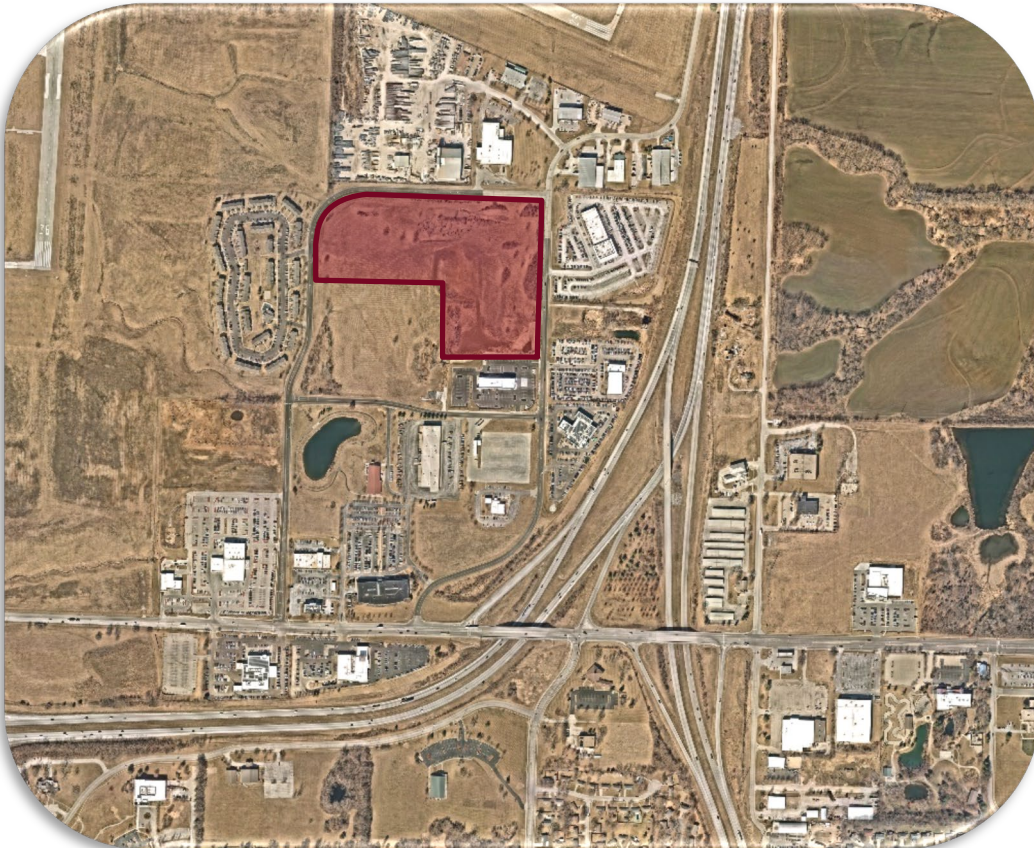


Traffic Impact Study

Town Centre Industrial

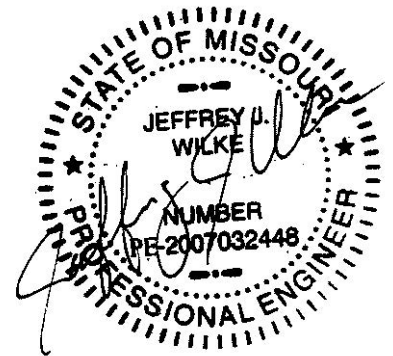


LEE'S SUMMIT, MISSOURI

AUGUST 2022

Prepared By:

Kimley»Horn



8/18/2022

Contents

1.0 INTRODUCTION.....	5
1.1 REPORT PURPOSE AND OBJECTIVES	5
2.0 EXISTING CONDITIONS	6
2.1 STREET NETWORK.....	6
2.2 STUDY AREA.....	7
2.3 SURROUNDING LAND USES	7
3.0 PROPOSED DEVELOPMENT	8
3.1 SITE DESCRIPTION.....	8
3.2 SITE CIRCULATION	8
3.3 TRIP GENERATION	8
3.4 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT	9
4.0 FUTURE CONDITIONS	10
4.1 BACKGROUND GROWTH.....	10
4.2 FUTURE ROADWAY IMPROVEMENTS	10
5.0 ACCESS MANAGEMENT	11
5.1 ACCESS SPACING	11
5.2 DRIVEWAY THROAT LENGTH	11
5.3 TURN LANE ANALYSIS.....	12
6.0 INTERSECTION CAPACITY ANALYSIS.....	13
6.1 LEVEL OF SERVICE OVERVIEW.....	13
6.2 EXISTING LEVEL OF SERVICE ANALYSIS	14
6.3 EXISTING PLUS DEVELOPMENT LEVEL OF SERVICE ANALYSIS	14
6.4 FUTURE LEVEL OF SERVICE ANALYSIS	15
7.0 CONCLUSIONS AND RECOMMENDATIONS.....	17
Appendix.....	18

TABLES

TABLE 1: TRIP GENERATION	8
TABLE 2: TRIP DISTRIBUTION.....	9
TABLE 3: LEVEL OF SERVICE	13
TABLE 4: EXISTING (YEAR 2022) PEAK HOUR CONDITIONS	14
TABLE 5: EXISTING PLUS DEVELOPMENT PEAK HOUR CONDITIONS	15
TABLE 6: FUTURE (YEAR 2042) PEAK HOUR CONDITIONS	16

EXHIBITS (SEE APPENDIX A)

- EXHIBIT 1: PROJECT SITE LOCATION AND STUDY AREA
- EXHIBIT 2: EXISTING GEOMETRY AND INTERSECTION CONTROL
- EXHIBIT 3: EXISTING CONDITIONS PEAK HOUR TRAFFIC VOLUMES
- EXHIBIT 4: TRIP DISTRIBUTION
- EXHIBIT 5: TOTAL TRIP ASSIGNMENT
- EXHIBIT 6: EXISTING PLUS PROPOSED PEAK HOUR TRAFFIC PROJECTIONS
- EXHIBIT 7: FUTURE CONDITIONS PEAK HOUR TRAFFIC PROJECTIONS

1.0 INTRODUCTION

This report serves as the traffic analysis for the Town Centre Industrial development, located on the southeast corner of Town Centre Boulevard and Independence Avenue 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* and the Missouri Department of Transportation (MoDOT) *Engineering Policy Guide*. 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 as well as existing year (2022) and horizon year (2042) 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.
- Review of the site plan for compliance with the Lee's Summit *Access Management Code*.
- 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.
- 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 Town Centre Industrial 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 STREET NETWORK

The existing street network within the study area includes Colbern Road, Town Centre Boulevard, Independence Avenue, and Town Centre Drive. The following provides a summary of the existing street network within the study area:

Colbern Road is an east-west roadway that runs south of the proposed development site. Through the study area, Colbern Road is a five-lane undivided roadway with curbs and gutters. There is a shared-use path along the south side of the road and a sidewalk along the north side. The sidewalk and shared-use path end approximately 600 feet west of Town Centre Boulevard. According to the Lee's Summit Thoroughfare Master Plan, Colbern Road is classified as a Major Arterial. The posted speed limit is 40 miles per hour (mph) east of Town Centre Boulevard and 45 mph west of Town Centre Boulevard.

Colbern Road provides access to the regional highway system with partial diamond interchanges at both Interstate 470 and Route 291 to the east of the development site. The other half of the partial diamond interchange with I-470 is accessed from Douglas Street, just south of Colbern Road to the west of the site.

Town Centre Boulevard runs north-south along the west edge of the site then turns 90-degrees to run east-west along the north edge of the site. The roadway is generally 40 feet wide, measured between the backs of curbs. Much of the roadway is marked as a three-lane roadway with a center two-way left-turn lane. South of Town Centre Drive, the pavement markings and lane use vary, and the road widens for two southbound left-turn lanes at the signalized intersection with Colbern Road. There are some sections of sidewalk along Town Centre Boulevard, but they are not continuous. The roadway is classified as an Industrial/Commercial Collector with a posted speed limit of 35 mph.

