arborwalk Boulevard is open area that is part of Arborwalk Park. To the south of the site, there is undeveloped land that is planned to have commercial uses along Route 150. Southeast of the site there are existing commercial uses, including a gas station, at the northeast corner of Route 150 and Arborlake Drive. To the east of the site across Ward Road is a streamway buffer, then a single-family neighborhood.

Through discussion with City staff, three intersections along Route 150 and Ward Road were included within the study area for the traffic analysis. The Arborwalk Boulevard & Arborway Drive intersection will be the main access for the development, therefore it was also included as a study intersection. The list provides the existing intersection control for each of the study intersections.

- Route 150 & Ward Road (Signalized)
- Route 150 & Arborlake Drive/Stoney Creek Drive (Signalized)
- Ward Road & Arborwalk Boulevard (Side Street Stop)
- Arborwalk Boulevard & Arborway Drive (Roundabout)

2.2 STREET NETWORK

The existing street network within the study area includes Route 150, Ward Road, Arborlake Drive/Stoney Creek Drive, Arborwalk Boulevard, and Arborway Drive. The following provides a summary of the existing street network within the study area:

Route 150 (Missouri 150) is an east-west roadway to the south of the proposed development site. Route 150 is a four-lane divided highway with curbs and gutters. There is a sidewalk along the south side of Route 150 and a shared-use path along the north side. . According to the Lee's Summit Thoroughfare Master Plan, Route 150 is classified as a Highway. The average annual daily traffic (AADT) on Route 150 is approximately 19,500 vpd according to the Missouri Department of Transportation (MoDOT) traffic volume maps. The posted speed limit is 45 miles per hour (mph). Route 150 provides access to the regional highway system with an interchange at Route 291 one mile to the east, and an interchange with I-49 roughly seven miles to the west of the site

Ward Road is a north-south roadway that runs along the east side of the proposed development. Ward Road is a four-lane, divided roadway with curbs and gutters and a posted speed limit of 45 mph. There is a sidewalk along the east side of Ward Road and a shared-use path along the west side. According to the Lee's Summit Thoroughfare Master Plan, Ward Road is classified as a Major Arterial. The AADT is approximately 7,500 vpd according to MoDOT traffic volume maps.

Arborlake Drive north-south roadway that runs west of the proposed development site. Arborlake Drive is a two-lane, divided roadway to the north of Route 150, with a posted speed limit of 30 mph. To the south of Route 150, the street is a two-lane undivided roadway and the name changes to Stoney Creek Drive. There are sidewalks along both sides of the roadway to the north and south of Route 150. According to the Lee's Summit Thoroughfare Master Plan, Arborlake Drive is classified as a Commercial Collector and Stoney Creek Drive is a Residential Collector.

Arborwalk Boulevard is a two-lane, undivided roadway that runs along the northwestern edge of the proposed development site. The roadway has curbs and gutters with a posted speed limit of 30 mph. There are sections of sidewalk and shared-use paths along the north side of the roadway. There are no sidewalks along the south side adjacent to the development site. According to the Lee's Summit Thoroughfare Master Plan, Arborwalk Boulevard is classified as a Commercial Collector.

2.3 DATA COLLECTION

Turning Movement Counts (TMCs) were collected at the four study intersections on Thursday, November 17, 2022. A 13-hour TMC (6:00 AM to 7:00 PM) was recorded at the Ward Road & Arborwalk Boulevard intersection. At Route 150 & Ward Road, Route 150 & Arborlake Drive/Stoney Creek Drive, and Arborwalk Boulevard & Arbor Park Drive peak hour TMCs were recorded from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM.

Turning movement counts are challenging to collect at roundabout intersections. Instead of collecting TMC's at the roundabout intersection, TMCs were collected at Arborwalk Boulevard & Arbor Park Drive. Turning movement volumes at the Arborwalk Boulevard & Arborway Drive roundabout intersection were derived by assigning the turning movement volumes at the roundabout intersection to balance with the counts at the two adjacent intersections. **Appendix B** provides the raw turning movement counts collected.

The Existing Conditions peak hour turning movement volumes are shown on **Exhibit 2**. The existing geometry with lane configurations and intersection control at the study intersections is shown on **Exhibit 3**.

3.0 PROPOSED DEVELOPMENT

3.1 SITE DESCRIPTION

The proposed Arborwalk East development consists of eight multifamily apartment buildings. There will be three- and four-story buildings arranged generally around the perimeter of the site with 24 to 42 units in each building. In the center of the site will be a larger four-story building with 90 units and an amenity area. The total number of apartment units is 314. Surface parking is provided in the interior of the site. Several garage spaces are also available at several locations in the surface parking lot.

The proposed site plan is included in **Appendix C** for reference.

3.2 SITE CIRCULATION

The proposed development will be accessed from two access points. Access A is a proposed full-access drive along Arborwalk Boulevard located approximately 450 feet south and west of the Arbor Park Drive intersection. Access B is proposed to be the south leg of the existing single-lane roundabout at Arborwalk Boulevard & Arborway Drive.

Vehicles will circulate within the site through the aisles of the surface parking lot. Sidewalks are provided in front of the buildings and at the perimeter of the site along Arborwalk Boulevard.

3.3 TRIP GENERATION

Trip generation estimates were prepared using the *ITE Trip Generation Manual,* 11th Edition. **Table 1** shows the expected trips to be generated by the proposed development. The total trip generation is anticipated to be 2,088 daily trips, 120 trips during the AM peak hour (29 entering and 91 exiting), and 156 trips during the PM peak hour (98 entering and 58 exiting).

TABLE 1: TRIP GENERATION

Land Use Description	ITE LUC	Intensity / Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise)	220	314 Dwelling Units	2,088	29	91	120	98	58	156

Appendix D provides the ITE Trip Generation Manual calculations used to determine the trip generation of the proposed site.

3.4 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The estimated trips generated by the proposed development were assigned to the street network based on the trip distributions summarized in **Table 2**. This distribution is based on existing traffic patterns, the surrounding street network, and engineering judgement.

TABLE 2: TRIP DISTRIBUTION

Direction To/From	Percentage
North on Ward Road	35%
East on Route 150	35%
West on Route 150	30%
Total	**100%**

The detailed residential distribution patterns through the study intersections are shown in **Exhibit 4**.

Exhibit 5 shows the total development trip assignment. The proposed development trip assignments were added to the Existing Conditions traffic volumes. **Exhibit 6** illustrates the Existing plus Development peak hour traffic volumes.

4.0 ACCESS MANAGEMENT

The City of Lee's Summit has access management guidelines in the *Access Management Code* that addresses the location and design of access points. The guidelines were used to review various aspects of the proposed development in the following sections.

4.1 ACCESS SPACING

The *Access Management Code* includes requirements for the minimum allowable spacing between connections, depending on street classification. For an industrial/commercial collector such as Arborwalk Boulevard, the minimum spacing requirement is 300 feet. The distance between proposed Access A and the driveway to the existing gas station is 475 feet, and the distance between Access A and Arbor Park Drive is 450 feet. Therefore, the proposed site driveway on Arborwalk Boulevard is adequately spaced.

4.2 TURN LANE ANALYSIS

The *Access Management Code* also provides standards for left- and right-turn lanes based on traffic volumes and street classification. According to the *Access Management Code*, left-turn lanes are not required on collector streets when the left-turn volume is less than 30 vehicles in an hour. The left-turn volumes are not projected to exceed 10 for any scenario. Therefore, a left-turn lane is not warranted at proposed Access A along Arborwalk Boulevard. Right-turn lanes are not required on collector streets when the right-turn volume is less than 100 vehicles in an hour. The right-turn volumes are not projected to exceed 14 for any scenario and a right-turn lane is not warranted at Access A along Arborwalk Boulevard.

4.3 DRIVEWAY THROAT LENGTH

A driveway's throat length is the distance along a driveway from the intersecting roadway to the first location on site where a driver can make a turn. Adequate throat lengths minimize the potential for inbound traffic to queue onto the public street. The throat length also provides space for outbound traffic to queue without adversely impacting site circulation.

The throat length requirements in the *Access Management Code* are based on the two-way traffic volume on the driveway and the adjacent street classification. Access A is projected to have between 30 and 40 vehicles during the peak hours. As such the minimum required throat length for collector roadways is 50 feet. Access is proposed to have a throat length of approximately 120 feet, which exceeds the minimum required throat length. Access B is projected to have between 60 and 75 vehicles during the peak hour, resulting in a minimum required throat length of 75 feet. Access B is proposed to have a throat length of approximately 115 feet, meeting the minimum requirement.

5.0 FUTURE CONDITIONS

Historical Annual Average Daily Traffic (AADT) volumes for Route 150 and Ward Road were analyzed to determine the growth rate for the study network. **Table 3** provides AADT volumes from 2016 and projected AADTs for 2050, as well as an annual growth rate for each facility. The AADT volumes are from the Mid-America Regional Council (MARC) Regional Traffic Forecast Map.

TABLE 3: ANNUAL GROWTH RATE

Road	Location	MARC Model AADT		Annual Growth Rate
		2016	2050	
Route 150	East of Ward Road	17,900	34,000	1.9%
	West of Ward Road	15,400	29,000	1.9%
Ward Road	North of Route 150	5,600	13,900	2.7%
	South of Route 150	7,100	12,400	1.7%

An average annual growth rate of 2.0% was assumed for all intersections within the study network based on the annual growth rates shown in **Table 3**. Traffic Volumes were grown to a 20-year future condition. No adjacent development traffic was included in the future year volume development.

6.0 INTERSECTION CAPACITY ANALYSIS

6.1 LEVEL OF SERVICE OVERVIEW

Intersection capacity analysis was performed at the study intersections for the following three scenarios:

- Existing Conditions (Year 2022)
- Existing plus Development Conditions
- Future Conditions (Year 2042)

The capacity analysis was performed for the weekday AM and PM peak hours using Synchro or Sidra traffic modeling software to determine intersection delay and level of service (LOS). Calculations were performed based on the methodologies outlined in the *Highway Capacity Manual (HCM)*, 6th Edition, which is published by the Transportation Research Board. Signalized intersections were evaluated based on the 2000 Edition of the HCM because the 6th Edition will not evaluate the signal phasing.

LOS is a quantitative measure used by traffic engineers to describe the operations of an intersection. It ranges from A to F, with A being the best and F being the worst level of operation. LOS A conditions are characterized by minimal vehicle delay and free-flow conditions, while LOS F is characterized by long vehicle delay – usually when demand exceeds available roadway capacity. **Table 4** shows the definition of LOS for unsignalized and signalized intersections.

TABLE 4: LEVEL OF SERVICE

Level of Service	Average Control Delay (seconds/vehicle) at:	
	Unsignalized Intersections	Signalized Intersections
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Levels of service are evaluated based on the movement groupings which are required to yield to other traffic. Typically, these are left turns off the major street and the side street approaches for two-way stop-controlled intersections. For signalized intersections each movement grouping is evaluated, and LOS is evaluated for the intersection as a whole.

The City of Lee's Summit has adopted LOS C as the minimum desirable LOS. However, LOS D and E may be considered acceptable for low to moderate traffic volumes, the availability of alternate routes, and the duration of activity resulting in lower LOS.

The volume-to-capacity (v/c) ratio is a secondary measure of intersection performance. The v/c ratio represents the sufficiency of an intersection to accommodate the vehicular demand. A v/c ratio less than 0.85 generally indicates that adequate capacity is available, and vehicles are not expected to experience significant queues and delays. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur. Once the demand exceeds the capacity (a v/c ratio greater than 1.0), traffic flow is unstable and excessive delay and queuing is expected. The v/c ratio is important in

understanding low-volume movements that, due to their nature, may experience relatively high delays yet operate will under capacity.

Traffic queues were also evaluated as part of the analyses. Long traffic queues which extend beyond the amount of storage available, either between intersections or within turn lanes, can have significant impacts on operations. The projected vehicular queues were analyzed to ensure the analyses are reflective of the physical constraints of the study intersections and to identify if additional storage is needed for turn lanes.

6.2 EXISTING (YEAR 2022) ANALYSIS

Capacity analysis was conducted for existing traffic conditions at the study intersections to determine baseline conditions for the existing analysis year and to calibrate the models. The analysis was performed for weekday AM and PM peak hours and is based on the lane configurations and traffic volumes shown in **Exhibits 2** and **3**. The Synchro and Sidra reports are provided in **Appendix E**.

Table 5 provides a summary of the capacity analysis at the study intersections.

Based on the analysis, all intersections currently operate at acceptable LOS. Several left-turn movements at the Route 150 & Ward Road intersection operates at LOS E in both the AM and PM peak hours. While this is a lower level of service, the 95th percentile queue lengths are relatively short, and the volume-to-capacity ratios indicate that the movements currently operate under capacity.

TABLE 5: EXISTING (YEAR 2022) PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			AM Peak Hour				PM Peak Hour			
			Delay (sec/veh)	LOS	95% Queue	V/C Ratio	Delay (sec/veh)	LOS	95% Queue	V/C Ratio
Route 150 & Ward Road	Traffic Signal	EBL	59.7	**E**	81'	0.46	60.7	**E**	86'	0.47
		EBT	8.8	A	76'	0.16	10.7	B	132'	0.42
		EBR	9.7	A	< 50'	0.02	3.3	A	< 50'	0.12
		WBL	55.9	**E**	< 50'	0.32	53.6	D	82'	0.49
		WBT	14.5	B	239'	0.37	13.5	B	152'	0.25
		WBR	11.9	B	< 50'	0.10	12.1	B	< 50'	0.09
		NBL	53.6	D	106'	0.55	54.1	D	61'	0.37
		NBT	53.4	D	134'	0.61	53.3	D	105'	0.53
		NBR	47.8	D	52'	0.07	49.7	D	57'	0.09
		SBL	53.8	D	77'	0.47	53.7	D	108'	0.58
		SBT	50.2	D	52'	0.22	51.0	D	139'	0.58
		SBR	49.5	D	57'	0.08	46.3	D	155'	0.09
		Overall	**30.9**	**C**	--	**0.43**	**29.2**	**C**	--	**0.48**
Route 150 & Arborlake Drive/Stoney Creek Drive	Traffic Signal	EBL	5.5	A	< 50'	0.06	6.4	A	< 50'	0.10
		EBT/R	7.0	A	82'	0.16	11.7	B	288'	0.44
		WBL	3.5	A	< 50'	0.06	9.7	A	61'	0.34
		WBT	7.0	A	196'	0.39	7.1	A	107	0.22
		WBR	9.7	A	< 50'	0.04	9.7	A	< 50'	0.03
		NBL	45.9	D	70'	0.27	49.2	D	< 50'	0.13
		NBT	51.2	D	< 50'	0.11	52.0	D	< 50'	0.12
		NBR	50.9	D	55'	0.07	51.8	D	53'	0.08
		SBL	49.6	D	53'	0.23	43.3	D	70'	0.26
		SBT	53.3	D	< 50'	0.09	48.3	D	< 50'	0.12
		SBR	53.0	D	< 50'	0.06	47.7	D	< 50'	0.03
		Overall	**14.8**	**B**	--	**0.37**	**15.6**	**B**	--	**0.41**
Ward Road & Arborwalk Boulevard	Side Street Stop	EBL	15.1	C	< 50'	0.19	19.4	C	< 50'	0.20
		EBR	9.5	A	< 50'	0.03	10.3	B	< 50'	0.06
		NBL	8.4	A	< 50'	0.01	8.9	A	< 50'	0.02
Arborwalk Boulevard & Arborway Drive	Roundabout	EB	0.4	A	< 50'	0.05	0.3	A	< 50'	0.06
		WB	0.2	A	< 50'	0.03	0.2	A	< 50'	0.08
		NB	2.1	A	< 50'	0.00	2.1	A	< 50'	0.00
		SB	2.7	A	< 50'	0.10	2.8	A	< 50'	0.07
Arborwalk Boulevard & Arbor Park Drive	Side Street Stop	EBL	8.9	A	< 50'	0.03	9.1	A	< 50'	0.01
		NBL	7.3	A	< 50'	0.00	7.3	A	< 50'	0.01

6.3 EXISTING PLUS DEVELOPMENT ANALYSIS

Capacity analysis was conducted for Existing plus Development Conditions at the study intersections to determine the impact of site generated traffic from the proposed development. The analysis was performed for weekday AM and PM peak hours and is based on the traffic volumes shown in **Exhibit 6**. The lane configurations and intersection controls remain the same as the Existing Conditions scenario. All site driveways were analyzed as single-lane approaches. Access B was evaluated to be stop controlled at the intersection with Arborwalk Boulevard. The Synchro and Sidra reports are provided in **Appendix E.**

Table 6 provides a summary of the capacity analysis at the study intersections.

The analysis results in **Table 6** indicate that the addition of site generated trips from the proposed development is projected to have a negligible impact on the levels of service at the study intersections. All intersections are projected to operate at acceptable overall levels of service. As in the Existing Conditions scenario, several left-turn movements at the Route 150 & Ward Road intersection are projected to operate at LOS E during both peak hours. However, the 95th percentile queue lengths are relatively short, and the volume-to-capacity ratios indicate that the movements are projected to operate under capacity.

TABLE 6: EXISTING PLUS DEVELOPMENT PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			AM Peak Hour				PM Peak Hour			
			Delay (sec/veh)	LOS	95% Queue	V/C Ratio	Delay (sec/veh)	LOS	95% Queue	V/C Ratio
Route 150 & Ward Road	Traffic Signal	EBL	59.4	E	80'	0.46	62.0	E	87'	0.47
		EBT	9.3	A	76'	0.16	10.9	B	130'	0.43
		EBR	10.1	B	< 50'	0.02	3.2	A	< 50'	0.12
		WBL	55.9	E	< 50'	0.32	53.6	D	52'	0.49
		WBT	15.2	B	245'	0.38	14.0	B	98'	0.25
		WBR	12.5	B	< 50'	0.10	12.8	B	< 50'	0.11
		NBL	53.6	D	106'	0.55	54.1	D	< 50'	0.37
		NBT	53.2	D	135'	0.61	53.1	D	73'	0.54
		NBR	47.7	D	52'	0.07	49.4	D	< 50'	0.09
		SBL	53.5	D	91'	0.52	53.8	D	81'	0.60
		SBT	49.2	D	53'	0.21	49.6	D	102'	0.55
		SBR	48.4	D	56'	0.08	45.5	D	< 50'	0.09
		Overall	**31.4**	**C**	--	**0.44**	**29.3**	**C**	--	**0.49**
Route 150 & Arborlake Drive/Stoney Creek Drive	Traffic Signal	EBL	5.7	A	< 50'	0.09	6.0	A	< 50'	0.15
		EBT/R	7.2	A	86'	0.16	11.7	B	288'	0.44
		WBL	3.7	A	< 50'	0.06	10.1	B	62'	0.34
		WBT	7.3	A	196'	0.40	7.7	A	111'	0.23
		WBR	11.0	B	< 50'	0.04	10.3	B	< 50'	0.03
		NBL	45.3	D	69'	0.26	49.2	D	< 50'	0.13
		NBT	50.6	D	< 50'	0.10	52.0	D	< 50'	0.12
		NBR	50.4	D	54'	0.07	51.8	D	53'	0.08
		SBL	49.0	D	52'	0.22	43.3	D	70'	0.26
		SBT	52.6	D	< 50'	0.09	48.3	D	< 50'	0.12
		SBR	52.6	D	57'	0.08	47.8	D	< 50'	0.05
		Overall	**15.5**	**B**	--	**0.37**	**15.9**	**B**	--	**0.41**
Ward Road & Arborwalk Boulevard	Side Street Stop	EBL	16.9	C	< 50'	0.28	24.8	C	< 50'	0.32
		EBR	9.7	A	< 50'	0.07	10.5	B	< 50'	0.10
		NBL	8.5	A	< 50'	0.02	9.3	A	< 50'	0.06
Arborwalk Boulevard & Arborway Drive	Roundabout	EB	0.5	A	< 50'	0.06	0.6	A	< 50'	0.08
		WB	0.3	A	< 50'	0.05	0.2	A	< 50'	0.14
		NB	2.4	A	< 50'	0.07	2.3	A	< 50'	0.04
		SB	2.9	A	< 50'	0.10	3.1	A	< 50'	0.08
Arborwalk Boulevard & Arbor Park Drive	Side Street Stop	EBL	9.0	A	< 50'	0.03	9.4	A	< 50'	0.02
		NBL	7.3	A	< 50'	0.00	7.4	A	< 50'	0.00
Arborwalk Boulevard & Access A	Side Street Stop	WBL	7.3	A	< 50'	0.00	7.5	A	< 50'	0.01
		SBL	9.1	A	< 50'	0.03	9.3	A	< 50'	0.02

6.4 FUTURE (YEAR 2042) ANALYSIS

Capacity analysis was conducted for future traffic conditions at the study intersections to determine the need for capacity improvements within the study network in the future. The analysis was performed for weekday AM and PM peak hours and is based on the traffic volumes shown in **Exhibit 7**. The lane configurations and intersection controls remain the same as the Existing plus Development Conditions scenario. The Synchro and Sidra reports are provided in **Appendix E.**

Table 7 provides a summary of the capacity analysis at the study intersections.

Overall, the signalized intersections are projected to operate at acceptable levels of service in the future. The analysis results indicate that several left-turn movements are projected to operate at LOS E at the Route 150 & Ward Road intersection. However, the 95th percentile queue lengths are relatively short, and the volume-to-capacity ratios indicate that the movements are projected to operate under capacity.

All movements at the unsignalized intersections are projected to operate acceptably, except for the eastbound left-turn movement at Ward Road & Arborwalk Boulevard. The left-turn movement is projected to operate at LOS E in the AM peak hour and LOS F in the PM peak hour. During the PM peak hour, the 95th percentile queue is projected to be four car lengths.

TABLE 7: FUTURE (YEAR 2042) PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			AM Peak Hour				PM Peak Hour			
			Delay (sec/veh)	LOS	95% Queue	V/C Ratio	Delay (sec/veh)	LOS	95% Queue	V/C Ratio
Route 150 & Ward Road	Traffic Signal	EBL	60.3	E	112'	0.57	56.9	E	120'	0.58
		EBT	12.4	B	128'	0.27	21.5	C	365'	0.72
		EBR	8.0	A	< 50'	0.03	21.7	C	99'	0.22
		WBL	55.9	E	56'	0.42	54.5	D	114'	0.60
		WBT	24.1	C	461'	0.64	20.0	C	265'	0.43
		WBR	17.1	B	63'	0.17	16.9	B	< 50'	0.16
		NBL	54.7	D	148'	0.67	55.1	E	85'	0.52
		NBT	52.2	D	184'	0.69	52.4	D	145'	0.62
		NBR	44.4	D	59'	0.10	47.1	D	67'	0.14
		SBL	55.5	E	122'	0.63	58.1	E	164'	0.75
		SBT	46.9	D	71'	0.25	47.7	D	189'	0.63
		SBR	47.0	D	87'	0.23	41.9	D	61'	0.14
		Overall	**34.7**	**C**	--	**0.65**	**34.2**	**C**	--	**0.71**
Route 150 & Arborlake Drive/Stoney Creek Drive	Traffic Signal	EBL	7.9	A	< 50'	0.20	8.2	A	< 50'	0.26
		EBT/R	7.9	A	126'	0.23	20.0	C	598'	0.72
		WBL	5.4	A	< 50'	0.10	42.8	D	202'	0.63
		WBT	10.3	B	280'	0.60	8.2	A	146'	0.34
		WBR	11.0	B	< 50'	0.05	6.1	A	< 50'	0.05
		NBL	47.6	D	97'	0.39	48.9	D	< 50'	0.17
		NBT	52.6	D	< 50'	0.18	52.5	D	< 50'	0.18
		NBR	52.0	D	64'	0.10	52.2	D	67'	0.12
		SBL	48.9	D	72'	0.30	46.4	D	98'	0.40
		SBT	53.3	D	< 50'	0.13	50.3	D	59'	0.20
		SBR	53.2	D	63'	0.10	49.3	D	< 50'	0.06
		Overall	**17.3**	**B**	--	**0.55**	**22.2**	**C**	--	**0.66**
Ward Road & Arborwalk Boulevard	Side Street Stop	EBL	35.0	E	68'	0.58	93.8	F	102'	0.81
		EBR	10.3	B	< 50'	0.09	12.2	B	< 50'	0.15
		NBL	9.1	A	< 50'	0.03	10.8	B	< 50'	0.10
Arborwalk Boulevard & Arborway Drive	Roundabout	EB	1.9	A	< 50'	0.09	0.7	A	< 50'	0.12
		WB	0.4	A	< 50'	0.07	0.3	A	< 50'	0.19
		NB	2.8	A	< 50'	0.07	2.7	A	< 50'	0.05
		SB	2.9	A	< 50'	0.15	3.2	A	< 50'	0.12
Arborwalk Boulevard & Arbor Park Drive	Side Street Stop	EBL	9.2	A	< 50'	0.04	9.8	A	< 50'	0.02
		NBL	7.4	A	< 50'	0.00	7.5	A	< 50'	0.01
Arborwalk Boulevard & Access A	Side Street Stop	WBL	9.3	A	< 50'	0.03	9.6	A	< 50'	0.02
		SBL	7.4	A	< 50'	0.00	7.5	A	< 50'	0.01

7.0 TRAFFIC SIGNAL WARRANT ANALYSIS

The need for a traffic signal is evaluated based on the applicable factors contained in the traffic signal warrants of the *Manual on Uniform Traffic Control Devices* (MUTCD). Given the lower level of service observed at the Ward Road & Arborwalk Boulevard intersection, traffic signal warrant analysis was conducted.

For the warrant analysis hourly traffic count data collected at the intersection from 6:00 AM to 7:00 PM was compared to the minimum volume criteria of the traffic volume warrants (Warrants 1 through 3) of the MUTCD for Existing Conditions. For Existing plus Development Conditions, the hourly variation of daily traffic from the *Trip Generation Manual* was used to project site trips. The site trips were then added to the existing hourly volumes. For future conditions, the existing volumes were increased by 2.0% per year, and the site trips were added. The results of the warrant analysis are summarized in **Table 8**. The traffic signal warrant analysis worksheets are provided in **Appendix F**.

TABLE 8: TRAFFIC SIGNAL WARRANT ANALYSIS

MUTCD Warrant	Existing Conditions	Existing plus Development	Future Conditions
Warrant 1a (Eight-Hour Vehicular Volume, Minimum Vehicular Volume)	NO	NO	NO
Warrant 1b (Eight-Hour Vehicular Volume, Interruption of continuous Traffic)	NO	NO	YES
Warrant 2 (Four-Hour Vehicular Volume)	NO	NO	YES
Warrant 3 (Peak Hour)	NO	NO	YES

The results of the analysis indicate that a traffic signal is projected to be warranted at the intersection in the future, but not for Existing or Existing plus Development conditions.

8.0 CONCLUSIONS AND RECOMMENDATIONS

A traffic impact study for the Arborwalk East Multifamily development has been prepared by Kimley-Horn. The proposed site is located near the northwest corner of the Route 150 and Ward Road intersection in Lee's Summit, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system. The following provides a summary of the analysis.

Intersection capacity analysis was performed at the study intersections for the following three scenarios:

- Existing Conditions (Year 2022)
- Existing plus Development Conditions
- Future Conditions (Year 2042)

All study intersections were found to currently be operating at acceptable levels of service.

The proposed development is projected to generate 2,088 daily trips, with 120 trips in the AM peak hour, and 156 trips in the PM peak hour. The site trips were added to the street network and all study intersections are projected to continue to operate at acceptable levels of service. Traffic volumes are not projected to satisfy turn lane warrants at the proposed Access A intersection along Arborwalk Boulevard. The As such, no improvements are identified to mitigate the addition of site trips for the proposed development.

The Future Conditions scenario includes background traffic growth. All intersections are projected to operate at acceptable levels of service with one exception. The eastbound left movement at the intersection of Ward Road & Arborwalk Boulevard is projected to operate at a LOS E during the AM peak hour and LOS F during the PM peak hour. Traffic signal warrant analysis indicated that a traffic signal is projected to be warranted at Ward Road & Arborwalk Boulevard in the future.