Independence Avenue is a north-south Industrial/Commercial Collector that runs along the east edge of the site. The roadway is 36 feet wide, measured between the backs of curbs. Most of the roadway is marked with two lanes. There are several sections of sidewalk along Independence Avenue, but most of the roadway has no sidewalks. The posted speed limit is 35 mph. North of the site, the roadway curves around the end of the runway at the Lee's Summit Municipal Airport. South of the site, Independence Avenue ends in a T-intersection at Colbern Road, where only right-turns are permitted.

Town Centre Drive is an east-west local street south of the site that runs between Town Centre Boulevard and Independence Avenue. The roadway has two lanes but widens for westbound left- and right-turn lanes at the intersection with Town Centre Boulevard. There are some sections of sidewalk along each side of the roadway, however they are not continuous. There is no posted speed limit along Town Centre Drive.

2.2 STUDY AREA

Through discussion with City staff, the following intersections were included within the study area for the traffic analysis. The list provides the existing intersection control for each of the study intersections.

- Independence Avenue & Town Centre Boulevard (Side Street Stop)
- Independence Avenue & Town Centre Drive (Side Street Stop)
- Town Centre Boulevard & Town Centre Drive (Side Street Stop)
- Colbern Road & Town Centre Boulevard (Signalized)

Turning Movement Counts (TMCs) were collected the study intersections on Thursday, August 4, 2022. The turning movement count data collected is included in **Appendix B**. The AM peak hour occurred between 7:15 AM and 8:15 AM, and the PM peak hour occurred between 4:30 PM and 5:30 PM. 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**.

2.3 SURROUNDING LAND USES

The development site currently consists of approximately 22 acres of undeveloped land. The site is surrounded by a variety of land uses. To the west of the site, across Town Centre Boulevard, is the Crossroads of Lee's Summit Apartments. North of the site across Town Centre Boulevard is a business park with industrial and manufacturing land uses. Farther to the north and west of the site is the Lee's Summit Municipal Airport. East of the site across Independence Avenue there are several car dealerships. South of the site the land is mostly undeveloped, however it is platted as lots along the north side of Town Centre Drive. Several commercial businesses are planned for these lots, one of which is an auto detailing business that was constructed at the time of this study. A self-storage facility is also planned for one of the larger lots.

3.0 PROPOSED DEVELOPMENT

3.1 SITE DESCRIPTION

The proposed development includes a 250,000 square-foot rectangular building for distribution and warehousing type uses at the southwest corner of Independence Avenue & Town Centre Boulevard in Lee's Summit, Missouri. The building includes truck loading docks all along the south side of the building, and several smaller loading docks are proposed along the north side of the building. Parking areas are provided along the north and west sides of the building. A truck parking lot is proposed in the southeast corner of the site.

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

3.2 SITE CIRCULATION

The development will primarily be accessed from three new driveways that will align with existing drives. A new driveway to Town Centre Boulevard on the west will align with the northern driveway to the Crossroads of Lee's Summit Apartments. A new driveway to the north to Town Centre Boulevard will align with an existing driveway to an industrial business on the north side of the roadway. A new driveway to the east on Independence Avenue will align with an existing driveway the Volkswagen Lee's Summit dealership.

Drive aisles are proposed surrounding the entire building. This will allow drivers to use any of the driveways when entering or exiting the site. Truck traffic is expected to primarily use the east and west driveways, as they are most convenient to the truck loading docks and truck parking lot.

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 428 daily trips, 54 trips during the AM peak hour (41 entering and 13 exiting), and 56 trips during the PM peak hour (15 entering and 41 exiting).

The *Trip Generation Manual* also includes estimates for truck traffic for the Warehousing land use. The proposed development is projected to generate 150 daily truck trips. The Warehousing land use does not generate much truck traffic during peak hours. During the AM peak hour, 5 truck trips are anticipated and during the PM peak hour, 8 truck trips are anticipated.

TABLE 1: TRIP GENERATION

Land Use Description	ITE LUC	Intensity / Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Warehousing	150	250,000 Square Feet	428	41	13	54	15	41	56
Truck Trips			150	3	2	5	4	4	8
Passenger Vehicle Trips			278	38	11	49	11	37	48

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

3.4 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The estimated new site trips generated by the proposed development were assigned to the street network based on the trip distribution summarized in **Table 2**. This distribution is based on existing traffic patterns, the surrounding street network, and engineering judgment. It is assumed that most development trips will be routed to/from the highway system via the I-470 interchanges to the east and west of the site on Colbern Road and Douglas Street. To a lesser degree, some development traffic may access the site to/from the north via Independence Avenue from the I-470 & Strother Road interchange. The detailed distribution patterns through the study intersections are shown on **Exhibit 4**.

TABLE 2: TRIP DISTRIBUTION

Direction To/From	Percentage
North on Independence Avenue	15%
East on Colbern Road	35%
West on Colbern Road	50%
Total	100%

Exhibit 5 shows the development trip assignment. The proposed development trip assignments were added to the Existing (Year 2022) traffic volumes. **Exhibit 6** illustrates the Existing plus Development Conditions peak hour traffic volumes. Existing volumes at the driveways that align with the site accesses were estimated to balance volumes between intersections.

4.0 FUTURE CONDITIONS

The traffic analysis focused on two analysis years: existing year (2022) and horizon year (2042). To develop the Future Conditions traffic volume projections, background traffic growth was added to the existing traffic volumes, then the proposed development site trips were added.

4.1 BACKGROUND GROWTH

To estimate background traffic growth, the existing traffic volumes at the study intersections were assumed to increase at a rate of 1% per year. The annual growth rate was estimated from historical traffic volumes in the area provided on the Missouri Department of Transportation's website. The Future Conditions (Year 2042) peak hour traffic volumes are shown on **Exhibit 7**. These volumes include the development trip assignments.

4.2 FUTURE ROADWAY IMPROVEMENTS

The study intersection of Independence Avenue & Town Centre Boulevard is to be improved in the next few years. The city has designed a capital improvement project to convert the existing intersection into a single-lane roundabout. The goal of the project is to direct more through traffic on Independence Avenue to instead follow Town Centre Boulevard to the signalized intersection at Colbern Road. It is possible that the roundabout project could divert some of the through traffic on Independence Avenue to Town Center Boulevard. No analysis of the magnitude of diversion has been completed, and no diversion of traffic is assumed in this study.

5.0 ACCESS MANAGEMENT

The City of Lee's Summit *Access Management Code* (AMC) provides guidance for the design of driveways, access spacing, and the need for turn lanes at intersections. These items are discussed in the following paragraphs.

5.1 ACCESS SPACING

The AMC includes requirements for minimum spacing between street connections, depending on street classification. Along Industrial/Commercial roadways such as Town Centre Boulevard and Independence Avenue, the minimum spacing is 300 feet, measured between centerlines. All proposed site driveways exceed this minimum spacing. Further, all proposed site driveways align with an existing driveway, which is indicative of good access management.

5.2 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 AMC are based on the two-way traffic volume on the driveway and the adjacent street classification. All site access driveways are projected to have between 10 and 50 vehicles during the peak hours. As such the minimum required throat length for collector roadways is 50 feet. The west, north, and east site access driveways are proposed to have throat lengths of 115 feet, 55 feet and 75 feet, respectively. Therefore, all proposed site access drives exceed the minimum required throat length.

5.3 TURN LANE ANALYSIS

The AMC also provides requirements for right- and left-turn lanes based on traffic volumes and street classifications. For collector roadways with non-residential driveways, right-turn lanes are required if there are 100 or more right turns during a peak hour. The volumes in **Exhibit 6** indicate that far less than 100 right turns are projected during each peak hour at each of the site accesses. Therefore, right-turn lanes are not warranted at any of the site access driveway intersections.