APPENDIX

Appendix A: EXHIBITS

Appendix B: TURNING MOVEMENT COUNTS

Appendix C: SITE PLAN

Appendix D: ITE TRIP GENERATION MANUAL SHEETS

Appendix E: CAPACITY ANALYSIS REPORTS

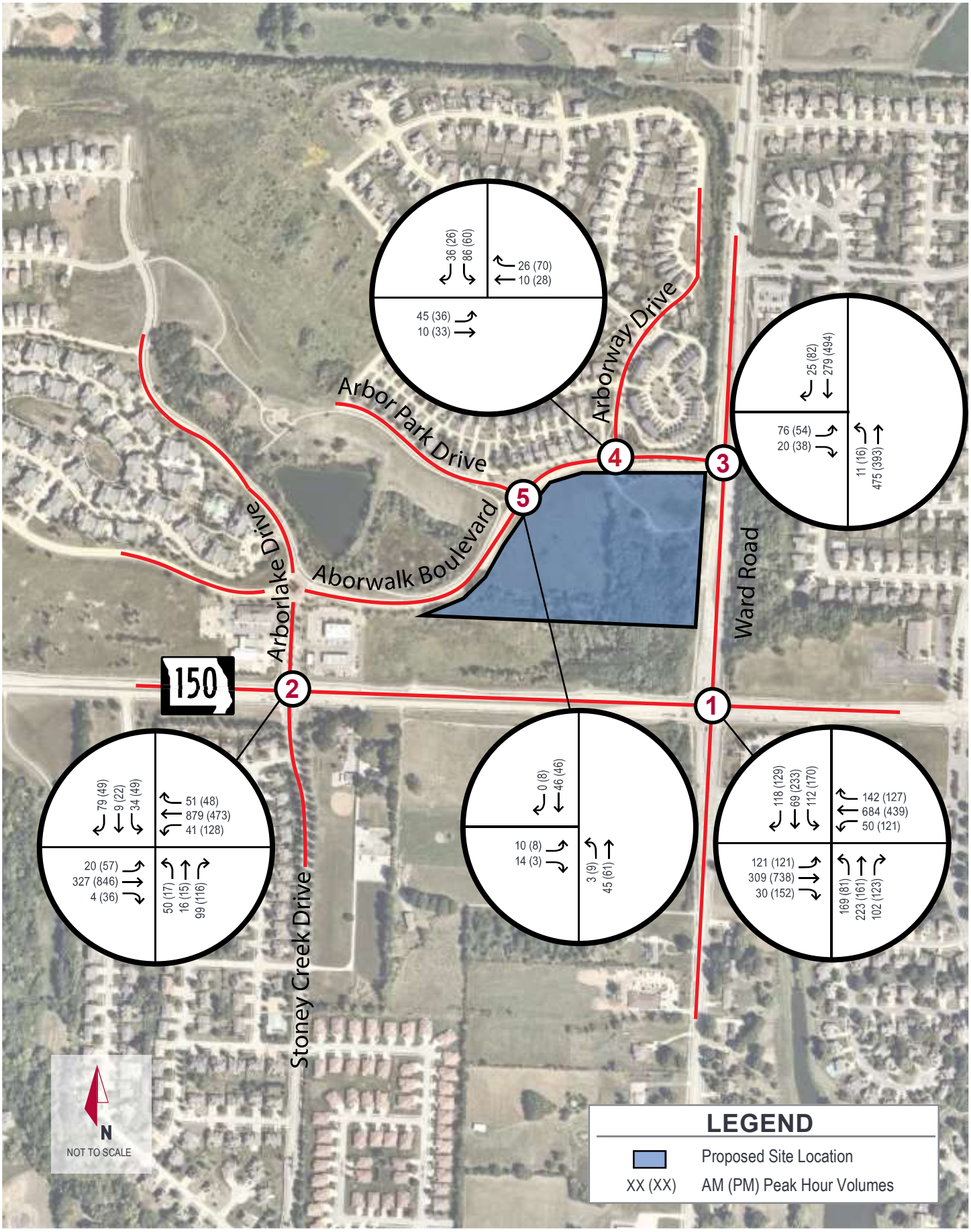
Appendix F: SIGNAL WARRANT ANALYSIS

Appendix A: Exhibits

Kimley»Horn

EXHIBIT 1

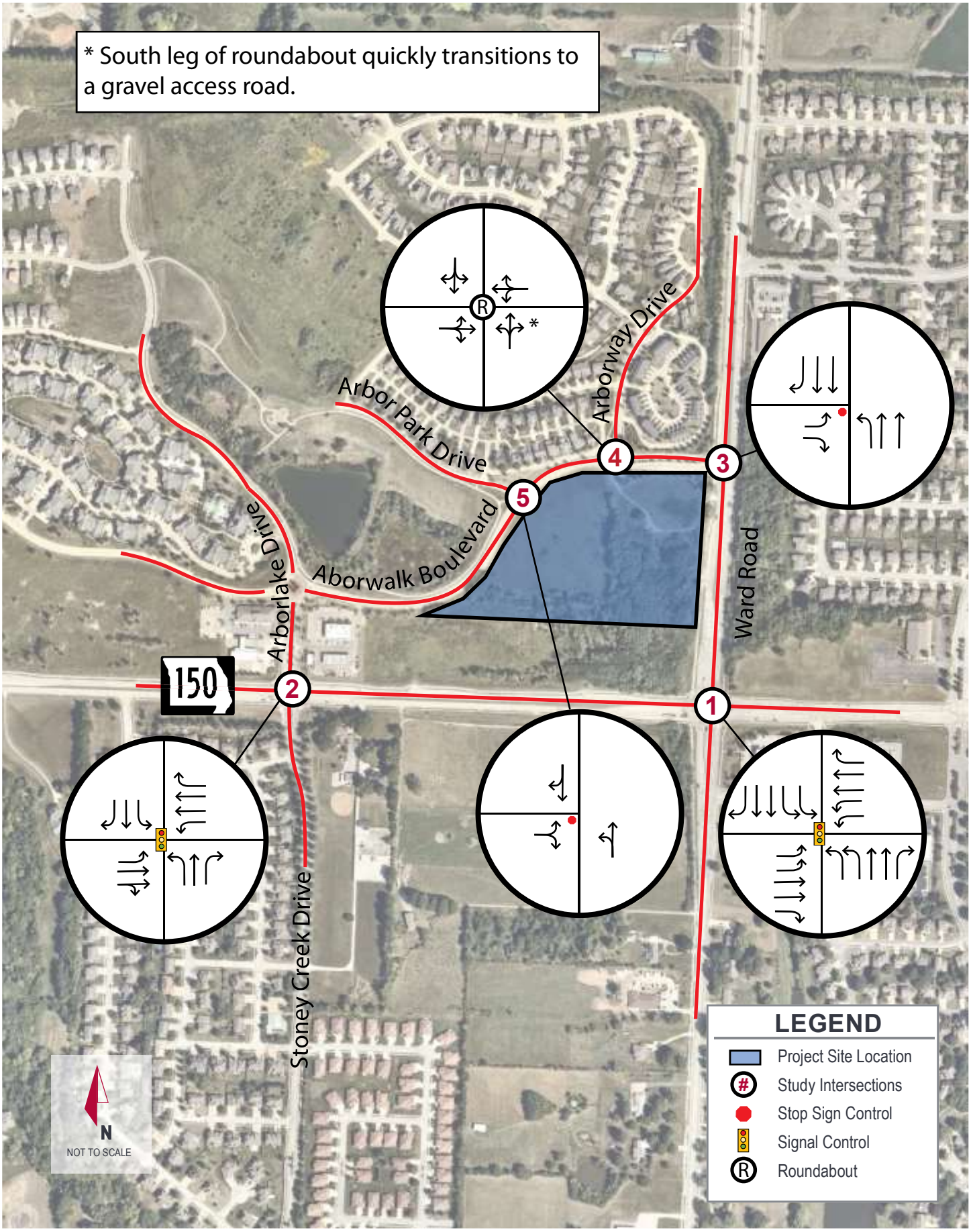
PROJECT SITE LOCATION AND STUDY AREA



Kimley»Horn

EXHIBIT 2

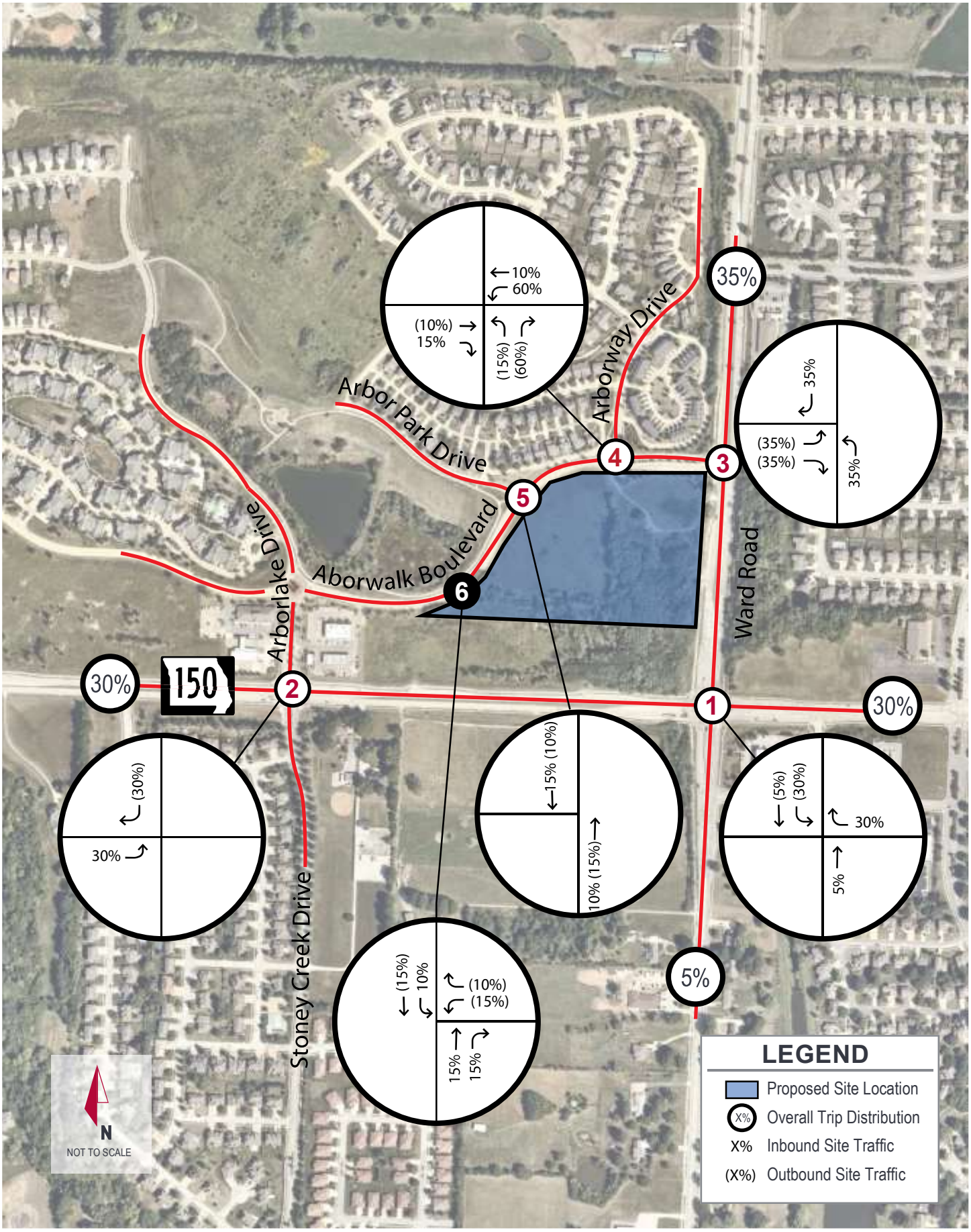
EXISTING CONDITIONS
PEAK HOUR TRAFFIC VOLUMES



Kimley»Horn

EXHIBIT 3

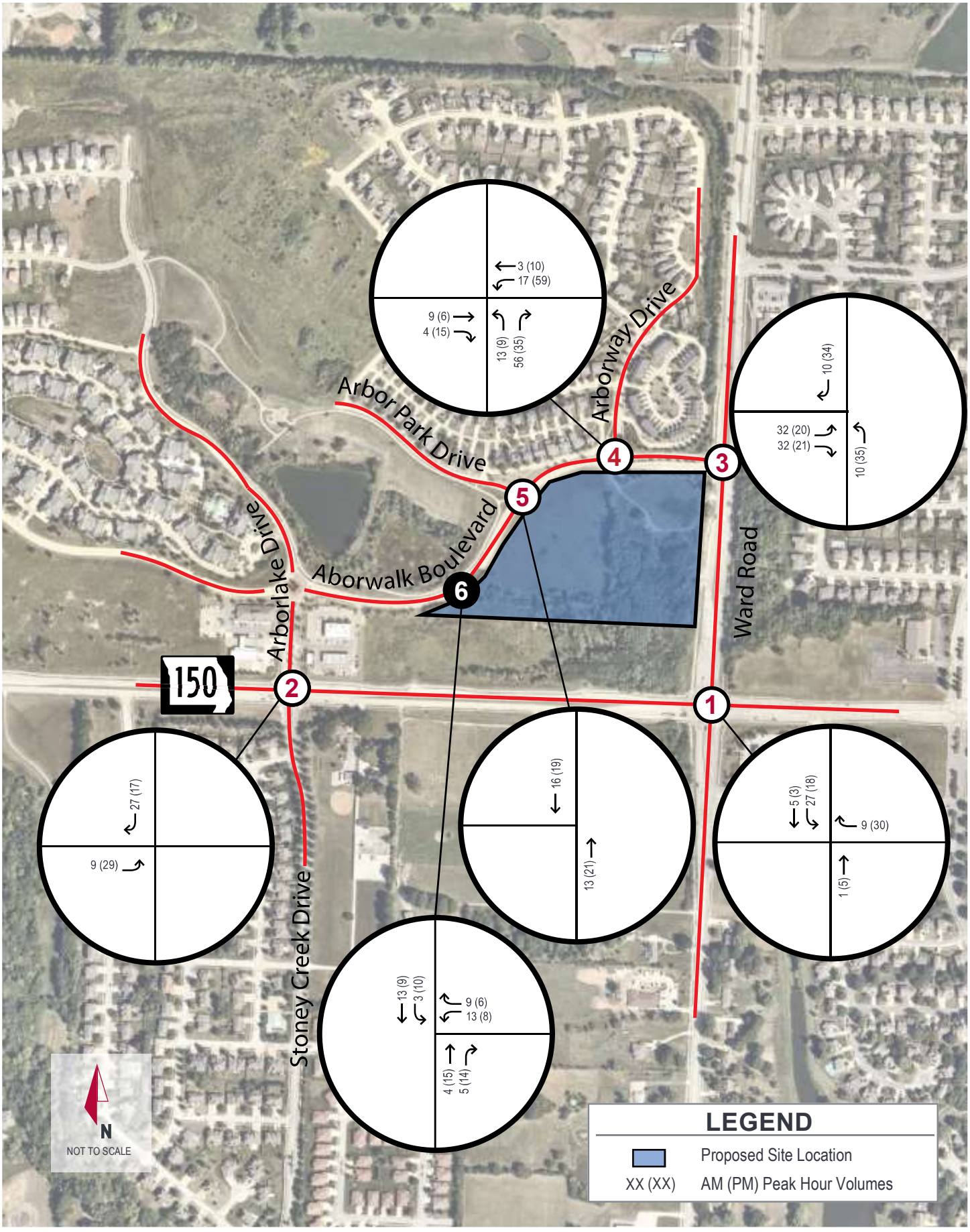
EXISTING GEOMETRY AND INTERSECTION CONTROL



Kimley»Horn

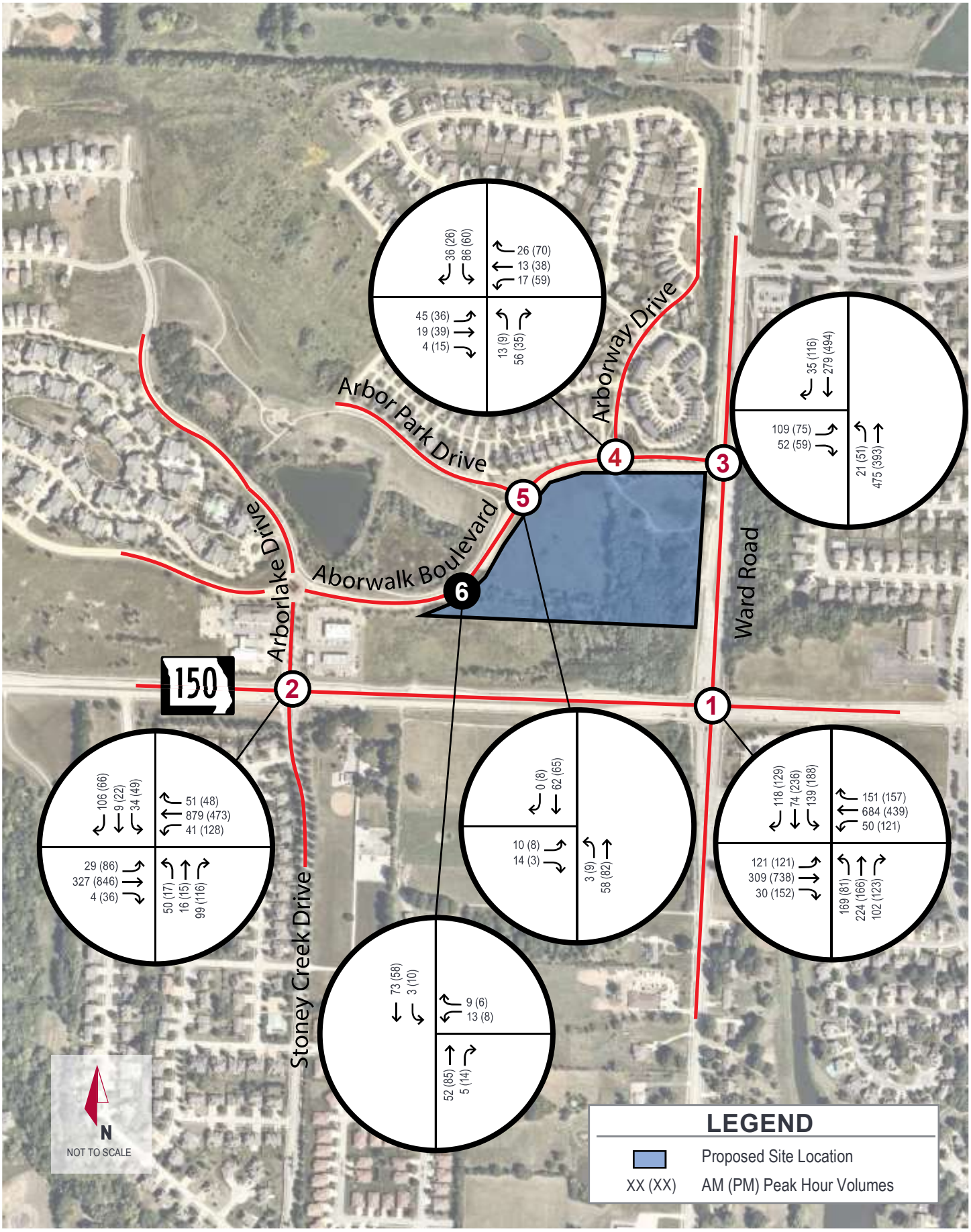
EXHIBIT 4

SITE TRIP DISTRIBUTION



Kimley»Horn

EXHIBIT 5
PROJECT TRAFFIC

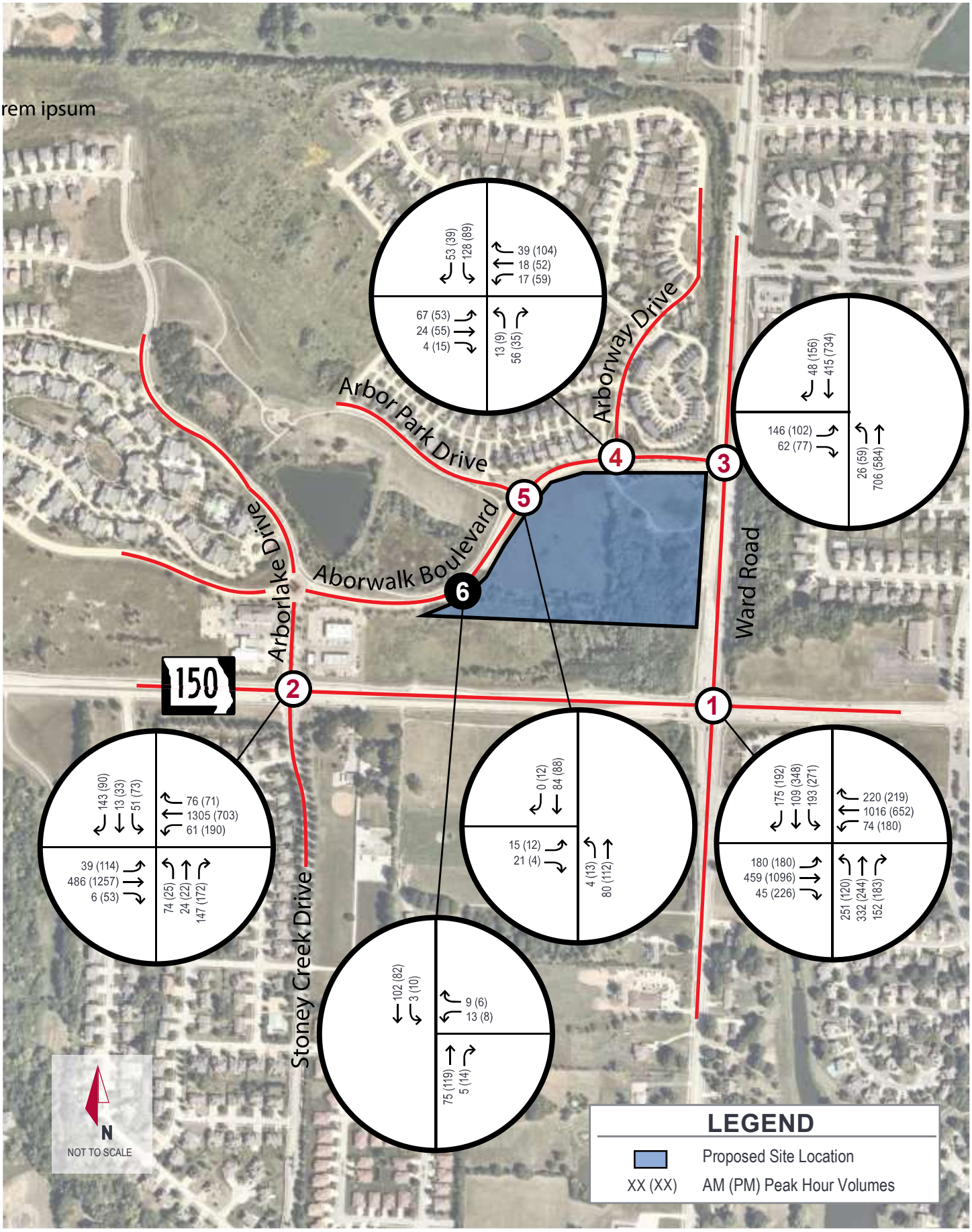


Kimley»Horn

EXHIBIT 6

EXISTING PLUS DEVELOPMENT PEAK HOUR TRAFFIC VOLUMES

Lorem ipsum



Kimley»Horn

EXHIBIT 7

FUTURE PEAK HOUR TRAFFIC VOLUMES

Appendix B: Turning Movement Counts

1_MO-150 & Ward Road - TMC

Thu Nov 17, 2022
Full Length (6 AM-7 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012132, Location: 38.853263, -94.398718

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

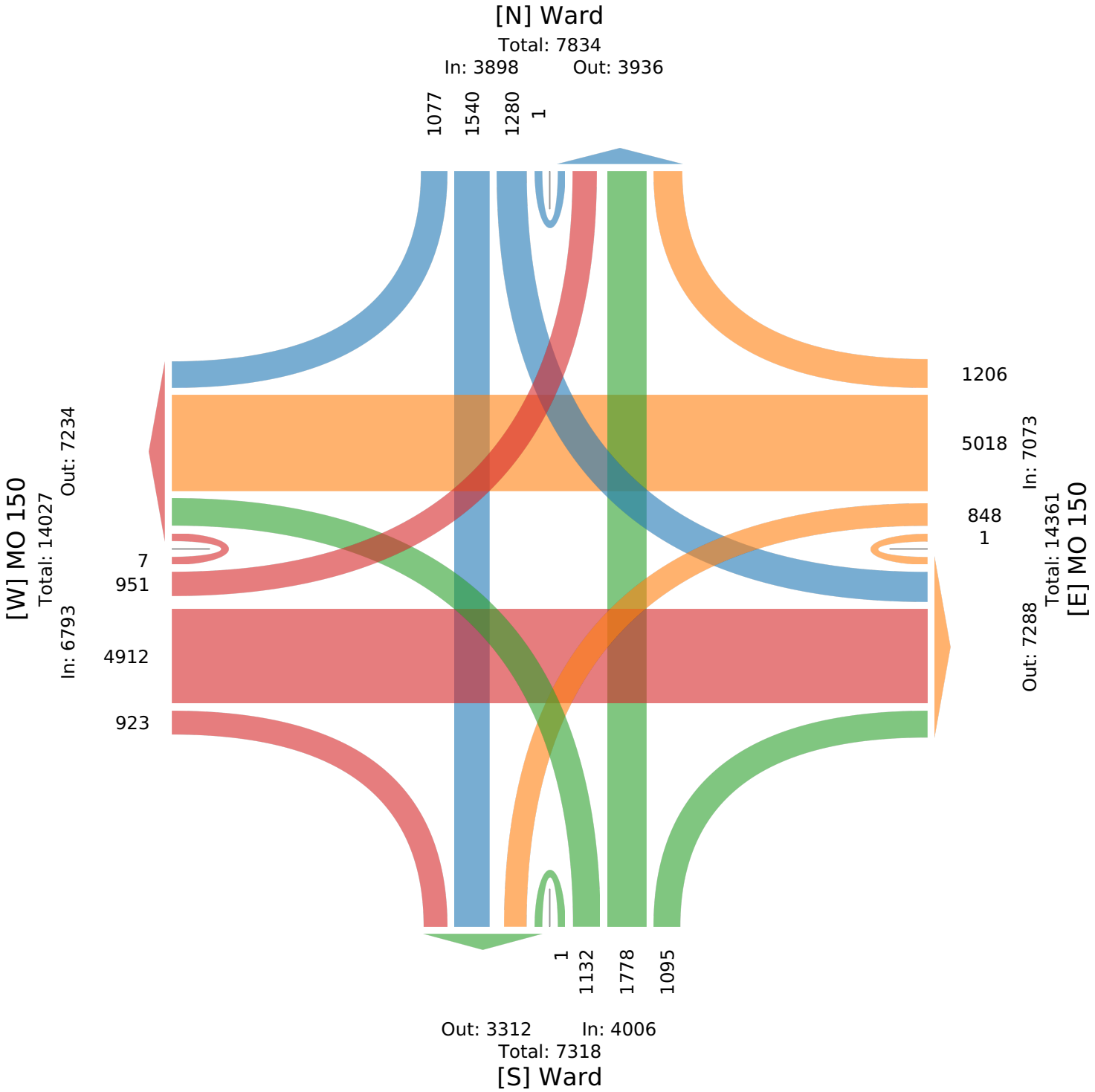
Leg	MO 150					MO 150					Ward					Ward					
Direction	Eastbound					Westbound					Northbound					Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-17 6:00AM	3	18	2	0	**23**	0	62	2	0	**64**	16	13	10	0	**39**	2	5	11	0	**18**	**144**
6:15AM	11	38	5	0	**54**	1	117	8	0	**126**	27	11	8	0	**46**	5	7	11	0	**23**	**249**
6:30AM	9	54	4	1	**68**	8	141	15	0	**164**	25	28	13	0	**66**	11	9	10	0	**30**	**328**
6:45AM	28	70	9	0	**107**	5	123	52	0	**180**	26	59	20	0	**105**	16	6	9	0	**31**	**423**
Hourly Total	51	180	20	1	**252**	14	443	77	0	**534**	94	111	51	0	**256**	34	27	41	0	**102**	**1144**
7:00AM	47	52	6	0	**105**	11	124	72	0	**207**	47	61	21	0	**129**	36	7	27	0	**70**	**511**
7:15AM	32	87	6	0	**125**	8	183	25	0	**216**	36	53	29	1	**119**	34	20	37	1	**92**	**552**
7:30AM	21	88	8	1	**118**	16	203	23	0	**242**	46	53	32	0	**131**	22	20	32	0	**74**	**565**
7:45AM	21	87	10	0	**118**	15	174	22	0	**211**	40	56	20	0	**116**	20	22	22	0	**64**	**509**
Hourly Total	121	314	30	1	**466**	50	684	142	0	**876**	169	223	102	1	**495**	112	69	118	1	**300**	**2137**
8:00AM	28	90	11	0	**129**	11	153	20	0	**184**	32	51	32	0	**115**	19	15	15	0	**49**	**477**
8:15AM	25	68	8	0	**101**	14	131	35	0	**180**	35	45	20	0	**100**	18	25	17	0	**60**	**441**
8:30AM	19	70	12	0	**101**	7	120	28	0	**155**	36	45	19	0	**100**	15	15	13	0	**43**	**399**
8:45AM	24	85	18	0	**127**	14	95	24	0	**133**	29	48	30	0	**107**	16	22	21	0	**59**	**426**
Hourly Total	96	313	49	0	**458**	46	499	107	0	**652**	132	189	101	0	**422**	68	77	66	0	**211**	**1743**
9:00AM	17	83	15	0	**115**	13	77	24	0	**114**	28	36	21	0	**85**	14	19	13	0	**46**	**360**
9:15AM	13	50	9	0	**72**	9	90	19	0	**118**	23	25	14	0	**62**	17	17	13	0	**47**	**299**
9:30AM	11	69	8	0	**88**	11	92	21	0	**124**	27	32	21	0	**80**	9	17	15	0	**41**	**333**
9:45AM	11	74	9	0	**94**	10	64	14	0	**88**	13	26	12	0	**51**	14	14	16	0	**44**	**277**
Hourly Total	52	276	41	0	**369**	43	323	78	0	**444**	91	119	68	0	**278**	54	67	57	0	**178**	**1269**
10:00AM	14	69	8	0	**91**	14	64	9	0	**87**	20	30	10	0	**60**	20	24	17	0	**61**	**299**
10:15AM	13	58	6	0	**77**	11	74	19	0	**104**	30	22	13	0	**65**	13	16	21	0	**50**	**296**
10:30AM	11	72	10	0	**93**	3	90	17	0	**110**	19	24	12	0	**55**	20	24	14	0	**58**	**316**
10:45AM	15	63	16	0	**94**	12	70	15	0	**97**	17	29	17	0	**63**	18	22	13	0	**53**	**307**
Hourly Total	53	262	40	0	**355**	40	298	60	0	**398**	86	105	52	0	**243**	71	86	65	0	**222**	**1218**
11:00AM	9	57	7	0	**73**	13	82	11	0	**106**	17	37	23	0	**77**	8	19	10	0	**37**	**293**
11:15AM	18	77	18	0	**113**	14	73	12	0	**99**	17	41	21	0	**79**	23	25	17	0	**65**	**356**
11:30AM	11	72	20	0	**103**	12	69	20	0	**101**	13	27	13	0	**53**	21	18	19	0	**58**	**315**
11:45AM	12	90	16	0	**118**	14	75	13	0	**102**	9	19	14	0	**42**	26	23	10	0	**59**	**321**
Hourly Total	50	296	61	0	**407**	53	299	56	0	**408**	56	124	71	0	**251**	78	85	56	0	**219**	**1285**
12:00PM	9	71	17	0	**97**	18	83	23	0	**124**	16	32	17	0	**65**	18	35	14	0	**67**	**353**
12:15PM	12	70	17	0	**99**	10	84	16	0	**110**	15	23	26	0	**64**	24	34	10	0	**68**	**341**
12:30PM	9	84	12	0	**105**	18	77	14	0	**109**	24	27	7	0	**58**	19	21	20	0	**60**	**332**
12:45PM	11	82	11	0	**104**	12	86	18	0	**116**	22	32	17	0	**71**	28	19	15	0	**62**	**353**
Hourly Total	41	307	57	0	**405**	58	330	71	0	**459**	77	114	67	0	**258**	89	109	59	0	**257**	**1379**
1:00PM	12	88	16	0	**116**	13	64	10	0	**87**	19	31	16	0	**66**	17	17	13	0	**47**	**316**
1:15PM	12	71	16	0	**99**	13	60	19	0	**92**	10	27	20	0	**57**	16	31	14	0	**61**	**309**
1:30PM	7	88	13	0	**108**	10	62	13	0	**85**	21	40	15	0	**76**	31	22	17	0	**70**	**339**
1:45PM	20	85	19	0	**124**	8	81	22	0	**111**	14	19	23	0	**56**	24	41	17	0	**82**	**373**
Hourly Total	51	332	64	0	**447**	44	267	64	0	**375**	64	117	74	0	**255**	88	111	61	0	**260**	**1337**
2:00PM	18	77	22	0	**117**	16	80	32	0	**128**	18	26	27	0	**71**	19	25	12	0	**56**	**372**
2:15PM	19	106	15	0	**140**	27	72	17	0	**116**	20	32	13	0	**65**	42	44	33	0	**119**	**440**
2:30PM	13	82	21	1	**117**	18	73	22	0	**113**	13	42	29	0	**84**	55	54	45	0	**154**	**468**
2:45PM	17	119	21	1	**158**	27	105	27	0	**159**	14	39	30	0	**83**	40	35	26	0	**101**	**501**
Hourly Total	67	384	79	2	**532**	88	330	98	0	**516**	65	139	99	0	**303**	156	158	116	0	**430**	**1781**
3:00PM	20	112	22	1	**155**	17	86	30	0	**133**	27	34	26	0	**87**	32	46	28	0	**106**	**481**
3:15PM	20	123	18	0	**161**	20	117	29	0	**166**	20	25	17	0	**62**	37	42	30	0	**109**	**498**
3:30PM	21	129	26	0	**176**	23	95	31	0	**149**	15	37	21	0	**73**	29	60	39	0	**128**	**526**
3:45PM	17	132	36	0	**185**	14	105	27	0	**146**	16	29	23	0	**68**	30	55	24	0	**109**	**508**
Hourly Total	78	496	102	1	**677**	74	403	117	0	**594**	78	125	87	0	**290**	128	203	121	0	**452**	**2013**
4:00PM	18	146	28	0	**192**	22	84	30	0	**136**	16	36	24	0	**76**	29	49	29	0	**107**	**511**
4:15PM	26	189	34	0	**249**	30	87	26	0	**143**	14	29	21	0	**64**	34	43	15	0	**92**	**548**
4:30PM	24	173	46	0	**243**	31	87	21	0	**139**	21	45	31	0	**97**	33	43	27	0	**103**	**582**
4:45PM	32	201	34	1	**268**	35	106	27	0	**168**	13	39	33	0	**85**	34	70	30	0	**134**	**655**