The AMC states that left-turn lanes shall be provided on collector streets at non-residential driveways where the left-turn volume is at least 30 vehicles in any hour. There is already a continuous two-way left-turn lane on Town Centre Boulevard, therefore the need for a left-turn lane was not evaluated at the west or north site accesses. At the east site access along Independence Avenue, the northbound left-turn volume is well under 30 vehicles during both peak hours. Therefore, a left-turn lane is not warranted at the east site access driveway.

6.0 INTERSECTION CAPACITY ANALYSIS

6.1 LEVEL OF SERVICE OVERVIEW

Intersection capacity analysis was performed at the study intersections for the following 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 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.

LOS is a quantitative measure 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 3** shows the definition of LOS for unsignalized and signalized intersections.

TABLE 3: 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.

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 95th percentile 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. The 95th percentile queue represents the queue length that has only a 5% chance of being exceeded during the analysis period.

6.2 EXISTING LEVEL OF SERVICE ANALYSIS

Capacity analysis was conducted for Existing (Year 2022) 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 reports are provided in **Appendix E**.

Table 4 provides a summary of the capacity analysis at the study intersections.

TABLE 4: EXISTING (YEAR 2022) PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results					
			AM Peak Hour			PM Peak Hour		
			Delay (sec/veh)	LOS	95% Queue	Delay (sec/veh)	LOS	95% Queue
Independence Ave. & Town Centre Blvd.	Side Street Stop	EBL	9.9	A	<50'	10.5	B	<50'
		EBR	9.0	A	<50'	9.0	A	<50'
		NBL	0.0	A	<50'	7.6	A	<50'
Independence Ave. & Town Centre Dr.	Side Street Stop	EB	10.3	B	<50'	10.7	B	<50'
		WB	9.7	A	<50'	9.1	A	<50'
		NBL	7.7	A	<50'	7.6	A	<50'
		SBL	7.4	A	<50'	7.5	A	<50'
Town Centre Blvd. & Town Centre Dr.	Side Street Stop	WBL	9.4	A	<50'	9.8	A	<50'
		WBR	9.2	A	<50'	8.8	A	<50'
		SBL	0.0	A	<50'	7.5	A	<50'
Colbern Road & Town Centre Blvd.	Traffic Signal	EBL	13.9	B	<50'	14.9	B	<50'
		EBT/R			87'			302'
		WBL			<50'			<50'
		WBT/R			292'			270'
		NB			<50'			<50'
		SBL			<50'			62'
		SBT/L			<50'			64'
		SBR			<50'			<50'

Based on the analysis, all intersections currently operate at LOS B or better. All queues are short, measuring less than 50 feet, except on Colbern Road at the signalized intersection with Town Centre Boulevard. During the AM peak hour, the 95th percentile westbound queues are 292 feet, which extends back to the next driveway to the east along Colbern Road. During the PM peak hour, the 95th percentile eastbound queues are 302 feet, which nearly extends back to the next driveway to the west along Colbern Road.

6.3 EXISTING PLUS DEVELOPMENT LEVEL OF SERVICE ANALYSIS

Capacity analysis was conducted for Existing plus Development Conditions traffic conditions at the study intersections to determine the impacts of the development site traffic. 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, traffic control, for the analysis remain the same as in the Existing Conditions scenario. All site driveways were analyzed with stop sign control for the driveway and uninterrupted flow for the public street. All site driveways are assumed to have one entering and one exiting lane.

Table 5 provides a summary of the capacity analysis at the study intersections. The Synchro reports are provided in **Appendix F**.

TABLE 5: EXISTING PLUS DEVELOPMENT PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results					
			AM Peak Hour			PM Peak Hour		
			Delay (sec/veh)	LOS	95% Queue	Delay (sec/veh)	LOS	95% Queue
Independence Ave. & Town Centre Blvd.	Side Street Stop	EBL	10.0	A	<50'	10.5	B	<50'
		EBR	9.1	A	<50'	9.0	A	<50'
		NBL	0.0	A	<50'	7.6	A	<50'
Independence Ave. & Town Centre Dr.	Side Street Stop	EB	10.3	B	<50'	10.8	B	<50'
		WB	9.8	A	<50'	9.2	A	<50'
		NBL	7.7	A	<50'	7.6	A	<50'
		SBL	7.5	A	<50'	7.5	A	<50'
Town Centre Blvd. & Town Centre Dr.	Side Street Stop	WBL	9.7	A	<50'	10.0	A	<50'
		WBR	9.4	A	<50'	8.8	A	<50'
		SBL	0.0	A	<50'	7.5	A	<50'
Colbern Road & Town Centre Blvd.	Traffic Signal	EBL	14.2	B	54'	15.3	B	<50'
		EBT/R			87'			307'
		WBL			<50'			<50'
		WBT/R			315'			287'
		NB			<50'			<50'
		SBL			<50'			70'
		SBT/L			<50'			71'
		SBR			<50'			<50'
Town Centre Blvd. & West Site Access	Side Street Stop	EB	8.8	A	<50'	9.3	A	<50'
		WB	9.7	A	<50'	9.7	A	<50'
		NBL	7.3	A	<50'	7.4	A	<50'
		SBL	7.4	A	<50'	7.3	A	<50'
Town Centre Blvd. & North Site Access	Side Street Stop	NB	9.1	A	<50'	9.2	A	<50'
		SB	9.9	A	<50'	9.0	A	<50'
		EBL	8.2	A	<50'	7.3	A	<50'
		WBL	7.4	A	<50'	7.3	A	<50'
Independence Ave. & East Site Access	Side Street Stop	EB	9.0	A	<50'	9.2	A	<50'
		WB	9.5	A	<50'	9.9	A	<50'
		NBL	7.4	A	<50'	7.4	A	<50'
		SBL	7.5	A	<50'	7.5	A	<50'

The analysis results in **Table 5** indicate that all study intersections are anticipated to operate at acceptable levels of service with the addition of development site trips. In fact, none of the levels of service are anticipated to change with the addition of site trips. Therefore, the proposed development is anticipated to have a negligible impact on the study intersections. All queues remain minimal, except at the Colbern Road & Town Centre Boulevard intersection. The through queues in the eastbound and westbound direction are projected to be similar in length to the Existing Conditions scenario.

6.4 FUTURE LEVEL OF SERVICE ANALYSIS

Capacity analysis was conducted for Future Conditions (Year 2042) at the study intersections to determine if improvements may be needed in the future. The analysis was performed for weekday AM and PM peak hours and is based on the traffic volumes shown on **Exhibit 7**. The lane configurations, traffic control, for

the analysis remain the same as in the Existing plus Development Conditions scenario, with one exception. The intersection of Independence Avenue & Town Centre Boulevard is assumed to be a single-lane roundabout in the Future Conditions scenario.

Table 6 provides a summary of the capacity analysis at the study intersections. The Synchro reports are provided in **Appendix E**.

TABLE 6: FUTURE (YEAR 2042) PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results					
			AM Peak Hour			PM Peak Hour		
			Delay (sec/veh)	LOS	95% Queue	Delay (sec/veh)	LOS	95% Queue
Independence Ave. & Town Centre Blvd.	Round- about	EB	3.9	A	<50'	3.6	B	<50'
		NB	3.7	A	<50'	3.9	A	<50'
		SB	3.6	A	<50'	3.9	A	<50'
Independence Ave. & Town Centre Dr.	Side Street Stop	EB	10.9	B	<50'	11.5	B	<50'
		WB	10.2	B	<50'	9.4	A	<50'
		NBL	7.7	A	<50'	7.7	A	<50'
		SBL	7.5	A	<50'	7.6	A	<50'
Town Centre Blvd. & Town Centre Dr.	Side Street Stop	WBL	9.9	A	<50'	10.4	A	<50'
		WBR	9.5	A	<50'	8.9	A	<50'
		SBL	0.0	A	<50'	7.6	A	<50'
Colbern Road & Town Centre Blvd.	Traffic Signal	EBL	16.6	B	110'	18.6	B	<50'
		EBT/R			107'			420'
		WBL			<50'			<50'
		WBT/R			400'			385'
		NB			<50'			53'
		SBL			<50'			93'
		SBT/L			<50'			93'
		SBR			<50'			<50'
Town Centre Blvd. & West Site Access	Side Street Stop	EB	8.9	A	<50'	9.5	A	<50'
		WB	9.8	A	<50'	9.9	A	<50'
		NBL	7.3	A	<50'	7.4	A	<50'
		SBL	7.4	A	<50'	7.3	A	<50'
Town Centre Blvd. & North Site Access	Side Street Stop	NB	9.2	A	<50'	9.4	A	<50'
		SB	10.0	A	<50'	9.1	A	<50'
		EBL	8.2	A	<50'	7.4	A	<50'
		WBL	7.4	A	<50'	7.4	A	<50'
Independence Ave. & East Site Access	Side Street Stop	EB	9.2	A	<50'	9.4	A	<50'
		WB	9.7	A	<50'	10.2	A	<50'
		NBL	7.4	A	<50'	7.5	A	<50'
		SBL	7.5	A	<50'	7.5	A	<50'

The analysis results in **Table 6** indicate that all study intersections are anticipated to operate at acceptable levels of service with background growth in the horizon year 2042. The levels of service are projected to slightly increase for several movements, but overall remain nearly the same as in the Existing plus Development Conditions scenario. The single-lane roundabout at Independence Avenue & Town Centre Boulevard is projected to operate at good levels of service in the Future Conditions scenario. All queues are anticipated to be minimal, except at the Colbern Road & Town Centre Boulevard intersection. The through queues in the eastbound and westbound direction are projected to increase, due to background traffic growth.

7.0 CONCLUSIONS AND RECOMMENDATIONS

A traffic impact study for the Town Centre Industrial development has been prepared by Kimley-Horn. The proposed site is located on the southeast corner of Town Centre Boulevard and Independence Avenue 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)

Traffic counts were collected in August 2022 to serve as the baseline for analysis. All study intersections were found to currently be operating at acceptable levels of service.

The proposed development is projected to generate 428 daily trips, with 54 trips during the AM peak hour and 56 trips during the PM peak hour. The site trips were added to the street network, and it was determined that none of the existing levels of service are expected to change. All intersections are projected to continue to operate at acceptable levels of service.

A review of the site plan determined that the development satisfies the City of Lee's Summit *Access Management Code (AMC)* guidelines for driveway spacings and driveway throat length. Traffic volumes indicate that turn lanes are not needed at any of the proposed site access drives.

In the Future Conditions (Year 2042) scenario, the existing traffic volumes were grown at a rate of 1% per year, and the proposed site trips were included. Overall, the study intersections are projected to operate similar to Existing plus Development Conditions scenario.

APPENDIX

Appendix A: EXHIBITS

Appendix B: TURNING MOVEMENT COUNTS

Appendix C: SITE PLAN

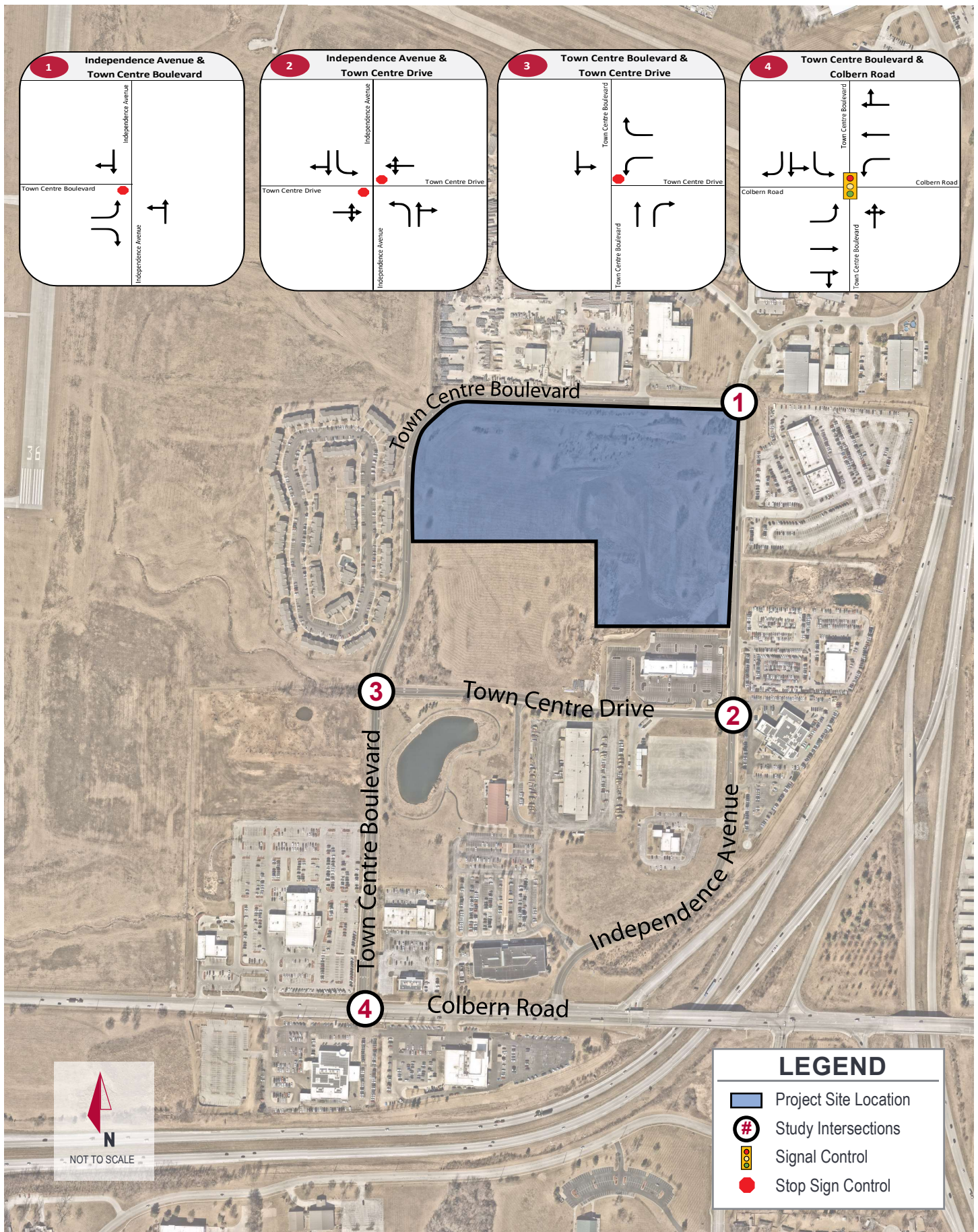
Appendix D: ITE TRIP GENERATION MANUAL SHEETS