Leg	MO 150					MO 150					Ward					Ward					
Direction	Eastbound					Westbound					Northbound					Southbound					
Time	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	**Int**
Hourly Total	100	709	142	1	**952**	118	364	104	0	**586**	64	149	109	0	**322**	130	205	101	0	**436**	**2296**
5:00PM	27	153	32	0	**212**	36	94	33	0	**163**	24	38	26	0	**88**	38	53	45	0	**136**	**599**
5:15PM	31	212	42	0	**285**	33	134	37	0	**204**	22	49	40	0	**111**	58	56	24	0	**138**	**738**
5:30PM	34	172	44	0	**250**	17	105	30	0	**152**	22	35	24	0	**81**	40	54	30	0	**124**	**607**
5:45PM	27	136	34	1	**198**	20	82	37	0	**139**	18	48	34	0	**100**	38	41	32	0	**111**	**548**
Hourly Total	119	673	152	1	**945**	106	415	137	0	**658**	86	170	124	0	**380**	174	204	131	0	**509**	**2492**
6:00PM	34	98	32	0	**164**	30	90	25	0	**145**	14	26	28	0	**68**	34	36	22	0	**92**	**469**
6:15PM	12	98	18	0	**128**	23	90	22	0	**135**	22	27	15	0	**64**	29	41	30	0	**100**	**427**
6:30PM	15	90	19	0	**124**	28	93	16	0	**137**	19	24	24	0	**67**	17	36	17	0	**70**	**398**
6:45PM	11	84	17	0	**112**	33	90	32	1	**156**	15	16	23	0	**54**	18	26	16	0	**60**	**382**
Hourly Total	72	370	86	0	**528**	114	363	95	1	**573**	70	93	90	0	**253**	98	139	85	0	**322**	**1676**
Total	951	4912	923	7	**6793**	848	5018	1206	1	**7073**	1132	1778	1095	1	**4006**	1280	1540	1077	1	**3898**	**21770**
% Approach	14.0%	72.3%	13.6%	0.1%	-	12.0%	70.9%	17.1%	0%	-	28.3%	44.4%	27.3%	0%	-	32.8%	39.5%	27.6%	0%	-	-
% Total	4.4%	22.6%	4.2%	0%	**31.2%**	3.9%	23.1%	5.5%	0%	**32.5%**	5.2%	8.2%	5.0%	0%	**18.4%**	5.9%	7.1%	4.9%	0%	**17.9%**	-
Lights	930	4740	911	7	**6588**	826	4850	1181	1	**6858**	1113	1763	1070	1	**3947**	1237	1529	1048	1	**3815**	21208
% Lights	97.8%	96.5%	98.7%	100%	**97.0%**	97.4%	96.7%	97.9%	100%	**97.0%**	98.3%	99.2%	97.7%	100%	**98.5%**	96.6%	99.3%	97.3%	100%	**97.9%**	97.4%
Articulated Trucks	3	40	2	0	**45**	3	36	0	0	**39**	3	3	3	0	**9**	3	1	1	0	**5**	98
% Articulated Trucks	0.3%	0.8%	0.2%	0%	**0.7%**	0.4%	0.7%	0%	0%	**0.6%**	0.3%	0.2%	0.3%	0%	**0.2%**	0.2%	0.1%	0.1%	0%	**0.1%**	0.5%
Buses and Single-Unit Trucks	18	132	10	0	**160**	19	132	25	0	**176**	16	12	22	0	**50**	40	10	28	0	**78**	464
% Buses and Single-Unit Trucks	1.9%	2.7%	1.1%	0%	**2.4%**	2.2%	2.6%	2.1%	0%	**2.5%**	1.4%	0.7%	2.0%	0%	**1.2%**	3.1%	0.6%	2.6%	0%	**2.0%**	2.1%

*L: Left, R: Right, T: Thru, U: U-Turn

1_MO-150 & Ward Road - TMC
Thu Nov 17, 2022
Full Length (6 AM-7 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012132, Location: 38.853263, -94.398718

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



1_MO-150 & Ward Road - TMC

Thu Nov 17, 2022
AM Peak (7 AM - 8 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012132, Location: 38.853263, -94.398718

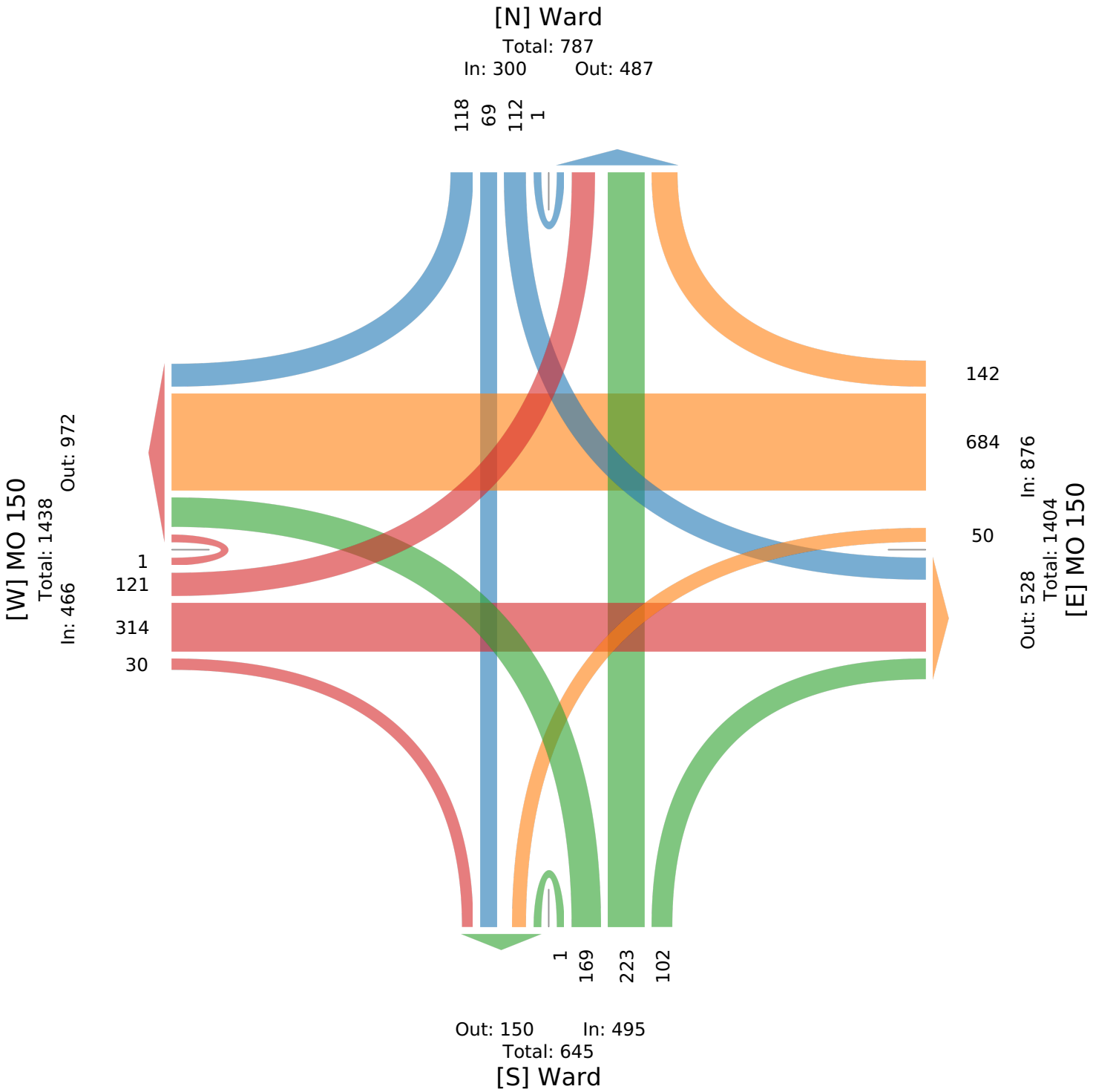
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	MO 150					MO 150					Ward					Ward					
Direction	Eastbound					Westbound					Northbound					Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-17 7:00AM	47	52	6	0	**105**	11	124	72	0	**207**	47	61	21	0	**129**	36	7	27	0	**70**	**511**
7:15AM	32	87	6	0	**125**	8	183	25	0	**216**	36	53	29	1	**119**	34	20	37	1	**92**	**552**
7:30AM	21	88	8	1	**118**	16	203	23	0	**242**	46	53	32	0	**131**	22	20	32	0	**74**	**565**
7:45AM	21	87	10	0	**118**	15	174	22	0	**211**	40	56	20	0	**116**	20	22	22	0	**64**	**509**
Total	121	314	30	1	**466**	50	684	142	0	**876**	169	223	102	1	**495**	112	69	118	1	**300**	**2137**
% Approach	26.0%	67.4%	6.4%	0.2%	-	5.7%	78.1%	16.2%	0%	-	34.1%	45.1%	20.6%	0.2%	-	37.3%	23.0%	39.3%	0.3%	-	-
% Total	5.7%	14.7%	1.4%	0%	**21.8%**	2.3%	32.0%	6.6%	0%	**41.0%**	7.9%	10.4%	4.8%	0%	**23.2%**	5.2%	3.2%	5.5%	0%	**14.0%**	-
PHF	0.644	0.892	0.750	0.250	**0.932**	0.781	0.842	0.493	-	**0.905**	0.899	0.914	0.797	0.250	**0.945**	0.778	0.784	0.797	0.250	**0.815**	0.946
Lights	120	303	27	1	**451**	46	656	138	0	**840**	168	221	100	1	**490**	101	68	114	1	**284**	2065
% Lights	99.2%	96.5%	90.0%	100%	**96.8%**	92.0%	95.9%	97.2%	0%	**95.9%**	99.4%	99.1%	98.0%	100%	**99.0%**	90.2%	98.6%	96.6%	100%	**94.7%**	96.6%
Articulated Trucks	1	1	1	0	**3**	1	4	0	0	**5**	1	0	1	0	**2**	0	0	0	0	**0**	10
% Articulated Trucks	0.8%	0.3%	3.3%	0%	**0.6%**	2.0%	0.6%	0%	0%	**0.6%**	0.6%	0%	1.0%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0.5%
Buses and Single-Unit Trucks	0	10	2	0	**12**	3	24	4	0	**31**	0	2	1	0	**3**	11	1	4	0	**16**	62
% Buses and Single-Unit Trucks	0%	3.2%	6.7%	0%	**2.6%**	6.0%	3.5%	2.8%	0%	**3.5%**	0%	0.9%	1.0%	0%	**0.6%**	9.8%	1.4%	3.4%	0%	**5.3%**	2.9%

*L: Left, R: Right, T: Thru, U: U-Turn

1_MO-150 & Ward Road - TMC
Thu Nov 17, 2022
AM Peak (7 AM - 8 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012132, Location: 38.853263, -94.398718

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



1_MO-150 & Ward Road - TMC

Thu Nov 17, 2022
Midday Peak (12 PM - 1 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012132, Location: 38.853263, -94.398718

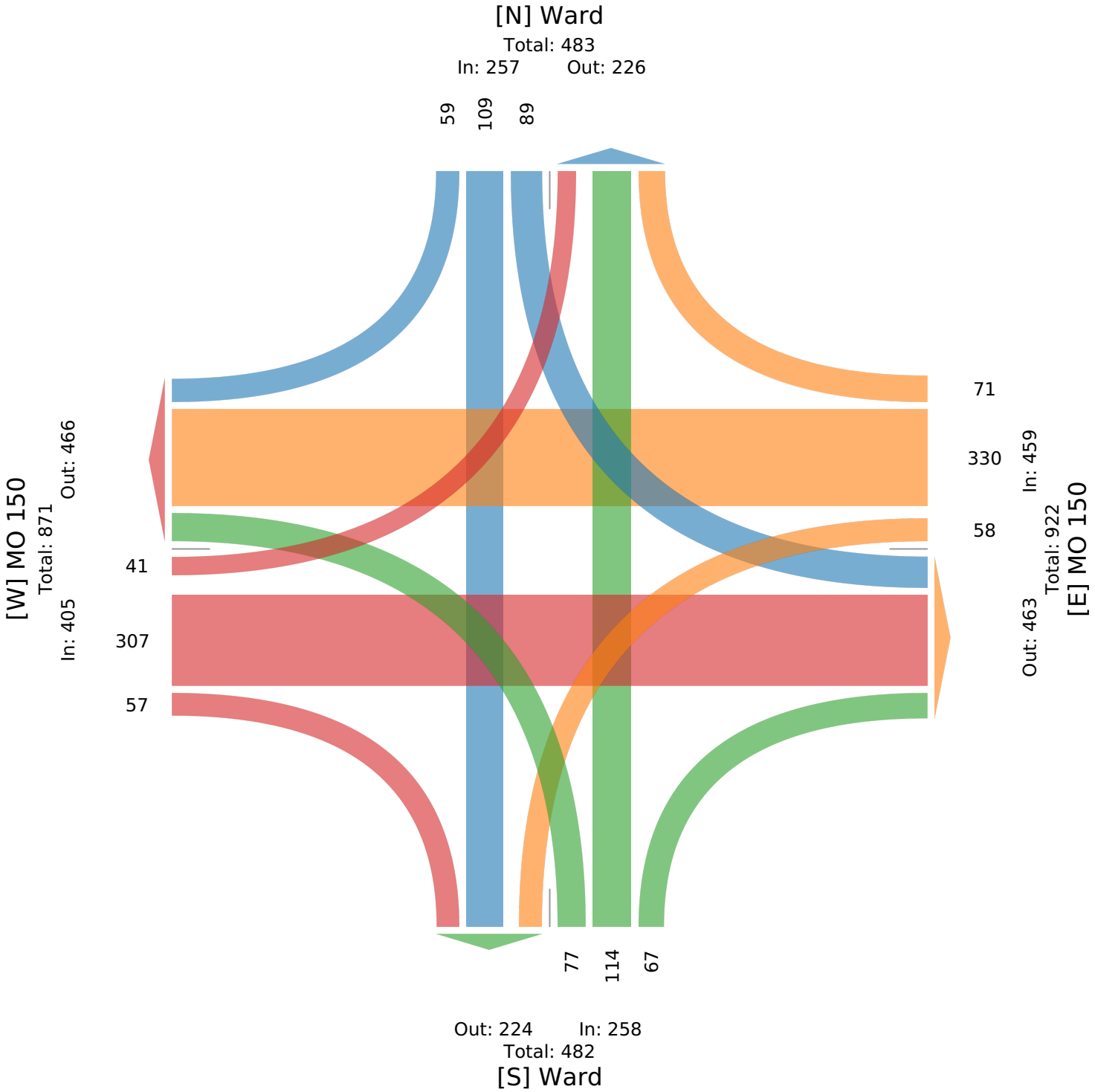
GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	MO 150					MO 150					Ward					Ward					
Direction	Eastbound					Westbound					Northbound					Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-17 12:00PM	9	71	17	0	**97**	18	83	23	0	**124**	16	32	17	0	**65**	18	35	14	0	**67**	**353**
12:15PM	12	70	17	0	**99**	10	84	16	0	**110**	15	23	26	0	**64**	24	34	10	0	**68**	**341**
12:30PM	9	84	12	0	**105**	18	77	14	0	**109**	24	27	7	0	**58**	19	21	20	0	**60**	**332**
12:45PM	11	82	11	0	**104**	12	86	18	0	**116**	22	32	17	0	**71**	28	19	15	0	**62**	**353**
Total	41	307	57	0	**405**	58	330	71	0	**459**	77	114	67	0	**258**	89	109	59	0	**257**	**1379**
% Approach	10.1%	75.8%	14.1%	0%	-	12.6%	71.9%	15.5%	0%	-	29.8%	44.2%	26.0%	0%	-	34.6%	42.4%	23.0%	0%	-	-
% Total	3.0%	22.3%	4.1%	0%	**29.4%**	4.2%	23.9%	5.1%	0%	**33.3%**	5.6%	8.3%	4.9%	0%	**18.7%**	6.5%	7.9%	4.3%	0%	**18.6%**	-
PHF	0.854	0.914	0.838	-	**0.964**	0.806	0.959	0.772	-	**0.925**	0.802	0.891	0.644	-	**0.908**	0.795	0.779	0.738	-	**0.945**	0.977
Lights	38	294	56	0	**388**	58	312	66	0	**436**	75	111	65	0	**251**	85	108	55	0	**248**	1323
% Lights	92.7%	95.8%	98.2%	0%	**95.8%**	100%	94.5%	93.0%	0%	**95.0%**	97.4%	97.4%	97.0%	0%	**97.3%**	95.5%	99.1%	93.2%	0%	**96.5%**	95.9%
Articulated Trucks	0	6	0	0	**6**	0	3	0	0	**3**	0	1	0	0	**1**	2	0	0	0	**2**	12
% Articulated Trucks	0%	2.0%	0%	0%	**1.5%**	0%	0.9%	0%	0%	**0.7%**	0%	0.9%	0%	0%	**0.4%**	2.2%	0%	0%	0%	**0.8%**	0.9%
Buses and Single-Unit Trucks	3	7	1	0	**11**	0	15	5	0	**20**	2	2	2	0	**6**	2	1	4	0	**7**	44
% Buses and Single-Unit Trucks	7.3%	2.3%	1.8%	0%	**2.7%**	0%	4.5%	7.0%	0%	**4.4%**	2.6%	1.8%	3.0%	0%	**2.3%**	2.2%	0.9%	6.8%	0%	**2.7%**	3.2%

*L: Left, R: Right, T: Thru, U: U-Turn

1_MO-150 & Ward Road - TMC
Thu Nov 17, 2022
Midday Peak (12 PM - 1 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012132, Location: 38.853263, -94.398718

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



1_MO-150 & Ward Road - TMC

Thu Nov 17, 2022
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012132, Location: 38.853263, -94.398718

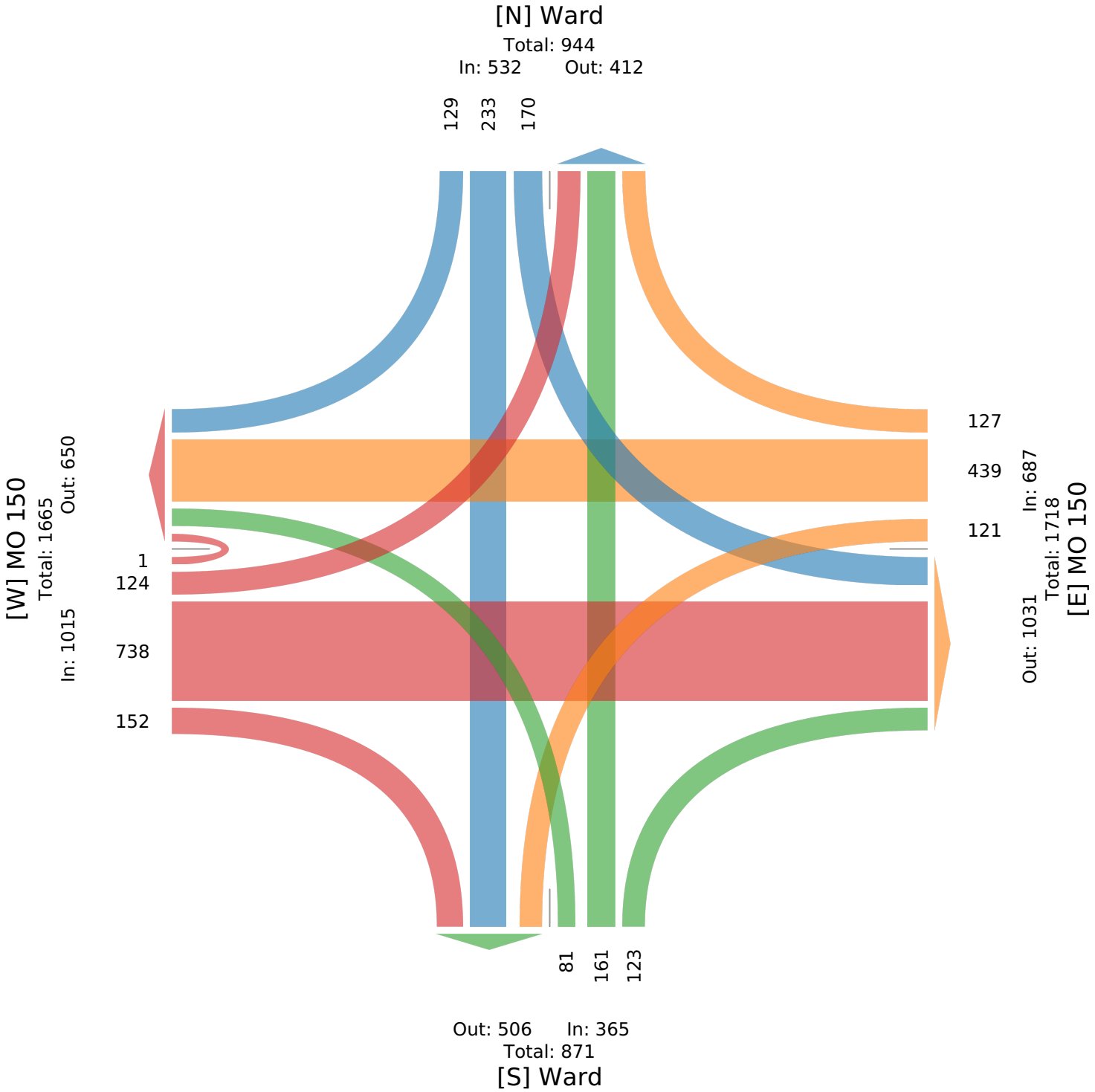
GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	MO 150					MO 150					Ward					Ward					
Direction	Eastbound					Westbound					Northbound					Southbound					
Time	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	**Int**
2022-11-17 4:45PM	32	201	34	1	**268**	35	106	27	0	**168**	13	39	33	0	**85**	34	70	30	0	**134**	**655**
5:00PM	27	153	32	0	**212**	36	94	33	0	**163**	24	38	26	0	**88**	38	53	45	0	**136**	**599**
5:15PM	31	212	42	0	**285**	33	134	37	0	**204**	22	49	40	0	**111**	58	56	24	0	**138**	**738**
5:30PM	34	172	44	0	**250**	17	105	30	0	**152**	22	35	24	0	**81**	40	54	30	0	**124**	**607**
Total	124	738	152	1	**1015**	121	439	127	0	**687**	81	161	123	0	**365**	170	233	129	0	**532**	**2599**
% Approach	12.2%	72.7%	15.0%	0.1%	**-**	17.6%	63.9%	18.5%	0%	**-**	22.2%	44.1%	33.7%	0%	**-**	32.0%	43.8%	24.2%	0%	**-**	-
% Total	4.8%	28.4%	5.8%	0%	**39.1%**	4.7%	16.9%	4.9%	0%	**26.4%**	3.1%	6.2%	4.7%	0%	**14.0%**	6.5%	9.0%	5.0%	0%	**20.5%**	-
PHF	0.912	0.870	0.864	0.250	**0.890**	0.840	0.819	0.858	-	**0.842**	0.844	0.821	0.769	-	**0.822**	0.733	0.832	0.717	-	**0.964**	0.880
Lights	123	730	152	1	**1006**	120	434	127	0	**681**	81	161	123	0	**365**	169	233	129	0	**531**	2583
% Lights	99.2%	98.9%	100%	100%	**99.1%**	99.2%	98.9%	100%	0%	**99.1%**	100%	100%	100%	0%	**100%**	99.4%	100%	100%	0%	**99.8%**	99.4%
Articulated Trucks	0	3	0	0	**3**	1	2	0	0	**3**	0	0	0	0	**0**	0	0	0	0	**0**	6
% Articulated Trucks	0%	0.4%	0%	0%	**0.3%**	0.8%	0.5%	0%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0.2%
Buses and Single-Unit Trucks	1	5	0	0	**6**	0	3	0	0	**3**	0	0	0	0	**0**	1	0	0	0	**1**	10
% Buses and Single-Unit Trucks	0.8%	0.7%	0%	0%	**0.6%**	0%	0.7%	0%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0.6%	0%	0%	0%	**0.2%**	0.4%

*L: Left, R: Right, T: Thru, U: U-Turn

1_MO-150 & Ward Road - TMC
Thu Nov 17, 2022
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012132, Location: 38.853263, -94.398718

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



2_MO-150 & Arborlake Drive/Stoney Creek Drive - TMC

Thu Nov 17, 2022
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012130, Location: 38.853449, -94.404891

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

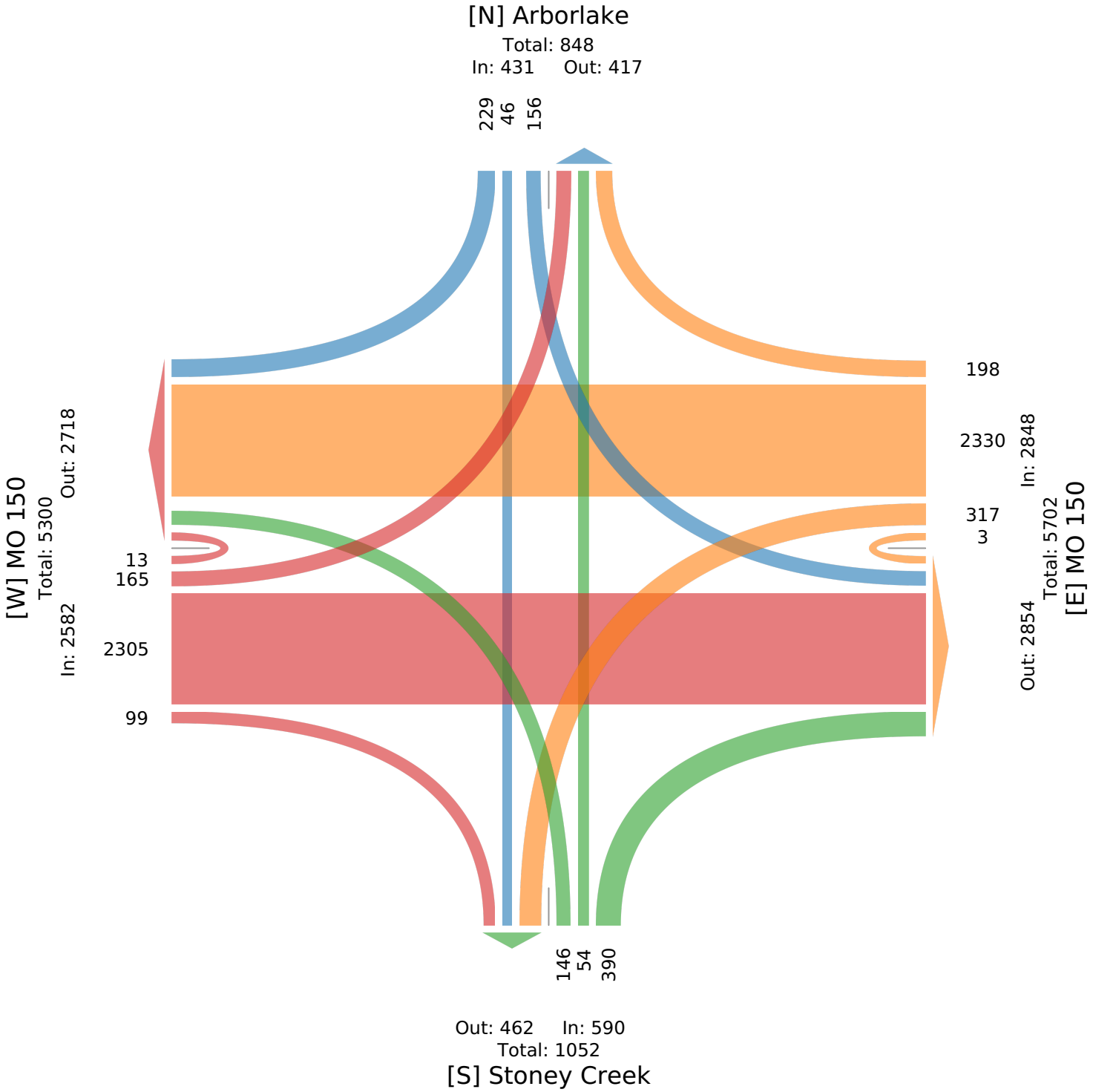
Leg	MO 150					MO 150					Stoney Creek					Arborlake					
Direction	Eastbound					Westbound					Northbound					Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-17 7:00AM	5	69	1	0	**75**	9	185	11	0	**205**	10	4	33	0	**47**	3	2	12	0	**17**	**344**
7:15AM	4	85	2	0	**91**	11	227	13	0	**251**	20	5	22	0	**47**	11	1	23	0	**35**	**424**
7:30AM	4	81	1	2	**88**	13	253	17	0	**283**	11	5	23	0	**39**	9	2	29	0	**40**	**450**
7:45AM	7	92	0	1	**100**	8	212	10	0	**230**	9	2	21	0	**32**	11	4	15	0	**30**	**392**
Hourly Total	20	327	4	3	**354**	41	877	51	0	**969**	50	16	99	0	**165**	34	9	79	0	**122**	**1610**
8:00AM	7	98	1	0	**106**	15	185	10	0	**210**	12	3	27	0	**42**	7	0	16	0	**23**	**381**
8:15AM	6	69	2	2	**79**	12	155	10	0	**177**	11	2	22	0	**35**	7	2	12	0	**21**	**312**
8:30AM	11	75	4	1	**91**	13	146	13	1	**173**	12	5	24	0	**41**	5	4	10	0	**19**	**324**
8:45AM	10	99	2	2	**113**	10	128	9	0	**147**	27	4	19	0	**50**	10	0	19	0	**29**	**339**
Hourly Total	34	341	9	5	**389**	50	614	42	1	**707**	62	14	92	0	**168**	29	6	57	0	**92**	**1356**
4:00PM	12	183	17	0	**212**	23	99	9	2	**133**	8	3	14	0	**25**	11	3	9	0	**23**	**393**
4:15PM	16	230	16	2	**264**	17	90	12	0	**119**	3	2	22	0	**27**	15	2	11	0	**28**	**438**
4:30PM	15	211	8	0	**234**	23	95	17	0	**135**	2	2	23	0	**27**	10	2	10	0	**22**	**418**
4:45PM	14	217	9	1	**241**	26	109	9	0	**144**	6	4	27	0	**37**	17	3	5	0	**25**	**447**
Hourly Total	57	841	50	3	**951**	89	393	47	2	**531**	19	11	86	0	**116**	53	10	35	0	**98**	**1696**
5:00PM	13	190	8	0	**211**	28	128	14	0	**170**	7	5	31	0	**43**	10	8	12	0	**30**	**454**
5:15PM	17	251	13	0	**281**	40	122	12	0	**174**	1	3	33	0	**37**	11	5	19	0	**35**	**527**
5:30PM	13	188	6	0	**207**	34	113	13	0	**160**	3	3	25	0	**31**	11	6	13	0	**30**	**428**
5:45PM	11	167	9	2	**189**	35	83	19	0	**137**	4	2	24	0	**30**	8	2	14	0	**24**	**380**
Hourly Total	54	796	36	2	**888**	137	446	58	0	**641**	15	13	113	0	**141**	40	21	58	0	**119**	**1789**
Total	165	2305	99	13	**2582**	317	2330	198	3	**2848**	146	54	390	0	**590**	156	46	229	0	**431**	**6451**
% Approach	6.4%	89.3%	3.8%	0.5%	**-**	11.1%	81.8%	7.0%	0.1%	**-**	24.7%	9.2%	66.1%	0%	**-**	36.2%	10.7%	53.1%	0%	**-**	-
% Total	2.6%	35.7%	1.5%	0.2%	**40.0%**	4.9%	36.1%	3.1%	0%	**44.1%**	2.3%	0.8%	6.0%	0%	**9.1%**	2.4%	0.7%	3.5%	0%	**6.7%**	-
Lights	157	2250	96	13	**2516**	316	2264	192	3	**2775**	142	53	387	0	**582**	151	41	218	0	**410**	6283
% Lights	95.2%	97.6%	97.0%	100%	**97.4%**	99.7%	97.2%	97.0%	100%	**97.4%**	97.3%	98.1%	99.2%	0%	**98.6%**	96.8%	89.1%	95.2%	0%	**95.1%**	97.4%
Articulated Trucks	0	6	0	0	**6**	0	14	0	0	**14**	0	0	1	0	**1**	1	0	2	0	**3**	24
% Articulated Trucks	0%	0.3%	0%	0%	**0.2%**	0%	0.6%	0%	0%	**0.5%**	0%	0%	0.3%	0%	**0.2%**	0.6%	0%	0.9%	0%	**0.7%**	0.4%
Buses and Single-Unit Trucks	8	49	3	0	**60**	1	52	6	0	**59**	4	1	2	0	**7**	4	5	9	0	**18**	144
% Buses and Single-Unit Trucks	4.8%	2.1%	3.0%	0%	**2.3%**	0.3%	2.2%	3.0%	0%	**2.1%**	2.7%	1.9%	0.5%	0%	**1.2%**	2.6%	10.9%	3.9%	0%	**4.2%**	2.2%