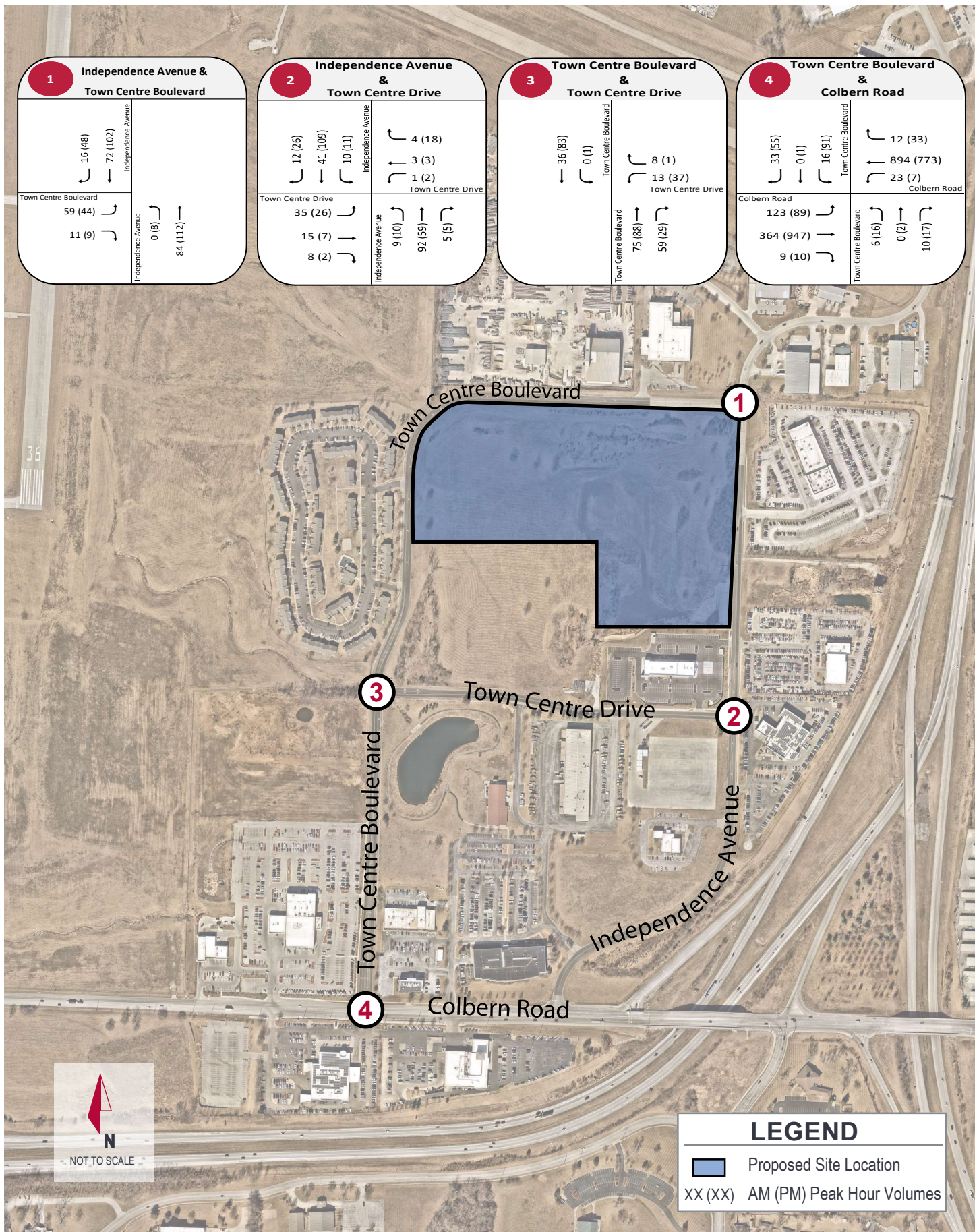
Appendix E: SYNCHRO REPORTS

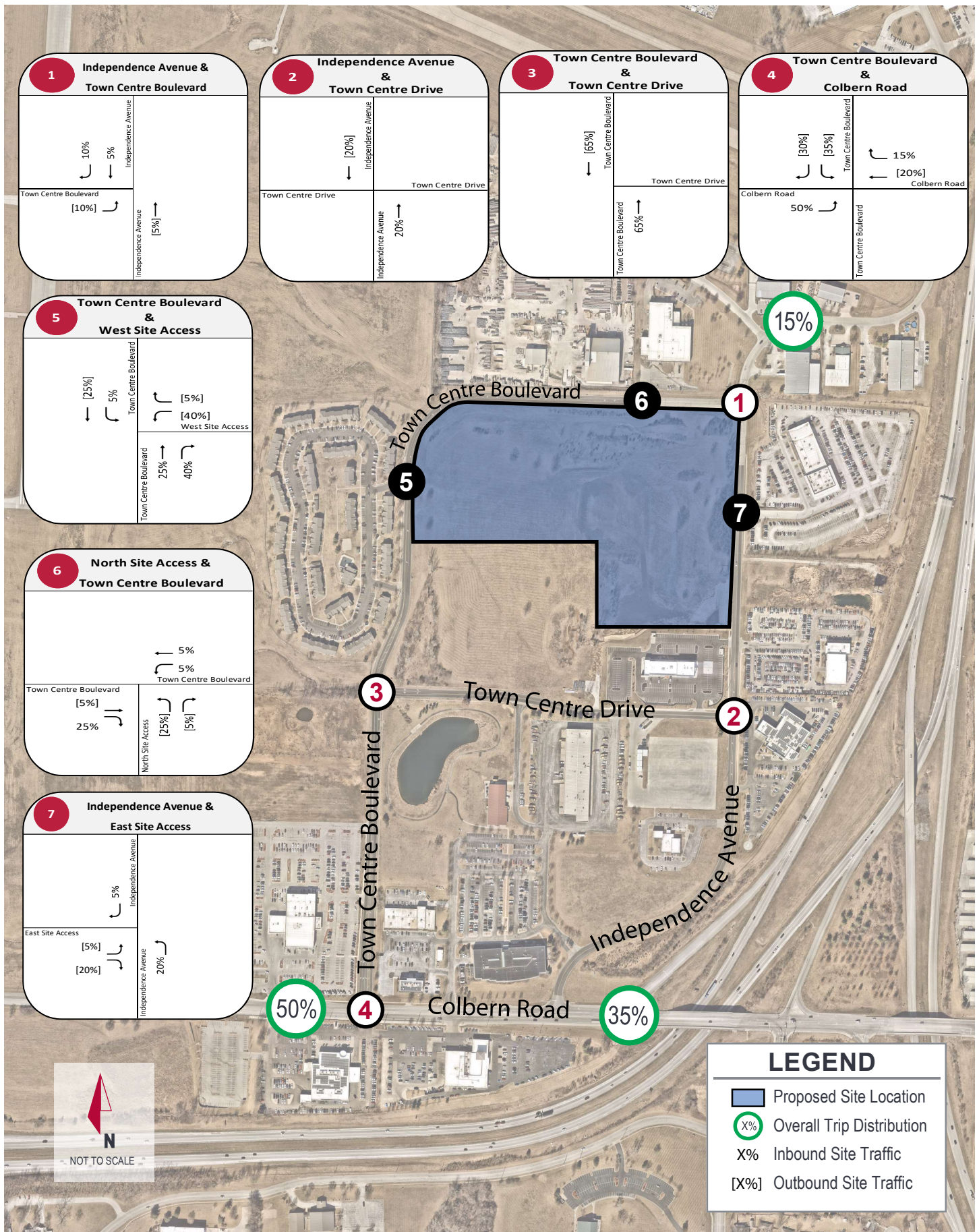
Appendix A: Exhibits

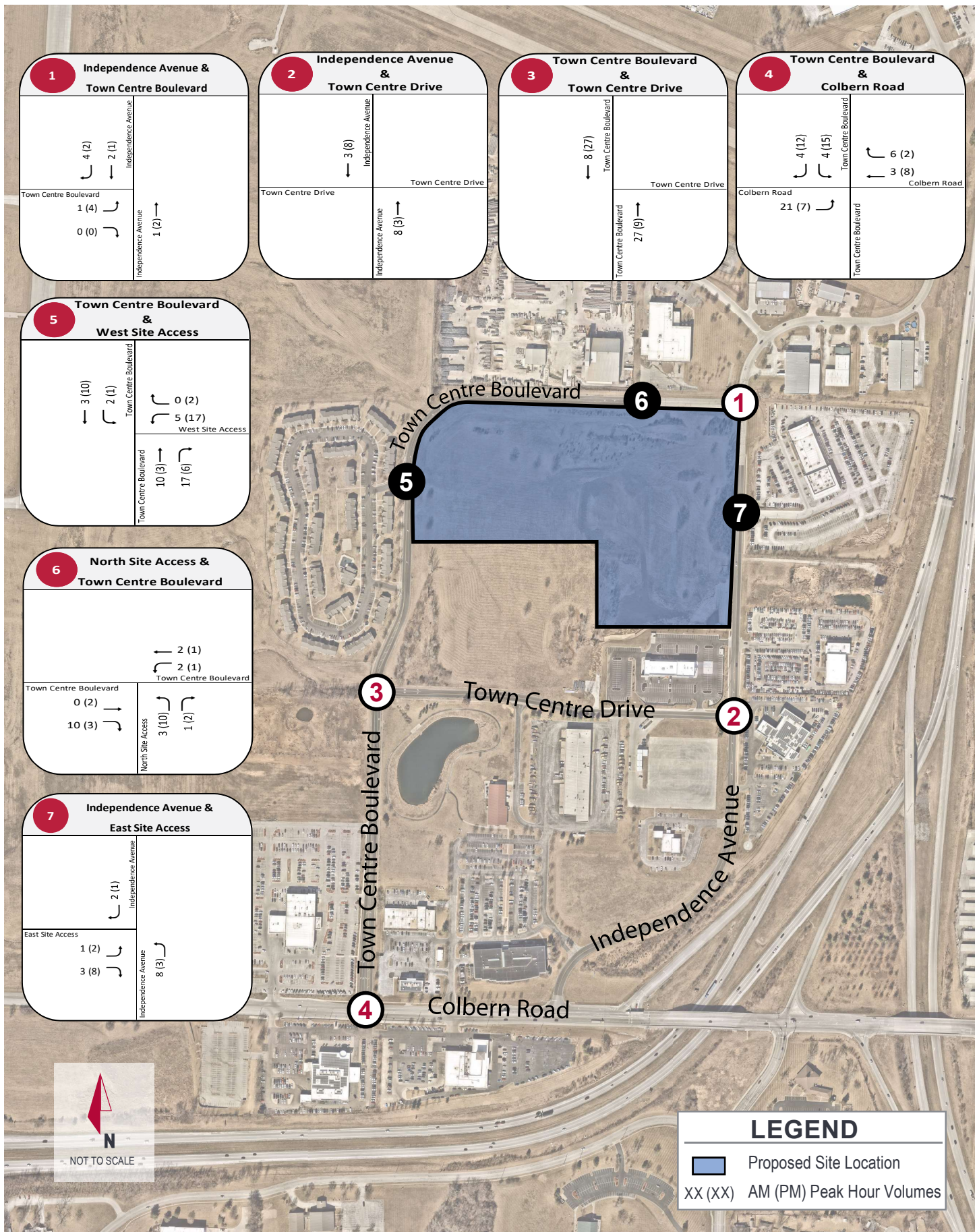


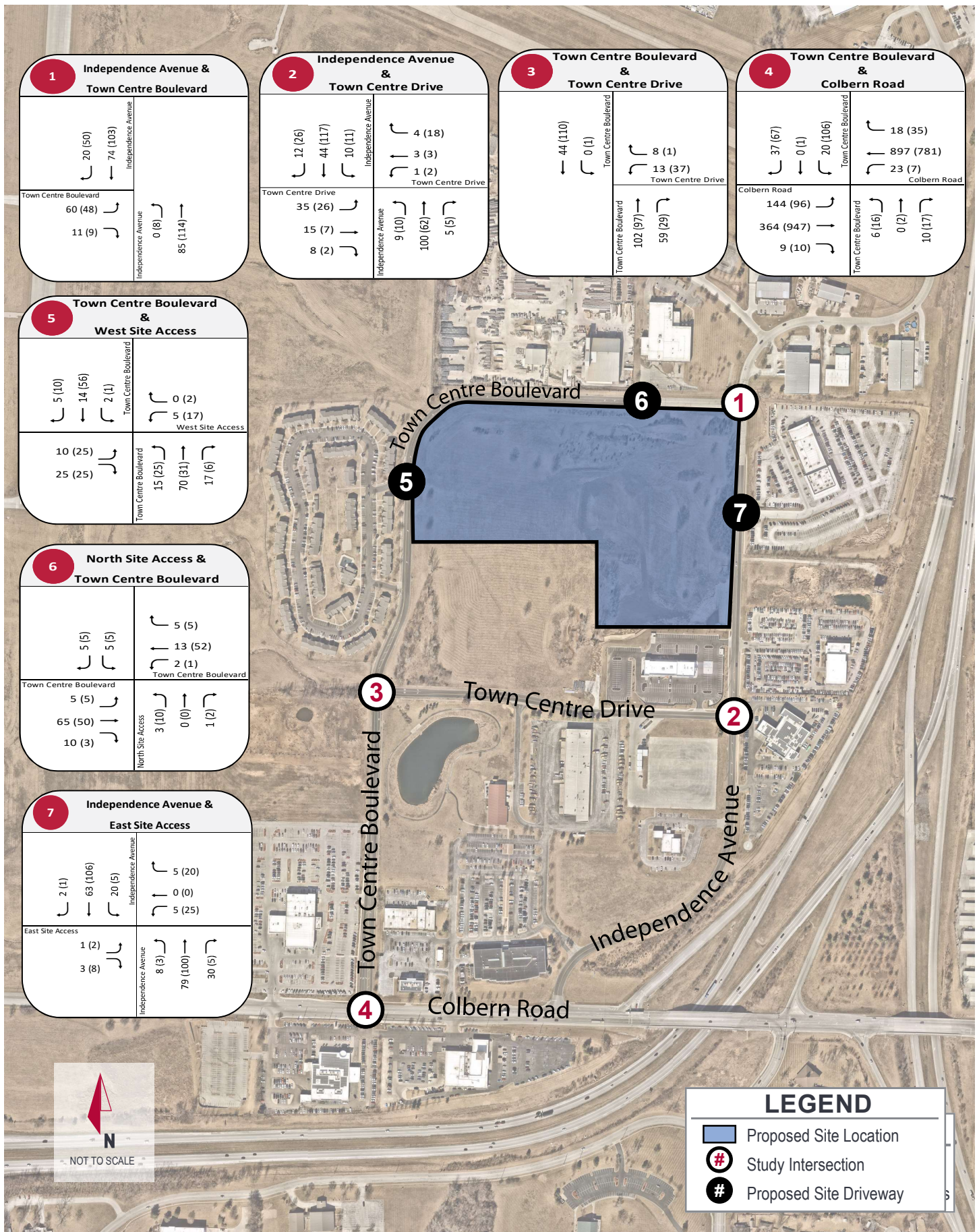


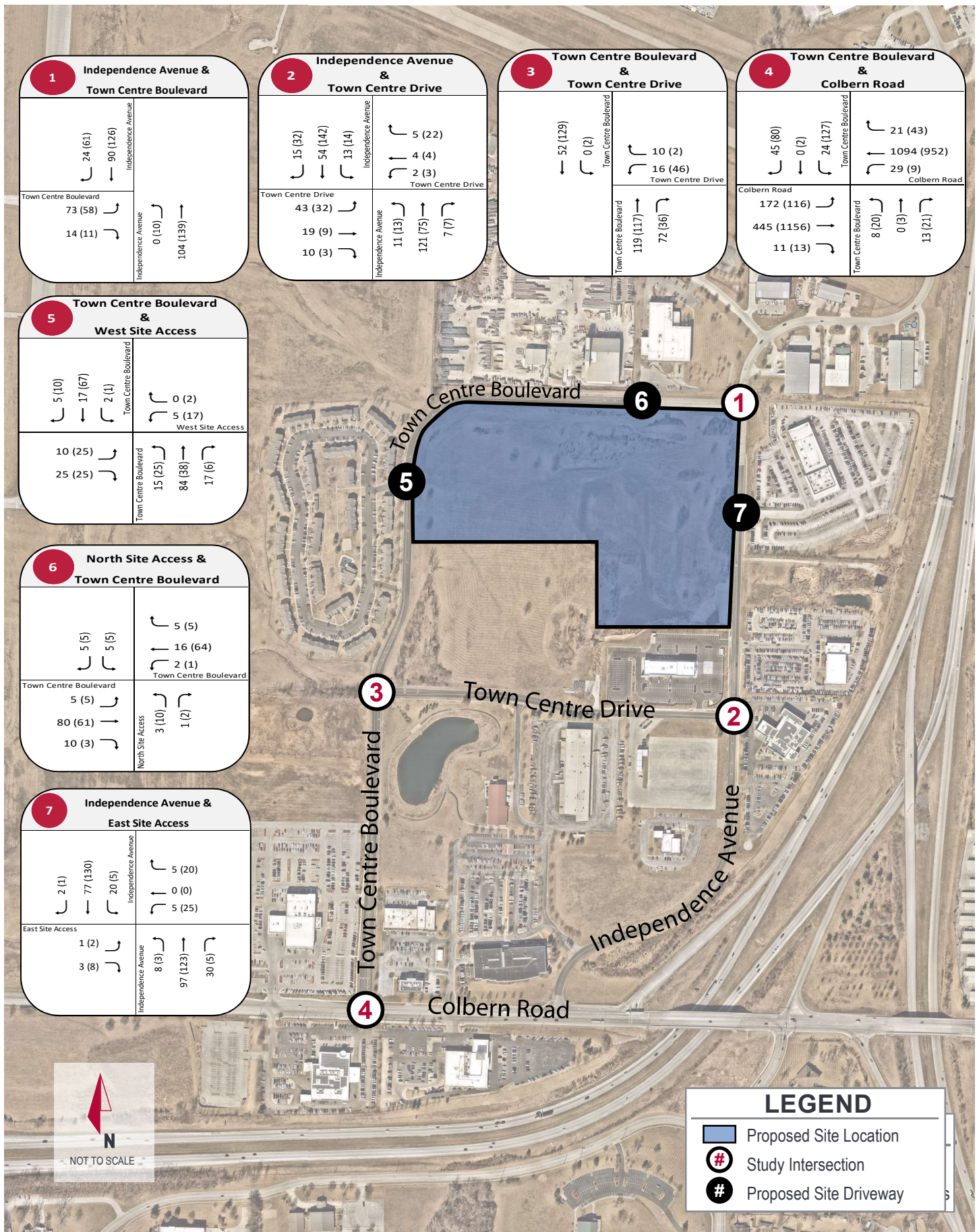












Appendix B: Turning Movement Counts



Independence Ave. & Town Centre Blvd. - TMC

Thu Aug 4, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975239, Location: 38.953452, -94.36396



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

Leg Direction	Town Center Eastbound				Independence Northbound				Independence Southbound				
Time	L	R	U	App	L	T	U	App	T	R	U	App	Int
2022-08-04 7:00AM	13	0	0	13	0	10	0	10	6	6	0	12	35
7:15AM	13	0	0	13	0	15	0	15	17	6	0	23	51
7:30AM	18	3	0	21	0	24	0	24	16	5	0	21	66
7:45AM	18	0	0	18	0	30	0	30	21	0	0	21	69
Hourly Total	62	3	0	65	0	79	0	79	60	17	0	77	221
8:00AM	10	8	0	18	0	15	0	15	18	5	0	23	56
8:15AM	16	3	0	19	1	12	0	13	11	3	0	14	46
8:30AM	11	2	0	13	1	17	0	18	15	2	0	17	48
8:45AM	8	1	0	9	2	25	0	27	21	1	0	22	58
Hourly Total	45	14	0	59	4	69	0	73	65	11	0	76	208
4:00PM	12	4	0	16	1	29	0	30	14	19	0	33	79
4:15PM	6	2	0	8	2	23	0	25	23	8	0	31	64
4:30PM	14	1	0	15	3	26	0	29	27	18	0	45	89
4:45PM	7	1	0	8	1	26	0	27	23	4	0	27	62
Hourly Total	39	8	0	47	7	104	0	111	87	49	0	136	294
5:00PM	14	6	0	20	1	34	0	35	30	14	0	44	99
5:15PM	9	1	0	10	3	26	0	29	22	12	0	34	73