*L: Left, R: Right, T: Thru, U: U-Turn

2_MO-150 & Arborlake Drive/Stoney Creek Drive - TMC

Thu Nov 17, 2022
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012130, Location: 38.853449, -94.404891

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



2_MO-150 & Arborlake Drive/Stoney Creek Drive - TMC

Thu Nov 17, 2022
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012130, Location: 38.853449, -94.404891

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

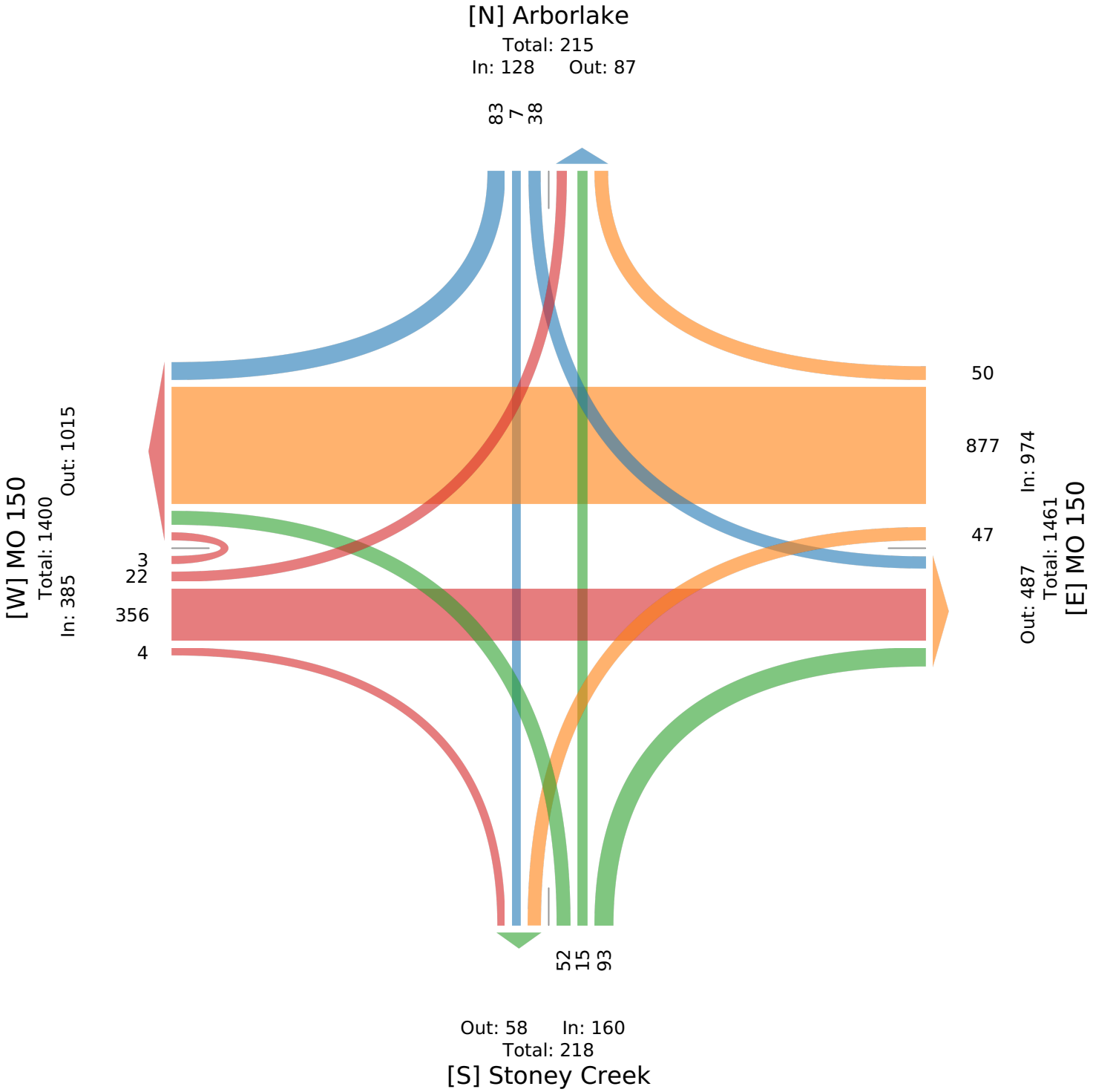
Leg	MO 150					MO 150					Stoney Creek					Arborlake					
Direction	Eastbound					Westbound					Northbound					Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-17 7:15AM	4	85	2	0	**91**	11	227	13	0	**251**	20	5	22	0	**47**	11	1	23	0	**35**	**424**
7:30AM	4	81	1	2	**88**	13	253	17	0	**283**	11	5	23	0	**39**	9	2	29	0	**40**	**450**
7:45AM	7	92	0	1	**100**	8	212	10	0	**230**	9	2	21	0	**32**	11	4	15	0	**30**	**392**
8:00AM	7	98	1	0	**106**	15	185	10	0	**210**	12	3	27	0	**42**	7	0	16	0	**23**	**381**
Total	22	356	4	3	**385**	47	877	50	0	**974**	52	15	93	0	**160**	38	7	83	0	**128**	**1647**
% Approach	5.7%	92.5%	1.0%	0.8%	**-**	4.8%	90.0%	5.1%	0%	**-**	32.5%	9.4%	58.1%	0%	**-**	29.7%	5.5%	64.8%	0%	**-**	-
% Total	1.3%	21.6%	0.2%	0.2%	**23.4%**	2.9%	53.2%	3.0%	0%	**59.1%**	3.2%	0.9%	5.6%	0%	**9.7%**	2.3%	0.4%	5.0%	0%	**7.8%**	-
PHF	0.786	0.908	0.500	0.375	**0.908**	0.783	0.867	0.735	-	**0.860**	0.650	0.750	0.861	-	**0.851**	0.864	0.438	0.716	-	**0.800**	0.915
Lights	18	335	4	3	**360**	47	852	47	0	**946**	52	15	93	0	**160**	36	6	78	0	**120**	1586
% Lights	81.8%	94.1%	100%	100%	**93.5%**	100%	97.1%	94.0%	0%	**97.1%**	100%	100%	100%	0%	**100%**	94.7%	85.7%	94.0%	0%	**93.8%**	96.3%
Articulated Trucks	0	3	0	0	**3**	0	5	0	0	**5**	0	0	0	0	**0**	1	0	1	0	**2**	10
% Articulated Trucks	0%	0.8%	0%	0%	**0.8%**	0%	0.6%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	2.6%	0%	1.2%	0%	**1.6%**	0.6%
Buses and Single-Unit Trucks	4	18	0	0	**22**	0	20	3	0	**23**	0	0	0	0	**0**	1	1	4	0	**6**	51
% Buses and Single-Unit Trucks	18.2%	5.1%	0%	0%	**5.7%**	0%	2.3%	6.0%	0%	**2.4%**	0%	0%	0%	0%	**0%**	2.6%	14.3%	4.8%	0%	**4.7%**	3.1%

*L: Left, R: Right, T: Thru, U: U-Turn

2_MO-150 & Arborlake Drive/Stoney Creek Drive - TMC

Thu Nov 17, 2022
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012130, Location: 38.853449, -94.404891

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



2_MO-150 & Arborlake Drive/Stoney Creek Drive - TMC

Thu Nov 17, 2022
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012130, Location: 38.853449, -94.404891

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

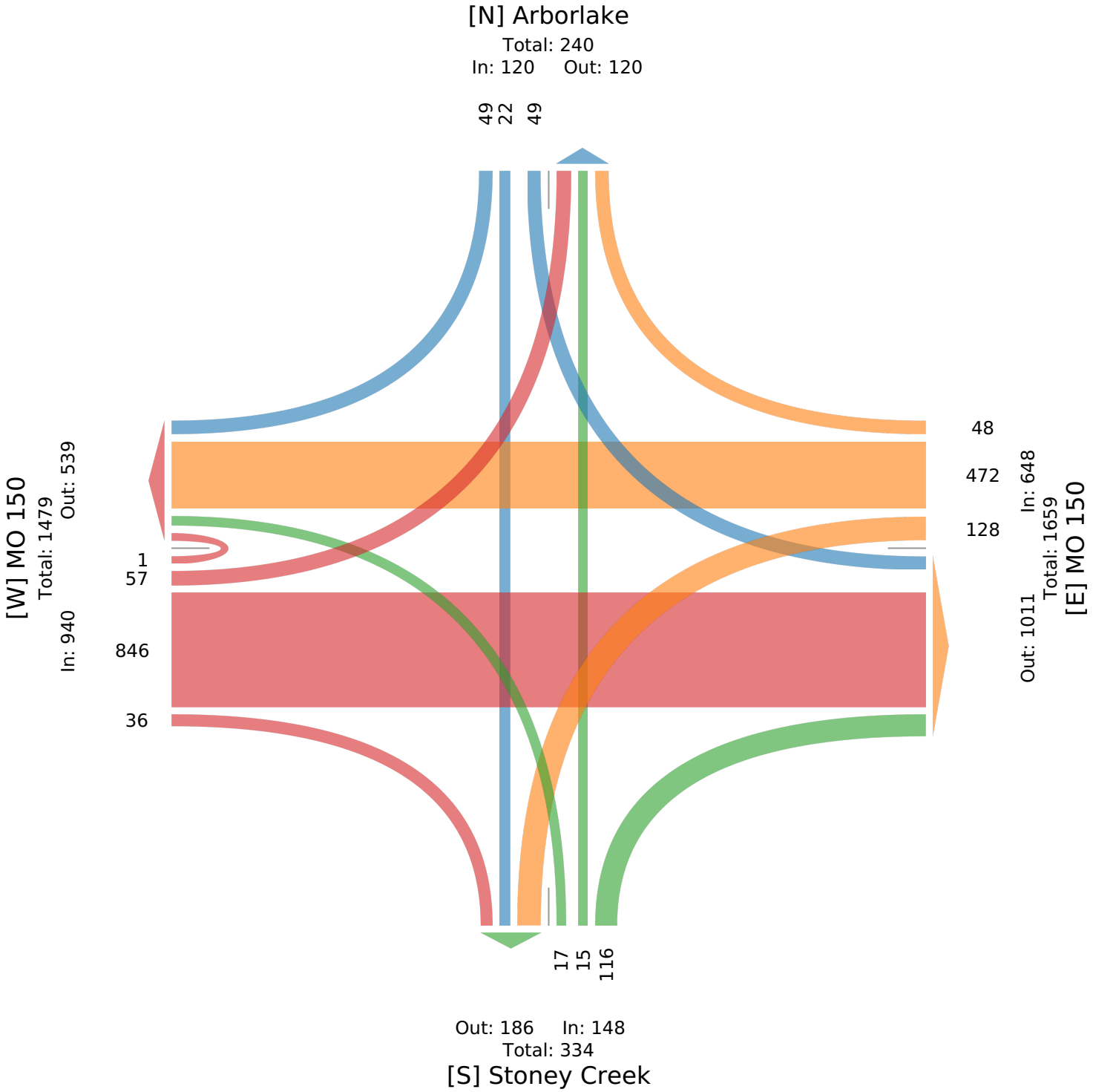
Leg	MO 150					MO 150					Stoney Creek					Arborlake					
Direction	Eastbound					Westbound					Northbound					Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-17 4:45PM	14	217	9	1	**241**	26	109	9	0	**144**	6	4	27	0	**37**	17	3	5	0	**25**	**447**
5:00PM	13	190	8	0	**211**	28	128	14	0	**170**	7	5	31	0	**43**	10	8	12	0	**30**	**454**
5:15PM	17	251	13	0	**281**	40	122	12	0	**174**	1	3	33	0	**37**	11	5	19	0	**35**	**527**
5:30PM	13	188	6	0	**207**	34	113	13	0	**160**	3	3	25	0	**31**	11	6	13	0	**30**	**428**
Total	57	846	36	1	**940**	128	472	48	0	**648**	17	15	116	0	**148**	49	22	49	0	**120**	**1856**
% Approach	6.1%	90.0%	3.8%	0.1%	**-**	19.8%	72.8%	7.4%	0%	**-**	11.5%	10.1%	78.4%	0%	**-**	40.8%	18.3%	40.8%	0%	**-**	-
% Total	3.1%	45.6%	1.9%	0.1%	**50.6%**	6.9%	25.4%	2.6%	0%	**34.9%**	0.9%	0.8%	6.3%	0%	**8.0%**	2.6%	1.2%	2.6%	0%	**6.5%**	-
PHF	0.838	0.843	0.692	0.250	**0.836**	0.800	0.922	0.857	-	**0.931**	0.607	0.750	0.879	-	**0.860**	0.721	0.688	0.645	-	**0.857**	0.880
Lights	56	838	36	1	**931**	128	468	48	0	**644**	17	15	114	0	**146**	48	22	48	0	**118**	1839
% Lights	98.2%	99.1%	100%	100%	**99.0%**	100%	99.2%	100%	0%	**99.4%**	100%	100%	98.3%	0%	**98.6%**	98.0%	100%	98.0%	0%	**98.3%**	99.1%
Articulated Trucks	0	1	0	0	**1**	0	2	0	0	**2**	0	0	1	0	**1**	0	0	0	0	**0**	4
% Articulated Trucks	0%	0.1%	0%	0%	**0.1%**	0%	0.4%	0%	0%	**0.3%**	0%	0%	0.9%	0%	**0.7%**	0%	0%	0%	0%	**0%**	0.2%
Buses and Single-Unit Trucks	1	7	0	0	**8**	0	2	0	0	**2**	0	0	1	0	**1**	1	0	1	0	**2**	13
% Buses and Single-Unit Trucks	1.8%	0.8%	0%	0%	**0.9%**	0%	0.4%	0%	0%	**0.3%**	0%	0%	0.9%	0%	**0.7%**	2.0%	0%	2.0%	0%	**1.7%**	0.7%

*L: Left, R: Right, T: Thru, U: U-Turn

2_MO-150 & Arborlake Drive/Stoney Creek Drive - TMC

Thu Nov 17, 2022
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012130, Location: 38.853449, -94.404891

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



3_Ward Road & Arborwalk Boulevard - 13 hour ... - TMC

Thu Nov 17, 2022
Full Length (6 AM-7 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1033007, Location: 38.856098, -94.398473

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

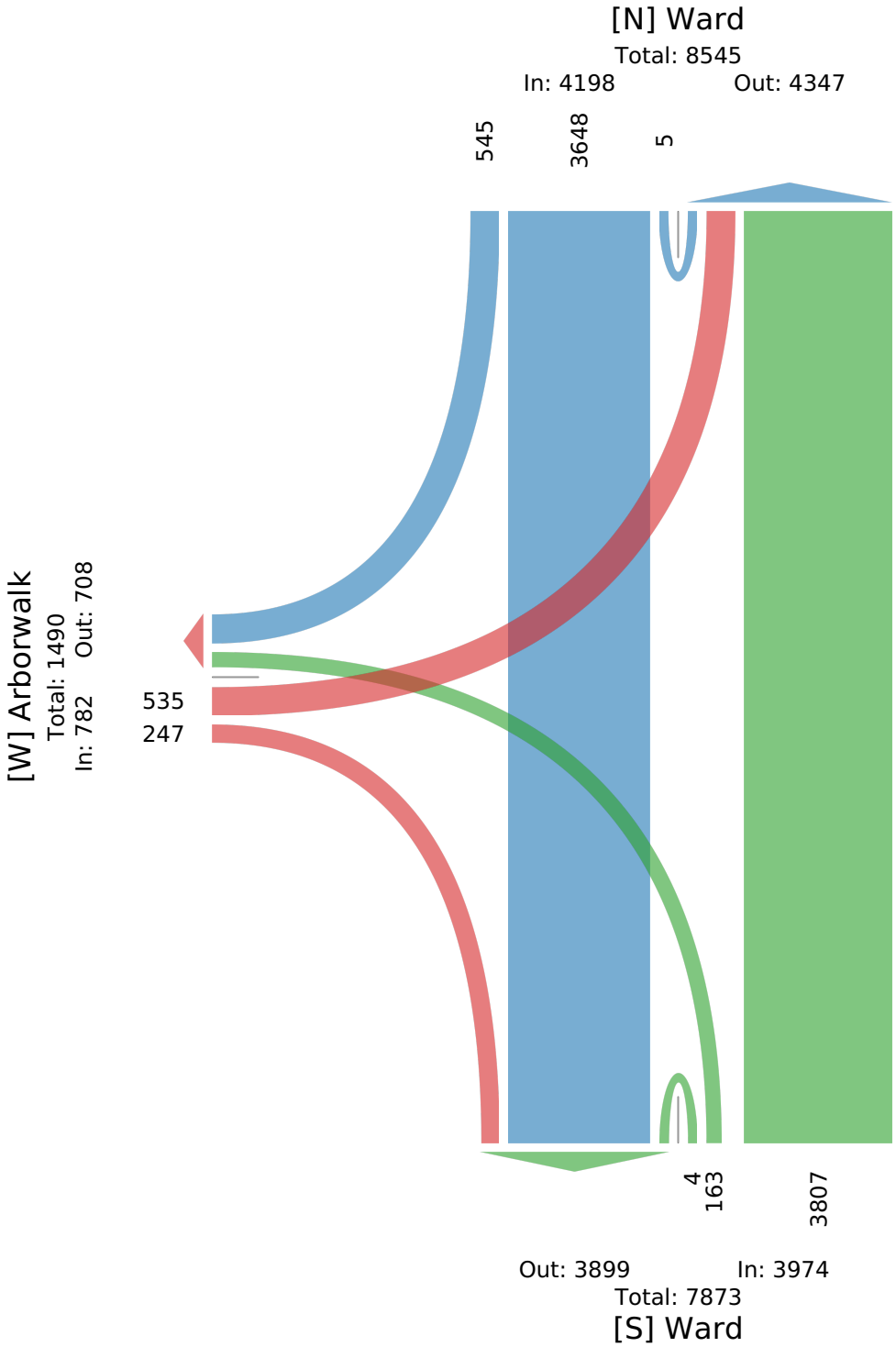
Leg	Arborwalk				Ward				Ward				
Direction	Eastbound				Northbound				Southbound				
Time	L	R	U	App	L	T	U	App	T	R	U	App	Int
2022-11-17 6:00AM	4	1	0	**5**	0	16	0	**16**	15	3	0	**18**	**39**
6:15AM	8	2	0	**10**	1	31	0	**32**	21	4	0	**25**	**67**
6:30AM	17	4	0	**21**	0	53	0	**53**	26	2	0	**28**	**102**
6:45AM	21	7	0	**28**	2	136	0	**138**	25	4	0	**29**	**195**
Hourly Total	50	14	0	**64**	3	236	0	**239**	87	13	0	**100**	**403**
7:00AM	27	3	0	**30**	2	179	0	**181**	69	4	0	**73**	**284**
7:15AM	17	3	0	**20**	1	114	0	**115**	92	10	0	**102**	**237**
7:30AM	18	8	0	**26**	6	92	0	**98**	65	4	0	**69**	**193**
7:45AM	16	7	0	**23**	2	100	0	**102**	53	7	0	**60**	**185**
Hourly Total	78	21	0	**99**	11	485	0	**496**	279	25	0	**304**	**899**
8:00AM	14	1	0	**15**	2	96	0	**98**	51	3	0	**54**	**167**
8:15AM	8	4	0	**12**	5	104	0	**109**	48	11	0	**59**	**180**
8:30AM	13	5	0	**18**	4	88	0	**92**	40	7	0	**47**	**157**
8:45AM	13	2	0	**15**	2	95	0	**97**	53	5	0	**58**	**170**
Hourly Total	48	12	0	**60**	13	383	0	**396**	192	26	0	**218**	**674**
9:00AM	5	4	0	**9**	2	77	0	**79**	45	8	0	**53**	**141**
9:15AM	5	5	0	**10**	3	52	0	**55**	37	12	0	**49**	**114**
9:30AM	9	0	0	**9**	0	63	0	**63**	43	6	1	**50**	**122**
9:45AM	6	1	0	**7**	1	59	0	**60**	44	4	0	**48**	**115**
Hourly Total	25	10	0	**35**	6	251	0	**257**	169	30	1	**200**	**492**
10:00AM	11	6	0	**17**	4	50	0	**54**	53	4	0	**57**	**128**
10:15AM	6	2	0	**8**	2	51	0	**53**	48	6	0	**54**	**115**
10:30AM	11	6	0	**17**	0	52	0	**52**	51	9	0	**60**	**129**
10:45AM	7	5	0	**12**	1	55	0	**56**	54	5	1	**60**	**128**
Hourly Total	35	19	0	**54**	7	208	0	**215**	206	24	1	**231**	**500**
11:00AM	1	2	0	**3**	2	56	0	**58**	31	8	1	**40**	**101**
11:15AM	9	5	0	**14**	4	61	0	**65**	60	6	2	**68**	**147**
11:30AM	7	7	0	**14**	2	55	0	**57**	53	7	0	**60**	**131**
11:45AM	10	4	0	**14**	1	45	0	**46**	54	10	0	**64**	**124**
Hourly Total	27	18	0	**45**	9	217	0	**226**	198	31	3	**232**	**503**
12:00PM	7	6	0	**13**	5	60	0	**65**	61	10	0	**71**	**149**
12:15PM	12	7	0	**19**	2	45	0	**47**	59	13	0	**72**	**138**
12:30PM	12	5	0	**17**	9	46	0	**55**	61	7	0	**68**	**140**
12:45PM	5	3	0	**8**	2	60	0	**62**	57	11	0	**68**	**138**
Hourly Total	36	21	0	**57**	18	211	0	**229**	238	41	0	**279**	**565**
1:00PM	8	4	0	**12**	4	51	0	**55**	43	3	0	**46**	**113**
1:15PM	6	2	0	**8**	1	58	0	**59**	62	9	0	**71**	**138**
1:30PM	4	4	0	**8**	6	57	0	**63**	67	9	0	**76**	**147**
1:45PM	8	5	0	**13**	4	58	1	**63**	77	12	0	**89**	**165**
Hourly Total	26	15	0	**41**	15	224	1	**240**	249	33	0	**282**	**563**
2:00PM	6	3	0	**9**	3	72	0	**75**	52	14	0	**66**	**150**
2:15PM	10	4	0	**14**	4	63	0	**67**	123	13	0	**136**	**217**
2:30PM	10	2	0	**12**	2	73	0	**75**	144	14	0	**158**	**245**
2:45PM	8	6	0	**14**	4	81	0	**85**	97	11	0	**108**	**207**
Hourly Total	34	15	0	**49**	13	289	0	**302**	416	52	0	**468**	**819**
3:00PM	10	0	0	**10**	6	82	0	**88**	104	9	0	**113**	**211**
3:15PM	9	8	0	**17**	7	69	0	**76**	106	14	0	**120**	**213**
3:30PM	10	7	0	**17**	3	82	0	**85**	117	11	0	**128**	**230**
3:45PM	14	4	0	**18**	6	70	0	**76**	105	19	0	**124**	**218**
Hourly Total	43	19	0	**62**	22	303	0	**325**	432	53	0	**485**	**872**
4:00PM	11	4	0	**15**	5	82	0	**87**	101	18	0	**119**	**221**
4:15PM	13	15	0	**28**	4	78	0	**82**	80	22	0	**102**	**212**
4:30PM	8	5	0	**13**	1	97	0	**98**	95	10	0	**105**	**216**
4:45PM	19	7	0	**26**	3	95	0	**98**	128	16	0	**144**	**268**

Leg	Arborwalk				Ward				Ward				
Direction	Eastbound				Northbound				Southbound				
Time	L	R	U	**App**	L	T	U	**App**	T	R	U	**App**	**Int**
Hourly Total	51	31	0	**82**	13	352	0	**365**	404	66	0	**470**	**917**
5:00PM	18	10	0	**28**	7	91	0	**98**	126	18	0	**144**	**270**
5:15PM	10	12	0	**22**	4	109	1	**114**	130	28	0	**158**	**294**
5:30PM	8	9	0	**17**	2	97	1	**100**	110	20	0	**130**	**247**
5:45PM	3	5	0	**8**	4	106	0	**110**	104	21	0	**125**	**243**
Hourly Total	39	36	0	**75**	17	403	2	**422**	470	87	0	**557**	**1054**
6:00PM	13	3	0	**16**	4	77	0	**81**	91	12	0	**103**	**200**
6:15PM	11	5	0	**16**	4	60	0	**64**	90	17	0	**107**	**187**
6:30PM	9	4	0	**13**	2	48	0	**50**	69	20	0	**89**	**152**
6:45PM	10	4	0	**14**	6	60	1	**67**	58	15	0	**73**	**154**
Hourly Total	43	16	0	**59**	16	245	1	**262**	308	64	0	**372**	**693**
Total	535	247	0	**782**	163	3807	4	**3974**	3648	545	5	**4198**	**8954**
% Approach	68.4%	31.6%	0%	**-**	4.1%	95.8%	0.1%	**-**	86.9%	13.0%	0.1%	**-**	-
% Total	6.0%	2.8%	0%	**8.7%**	1.8%	42.5%	0%	**44.4%**	40.7%	6.1%	0.1%	**46.9%**	-
Lights	521	242	0	**763**	154	3750	4	**3908**	3576	527	5	**4108**	8779
% Lights	97.4%	98.0%	0%	**97.6%**	94.5%	98.5%	100%	**98.3%**	98.0%	96.7%	100%	**97.9%**	98.0%
Articulated Trucks	2	0	0	**2**	2	4	0	**6**	4	1	0	**5**	13
% Articulated Trucks	0.4%	0%	0%	**0.3%**	1.2%	0.1%	0%	**0.2%**	0.1%	0.2%	0%	**0.1%**	0.1%
Buses and Single-Unit Trucks	12	5	0	**17**	7	53	0	**60**	68	17	0	**85**	162
% Buses and Single-Unit Trucks	2.2%	2.0%	0%	**2.2%**	4.3%	1.4%	0%	**1.5%**	1.9%	3.1%	0%	**2.0%**	1.8%

*L: Left, R: Right, T: Thru, U: U-Turn

3_Ward Road & Arborwalk Boulevard - 13 hour ... - TMC
Thu Nov 17, 2022
Full Length (6 AM-7 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1033007, Location: 38.856098, -94.398473

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



3_Ward Road & Arborwalk Boulevard - 13 hour ... - TMC

Thu Nov 17, 2022
AM Peak (6:45 AM - 7:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1033007, Location: 38.856098, -94.398473

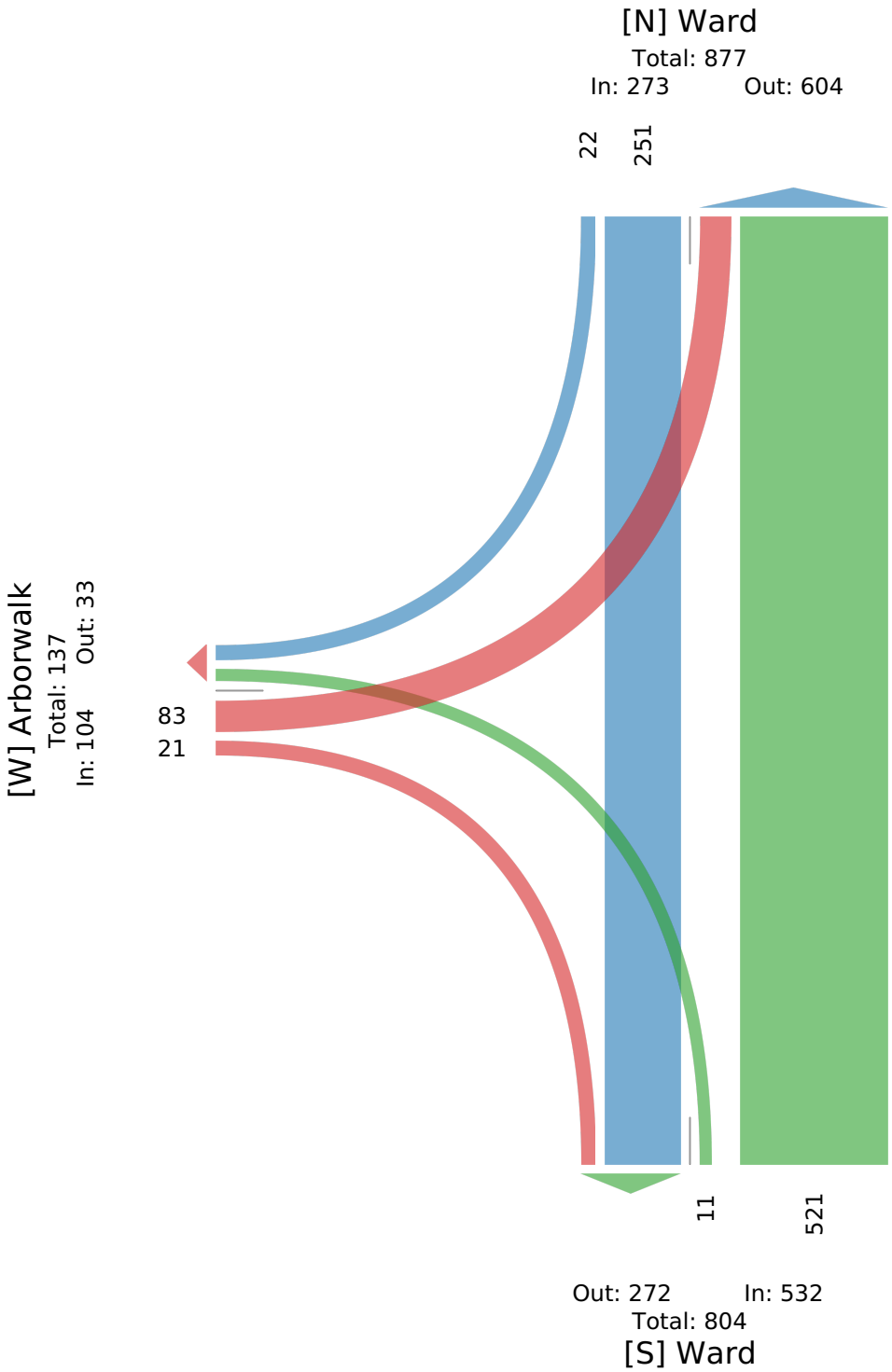
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Arborwalk Eastbound				Ward Northbound				Ward Southbound				
Time	L	R	U	**App**	L	T	U	**App**	T	R	U	**App**	**Int**
2022-11-17 6:45AM	21	7	0	**28**	2	136	0	**138**	25	4	0	**29**	**195**
7:00AM	27	3	0	**30**	2	179	0	**181**	69	4	0	**73**	**284**
7:15AM	17	3	0	**20**	1	114	0	**115**	92	10	0	**102**	**237**
7:30AM	18	8	0	**26**	6	92	0	**98**	65	4	0	**69**	**193**
Total	83	21	0	**104**	11	521	0	**532**	251	22	0	**273**	**909**
% Approach	79.8%	20.2%	0%	**-**	2.1%	97.9%	0%	**-**	91.9%	8.1%	0%	**-**	-
% Total	9.1%	2.3%	0%	**11.4%**	1.2%	57.3%	0%	**58.5%**	27.6%	2.4%	0%	**30.0%**	-
PHF	0.769	0.656	-	**0.867**	0.458	0.728	-	**0.735**	0.682	0.550	-	**0.669**	0.800
Lights	83	19	0	**102**	7	514	0	**521**	238	17	0	**255**	878
% Lights	100%	90.5%	0%	**98.1%**	63.6%	98.7%	0%	**97.9%**	94.8%	77.3%	0%	**93.4%**	96.6%
Articulated Trucks	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	1
% Articulated Trucks	0%	0%	0%	**0%**	9.1%	0%	0%	**0.2%**	0%	0%	0%	**0%**	0.1%
Buses and Single-Unit Trucks	0	2	0	**2**	3	7	0	**10**	13	5	0	**18**	30
% Buses and Single-Unit Trucks	0%	9.5%	0%	**1.9%**	27.3%	1.3%	0%	**1.9%**	5.2%	22.7%	0%	**6.6%**	3.3%

*L: Left, R: Right, T: Thru, U: U-Turn

3_Ward Road & Arborwalk Boulevard - 13 hour ... - TMC
Thu Nov 17, 2022
AM Peak (6:45 AM - 7:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1033007, Location: 38.856098, -94.398473

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



3_Ward Road & Arborwalk Boulevard - 13 hour ... - TMC

Thu Nov 17, 2022
Midday Peak (12 PM - 1 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1033007, Location: 38.856098, -94.398473

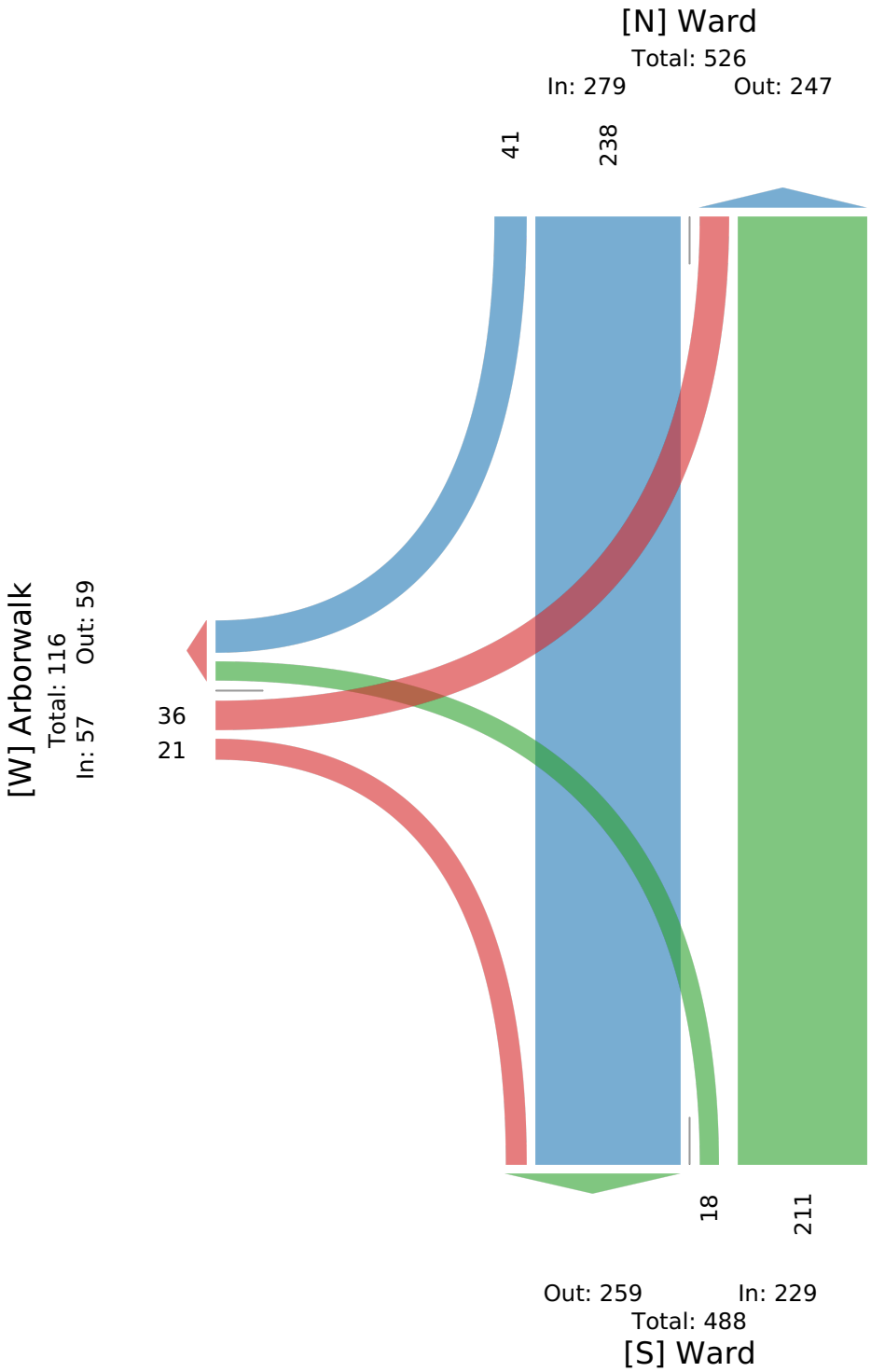
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	Arborwalk				Ward				Ward				
Direction	Eastbound				Northbound				Southbound				
Time	L	R	U	**App**	L	T	U	**App**	T	R	U	**App**	**Int**
2022-11-17 12:00PM	7	6	0	**13**	5	60	0	**65**	61	10	0	**71**	**149**
12:15PM	12	7	0	**19**	2	45	0	**47**	59	13	0	**72**	**138**
12:30PM	12	5	0	**17**	9	46	0	**55**	61	7	0	**68**	**140**
12:45PM	5	3	0	**8**	2	60	0	**62**	57	11	0	**68**	**138**
Total	36	21	0	**57**	18	211	0	**229**	238	41	0	**279**	**565**
% Approach	63.2%	36.8%	0%	**-**	7.9%	92.1%	0%	**-**	85.3%	14.7%	0%	**-**	-
% Total	6.4%	3.7%	0%	**10.1%**	3.2%	37.3%	0%	**40.5%**	42.1%	7.3%	0%	**49.4%**	-
PHF	0.750	0.750	-	**0.750**	0.500	0.879	-	**0.881**	0.975	0.788	-	**0.969**	0.948
Lights	35	21	0	**56**	16	202	0	**218**	229	39	0	**268**	542
% Lights	97.2%	100%	0%	**98.2%**	88.9%	95.7%	0%	**95.2%**	96.2%	95.1%	0%	**96.1%**	95.9%
Articulated Trucks	0	0	0	**0**	1	1	0	**2**	1	1	0	**2**	4
% Articulated Trucks	0%	0%	0%	**0%**	5.6%	0.5%	0%	**0.9%**	0.4%	2.4%	0%	**0.7%**	0.7%
Buses and Single-Unit Trucks	1	0	0	**1**	1	8	0	**9**	8	1	0	**9**	19
% Buses and Single-Unit Trucks	2.8%	0%	0%	**1.8%**	5.6%	3.8%	0%	**3.9%**	3.4%	2.4%	0%	**3.2%**	3.4%

*L: Left, R: Right, T: Thru, U: U-Turn

3_Ward Road & Arborwalk Boulevard - 13 hour ... - TMC
Thu Nov 17, 2022
Midday Peak (12 PM - 1 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1033007, Location: 38.856098, -94.398473

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



3_Ward Road & Arborwalk Boulevard - 13 hour ... - TMC

Thu Nov 17, 2022
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1033007, Location: 38.856098, -94.398473

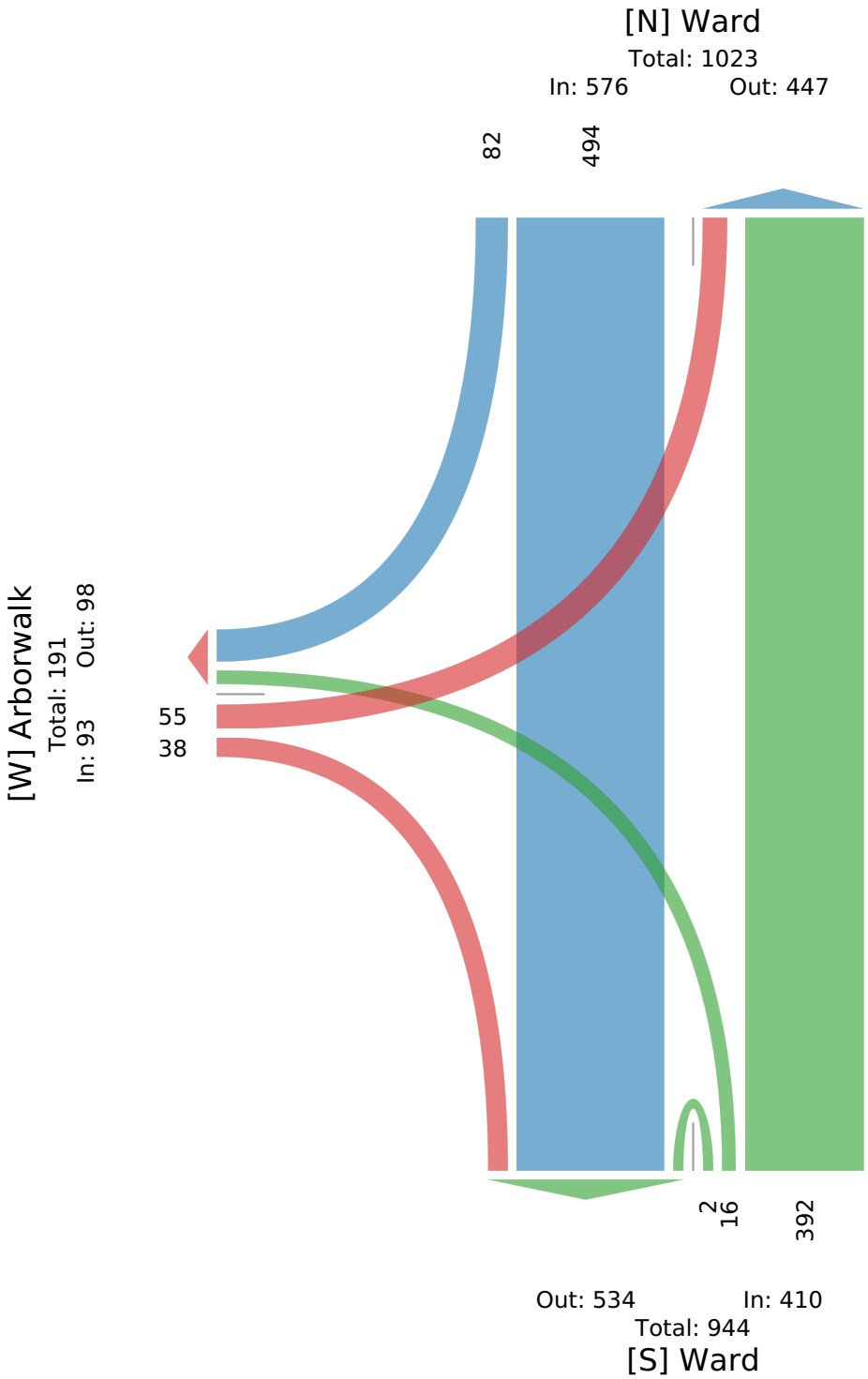
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	Arborwalk				Ward				Ward				
Direction	Eastbound				Northbound				Southbound				
Time	L	R	U	**App**	L	T	U	**App**	T	R	U	**App**	**Int**
2022-11-17 4:45PM	19	7	0	**26**	3	95	0	**98**	128	16	0	**144**	**268**
5:00PM	18	10	0	**28**	7	91	0	**98**	126	18	0	**144**	**270**
5:15PM	10	12	0	**22**	4	109	1	**114**	130	28	0	**158**	**294**
5:30PM	8	9	0	**17**	2	97	1	**100**	110	20	0	**130**	**247**
Total	55	38	0	**93**	16	392	2	**410**	494	82	0	**576**	**1079**
% Approach	59.1%	40.9%	0%	**-**	3.9%	95.6%	0.5%	**-**	85.8%	14.2%	0%	**-**	-
% Total	5.1%	3.5%	0%	**8.6%**	1.5%	36.3%	0.2%	**38.0%**	45.8%	7.6%	0%	**53.4%**	-
PHF	0.724	0.792	-	**0.830**	0.571	0.899	0.500	**0.899**	0.950	0.732	-	**0.911**	0.918
Lights	55	38	0	**93**	16	391	2	**409**	492	82	0	**574**	1076
% Lights	100%	100%	0%	**100%**	100%	99.7%	100%	**99.8%**	99.6%	100%	0%	**99.7%**	99.7%
Articulated Trucks	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	0	0	**0**	0	1	0	**1**	2	0	0	**2**	3
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	0%	0.3%	0%	**0.2%**	0.4%	0%	0%	**0.3%**	0.3%

*L: Left, R: Right, T: Thru, U: U-Turn

3_Ward Road & Arborwalk Boulevard - 13 hour ... - TMC
Thu Nov 17, 2022
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1033007, Location: 38.856098, -94.398473

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



4_Arborwalk Boulevard & Arbor Park Drive - TMC

Thu Nov 17, 2022
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012133, Location: 38.855693, -94.401528

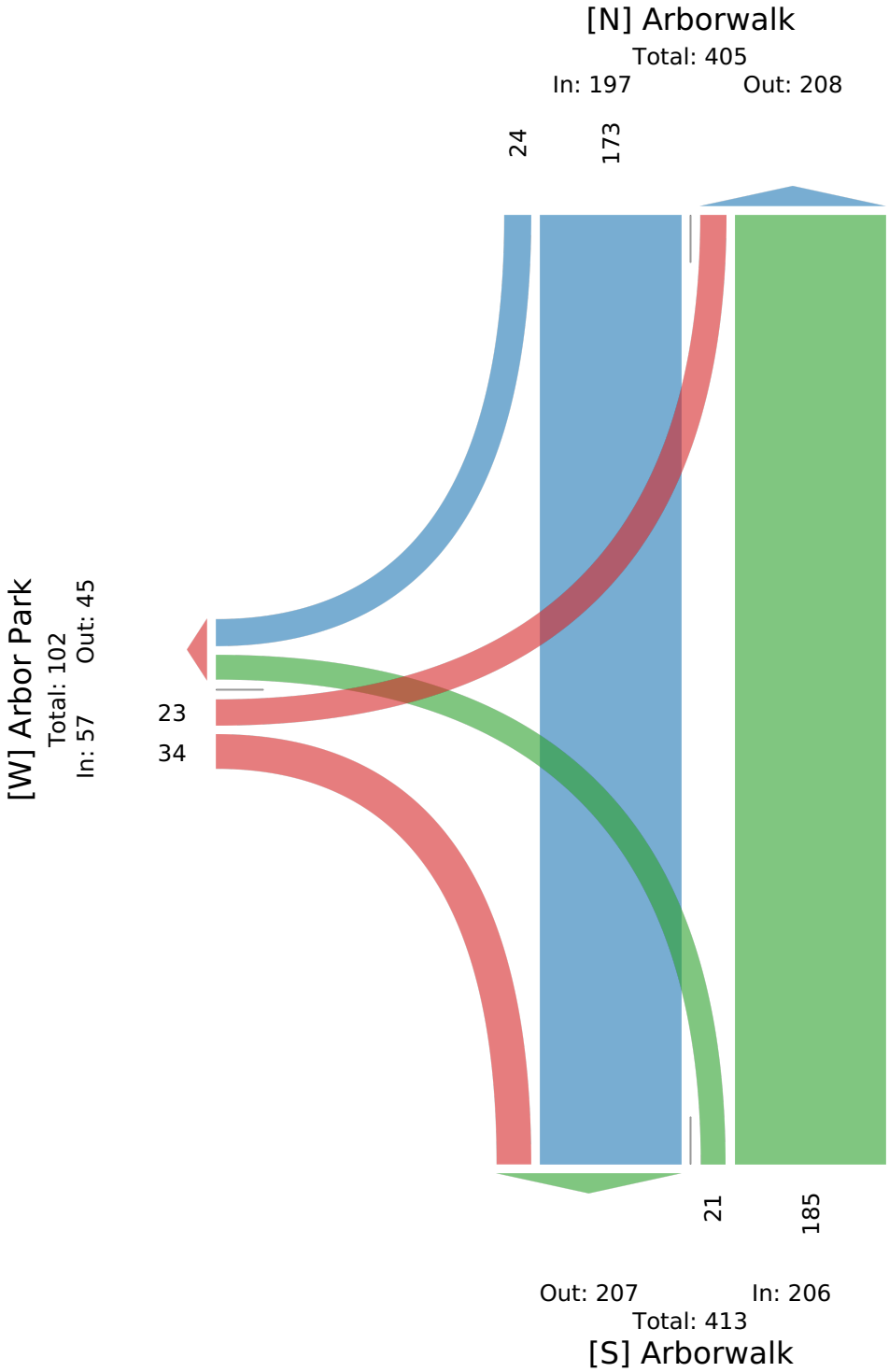
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	Arbor Park				Arborwalk				Arborwalk				
Direction	Eastbound				Northbound				Southbound				
Time	L	R	U	**App**	L	T	U	**App**	T	R	U	**App**	**Int**
2022-11-17 7:00AM	1	3	0	**4**	0	16	0	**16**	9	0	0	**9**	**29**
7:15AM	3	4	0	**7**	1	8	0	**9**	12	0	0	**12**	**28**
7:30AM	4	4	0	**8**	1	9	0	**10**	15	0	0	**15**	**33**
7:45AM	2	3	0	**5**	1	12	0	**13**	10	0	0	**10**	**28**
Hourly Total	10	14	0	**24**	3	45	0	**48**	46	0	0	**46**	**118**
8:00AM	0	6	0	**6**	1	6	0	**7**	2	2	0	**4**	**17**
8:15AM	0	0	0	**0**	1	8	0	**9**	9	2	0	**11**	**20**
8:30AM	2	1	0	**3**	1	10	0	**11**	8	2	0	**10**	**24**
8:45AM	1	3	0	**4**	0	8	0	**8**	8	2	0	**10**	**22**
Hourly Total	3	10	0	**13**	3	32	0	**35**	27	8	0	**35**	**83**
4:00PM	1	2	0	**3**	2	9	0	**11**	13	3	0	**16**	**30**
4:15PM	0	3	0	**3**	1	18	0	**19**	12	1	0	**13**	**35**
4:30PM	1	0	0	**1**	2	13	0	**15**	9	2	0	**11**	**27**
4:45PM	2	2	0	**4**	6	15	0	**21**	7	0	0	**7**	**32**
Hourly Total	4	7	0	**11**	11	55	0	**66**	41	6	0	**47**	**124**
5:00PM	3	0	0	**3**	1	18	0	**19**	12	1	0	**13**	**35**
5:15PM	2	0	0	**2**	1	20	0	**21**	14	5	0	**19**	**42**
5:30PM	1	1	0	**2**	1	8	0	**9**	13	2	0	**15**	**26**
5:45PM	0	2	0	**2**	1	7	0	**8**	20	2	0	**22**	**32**
Hourly Total	6	3	0	**9**	4	53	0	**57**	59	10	0	**69**	**135**
Total	23	34	0	**57**	21	185	0	**206**	173	24	0	**197**	**460**
% Approach	40.4%	59.6%	0%	**-**	10.2%	89.8%	0%	**-**	87.8%	12.2%	0%	**-**	-
% Total	5.0%	7.4%	0%	**12.4%**	4.6%	40.2%	0%	**44.8%**	37.6%	5.2%	0%	**42.8%**	-
Lights	23	34	0	**57**	18	182	0	**200**	163	24	0	**187**	444
% Lights	100%	100%	0%	**100%**	85.7%	98.4%	0%	**97.1%**	94.2%	100%	0%	**94.9%**	96.5%
Articulated Trucks	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	0	0	**0**	3	3	0	**6**	10	0	0	**10**	16
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	14.3%	1.6%	0%	**2.9%**	5.8%	0%	0%	**5.1%**	3.5%

*L: Left, R: Right, T: Thru, U: U-Turn

4_Arborwalk Boulevard & Arbor Park Drive - TMC
Thu Nov 17, 2022
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012133, Location: 38.855693, -94.401528

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



4_Arborwalk Boulevard & Arbor Park Drive - TMC

Thu Nov 17, 2022
AM Peak (7 AM - 8 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012133, Location: 38.855693, -94.401528

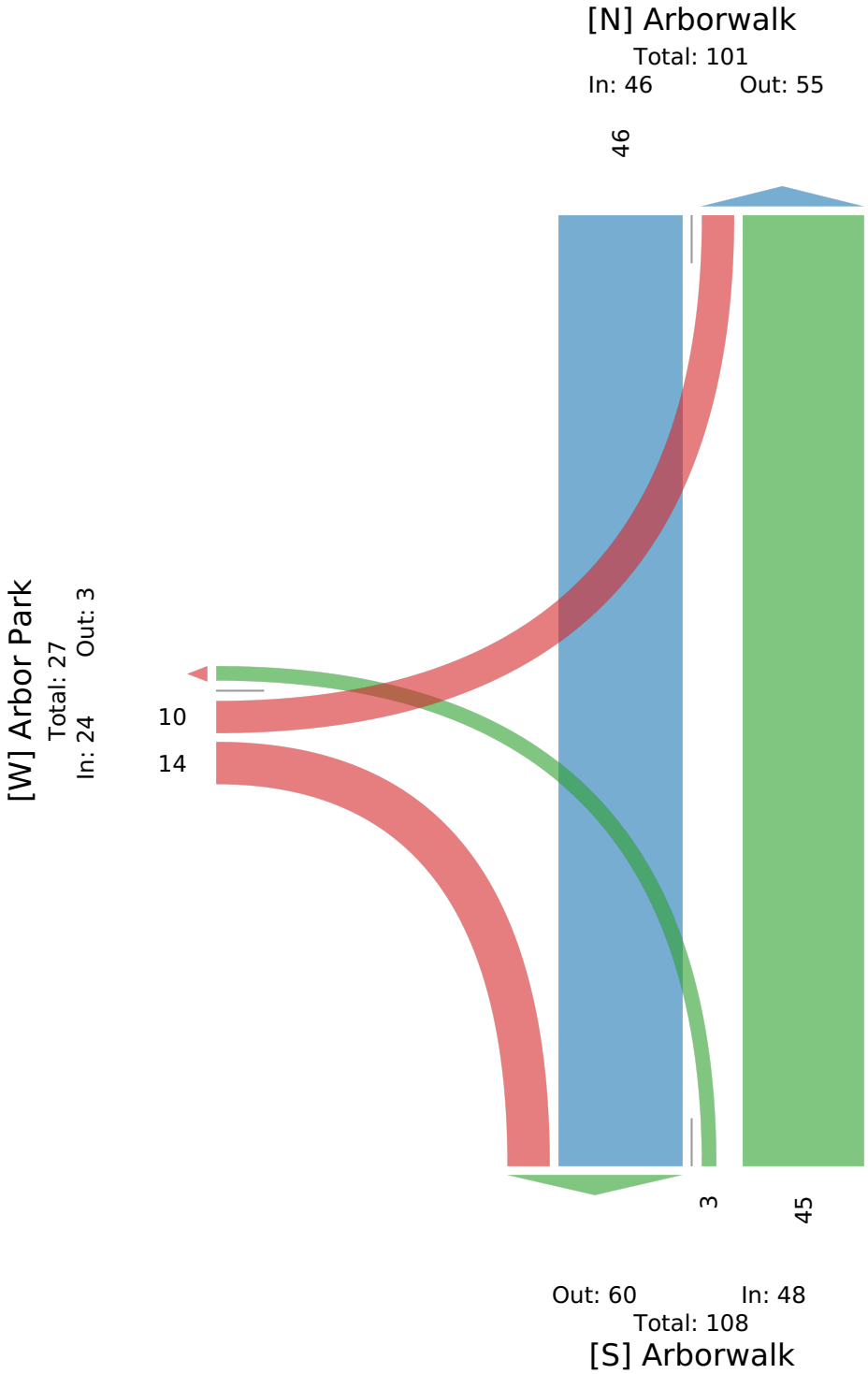
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	Arbor Park				Arborwalk				Arborwalk				
Direction	Eastbound				Northbound				Southbound				
Time	L	R	U	**App**	L	T	U	**App**	T	R	U	**App**	**Int**
2022-11-17 7:00AM	1	3	0	**4**	0	16	0	**16**	9	0	0	**9**	**29**
7:15AM	3	4	0	**7**	1	8	0	**9**	12	0	0	**12**	**28**
7:30AM	4	4	0	**8**	1	9	0	**10**	15	0	0	**15**	**33**
7:45AM	2	3	0	**5**	1	12	0	**13**	10	0	0	**10**	**28**
Total	10	14	0	**24**	3	45	0	**48**	46	0	0	**46**	**118**
% Approach	41.7%	58.3%	0%	**-**	6.3%	93.8%	0%	**-**	100%	0%	0%	**-**	-
% Total	8.5%	11.9%	0%	**20.3%**	2.5%	38.1%	0%	**40.7%**	39.0%	0%	0%	**39.0%**	-
PHF	0.625	0.875	-	**0.750**	0.750	0.703	-	**0.750**	0.767	-	-	**0.767**	0.894
Lights	10	14	0	**24**	2	43	0	**45**	40	0	0	**40**	109
% Lights	100%	100%	0%	**100%**	66.7%	95.6%	0%	**93.8%**	87.0%	0%	0%	**87.0%**	92.4%
Articulated Trucks	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	0	0	**0**	1	2	0	**3**	6	0	0	**6**	9
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	33.3%	4.4%	0%	**6.3%**	13.0%	0%	0%	**13.0%**	7.6%

*L: Left, R: Right, T: Thru, U: U-Turn

4_Arborwalk Boulevard & Arbor Park Drive - TMC
Thu Nov 17, 2022
AM Peak (7 AM - 8 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012133, Location: 38.855693, -94.401528

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



4_Arborwalk Boulevard & Arbor Park Drive - TMC

Thu Nov 17, 2022
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012133, Location: 38.855693, -94.401528

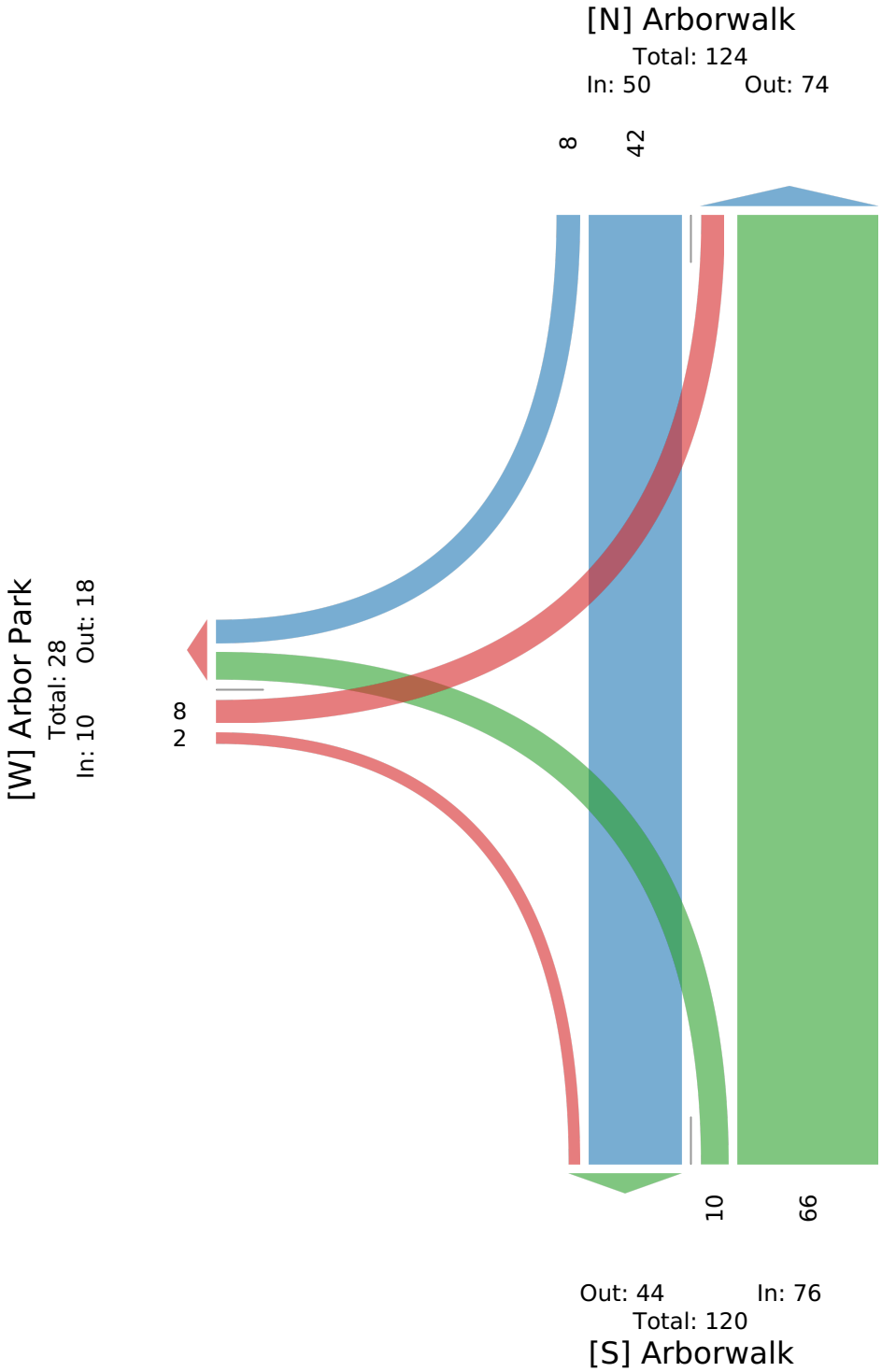
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	Arbor Park				Arborwalk				Arborwalk				
Direction	Eastbound				Northbound				Southbound				
Time	L	R	U	**App**	L	T	U	**App**	T	R	U	**App**	**Int**
2022-11-17 4:30PM	1	0	0	**1**	2	13	0	**15**	9	2	0	**11**	**27**
4:45PM	2	2	0	**4**	6	15	0	**21**	7	0	0	**7**	**32**
5:00PM	3	0	0	**3**	1	18	0	**19**	12	1	0	**13**	**35**
5:15PM	2	0	0	**2**	1	20	0	**21**	14	5	0	**19**	**42**
Total	8	2	0	**10**	10	66	0	**76**	42	8	0	**50**	**136**
% Approach	80.0%	20.0%	0%	**-**	13.2%	86.8%	0%	**-**	84.0%	16.0%	0%	**-**	-
% Total	5.9%	1.5%	0%	**7.4%**	7.4%	48.5%	0%	**55.9%**	30.9%	5.9%	0%	**36.8%**	-
PHF	0.667	0.250	-	**0.625**	0.417	0.825	-	**0.905**	0.750	0.400	-	**0.658**	0.810
Lights	8	2	0	**10**	10	66	0	**76**	42	8	0	**50**	136
% Lights	100%	100%	0%	**100%**	100%	100%	0%	**100%**	100%	100%	0%	**100%**	100%
Articulated Trucks	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%