5:30PM	7	0	0	7	0	19	0	19	24	8	0	32	58
5:45PM	7	2	0	9	1	12	0	13	14	6	0	20	42
Hourly Total	37	9	0	46	5	91	0	96	90	40	0	130	272
Total	183	34	0	217	16	343	0	359	302	117	0	419	995
% Approach	84.3%	15.7%	0%	-	4.5%	95.5%	0%	-	72.1%	27.9%	0%	-	-
% Total	18.4%	3.4%	0%	21.8%	1.6%	34.5%	0%	36.1%	30.4%	11.8%	0%	42.1%	-
Lights	175	31	0	206	16	338	0	354	287	113	0	400	960
% Lights	95.6%	91.2%	0%	94.9%	100%	98.5%	0%	98.6%	95.0%	96.6%	0%	95.5%	96.5%
Articulated Trucks	4	2	0	6	0	1	0	1	6	0	0	6	13
% Articulated Trucks	2.2%	5.9%	0%	2.8%	0%	0.3%	0%	0.3%	2.0%	0%	0%	1.4%	1.3%
Buses and Single-Unit Trucks	4	1	0	5	0	4	0	4	9	4	0	13	22
% Buses and Single-Unit Trucks	2.2%	2.9%	0%	2.3%	0%	1.2%	0%	1.1%	3.0%	3.4%	0%	3.1%	2.2%

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

Independence Ave. & Town Centre Blvd. - TMC

Thu Aug 4, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

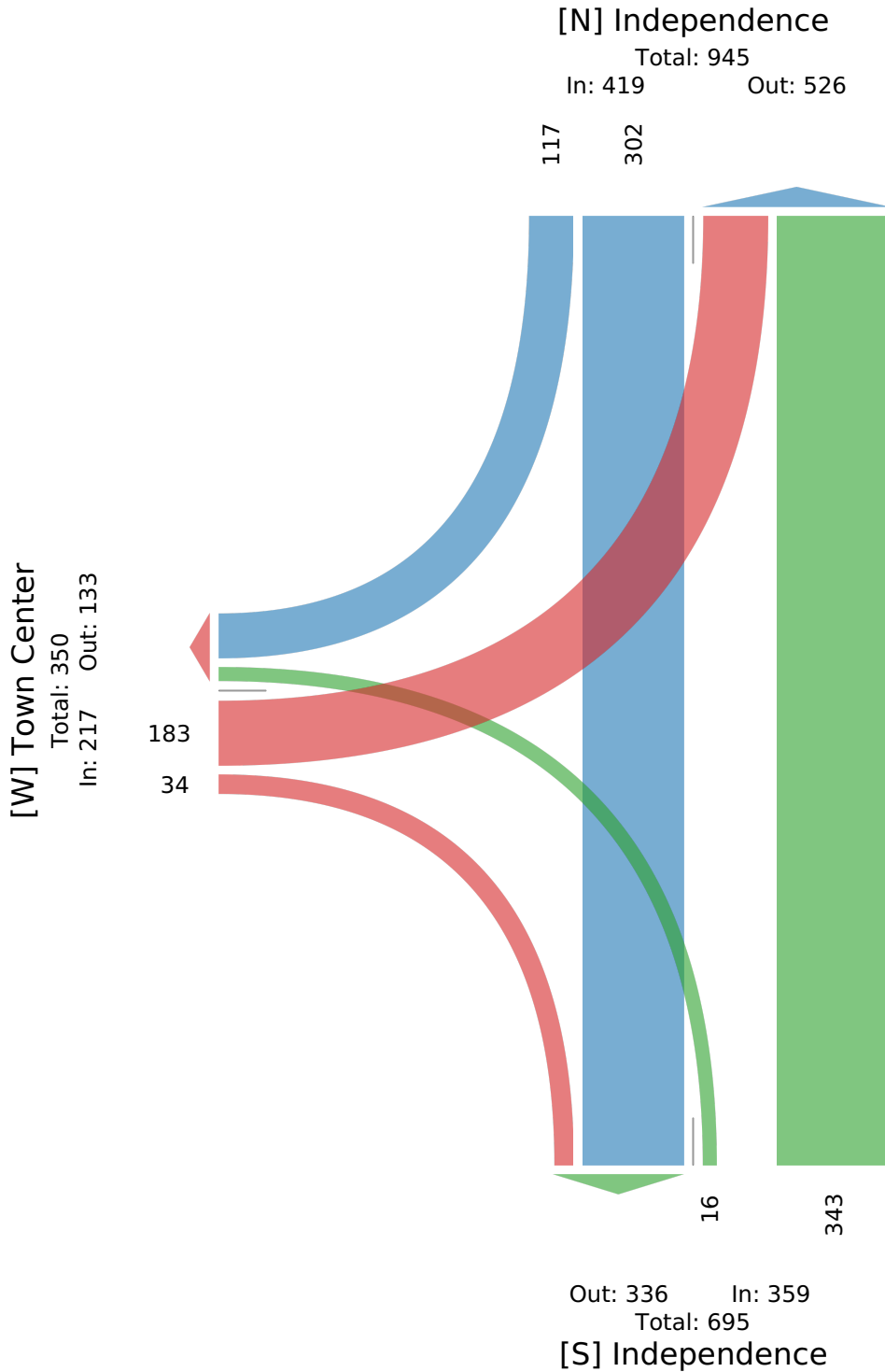
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975239, Location: 38.953452, -94.36396



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



Independence Ave. & Town Centre Blvd. - TMC

Thu Aug 4, 2022

AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975239, Location: 38.953452, -94.36396

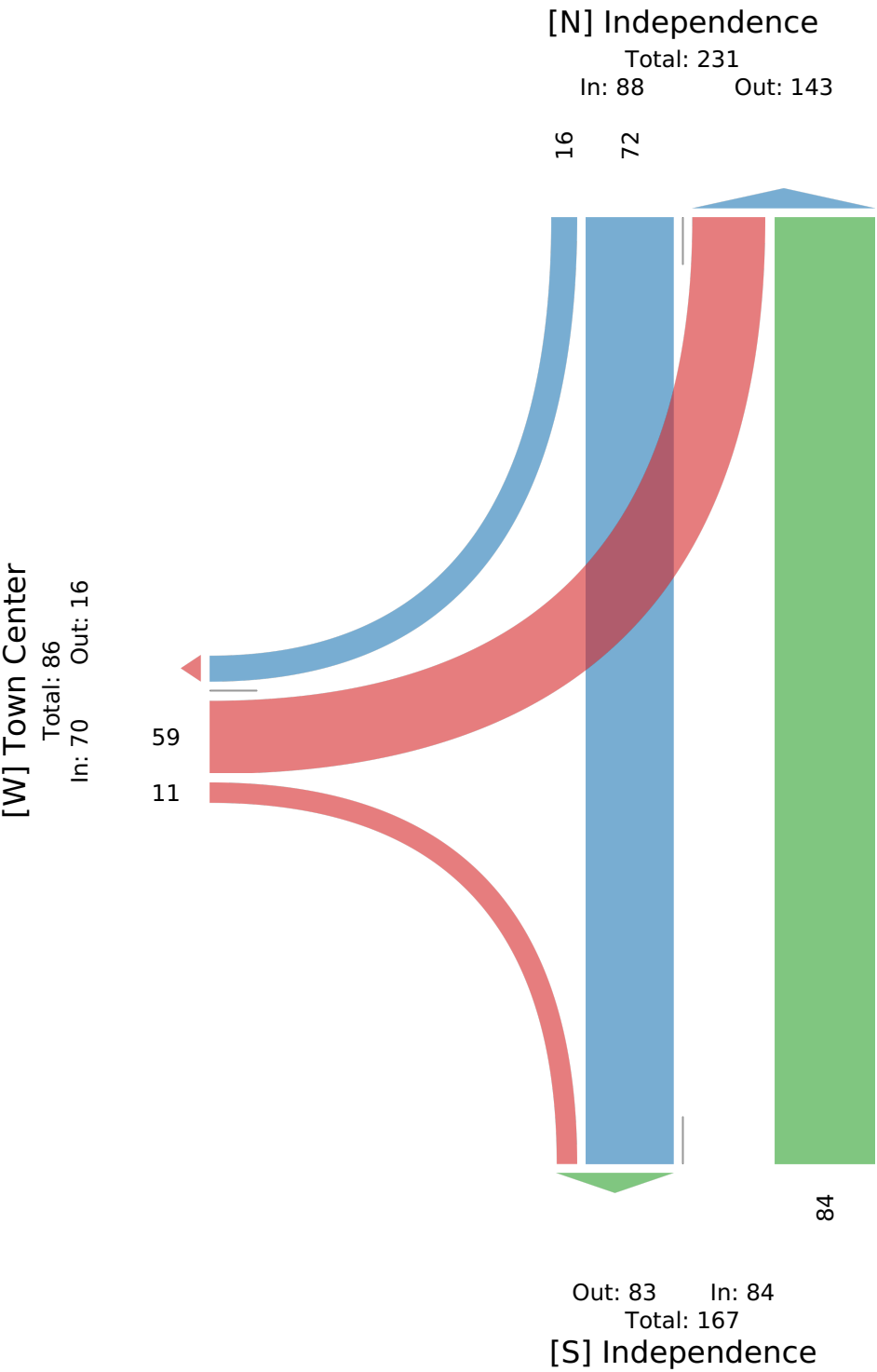


Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Town Center Eastbound				Independence Northbound				Independence Southbound				
Time	L	R	U	App	L	T	U	App	T	R	U	App	Int
2022-08-04 7:15AM	13	0	0	13	0	15	0	15	17	6	0	23	51
7:30AM	18	3	0	21	0	24	0	24	16	5	0	21	66
7:45AM	18	0	0	18	0	30	0	30	21	0	0	21	69
8:00AM	10	8	0	18	0	15	0	15	18	5	0	23	56
Total	59	11	0	70	0	84	0	84	72	16	0	88	242
% Approach	84.3%	15.7%	0%	-	0%	100%	0%	-	81.8%	18.2%	0%	-	-
% Total	24.4%	4.5%	0%	28.9%	0%	34.7%	0%	34.7%	29.8%	6.6%	0%	36.4%	-
PHF	0.819	0.344	-	0.833	-	0.700	-	0.700	0.857	0.667	-	0.957	0.877
Lights	55	8	0	63	0	83	0	83	69	13	0	82	228
% Lights	93.2%	72.7%	0%	90.0%	0%	98.8%	0%	98.8%	95.8%	81.3%	0%	93.2%	94.2%
Articulated Trucks	2	2	0	4	0	0	0	0	1	0	0	1	5
% Articulated Trucks	3.4%	18.2%	0%	5.7%	0%	0%	0%	0%	1.4%	0%	0%	1.1%	2.1%
Buses and Single-Unit Trucks	2	1	0	3	0	1	0	1	2	3	0	5	9
% Buses and Single-Unit Trucks	3.4%	9.1%	0%	4.3%	0%	1.2%	0%	1.2%	2.8%	18.8%	0%	5.7%	3.7%

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

Independence Ave. & Town Centre Blvd. - TMC
Thu Aug 4, 2022
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 