*L: Left, R: Right, T: Thru, U: U-Turn

4_Arborwalk Boulevard & Arbor Park Drive - TMC
Thu Nov 17, 2022
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012133, Location: 38.855693, -94.401528

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



Appendix C: Site Plan

SITE SUMMARY TABLE

A	**Zoning**		
	Existing	PMIX	
	Proposed	PMIX	
B	**Approximate Total Land Area**		
	Existing	11.46	Acres
C	**Right-of-way**		
	Existing	0.00	Acres
	Proposed	0.00	Acres
D	**Approximate Net Land Area**		
	Existing	11.46	Acres
	Proposed	11.46	Acres
E	**Green Space Area**		
	Proposed	4.13	Acres
	% of Site	36.06%	
F	**Proposed Uses**		
	Multi-Family		
G	**Building Information**		
	Number of Buildings		8
	3 Story Building Height (ft)		39'
	3 Story Building Height with Basement (ft)		44'
	Number of Units		314
	Total Gross Floor Area (SF)		97,250
H	**Building Coverage, FAR & Units/Acre**		
	Building Coverage		19%
	FAR		0.19
	Units/Acre		27.40
I	**Off-Street Vehicle Parking**		
	Surface Stalls Provided		512
	Garage Stalls Provided		70
	Total Stalls Provided		582
	Total Stall Required*		615
	Surface Parking Ratio (Stalls/Unit)		1.63
	Garage Parking Ratio (Stalls/Unit)		0.22
	Total Parking Ratio (Stalls/Unit)		1.85
J	**Land Cover Ratio**		
	Total Impervious Area (Acres)		7.33
	Total Impervious Area (Percent)		63.94%
K	**Requested Deviations**		

1. A reduction in private open space per CDO requirement of 400 SF/Unit
2. Deviation to providing elevator for one out of every three buildings
3. Deviation to 2' FF elevation above public sidewalks
4. A reduction in required parking ratio from 1.92 spaces/unit to 1.85 spaces/unit. See "Parking Deviation Memo" for a comprehensive analysis. Per Lee's Summit UDO, Table 8-1 "Minimum Parking By Use", the required parking is calculated below:

Unit Type	Unit Quantity	Required Stalls
Studios	47	47
1br	147	220.5
2br	99	148.5
3br	21	42
Total Unit Count	314	157**
Total Parking Required		**615**

**Additional Guest Parking Based on Total Units Provided

SITE PLAN LEGEND

- HEAVY DUTY CONCRETE PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- CONCRETE SIDEWALK
- BUILDING
- STANDARD CURB AND GUTTER

NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

PROPOSED PUBLIC SIDEWALK
EXISTING DRIVE APPROACH TO REMAIN
PROPOSED 18 STALL PARKING GARAGE
PROPOSED 20' LANDSCAPE BUFFER
EXISTING PROPERTY LINE (TYP.)
SW ARBORWALK BOULEVARD
EXISTING MONUMENT SIGNAGE & LANDSCAPING TO REMAIN
EXISTING PROPERTY LINE (TYP.)
PROPOSED PRIVATE SIDEWALK
PRIVATE PATIO (TYP.)
BUILDING 3 +/- 9200 SF 28 UNITS
BUILDING 2 +/- 11,400 SF 42 UNITS
REMOVE EXISTING DRIVE APPROACH
PROPOSED PUBLIC SIDEWALK
BUILDING 4 +/- 10,000 SF 28 UNITS
PROPOSED RETAINING WALL (TYP.)
PROPOSED +/- 8,000 SF AMENITY AREA
PROPOSED +/- 3000 SF AMENITY AREA
PROPOSED 20' LANDSCAPE BUFFER
PRIVATE PATIO (TYP.)
EXISTING 10' PUBLIC SIDEWALK
BUILDING 1 +/- 11,400 SF 36 UNITS
BUILDING 8 +/- 25,450 SF 90 UNITS
PROPOSED +/- 6,800 SF POOL/AMENITY AREA
EXISTING RIGHT TURN LANE TO REMAIN
PRIVATE PATIO (TYP.)
PROPOSED TRASH ENCLOSURES
BUILDING 5 +/- 11,400 SF 42 UNITS
PROPOSED 20' LANDSCAPE BUFFER
PROPOSED DRIVE APPROACH TO BE SHARED BETWEEN COMMERCIAL DEVELOPMENT & MULTIFAMILY DEVELOPMENT
INTERSECTION DEPARTURE SIGHT TRIANGLES
SW WARD ROAD
EXISTING DRIVE APPROACH TO REMAIN AND BE UTILIZED BY COMMERCIAL DEVELOPMENT
PROPOSED 15' LANDSCAPE BUFFER
BUILDING 6 +/- 9,200 SF 24 UNITS
BUILDING 7 +/- 9,200 SF 24 UNITS
PROPOSED PROPERTY LINE (TYP.)
PROPOSED TEMPORARY CONSTRUCTION EASEMENT
PROPOSED COMMERCIAL DEVELOPMENT ACCESS DRIVE (BY OTHERS)
EXISTING PROPERTY LINE (TYP.)
PROPOSED COMMERCIAL DEVELOPMENT DRIVE APPROACH (BY OTHERS)
PROPOSED PROPERTY LINE (TYP.)
PROPOSED 9 STALL PARKING GARAGES
PROPOSED MAINTENANCE FACILITY
PROPOSED 15' LANDSCAPE BUFFER
PROPOSED 9 STALL PARKING GARAGE
PROPOSED 16 STALL PARKING GARAGE
PROPOSED PROPERTY LINE (TYP.)
PROPOSED COMMERCIAL DEVELOPMENT (BY OTHERS)
LOT 2003
LOT 2002
EXISTING DRIVE APPROACH TO REMAIN AND BE UTILIZED BY COMMERCIAL DEVELOPMENT
MO-150 HIGHWAY
EXISTING DRIVE APPROACH TO REMAIN AND BE UTILIZED BY COMMERCIAL DEVELOPMENT

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2021 KIMLEY-HORN AND ASSOCIATES, INC.
805 PENNSYLVANIA AVE, SUITE 150
KANSAS CITY, MO 64105
PHONE: 816.652.2350
WWW.KIMLEY-HORN.COM
MO CERTIFICATE OF AUTHORITY #2015312.
EXPIRES: 12/31/23

SCALE: AS NOTED
DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: TW

PRELIMINARY NOT FOR CONSTRUCTION

MILHAUS

OVERALL SITE PLAN

ARBORWALK EAST MULTI-FAMILY DEVELOPMENT
150 HIGHWAY & SW WARD ROAD
LEE'S SUMMIT, MISSOURI, 64082

ORIGINAL ISSUE: 2/9/2023
KHA PROJECT NO. 268277000
SHEET NUMBER
C2

Appendix D: ITE Trip Generation Manual Sheets

Land Use: 220
Multifamily Housing (Low-Rise)

Description

Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have two or three floors (levels). Various configurations fit this description, including walkup apartment, mansion apartment, and stacked townhouse.

- A walkup apartment typically is two or three floors in height with dwelling units that are accessed by a single or multiple entrances with stairways and hallways.
- A mansion apartment is a single structure that contains several apartments within what appears to be a single-family dwelling unit.
- A fourplex is a single two-story structure with two matching dwelling units on the ground and second floors. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.
- A stacked townhouse is designed to match the external appearance of a townhouse. But, unlike a townhouse dwelling unit that only shares walls with an adjoining unit, the stacked townhouse units share both floors and walls. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.

Multifamily housing (mid-rise) (Land Use 221), multifamily housing (high-rise) (Land Use 222), affordable housing (Land Use 223), and off-campus student apartment (low-rise) (Land Use 225) are related land uses.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

Additional Data

For the three sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.72 residents per occupied dwelling unit.

For the two sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96.2 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip

generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

For the three sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.72 residents per occupied dwelling unit.

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1980s, the 1990s, the 2000s, the 2010s, and the 2020s in British Columbia (CAN), California, Delaware, Florida, Georgia, Illinois, Indiana, Maine, Maryland, Massachusetts, Minnesota, New Jersey, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, and Washington.

Source Numbers

188, 204, 237, 300, 305, 306, 320, 321, 357, 390, 412, 525, 530, 579, 583, 638, 864, 866, 896, 901, 903, 904, 936, 939, 944, 946, 947, 948, 963, 964, 966, 967, 1012, 1013, 1014, 1036, 1047, 1056, 1071, 1076

Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

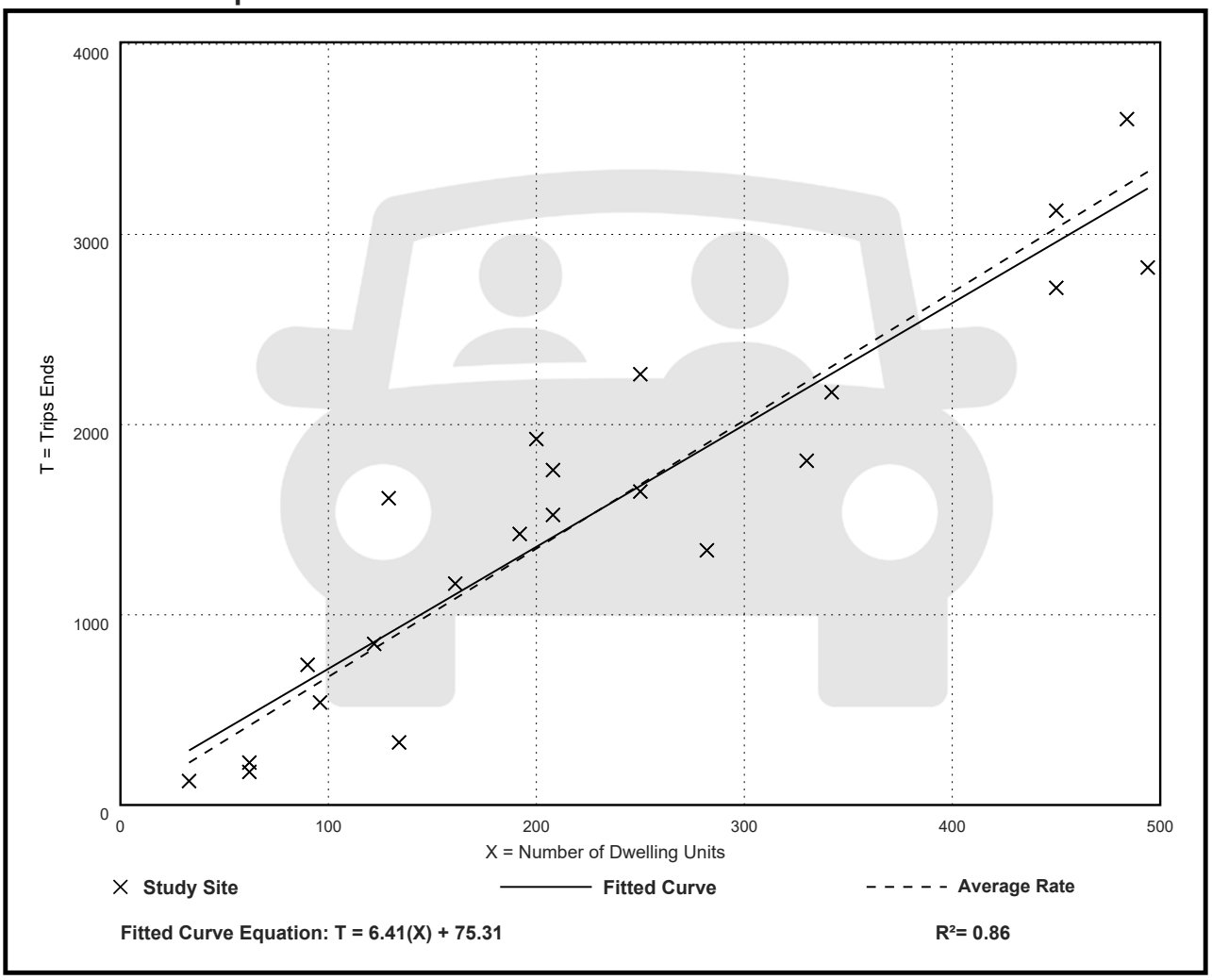
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. Num. of Dwelling Units: 229
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



Fitted Curve Equation: T = 6.41(X) + 75.31

R^2= 0.86

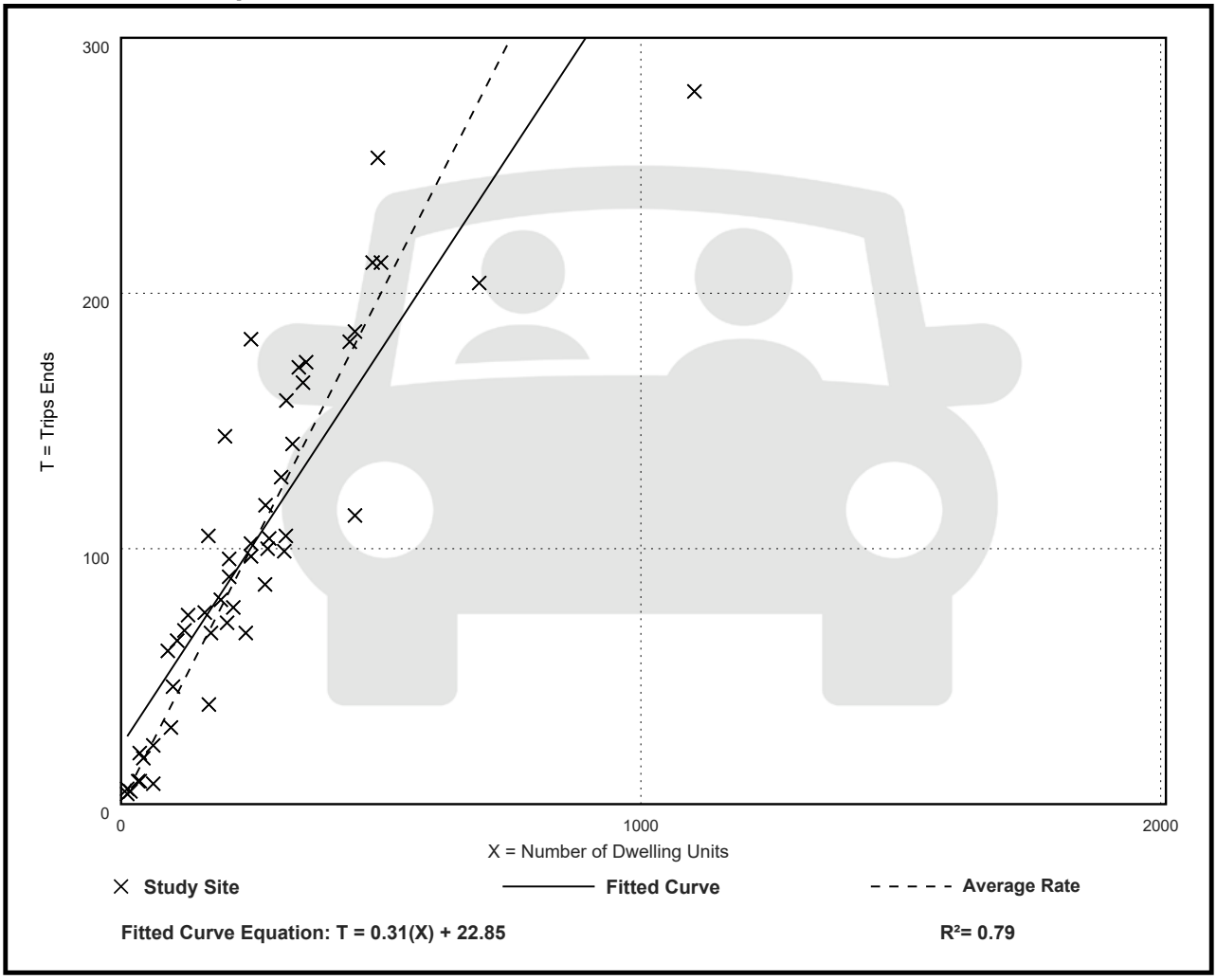
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 49
Avg. Num. of Dwelling Units: 249
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



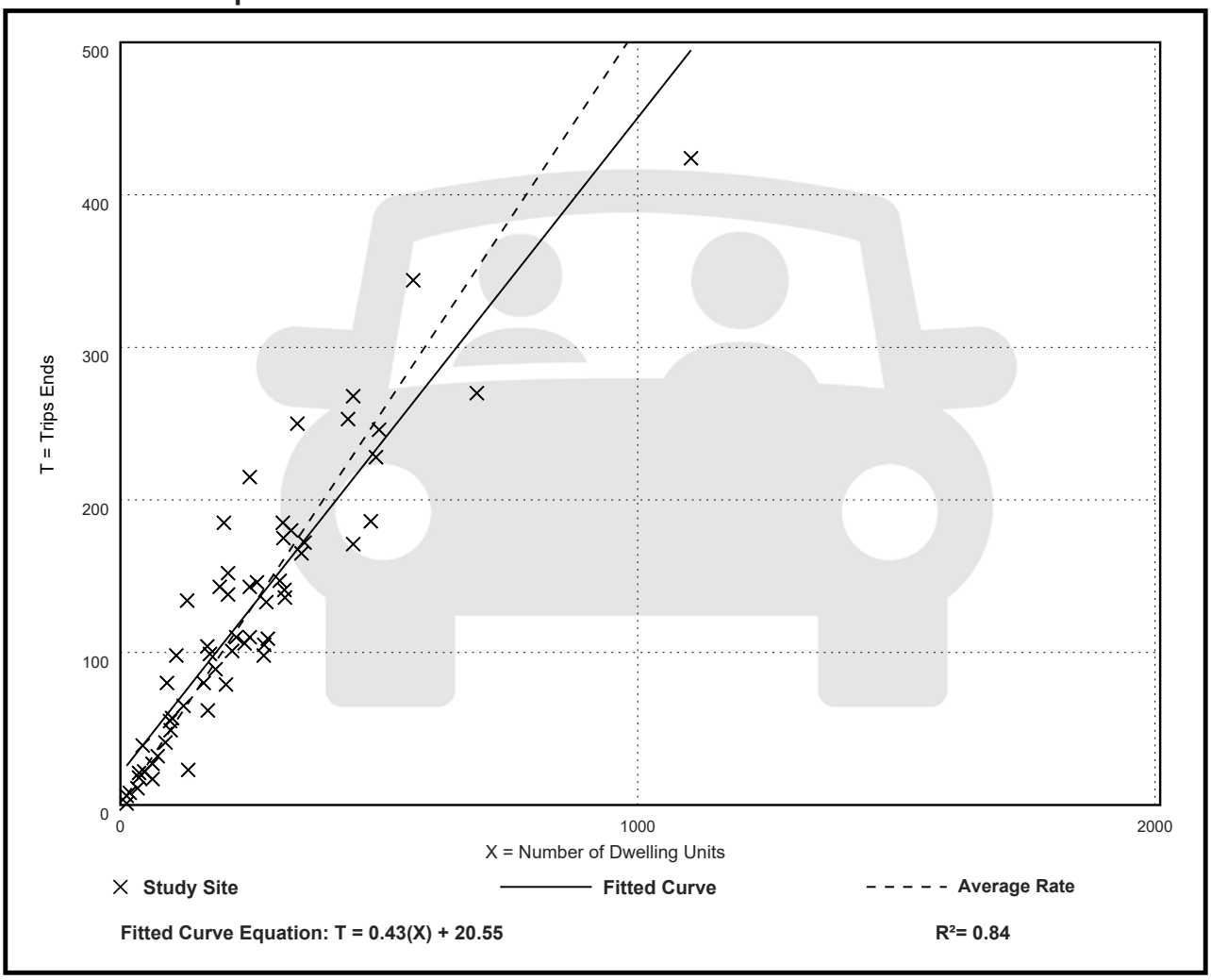
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 59
Avg. Num. of Dwelling Units: 241
Directional Distribution: 63% entering, 37% exiting

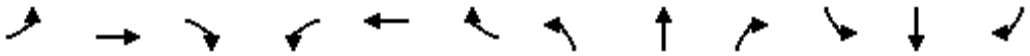
Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation

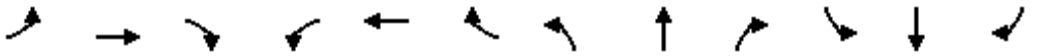


Appendix E: Capacity Analysis Reports



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	132	336	33	54	743	154	184	242	111	122	75	128
v/c Ratio	0.46	0.16	0.04	0.27	0.37	0.16	0.55	0.61	0.40	0.46	0.22	0.48
Control Delay	63.4	9.8	0.2	56.6	15.7	2.8	57.5	57.1	13.0	57.8	50.5	14.5
Queue Delay	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 Delay	63.4	9.8	0.2	56.6	15.7	2.8	57.5	57.1	13.0	57.8	50.5	14.5
Queue Length 50th (ft)	55	44	0	21	156	0	71	95	0	47	28	0
Queue Length 95th (ft)	81	76	0	41	239	34	106	134	52	77	52	57
Internal Link Dist (ft)		1672			696			640			959	
Turn Bay Length (ft)	210		205	220		220	170		135	260		120
Base Capacity (vph)	358	2115	931	233	1983	962	472	752	423	358	663	398
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.16	0.04	0.23	0.37	0.16	0.39	0.32	0.26	0.34	0.11	0.32

Intersection Summary

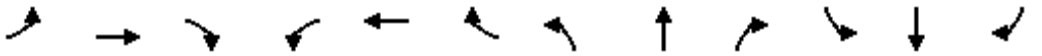


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	309	30	50	684	142	169	223	102	112	69	118
Future Volume (vph)	121	309	30	50	684	142	169	223	102	112	69	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	132	336	33	54	743	154	184	242	111	122	75	128
RTOR Reduction (vph)	0	0	13	0	0	66	0	0	99	0	0	116
Lane Group Flow (vph)	132	336	20	54	743	88	184	242	12	122	75	12
Heavy Vehicles (%)	2%	4%	10%	8%	4%	3%	2%	2%	2%	10%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	10.0	72.3	72.3	6.3	68.6	68.6	11.7	13.5	13.5	9.9	11.7	11.7
Effective Green, g (s)	10.0	72.3	72.3	6.3	68.6	68.6	11.7	13.5	13.5	9.9	11.7	11.7
Actuated g/C Ratio	0.08	0.60	0.60	0.05	0.57	0.57	0.10	0.11	0.11	0.08	0.10	0.10
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	286	2091	884	170	1984	896	334	398	178	262	345	152
v/s Ratio Prot	c0.04	c0.10		0.02	c0.21		c0.05	c0.07		0.04	0.02	
v/s Ratio Perm			0.01			0.06			0.01			0.01
v/c Ratio	0.46	0.16	0.02	0.32	0.37	0.10	0.55	0.61	0.07	0.47	0.22	0.08
Uniform Delay, d1	52.4	10.5	9.6	54.8	14.0	11.7	51.6	50.7	47.6	52.5	49.9	49.3
Progression Factor	1.12	0.83	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.2	0.0	1.1	0.5	0.2	2.0	2.6	0.2	1.3	0.3	0.2
Delay (s)	59.7	8.8	9.7	55.9	14.5	11.9	53.6	53.4	47.8	53.8	50.2	49.5
Level of Service	E	A	A	E	B	B	D	D	D	D	D	D
Approach Delay (s)		22.3			16.5			52.3			51.3	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	359	45	955	55	54	17	108	37	10	86
v/c Ratio	0.06	0.15	0.06	0.38	0.05	0.28	0.11	0.47	0.22	0.11	0.49
Control Delay	4.8	7.5	3.7	7.1	0.7	45.3	52.6	16.6	44.1	54.9	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	7.5	3.7	7.1	0.7	45.3	52.6	16.6	44.1	54.9	18.5
Queue Length 50th (ft)	3	48	6	163	0	37	13	0	25	8	0
Queue Length 95th (ft)	12	82	14	196	4	70	36	55	53	25	44
Internal Link Dist (ft)		1287		1672			122			245	
Turn Bay Length (ft)	200		215		190	75		100	210		200
Base Capacity (vph)	394	2388	796	2529	1126	203	364	396	179	312	362
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.15	0.06	0.38	0.05	0.27	0.05	0.27	0.21	0.03	0.24

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	327	4	41	879	51	50	16	99	34	9	79
Future Volume (vph)	20	327	4	41	879	51	50	16	99	34	9	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	3401		1770	3505	1524	1770	1863	1583	1703	1667	1524
Flt Permitted	0.27	1.00		0.53	1.00	1.00	0.58	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	433	3401		984	3505	1524	1077	1863	1583	1338	1667	1524
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	355	4	45	955	55	54	17	108	37	10	86
RTOR Reduction (vph)	0	0	0	0	0	17	0	0	99	0	0	80
Lane Group Flow (vph)	22	359	0	45	955	38	54	17	9	37	10	6
Heavy Vehicles (%)	18%	6%	2%	2%	3%	6%	2%	2%	2%	6%	14%	6%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	85.4	81.6		88.2	83.0	83.0	17.5	10.0	10.0	12.9	7.7	7.7
Effective Green, g (s)	85.4	81.6		88.2	83.0	83.0	17.5	10.0	10.0	12.9	7.7	7.7
Actuated g/C Ratio	0.71	0.68		0.74	0.69	0.69	0.15	0.08	0.08	0.11	0.06	0.06
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	342	2312		757	2424	1054	200	155	131	159	106	97
v/s Ratio Prot	0.00	0.11		c0.00	c0.27		c0.02	0.01		0.01	0.01	
v/s Ratio Perm	0.04			0.04		0.02	c0.02		0.01	0.01		0.00
v/c Ratio	0.06	0.16		0.06	0.39	0.04	0.27	0.11	0.07	0.23	0.09	0.06
Uniform Delay, d1	5.4	6.9		4.3	7.8	5.9	45.2	50.9	50.7	48.9	52.9	52.7
Progression Factor	1.00	1.00		0.80	0.84	1.65	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1		0.0	0.5	0.1	0.7	0.3	0.2	0.8	0.4	0.2
Delay (s)	5.5	7.0		3.5	7.0	9.7	45.9	51.2	50.9	49.6	53.3	53.0
Level of Service	A	A		A	A	A	D	D	D	D	D	D
Approach Delay (s)		6.9			7.0			49.4			52.1	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	76	20	11	475	279	25
Future Vol, veh/h	76	20	11	475	279	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	250	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	14	27	2	5	16
Mvmt Flow	83	22	12	516	303	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	585	152	330	0	-	0
Stage 1	303	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.84	7.18	4.64	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.44	2.47	-	-	-
Pot Cap-1 Maneuver	442	830	1064	-	-	-
Stage 1	723	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	437	830	1064	-	-	-
Mov Cap-2 Maneuver	437	-	-	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1064	-	437	830	-	-
HCM Lane V/C Ratio	0.011	-	0.189	0.026	-	-
HCM Control Delay (s)	8.4	-	15.1	9.5	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0	-	0.7	0.1	-	-

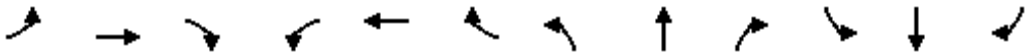
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	14	3	45	46	0
Future Vol, veh/h	10	14	3	45	46	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	16	3	51	52	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	109	52	52	0	-	0
Stage 1	52	-	-	-	-	-
Stage 2	57	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	888	1016	1554	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	966	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	886	1016	1554	-	-	-
Mov Cap-2 Maneuver	886	-	-	-	-	-
Stage 1	968	-	-	-	-	-
Stage 2	966	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1554	-	957	-	-
HCM Lane V/C Ratio	0.002	-	0.028	-	-
HCM Control Delay (s)	7.3	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	829	171	136	493	143	91	181	138	191	262	145
v/c Ratio	0.47	0.42	0.19	0.49	0.25	0.15	0.37	0.54	0.50	0.58	0.58	0.44
Control Delay	64.2	11.5	1.0	57.8	14.6	2.9	57.1	57.3	14.6	58.0	54.0	11.7
Queue Delay	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 Delay	64.2	11.5	1.0	57.8	14.6	2.9	57.1	57.3	14.6	58.0	54.0	11.7
Queue Length 50th (ft)	57	101	0	52	96	0	35	71	0	73	102	0
Queue Length 95th (ft)	86	132	9	82	152	33	61	105	57	108	139	55
Internal Link Dist (ft)		1672			696			640			959	
Turn Bay Length (ft)	210		205	220		220	170		135	260		120
Base Capacity (vph)	359	1957	902	341	1965	950	278	634	396	437	840	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.42	0.19	0.40	0.25	0.15	0.33	0.29	0.35	0.44	0.31	0.30

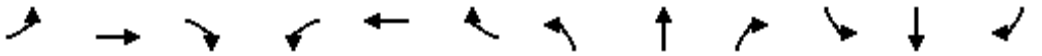
Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	738	152	121	439	127	81	161	123	170	233	129
Future Volume (vph)	121	738	152	121	439	127	81	161	123	170	233	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	136	829	171	136	493	143	91	181	138	191	262	145
RTOR Reduction (vph)	0	0	75	0	0	62	0	0	125	0	0	126
Lane Group Flow (vph)	136	829	96	136	493	81	91	181	13	191	262	19
Heavy Vehicles (%)	2%	4%	10%	8%	4%	3%	2%	2%	2%	10%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	10.1	67.6	67.6	10.4	67.9	67.9	8.6	11.5	11.5	12.5	15.4	15.4
Effective Green, g (s)	10.1	67.6	67.6	10.4	67.9	67.9	8.6	11.5	11.5	12.5	15.4	15.4
Actuated g/C Ratio	0.08	0.56	0.56	0.09	0.57	0.57	0.07	0.10	0.10	0.10	0.13	0.13
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	288	1955	826	280	1964	887	246	339	151	331	454	201
v/s Ratio Prot	0.04	c0.24		c0.04	0.14		0.03	0.05		c0.06	c0.07	
v/s Ratio Perm			0.07			0.05			0.01			0.01
v/c Ratio	0.47	0.42	0.12	0.49	0.25	0.09	0.37	0.53	0.09	0.58	0.58	0.09
Uniform Delay, d1	52.4	15.0	12.2	52.3	13.2	11.9	53.1	51.7	49.5	51.2	49.2	46.1
Progression Factor	1.14	0.67	0.25	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.6	0.3	1.3	0.3	0.2	0.9	1.6	0.3	2.4	1.8	0.2
Delay (s)	60.7	10.7	3.3	53.6	13.5	12.1	54.1	53.3	49.7	53.7	51.0	46.3
Level of Service	E	B	A	D	B	B	D	D	D	D	D	D
Approach Delay (s)		15.6			20.3			52.3			50.7	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	64	991	144	531	54	19	17	130	55	25	55
v/c Ratio	0.10	0.43	0.34	0.22	0.05	0.11	0.15	0.58	0.28	0.12	0.19
Control Delay	5.0	11.8	8.8	7.2	0.6	41.2	54.9	18.6	44.9	49.0	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	11.8	8.8	7.2	0.6	41.2	54.9	18.6	44.9	49.0	1.4
Queue Length 50th (ft)	10	181	21	80	0	13	13	0	37	17	0
Queue Length 95th (ft)	27	288	61	107	0	32	35	53	70	44	0
Internal Link Dist (ft)		1287		1672			122			245	
Turn Bay Length (ft)	200		215		190	75		100	210		200
Base Capacity (vph)	660	2315	501	2466	1132	175	333	395	201	349	407
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.43	0.29	0.22	0.05	0.11	0.05	0.33	0.27	0.07	0.14

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	846	36	128	473	48	17	15	116	49	22	49
Future Volume (vph)	57	846	36	128	473	48	17	15	116	49	22	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3518		1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.45	1.00		0.23	1.00	1.00	0.74	1.00	1.00	0.52	1.00	1.00
Satd. Flow (perm)	847	3518		423	3539	1583	1380	1863	1583	962	1863	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	64	951	40	144	531	54	19	17	130	55	25	55
RTOR Reduction (vph)	0	2	0	0	0	18	0	0	120	0	0	49
Lane Group Flow (vph)	64	989	0	144	531	36	19	17	10	55	25	6
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	81.8	76.3		89.4	80.1	80.1	12.3	9.2	9.2	20.5	13.3	13.3
Effective Green, g (s)	81.8	76.3		89.4	80.1	80.1	12.3	9.2	9.2	20.5	13.3	13.3
Actuated g/C Ratio	0.68	0.64		0.75	0.67	0.67	0.10	0.08	0.08	0.17	0.11	0.11
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	619	2236		419	2362	1056	151	142	121	212	206	175
v/s Ratio Prot	0.00	c0.28		c0.03	0.15		0.00	0.01		c0.02	0.01	
v/s Ratio Perm	0.07			0.23		0.02	0.01		0.01	c0.03		0.00
v/c Ratio	0.10	0.44		0.34	0.22	0.03	0.13	0.12	0.08	0.26	0.12	0.03
Uniform Delay, d1	6.3	11.1		5.9	7.8	6.8	48.9	51.6	51.5	42.6	48.1	47.6
Progression Factor	1.00	1.00		1.56	0.88	1.42	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.6		0.5	0.2	0.1	0.4	0.4	0.3	0.7	0.3	0.1
Delay (s)	6.4	11.7		9.7	7.1	9.7	49.2	52.0	51.8	43.3	48.3	47.7
Level of Service	A	B		A	A	A	D	D	D	D	D	D
Approach Delay (s)		11.4			7.8			51.5			46.0	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	38	16	393	494	82
Future Vol, veh/h	55	38	16	393	494	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	250	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	43	18	442	555	92

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	812	278	647	0	-	0
Stage 1	555	-	-	-	-	-
Stage 2	257	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	317	719	934	-	-	-
Stage 1	539	-	-	-	-	-
Stage 2	762	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	311	719	934	-	-	-
Mov Cap-2 Maneuver	311	-	-	-	-	-
Stage 1	529	-	-	-	-	-
Stage 2	762	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.7	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	934	-	311	719	-	-
HCM Lane V/C Ratio	0.019	-	0.199	0.059	-	-
HCM Control Delay (s)	8.9	-	19.4	10.3	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	0.2	-	-

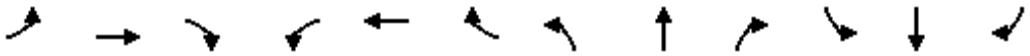
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	3	9	61	46	8
Future Vol, veh/h	8	3	9	61	46	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	3	10	69	52	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	146	57	61	0	-	0
Stage 1	57	-	-	-	-	-
Stage 2	89	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	846	1009	1542	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	840	1009	1542	-	-	-
Mov Cap-2 Maneuver	840	-	-	-	-	-
Stage 1	959	-	-	-	-	-
Stage 2	934	-	-	-	-	-

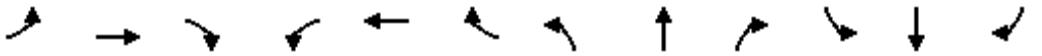
Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1542	-	880	-	-
HCM Lane V/C Ratio	0.007	-	0.014	-	-
HCM Control Delay (s)	7.3	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	132	336	33	54	743	164	184	243	111	151	80	128
v/c Ratio	0.46	0.16	0.04	0.27	0.38	0.17	0.55	0.61	0.40	0.52	0.21	0.46
Control Delay	63.2	10.2	0.2	56.6	16.4	2.9	57.5	57.0	13.0	58.0	49.3	13.5
Queue Delay	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 Delay	63.2	10.2	0.2	56.6	16.4	2.9	57.5	57.0	13.0	58.0	49.3	13.5
Queue Length 50th (ft)	55	47	0	21	161	0	71	95	0	58	30	0
Queue Length 95th (ft)	80	76	0	41	245	36	106	135	52	91	53	56
Internal Link Dist (ft)		1672			696			640			959	
Turn Bay Length (ft)	210		205	220		220	170		135	260		120
Base Capacity (vph)	358	2083	919	233	1951	953	472	752	423	362	663	398
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.16	0.04	0.23	0.38	0.17	0.39	0.32	0.26	0.42	0.12	0.32

Intersection Summary

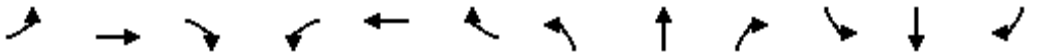


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	309	30	50	684	151	169	224	102	139	74	118
Future Volume (vph)	121	309	30	50	684	151	169	224	102	139	74	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	132	336	33	54	743	164	184	243	111	151	80	128
RTOR Reduction (vph)	0	0	13	0	0	72	0	0	98	0	0	114
Lane Group Flow (vph)	132	336	20	54	743	92	184	243	13	151	80	14
Heavy Vehicles (%)	2%	4%	10%	8%	4%	3%	2%	2%	2%	10%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	10.0	71.1	71.1	6.3	67.4	67.4	11.7	13.6	13.6	11.0	12.9	12.9
Effective Green, g (s)	10.0	71.1	71.1	6.3	67.4	67.4	11.7	13.6	13.6	11.0	12.9	12.9
Actuated g/C Ratio	0.08	0.59	0.59	0.05	0.56	0.56	0.10	0.11	0.11	0.09	0.11	0.11
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	286	2056	869	170	1949	880	334	401	179	291	380	168
v/s Ratio Prot	c0.04	c0.10		0.02	c0.21		c0.05	c0.07		0.05	0.02	
v/s Ratio Perm			0.01			0.06			0.01			0.01
v/c Ratio	0.46	0.16	0.02	0.32	0.38	0.10	0.55	0.61	0.07	0.52	0.21	0.08
Uniform Delay, d1	52.4	11.0	10.1	54.8	14.7	12.2	51.6	50.6	47.5	52.0	48.9	48.2
Progression Factor	1.11	0.83	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.2	0.0	1.1	0.6	0.2	2.0	2.6	0.2	1.6	0.3	0.2
Delay (s)	59.4	9.3	10.1	55.9	15.2	12.5	53.6	53.2	47.7	53.5	49.2	48.4
Level of Service	E	A	B	E	B	B	D	D	D	D	D	D
Approach Delay (s)		22.6			17.1			52.2			50.7	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	32	359	45	955	55	54	17	108	37	10	114
v/c Ratio	0.09	0.15	0.06	0.38	0.05	0.27	0.10	0.45	0.21	0.10	0.57
Control Delay	5.2	7.8	3.9	7.5	0.8	44.3	51.4	15.8	43.0	53.4	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.2	7.8	3.9	7.5	0.8	44.3	51.4	15.8	43.0	53.4	20.9
Queue Length 50th (ft)	5	48	6	154	0	37	13	0	25	8	0
Queue Length 95th (ft)	17	86	17	196	4	69	35	54	52	25	56
Internal Link Dist (ft)		1287		1672			122			245	
Turn Bay Length (ft)	200		215		190	75		100	210		200
Base Capacity (vph)	390	2371	790	2507	1117	209	364	396	185	312	378
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.15	0.06	0.38	0.05	0.26	0.05	0.27	0.20	0.03	0.30

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	327	4	41	879	51	50	16	99	34	9	105
Future Volume (vph)	29	327	4	41	879	51	50	16	99	34	9	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	3401		1770	3505	1524	1770	1863	1583	1703	1667	1524
Flt Permitted	0.27	1.00		0.53	1.00	1.00	0.59	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	429	3401		985	3505	1524	1096	1863	1583	1338	1667	1524
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	355	4	45	955	55	54	17	108	37	10	114
RTOR Reduction (vph)	0	0	0	0	0	17	0	0	98	0	0	106
Lane Group Flow (vph)	32	359	0	45	955	38	54	17	10	37	10	8
Heavy Vehicles (%)	18%	6%	2%	2%	3%	6%	2%	2%	2%	6%	14%	6%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	85.0	81.0		87.4	82.2	82.2	18.1	10.6	10.6	13.5	8.3	8.3
Effective Green, g (s)	85.0	81.0		87.4	82.2	82.2	18.1	10.6	10.6	13.5	8.3	8.3
Actuated g/C Ratio	0.71	0.68		0.73	0.69	0.69	0.15	0.09	0.09	0.11	0.07	0.07
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	340	2295		751	2400	1043	207	164	139	166	115	105
v/s Ratio Prot	c0.00	0.11		0.00	c0.27		c0.02	0.01		0.01	0.01	
v/s Ratio Perm	0.06			0.04		0.02	c0.02		0.01	0.02		0.01
v/c Ratio	0.09	0.16		0.06	0.40	0.04	0.26	0.10	0.07	0.22	0.09	0.08
Uniform Delay, d1	5.6	7.1		4.6	8.2	6.1	44.6	50.3	50.2	48.3	52.3	52.3
Progression Factor	1.00	1.00		0.80	0.83	1.78	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1		0.0	0.5	0.1	0.7	0.3	0.2	0.7	0.3	0.3
Delay (s)	5.7	7.2		3.7	7.3	11.0	45.3	50.6	50.4	49.0	52.6	52.6
Level of Service	A	A		A	A	B	D	D	D	D	D	D
Approach Delay (s)		7.1			7.3			48.9			51.7	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	109	52	21	475	279	35
Future Vol, veh/h	109	52	21	475	279	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	250	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	14	27	2	5	16
Mvmt Flow	118	57	23	516	303	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	607	152	341	0	-	0
Stage 1	303	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Critical Hdwy	6.84	7.18	4.64	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.44	2.47	-	-	-
Pot Cap-1 Maneuver	428	830	1053	-	-	-
Stage 1	723	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	419	830	1053	-	-	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	722	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.6	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1053	-	419	830	-	-
HCM Lane V/C Ratio	0.022	-	0.283	0.068	-	-
HCM Control Delay (s)	8.5	-	16.9	9.7	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	0.2	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	14	3	58	62	0
Future Vol, veh/h	10	14	3	58	62	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	15	3	63	67	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	136	67	67	0	-	0
Stage 1	67	-	-	-	-	-
Stage 2	69	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	857	997	1535	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	855	997	1535	-	-	-
Mov Cap-2 Maneuver	855	-	-	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	954	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1535	-	932	-	-
HCM Lane V/C Ratio	0.002	-	0.028	-	-
HCM Control Delay (s)	7.3	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

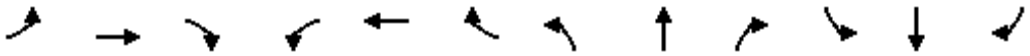
Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	9	52	5	3	73
Future Vol, veh/h	13	9	52	5	3	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	10	57	5	3	79

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	145	60	0	0	62	0
Stage 1	60	-	-	-	-	-
Stage 2	85	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	847	1005	-	-	1541	-
Stage 1	963	-	-	-	-	-
Stage 2	938	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	845	1005	-	-	1541	-
Mov Cap-2 Maneuver	845	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	936	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	904	1541	-
HCM Lane V/C Ratio	-	-	0.026	0.002	-
HCM Control Delay (s)	-	-	9.1	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	829	171	136	493	176	91	187	138	211	265	145
v/c Ratio	0.47	0.43	0.19	0.49	0.25	0.18	0.37	0.54	0.50	0.60	0.55	0.43
Control Delay	65.5	11.7	1.0	57.8	15.2	2.9	57.1	57.2	14.4	57.9	52.2	11.1
Queue Delay	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 Delay	65.5	11.7	1.0	57.8	15.2	2.9	57.1	57.2	14.4	57.9	52.2	11.1
Queue Length 50th (ft)	57	100	0	52	98	0	35	73	0	81	102	0
Queue Length 95th (ft)	87	130	9	82	155	36	61	108	57	116	138	54
Internal Link Dist (ft)		1672			696			640			959	
Turn Bay Length (ft)	210		205	220		220	170		135	260		120
Base Capacity (vph)	359	1929	891	341	1937	952	278	634	396	440	840	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.43	0.19	0.40	0.25	0.18	0.33	0.29	0.35	0.48	0.32	0.30

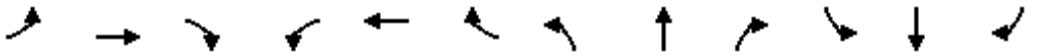
Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	738	152	121	439	157	81	166	123	188	236	129
Future Volume (vph)	121	738	152	121	439	157	81	166	123	188	236	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	136	829	171	136	493	176	91	187	138	211	265	145
RTOR Reduction (vph)	0	0	76	0	0	78	0	0	124	0	0	125
Lane Group Flow (vph)	136	829	95	136	493	98	91	187	14	211	265	20
Heavy Vehicles (%)	2%	4%	10%	8%	4%	3%	2%	2%	2%	10%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	10.1	66.6	66.6	10.4	66.9	66.9	8.6	11.8	11.8	13.2	16.4	16.4
Effective Green, g (s)	10.1	66.6	66.6	10.4	66.9	66.9	8.6	11.8	11.8	13.2	16.4	16.4
Actuated g/C Ratio	0.08	0.55	0.55	0.09	0.56	0.56	0.07	0.10	0.10	0.11	0.14	0.14
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	288	1926	814	280	1935	874	246	348	155	350	483	214
v/s Ratio Prot	0.04	c0.24		c0.04	0.14		0.03	0.05		c0.07	c0.07	
v/s Ratio Perm			0.06			0.06			0.01			0.01
v/c Ratio	0.47	0.43	0.12	0.49	0.25	0.11	0.37	0.54	0.09	0.60	0.55	0.09
Uniform Delay, d1	52.4	15.6	12.7	52.3	13.7	12.5	53.1	51.5	49.2	50.9	48.3	45.3
Progression Factor	1.16	0.66	0.23	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.7	0.3	1.3	0.3	0.3	0.9	1.6	0.2	2.9	1.3	0.2
Delay (s)	62.0	10.9	3.2	53.6	14.0	12.8	54.1	53.1	49.4	53.8	49.6	45.5
Level of Service	E	B	A	D	B	B	D	D	D	D	D	D
Approach Delay (s)		15.9			20.4			52.1			50.1	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	97	991	144	531	54	19	17	130	55	25	74
v/c Ratio	0.15	0.43	0.33	0.22	0.05	0.11	0.15	0.58	0.28	0.12	0.25
Control Delay	5.0	11.8	8.9	7.7	0.7	41.2	54.9	18.6	44.9	49.0	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	11.8	8.9	7.7	0.7	41.2	54.9	18.6	44.9	49.0	2.0
Queue Length 50th (ft)	16	181	21	81	0	13	13	0	37	17	0
Queue Length 95th (ft)	38	288	62	111	0	32	35	53	70	44	0
Internal Link Dist (ft)		1287		1672			122			245	
Turn Bay Length (ft)	200		215		190	75		100	210		200
Base Capacity (vph)	658	2315	508	2389	1099	175	333	395	201	349	407
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.43	0.28	0.22	0.05	0.11	0.05	0.33	0.27	0.07	0.18

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	846	36	128	473	48	17	15	116	49	22	66
Future Volume (vph)	86	846	36	128	473	48	17	15	116	49	22	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3518		1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.45	1.00		0.23	1.00	1.00	0.74	1.00	1.00	0.52	1.00	1.00
Satd. Flow (perm)	834	3518		433	3539	1583	1380	1863	1583	962	1863	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	97	951	40	144	531	54	19	17	130	55	25	74
RTOR Reduction (vph)	0	2	0	0	0	19	0	0	120	0	0	66
Lane Group Flow (vph)	97	989	0	144	531	35	19	17	10	55	25	8
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	83.6	76.3		87.6	78.3	78.3	12.3	9.2	9.2	20.5	13.3	13.3
Effective Green, g (s)	83.6	76.3		87.6	78.3	78.3	12.3	9.2	9.2	20.5	13.3	13.3
Actuated g/C Ratio	0.70	0.64		0.73	0.65	0.65	0.10	0.08	0.08	0.17	0.11	0.11
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	637	2236		419	2309	1032	151	142	121	212	206	175
v/s Ratio Prot	0.01	c0.28		c0.03	0.15		0.00	0.01		c0.02	0.01	
v/s Ratio Perm	0.10			0.22		0.02	0.01		0.01	c0.03		0.01
v/c Ratio	0.15	0.44		0.34	0.23	0.03	0.13	0.12	0.08	0.26	0.12	0.05
Uniform Delay, d1	5.8	11.1		6.1	8.5	7.4	48.9	51.6	51.5	42.6	48.1	47.7
Progression Factor	1.00	1.00		1.57	0.88	1.39	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.6		0.5	0.2	0.1	0.4	0.4	0.3	0.7	0.3	0.1
Delay (s)	6.0	11.7		10.1	7.7	10.3	49.2	52.0	51.8	43.3	48.3	47.8
Level of Service	A	B		B	A	B	D	D	D	D	D	D
Approach Delay (s)		11.2			8.4			51.5			46.3	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	59	51	393	494	116
Future Vol, veh/h	75	59	51	393	494	116
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	250	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	66	57	442	555	130

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	890	278	685	0	-	0
Stage 1	555	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	282	719	904	-	-	-
Stage 1	539	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	264	719	904	-	-	-
Mov Cap-2 Maneuver	264	-	-	-	-	-
Stage 1	505	-	-	-	-	-
Stage 2	697	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.6	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	904	-	264	719	-	-
HCM Lane V/C Ratio	0.063	-	0.319	0.092	-	-
HCM Control Delay (s)	9.3	-	24.9	10.5	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.3	0.3	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	3	9	82	65	8
Future Vol, veh/h	8	3	9	82	65	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	3	10	92	73	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	190	78	82	0	-	0
Stage 1	78	-	-	-	-	-
Stage 2	112	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	799	983	1515	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	913	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	793	983	1515	-	-	-
Mov Cap-2 Maneuver	793	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	913	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1515	-	837	-	-
HCM Lane V/C Ratio	0.007	-	0.015	-	-
HCM Control Delay (s)	7.4	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

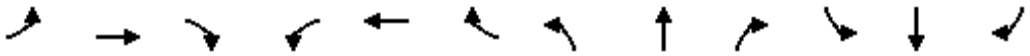
Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	6	85	14	10	58
Future Vol, veh/h	8	6	85	14	10	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	7	96	16	11	65

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	191	104	0	0	112	0
Stage 1	104	-	-	-	-	-
Stage 2	87	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	798	951	-	-	1478	-
Stage 1	920	-	-	-	-	-
Stage 2	936	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	792	951	-	-	1478	-
Mov Cap-2 Maneuver	792	-	-	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	929	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	853	1478	-
HCM Lane V/C Ratio	-	-	0.018	0.008	-
HCM Control Delay (s)	-	-	9.3	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	196	499	49	80	1104	239	273	361	165	210	118	190
v/c Ratio	0.57	0.26	0.06	0.36	0.64	0.27	0.67	0.69	0.44	0.63	0.25	0.54
Control Delay	64.2	13.5	0.3	57.2	25.9	5.0	58.7	55.1	10.2	60.4	47.0	16.2
Queue Delay	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 Delay	64.2	13.5	0.3	57.2	25.9	5.0	58.7	55.1	10.2	60.4	47.0	16.2
Queue Length 50th (ft)	81	75	1	30	324	12	105	141	0	80	43	18
Queue Length 95th (ft)	112	128	0	56	461	63	148	184	59	122	71	87
Internal Link Dist (ft)		1672			696			640			959	
Turn Bay Length (ft)	210		205	220		220	170		135	260		120
Base Capacity (vph)	379	1892	843	245	1722	883	472	752	466	365	663	427
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.26	0.06	0.33	0.64	0.27	0.58	0.48	0.35	0.58	0.18	0.44

Intersection Summary

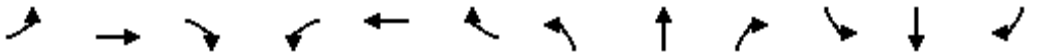
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	459	45	74	1016	220	251	332	152	193	109	175
Future Volume (vph)	180	459	45	74	1016	220	251	332	152	193	109	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	196	499	49	80	1104	239	273	361	165	210	118	190
RTOR Reduction (vph)	0	0	23	0	0	105	0	0	141	0	0	142
Lane Group Flow (vph)	196	499	26	80	1104	134	273	361	24	210	118	48
Heavy Vehicles (%)	2%	4%	10%	8%	4%	3%	2%	2%	2%	10%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	12.1	64.6	64.6	7.1	59.6	59.6	14.3	17.8	17.8	12.5	16.0	16.0
Effective Green, g (s)	12.1	64.6	64.6	7.1	59.6	59.6	14.3	17.8	17.8	12.5	16.0	16.0
Actuated g/C Ratio	0.10	0.54	0.54	0.06	0.50	0.50	0.12	0.15	0.15	0.10	0.13	0.13
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	346	1868	790	191	1723	778	409	524	234	331	471	209
v/s Ratio Prot	c0.06	0.14		0.02	c0.32		c0.08	c0.10		0.07	0.03	
v/s Ratio Perm			0.02			0.09			0.02			0.03
v/c Ratio	0.57	0.27	0.03	0.42	0.64	0.17	0.67	0.69	0.10	0.63	0.25	0.23
Uniform Delay, d1	51.4	14.9	13.0	54.5	22.3	16.6	50.6	48.5	44.2	51.6	46.6	46.5
Progression Factor	1.13	0.81	0.61	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.3	0.1	1.5	1.8	0.5	4.1	3.8	0.2	3.9	0.3	0.6
Delay (s)	60.3	12.4	8.0	55.9	24.1	17.1	54.7	52.2	44.4	55.5	46.9	47.0
Level of Service	E	B	A	E	C	B	D	D	D	E	D	D
Approach Delay (s)		24.7			24.7			51.5			50.4	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	42	535	66	1418	83	80	26	160	55	14	155
v/c Ratio	0.18	0.23	0.10	0.59	0.08	0.37	0.18	0.60	0.30	0.13	0.64
Control Delay	6.7	8.7	5.4	11.2	2.6	46.6	53.2	17.4	45.0	53.6	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	8.7	5.4	11.2	2.6	46.6	53.2	17.4	45.0	53.6	20.2
Queue Length 50th (ft)	7	81	9	238	2	54	19	0	37	11	0
Queue Length 95th (ft)	19	126	m30	280	m10	97	47	64	72	31	63
Internal Link Dist (ft)		1287		1672			122			245	
Turn Bay Length (ft)	200		215		190	75		100	210		200
Base Capacity (vph)	242	2340	662	2419	1081	221	364	438	188	312	411
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.23	0.10	0.59	0.08	0.36	0.07	0.37	0.29	0.04	0.38

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	486	6	61	1305	76	74	24	147	51	13	143
Future Volume (vph)	39	486	6	61	1305	76	74	24	147	51	13	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	3401		1770	3505	1524	1770	1863	1583	1703	1667	1524
Flt Permitted	0.14	1.00		0.44	1.00	1.00	0.65	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	218	3401		812	3505	1524	1210	1863	1583	1327	1667	1524
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	528	7	66	1418	83	80	26	160	55	14	155
RTOR Reduction (vph)	0	1	0	0	0	27	0	0	148	0	0	145
Lane Group Flow (vph)	42	534	0	66	1418	56	80	26	12	55	14	10
Heavy Vehicles (%)	18%	6%	2%	2%	3%	6%	2%	2%	2%	6%	14%	6%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	86.0	80.7		86.6	81.0	81.0	16.9	9.1	9.1	14.5	7.9	7.9
Effective Green, g (s)	86.0	80.7		86.6	81.0	81.0	16.9	9.1	9.1	14.5	7.9	7.9
Actuated g/C Ratio	0.72	0.67		0.72	0.68	0.68	0.14	0.08	0.08	0.12	0.07	0.07
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	214	2287		630	2365	1028	206	141	120	181	109	100
v/s Ratio Prot	c0.01	0.16		0.00	c0.40		c0.03	0.01		0.02	0.01	
v/s Ratio Perm	0.13			0.07		0.04	c0.03		0.01	0.02		0.01
v/c Ratio	0.20	0.23		0.10	0.60	0.05	0.39	0.18	0.10	0.30	0.13	0.10
Uniform Delay, d1	7.5	7.6		4.9	10.6	6.6	46.4	52.0	51.6	47.9	52.8	52.7
Progression Factor	1.00	1.00		1.11	0.88	1.66	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2		0.1	0.9	0.1	1.2	0.6	0.4	1.0	0.5	0.4
Delay (s)	7.9	7.9		5.4	10.3	11.0	47.6	52.6	52.0	48.9	53.3	53.2
Level of Service	A	A		A	B	B	D	D	D	D	D	D
Approach Delay (s)		7.9			10.1			50.7			52.1	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	146	62	26	706	415	48
Future Vol, veh/h	146	62	26	706	415	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	250	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	14	27	2	5	16
Mvmt Flow	159	67	28	767	451	52

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	891	226	503	0	-	0
Stage 1	451	-	-	-	-	-
Stage 2	440	-	-	-	-	-
Critical Hdwy	6.84	7.18	4.64	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.44	2.47	-	-	-
Pot Cap-1 Maneuver	282	741	901	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	616	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	273	741	901	-	-	-
Mov Cap-2 Maneuver	273	-	-	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	616	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.6	0.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	901	-	273	741	-	-
HCM Lane V/C Ratio	0.031	-	0.581	0.091	-	-
HCM Control Delay (s)	9.1	-	35	10.3	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.1	-	3.4	0.3	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	21	4	80	84	0
Future Vol, veh/h	15	21	4	80	84	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	23	4	87	91	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	186	91	91	0	-	0
Stage 1	91	-	-	-	-	-
Stage 2	95	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	803	967	1504	-	-	-
Stage 1	933	-	-	-	-	-
Stage 2	929	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	801	967	1504	-	-	-
Mov Cap-2 Maneuver	801	-	-	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	929	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1504	-	890	-	-
HCM Lane V/C Ratio	0.003	-	0.044	-	-
HCM Control Delay (s)	7.4	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

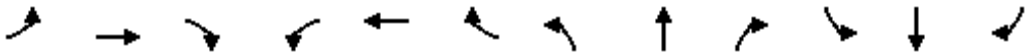
Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	9	75	5	3	102
Future Vol, veh/h	13	9	75	5	3	102
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	10	82	5	3	111

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	202	85	0	0	87	0
Stage 1	85	-	-	-	-	-
Stage 2	117	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	787	974	-	-	1509	-
Stage 1	938	-	-	-	-	-
Stage 2	908	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	785	974	-	-	1509	-
Mov Cap-2 Maneuver	785	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	906	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	853	1509	-
HCM Lane V/C Ratio	-	-	0.028	0.002	-
HCM Control Delay (s)	-	-	9.3	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	202	1231	254	202	733	246	135	274	206	304	391	216
v/c Ratio	0.59	0.72	0.31	0.60	0.42	0.27	0.52	0.62	0.55	0.75	0.63	0.48
Control Delay	60.1	22.8	8.0	59.0	21.3	3.3	60.8	55.9	12.4	62.5	49.9	8.9
Queue Delay	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 Delay	60.1	22.8	8.0	59.0	21.3	3.3	60.8	55.9	12.4	62.5	49.9	8.9
Queue Length 50th (ft)	85	165	8	78	188	0	52	107	2	117	149	0
Queue Length 95th (ft)	m120	365	99	114	265	45	85	145	67	164	189	61
Internal Link Dist (ft)		1672			696			640			959	
Turn Bay Length (ft)	210		205	220		220	170		135	260		120
Base Capacity (vph)	376	1716	822	359	1725	903	274	634	450	438	840	537
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.72	0.31	0.56	0.42	0.27	0.49	0.43	0.46	0.69	0.47	0.40

Intersection Summary

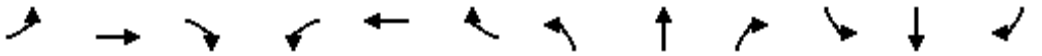
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	1096	226	180	652	219	120	244	183	271	348	192
Future Volume (vph)	180	1096	226	180	652	219	120	244	183	271	348	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3471	1468	3242	3471	1568	3433	3539	1583	3183	3539	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	202	1231	254	202	733	246	135	274	206	304	391	216
RTOR Reduction (vph)	0	0	96	0	0	124	0	0	178	0	0	178
Lane Group Flow (vph)	202	1231	158	202	733	122	135	274	28	304	391	38
Heavy Vehicles (%)	2%	4%	10%	8%	4%	3%	2%	2%	2%	10%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	12.1	59.3	59.3	12.4	59.6	59.6	9.1	15.0	15.0	15.3	21.2	21.2
Effective Green, g (s)	12.1	59.3	59.3	12.4	59.6	59.6	9.1	15.0	15.0	15.3	21.2	21.2
Actuated g/C Ratio	0.10	0.49	0.49	0.10	0.50	0.50	0.08	0.12	0.12	0.13	0.18	0.18
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	346	1715	725	335	1723	778	260	442	197	405	625	277
v/s Ratio Prot	0.06	c0.35		c0.06	0.21		0.04	0.08		c0.10	c0.11	
v/s Ratio Perm			0.11			0.08			0.02			0.02
v/c Ratio	0.58	0.72	0.22	0.60	0.43	0.16	0.52	0.62	0.14	0.75	0.63	0.14
Uniform Delay, d1	51.5	23.8	17.2	51.4	19.3	16.5	53.3	49.8	46.8	50.5	45.7	41.7
Progression Factor	1.07	0.82	1.23	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	2.0	0.5	3.0	0.8	0.4	1.8	2.6	0.3	7.6	2.0	0.2
Delay (s)	56.9	21.5	21.7	54.5	20.0	16.9	55.1	52.4	47.1	58.1	47.7	41.9
Level of Service	E	C	C	D	C	B	E	D	D	E	D	D
Approach Delay (s)		25.8			25.3			51.2			49.8	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	128	1472	213	790	80	28	25	193	82	37	101
v/c Ratio	0.25	0.70	0.62	0.33	0.07	0.16	0.20	0.67	0.42	0.20	0.36
Control Delay	6.5	20.9	35.3	8.5	1.3	42.5	54.7	19.2	49.3	51.9	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.5	20.9	35.3	8.5	1.3	42.5	54.7	19.2	49.3	51.9	7.0
Queue Length 50th (ft)	24	414	122	120	0	18	19	0	55	27	0
Queue Length 95th (ft)	46	598	202	146	3	43	45	67	98	59	25
Internal Link Dist (ft)		1287		1672			122			245	
Turn Bay Length (ft)	200		215		190	75		100	210		200
Base Capacity (vph)	511	2110	358	2364	1089	178	333	442	200	349	407
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.70	0.59	0.33	0.07	0.16	0.08	0.44	0.41	0.11	0.25

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	1257	53	190	703	71	25	22	172	73	33	90
Future Volume (vph)	114	1257	53	190	703	71	25	22	172	73	33	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3518		1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.35	1.00		0.09	1.00	1.00	0.73	1.00	1.00	0.57	1.00	1.00
Satd. Flow (perm)	657	3518		164	3539	1583	1365	1863	1583	1064	1863	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	128	1412	60	213	790	80	28	25	193	82	37	101
RTOR Reduction (vph)	0	2	0	0	0	28	0	0	178	0	0	91
Lane Group Flow (vph)	128	1470	0	213	790	52	28	25	15	82	37	10
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	77.9	70.1		90.7	78.4	78.4	13.1	9.1	9.1	18.5	11.8	11.8
Effective Green, g (s)	77.9	70.1		90.7	78.4	78.4	13.1	9.1	9.1	18.5	11.8	11.8
Actuated g/C Ratio	0.65	0.58		0.76	0.65	0.65	0.11	0.08	0.08	0.15	0.10	0.10
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	498	2055		339	2312	1034	162	141	120	203	183	155
v/s Ratio Prot	0.02	c0.42		c0.08	0.22		0.01	0.01		c0.02	0.02	
v/s Ratio Perm	0.15			0.39		0.03	0.01		0.01	c0.04		0.01
v/c Ratio	0.26	0.72		0.63	0.34	0.05	0.17	0.18	0.12	0.40	0.20	0.06
Uniform Delay, d1	8.0	17.8		23.3	9.3	7.5	48.4	51.9	51.7	45.0	49.8	49.1
Progression Factor	1.00	1.00		1.69	0.85	0.80	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	2.2		3.3	0.4	0.1	0.5	0.6	0.5	1.3	0.5	0.2
Delay (s)	8.2	20.0		42.8	8.2	6.1	48.9	52.5	52.2	46.4	50.3	49.3
Level of Service	A	B		D	A	A	D	D	D	D	D	D
Approach Delay (s)		19.0			14.9			51.8			48.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	102	77	59	584	734	156
Future Vol, veh/h	102	77	59	584	734	156
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	250	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	115	87	66	656	825	175

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1285	413	1000	0	-	0
Stage 1	825	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	156	588	688	-	-	-
Stage 1	391	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	141	588	688	-	-	-
Mov Cap-2 Maneuver	141	-	-	-	-	-
Stage 1	353	-	-	-	-	-
Stage 2	602	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	58.7	1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	688	-	141	588	-	-
HCM Lane V/C Ratio	0.096	-	0.813	0.147	-	-
HCM Control Delay (s)	10.8	-	93.8	12.2	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q(veh)	0.3	-	5.1	0.5	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	4	13	112	88	12
Future Vol, veh/h	12	4	13	112	88	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	4	15	126	99	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	262	106	112	0	-	0
Stage 1	106	-	-	-	-	-
Stage 2	156	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	727	948	1478	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	719	948	1478	-	-	-
Mov Cap-2 Maneuver	719	-	-	-	-	-
Stage 1	908	-	-	-	-	-
Stage 2	872	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1478	-	765	-	-
HCM Lane V/C Ratio	0.01	-	0.024	-	-
HCM Control Delay (s)	7.5	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	6	119	14	10	82
Future Vol, veh/h	8	6	119	14	10	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	7	134	16	11	92

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	256	142	0	0	150	0
Stage 1	142	-	-	-	-	-
Stage 2	114	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	733	906	-	-	1431	-
Stage 1	885	-	-	-	-	-
Stage 2	911	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	727	906	-	-	1431	-
Mov Cap-2 Maneuver	727	-	-	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	904	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	794	1431	-
HCM Lane V/C Ratio	-	-	0.02	0.008	-
HCM Control Delay (s)	-	-	9.6	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

LANE SUMMARY

Site: 4 [Arborwalk Boulevard & Arborway Drive (Site Folder: General)]

AM Peak Hour
Site Category: Existing Conditions
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Access B													
Lane 1[d]	3	2.0	1154	0.003	100	2.1	LOS A	0.0	0.3	Full	1600	0.0	0.0
Approach	3	2.0		0.003		2.1	LOS A	0.0	0.3				
East: Arborwalk Boulevard													
Lane 1[d]	40	2.0	1283	0.031	100	0.2	LOS A	0.1	3.3	Full	1600	0.0	0.0
Approach	40	2.0		0.031		0.2	LOS A	0.1	3.3				
North: Arborway Drive													
Lane 1[d]	134	2.0	1335	0.100	100	2.7	LOS A	0.5	11.6	Full	1600	0.0	0.0
Approach	134	2.0		0.100		2.7	LOS A	0.5	11.6				
West: Arborwalk Boulevard													
Lane 1[d]	61	2.0	1225	0.050	100	0.4	LOS A	0.2	5.4	Full	1600	0.0	0.0
Approach	61	2.0		0.050		0.4	LOS A	0.2	5.4				
Intersection	238	2.0		0.100		1.7	LOS A	0.5	11.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Access B

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	1	1	3	2.0	1154	0.003	100	NA	NA
Approach	1	1	1	3	2.0		0.003			

East: Arborwalk Boulevard

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	11	28	40	2.0	1283	0.031	100	NA	NA
Approach	1	11	28	40	2.0		0.031			

North: Arborway Drive

Mov. From N	L2	T1	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	E	S	W			veh/h	v/c	%	%	No.
Lane 1	93	1	39	134	2.0	1335	0.100	100	NA	NA
Approach	93	1	39	134	2.0		0.100			
West: Arborwalk Boulevard										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL %	Ov. Lane No.
Lane 1	49	11	1	61	2.0	1225	0.050	100	NA	NA
Approach	49	11	1	61	2.0		0.050			
	Total	%HV	Deg.Satn (v/c)							
Intersection	238	2.0	0.100							

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Access B Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
East Exit: Arborwalk Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
North Exit: Arborway Drive Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: Arborwalk Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 4 [Arborwalk Boulevard & Arborway Drive (Site Folder: General)]

PM Peak Hour
Site Category: Existing Conditons
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Access B													
Lane 1[d]	3	1.7	1173	0.003	100	2.1	LOS A	0.0	0.3	Full	1600	0.0	0.0
Approach	3	1.7		0.003		2.1	LOS A	0.0	0.3				
East: Arborwalk Boulevard													
Lane 1[d]	108	2.0	1296	0.083	100	0.2	LOS A	0.4	9.4	Full	1600	0.0	0.0
Approach	108	2.0		0.083		0.2	LOS A	0.4	9.4				
North: Arborway Drive													
Lane 1[d]	95	2.0	1308	0.072	100	2.8	LOS A	0.3	8.1	Full	1600	0.0	0.0
Approach	95	2.0		0.072		2.8	LOS A	0.3	8.1				
West: Arborwalk Boulevard													
Lane 1[d]	76	2.0	1261	0.060	100	0.3	LOS A	0.3	6.6	Full	1600	0.0	0.0
Approach	76	2.0		0.060		0.3	LOS A	0.3	6.6				
Intersection	282	2.0		0.083		1.1	LOS A	0.4	9.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Access B

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	1	1	3	1.7	1173	0.003	100	NA	NA
Approach	1	1	1	3	1.7		0.003			

East: Arborwalk Boulevard

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	30	76	108	2.0	1296	0.083	100	NA	NA
Approach	1	30	76	108	2.0		0.083			

North: Arborway Drive

Mov. From N	L2	T1	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	E	S	W			veh/h	v/c	%	%	No.
Lane 1	65	1	28	95	2.0	1308	0.072	100	NA	NA
Approach	65	1	28	95	2.0		0.072			

West: Arborwalk Boulevard

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL %	Ov. Lane No.
Lane 1	39	36	1	76	2.0	1261	0.060	100	NA	NA
Approach	39	36	1	76	2.0		0.060			

	Total	%HV	Deg.Satn (v/c)
Intersection	282	2.0	0.083

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Access B Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
East Exit: Arborwalk Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
North Exit: Arborway Drive Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: Arborwalk Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 4 [Arborwalk Boulevard & Arborway Drive (Site Folder: General)]

AM Peak Hour
Site Category: Existing plus Development Conditions
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Access B													
Lane 1[d]	76	2.0	1142	0.067	100	2.4	LOS A	0.3	7.2	Full	1600	0.0	0.0
Approach	76	2.0		0.067		2.4	LOS A	0.3	7.2				
East: Arborwalk Boulevard													
Lane 1[d]	61	2.0	1266	0.048	100	0.3	LOS A	0.2	5.2	Full	1600	0.0	0.0
Approach	61	2.0		0.048		0.3	LOS A	0.2	5.2				
North: Arborway Drive													
Lane 1[d]	134	2.0	1289	0.104	100	2.9	LOS A	0.5	11.9	Full	1600	0.0	0.0
Approach	134	2.0		0.104		2.9	LOS A	0.5	11.9				
West: Arborwalk Boulevard													
Lane 1[d]	74	2.0	1203	0.061	100	0.5	LOS A	0.3	6.7	Full	1600	0.0	0.0
Approach	74	2.0		0.061		0.5	LOS A	0.3	6.7				
Intersection	345	2.0		0.104		1.8	LOS A	0.5	11.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Access B

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	14	1	61	76	2.0	1142	0.067	100	NA	NA
Approach	14	1	61	76	2.0		0.067			

East: Arborwalk Boulevard

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	18	14	28	61	2.0	1266	0.048	100	NA	NA
Approach	18	14	28	61	2.0		0.048			

North: Arborway Drive

Mov. From N	L2	T1	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	E	S	W			veh/h	v/c	%	%	No.
Lane 1	93	1	39	134	2.0	1289	0.104	100	NA	NA
Approach	93	1	39	134	2.0		0.104			

West: Arborwalk Boulevard

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	49	21	4	74	2.0	1203	0.061	100	NA	NA
Approach	49	21	4	74	2.0		0.061			

	Total	%HV	Deg.Satn (v/c)
Intersection	345	2.0	0.104

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Access B Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									
East Exit: Arborwalk Boulevard Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									
North Exit: Arborway Drive Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									
West Exit: Arborwalk Boulevard Merge Type: **Not Applied**											
Full Length Lane	1	Merge Analysis not applied.									

LANE SUMMARY

Site: 4 [Arborwalk Boulevard & Arborway Drive (Site Folder: General)]

PM Peak Hour
Site Category: Existing plus Development Conditions
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Access B													
Lane 1[d]	49	2.0	1161	0.042	100	2.3	LOS A	0.2	4.5	Full	1600	0.0	0.0
Approach	49	2.0		0.042		2.3	LOS A	0.2	4.5				
East: Arborwalk Boulevard													
Lane 1[d]	182	2.0	1284	0.141	100	0.2	LOS A	0.7	16.9	Full	1600	0.0	0.0
Approach	182	2.0		0.141		0.2	LOS A	0.7	16.9				
North: Arborway Drive													
Lane 1[d]	95	2.0	1200	0.079	100	3.1	LOS A	0.3	8.7	Full	1600	0.0	0.0
Approach	95	2.0		0.079		3.1	LOS A	0.3	8.7				
West: Arborwalk Boulevard													
Lane 1[d]	98	2.0	1181	0.083	100	0.6	LOS A	0.4	9.1	Full	1600	0.0	0.0
Approach	98	2.0		0.083		0.6	LOS A	0.4	9.1				
Intersection	423	2.0		0.141		1.2	LOS A	0.7	16.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Access B

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	10	1	38	49	2.0	1161	0.042	100	NA	NA
Approach	10	1	38	49	2.0		0.042			

East: Arborwalk Boulevard

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	64	41	76	182	2.0	1284	0.141	100	NA	NA
Approach	64	41	76	182	2.0		0.141			

North: Arborway Drive

Mov. From N	L2	T1	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	E	S	W			veh/h	v/c	%	%	No.
Lane 1	65	1	28	95	2.0	1200	0.079	100	NA	NA
Approach	65	1	28	95	2.0		0.079			

West: Arborwalk Boulevard

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL %	Ov. Lane No.
Lane 1	39	42	16	98	2.0	1181	0.083	100	NA	NA
Approach	39	42	16	98	2.0		0.083			

	Total	%HV	Deg.Satn (v/c)
Intersection	423	2.0	0.141

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Access B Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
East Exit: Arborwalk Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
North Exit: Arborway Drive Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: Arborwalk Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 4 [Arborwalk Boulevard & Arborway Drive (Site Folder: General)]

AM Peak Hour
Site Category: Future Conditions
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Access B													
Lane 1[d]	76	2.0	1056	0.072	100	2.8	LOS A	0.3	7.7	Full	1600	0.0	0.0
Approach	76	2.0		0.072		2.8	LOS A	0.3	7.7				
East: Arborwalk Boulevard													
Lane 1[d]	80	2.0	1235	0.065	100	0.4	LOS A	0.3	7.1	Full	1600	0.0	0.0
Approach	80	2.0		0.065		0.4	LOS A	0.3	7.1				
North: Arborway Drive													
Lane 1[d]	198	2.0	1281	0.154	100	2.9	LOS A	0.7	18.7	Full	1600	0.0	0.0
Approach	198	2.0		0.154		2.9	LOS A	0.7	18.7				
West: Arborwalk Boulevard													
Lane 1[d]	103	2.0	1147	0.090	100	0.7	LOS A	0.4	9.9	Full	1600	0.0	0.0
Approach	103	2.0		0.090		0.7	LOS A	0.4	9.9				
Intersection	458	2.0		0.154		1.9	LOS A	0.7	18.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Access B

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	14	1	61	76	2.0	1056	0.072	100	NA	NA
Approach	14	1	61	76	2.0		0.072			

East: Arborwalk Boulevard

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	18	20	42	80	2.0	1235	0.065	100	NA	NA
Approach	18	20	42	80	2.0		0.065			

North: Arborway Drive

Mov. From N	L2	T1	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	E	S	W			veh/h	v/c	%	%	No.
Lane 1	139	1	58	198	2.0	1281	0.154	100	NA	NA
Approach	139	1	58	198	2.0		0.154			
West: Arborwalk Boulevard										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	73	26	4	103	2.0	1147	0.090	100	NA	NA
Approach	73	26	4	103	2.0		0.090			
	Total	%HV	Deg.Satn (v/c)							
Intersection	458	2.0		0.154						

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Access B Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
East Exit: Arborwalk Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
North Exit: Arborway Drive Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: Arborwalk Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 4 [Arborwalk Boulevard & Arborway Drive (Site Folder: General)]

PM Peak Hour
Site Category: Future Conditons
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Access B													
Lane 1[d]	49	2.0	1082	0.045	100	2.7	LOS A	0.2	4.7	Full	1600	0.0	0.0
Approach	49	2.0		0.045		2.7	LOS A	0.2	4.7				
East: Arborwalk Boulevard													
Lane 1[d]	234	2.0	1258	0.186	100	0.3	LOS A	0.9	23.1	Full	1600	0.0	0.0
Approach	234	2.0		0.186		0.3	LOS A	0.9	23.1				
North: Arborway Drive													
Lane 1[d]	140	2.0	1181	0.119	100	3.2	LOS A	0.5	13.5	Full	1600	0.0	0.0
Approach	140	2.0		0.119		3.2	LOS A	0.5	13.5				
West: Arborwalk Boulevard													
Lane 1[d]	139	2.0	1143	0.122	100	0.7	LOS A	0.5	13.8	Full	1600	0.0	0.0
Approach	139	2.0		0.122		0.7	LOS A	0.5	13.8				
Intersection	562	2.0		0.186		1.4	LOS A	0.9	23.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Access B

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	10	1	38	49	2.0	1082	0.045	100	NA	NA
Approach	10	1	38	49	2.0		0.045			

East: Arborwalk Boulevard

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	64	57	113	234	2.0	1258	0.186	100	NA	NA
Approach	64	57	113	234	2.0		0.186			

North: Arborway Drive

Mov. From N	L2	T1	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	E	S	W			veh/h	v/c	%	%	No.
Lane 1	97	1	42	140	2.0	1181	0.119	100	NA	NA
Approach	97	1	42	140	2.0		0.119			

West: Arborwalk Boulevard

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	59	60	21	139	2.0	1143	0.122	100	NA	NA
Approach	59	60	21	139	2.0		0.122			

	Total	%HV	Deg.Satn (v/c)
Intersection	562	2.0	0.186

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Access B Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
East Exit: Arborwalk Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
North Exit: Arborway Drive Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: Arborwalk Boulevard Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

Appendix F: Signal Warrant Analysis

SIGNAL WARRANTS ANALYSIS

Ward Road and Arborwalk Boulevard
Existing (2022) Conditions

Kimley»Horn

LOCATION: Lee's Summit
COUNTY: Jackson
REF. POINT:
DATE: 2/9/2023
OPERATOR: KH

Speed	Approach Description		Lanes
45	Major App1:	Northbound Ward Road	
45	Major App3:	Southbound Ward Road	
30	Minor App2:	Eastbound Arborwalk Boulevard	
	Minor App4:		

0.70 FACTOR USED? yes
POPULATION < 10,000? no
EXISTING SIGNAL ? yes

THRESHOLDS 1A/1B:				420	630		140	70		140	70		
HOUR	MAJOR APP. 1	MAJOR APP. 3	TOTAL 1+3	MAJOR 1A	MAJOR 1B	MINOR APP. 2	MINOR 2 1A	MINOR 2 1B	MINOR APP. 4	MINOR 4 1A	MINOR 4 1B	**MAJ & MIN 1A**	**MAJ & MIN 1B**
0:00 - 1:00			0										
1:00 - 2:00			0										
2:00 - 3:00			0										
3:00 - 4:00			0										
4:00 - 5:00			0										
5:00 - 6:00			0										
6:00 - 7:00	239	100	339			64							
7:00 - 8:00	496	304	800	X	X	99		X					**X**
8:00 - 9:00	396	218	614	X		60							
9:00 - 10:00	257	200	457	X		35							
10:00 - 11:00	215	231	446	X		54							
11:00 - 12:00	226	232	458	X		45							
12:00 - 13:00	229	279	508	X		57							
13:00 - 14:00	240	282	522	X		41							
14:00 - 15:00	302	468	770	X	X	49							
15:00 - 16:00	325	485	810	X	X	62							
16:00 - 17:00	365	470	835	X	X	82		X					**X**
17:00 - 18:00	422	557	979	X	X	75		X					**X**
18:00 - 19:00	262	372	634	X	X	59							
19:00 - 20:00			0										
20:00 - 21:00			0										
21:00 - 22:00			0										
22:00 - 23:00			0										
23:00 - 24:00			0										

	Met (Hr)	Required (Hr)	
Warrant 1a	0	8	Not satisfied
Warrant 1b	3	8	Not satisfied
Warrant 2	0	4	Not satisfied
Warrant 3	0	1	Not satisfied
Warrant 7	0	8	Not satisfied

LOCATION: Lee's Summit
COUNTY: Jackson
REF. POINT:
DATE: 2/9/2023
OPERATOR: KH

Speed	Approach Description		Lanes
45	Major App1:	Northbound Ward Road	
45	Major App3:	Southbound Ward Road	
30	Minor App2:	Eastbound Arborwalk Boulevard	
	Minor App4:		

0.70 FACTOR USED? yes
POPULATION < 10,000? no
EXISTING SIGNAL ? yes

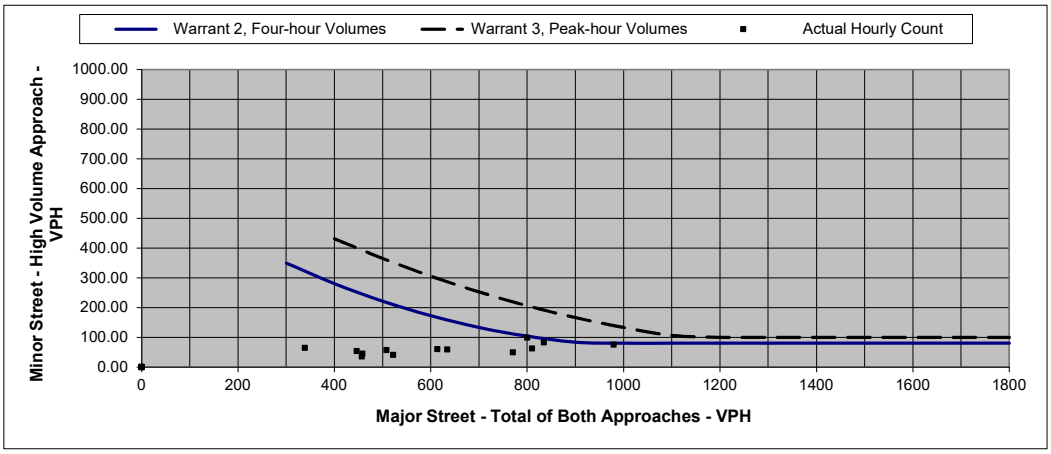


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

SIGNAL WARRANTS ANALYSIS

Ward Road and Arborwalk Boulevard
Existing + Development Conditions

Kimley»Horn

LOCATION: Lee's Summit
COUNTY: Jackson
REF. POINT:
DATE: 2/9/2023
OPERATOR: KH

Speed	Approach Description		Lanes
45	Major App1:	Northbound Ward Road	
45	Major App3:	Southbound Ward Road	
30	Minor App2:	Eastbound Arborwalk Boulevard	
	Minor App4:		

0.70 FACTOR USED? yes
POPULATION < 10,000? no
EXISTING SIGNAL ? yes

THRESHOLDS 1A/1B: 420 630 140 70 140 70

HOUR	MAJOR APP. 1	MAJOR APP. 3	TOTAL 1+3	MAJOR 1A	MAJOR 1B	MINOR APP. 2	MINOR 2 1A	MINOR 2 1B	MINOR APP. 4	MINOR 4 1A	MINOR 4 1B	MAJ & MIN 1A	MAJ & MIN 1B
0:00 - 1:00			0										
1:00 - 2:00			0										
2:00 - 3:00			0										
3:00 - 4:00			0										
4:00 - 5:00			0										
5:00 - 6:00			0										
6:00 - 7:00	244	105	349			114		X					
7:00 - 8:00	503	311	815	X	X	178	X	X				X	X
8:00 - 9:00	407	229	637	X	X	122		X					X
9:00 - 10:00	268	211	478	X		71		X					
10:00 - 11:00	224	240	464	X		89		X					
11:00 - 12:00	240	246	486	X		79		X					
12:00 - 13:00	245	295	541	X		87		X					
13:00 - 14:00	255	297	551	X		73		X					
14:00 - 15:00	322	488	811	X	X	85		X					X
15:00 - 16:00	350	510	860	X	X	101		X					X
16:00 - 17:00	402	507	909	X	X	123		X					X
17:00 - 18:00	464	599	1062	X	X	131		X					X
18:00 - 19:00	297	407	705	X	X	108		X					X
19:00 - 20:00			0										
20:00 - 21:00			0										
21:00 - 22:00			0										
22:00 - 23:00			0										
23:00 - 24:00			0										

	Met (Hr)	Required (Hr)	
Warrant 1a	1	8	Not satisfied
Warrant 1b	7	8	Not satisfied
Warrant 2	3	4	Not satisfied
Warrant 3	0	1	Not satisfied
Warrant 7	0	8	Not satisfied

LOCATION: Lee's Summit
COUNTY: Jackson
REF. POINT:
DATE: 2/9/2023
OPERATOR: KH

Speed	Approach Description		Lanes
45	Major App1:	Northbound Ward Road	
45	Major App3:	Southbound Ward Road	
30	Minor App2:	Eastbound Arborwalk Boulevard	
	Minor App4:		

0.70 FACTOR USED? yes
POPULATION < 10,000? no
EXISTING SIGNAL ? yes

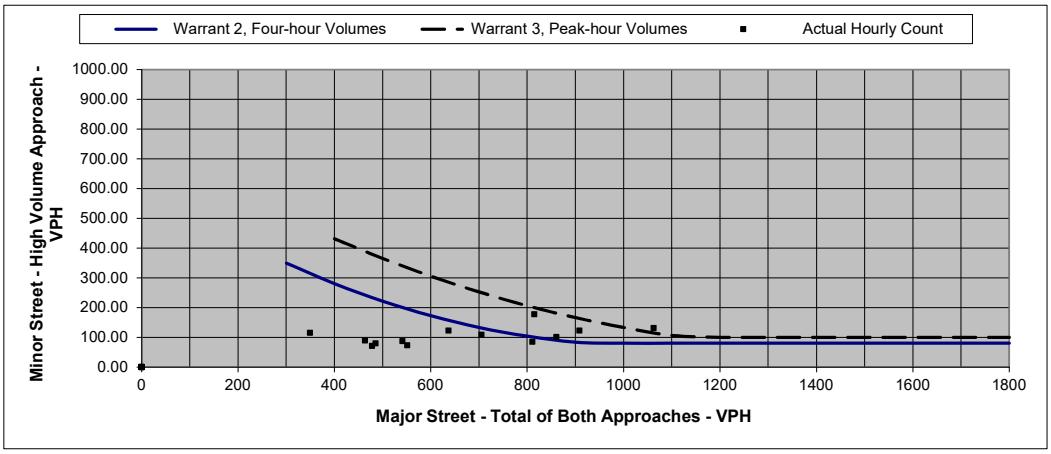


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

SIGNAL WARRANTS ANALYSIS

Ward Road and Arborwalk Boulevard
Future Conditions

Kimley»Horn

LOCATION: Lee's Summit
COUNTY: Jackson
REF. POINT:
DATE: 2/9/2023
OPERATOR: KH

Speed	Approach Description	Lanes
45	Major App1:	Northbound Ward Road
45	Major App3:	Southbound Ward Road
30	Minor App2:	Eastbound Arborwalk Boulevard
	Minor App4:	

0.70 FACTOR USED? yes
POPULATION < 10,000? no
EXISTING SIGNAL ? yes

THRESHOLDS 1A/1B:				420	630		140	70		140	70		
HOUR	MAJOR APP. 1	MAJOR APP. 3	TOTAL 1+3	MAJOR 1A	MAJOR 1B	MINOR APP. 2	MINOR 2 1A	MINOR 2 1B	MINOR APP. 4	MINOR 4 1A	MINOR 4 1B	**MAJ & MIN 1A**	**MAJ & MIN 1B**
0:00 - 1:00			0										
1:00 - 2:00			0										
2:00 - 3:00			0										
3:00 - 4:00			0										
4:00 - 5:00			0										
5:00 - 6:00			0										
6:00 - 7:00	353	151	504	X		144	X	X				**X**	
7:00 - 8:00	730	450	1180	X	X	223	X	X				**X**	**X**
8:00 - 9:00	588	329	917	X	X	150	X	X				**X**	**X**
9:00 - 10:00	385	302	687	X	X	87		X					**X**
10:00 - 11:00	322	345	667	X	X	114		X					**X**
11:00 - 12:00	343	352	695	X	X	100		X					**X**
12:00 - 13:00	350	423	773	X	X	113		X					**X**
13:00 - 14:00	364	425	790	X	X	92		X					**X**
14:00 - 15:00	460	702	1163	X	X	107		X					**X**
15:00 - 16:00	499	732	1230	X	X	129		X					**X**
16:00 - 17:00	569	722	1290	X	X	160	X	X				**X**	**X**
17:00 - 18:00	656	853	1510	X	X	165	X	X				**X**	**X**
18:00 - 19:00	417	577	995	X	X	135		X					**X**
19:00 - 20:00			0										
20:00 - 21:00			0										
21:00 - 22:00			0										
22:00 - 23:00			0										
23:00 - 24:00			0										

	Met (Hr)	Required (Hr)	
Warrant 1a	5	8	Not satisfied
Warrant 1b	**12**	8	**Satisfied**
Warrant 2	**7**	4	**Satisfied**
Warrant 3	**5**	1	**Satisfied**
Warrant 7	0	8	Not satisfied

LOCATION: Lee's Summit
COUNTY: Jackson
REF. POINT:
DATE: 2/9/2023
OPERATOR: KH

Speed	Approach Description	Lanes
45	Major App1:	Northbound Ward Road
45	Major App3:	Southbound Ward Road
30	Minor App2:	Eastbound Arborwalk Boulevard
	Minor App4:	

0.70 FACTOR USED? yes
POPULATION < 10,000? no
EXISTING SIGNAL ? yes

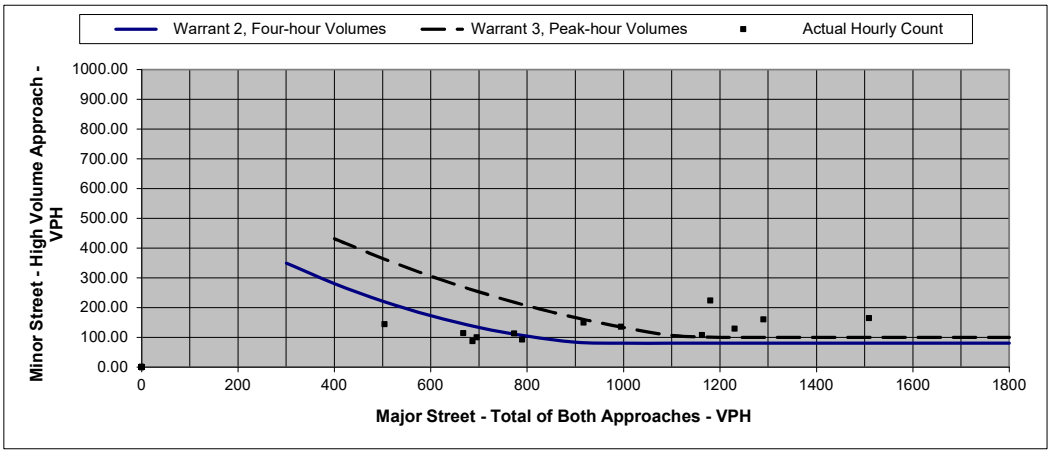


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds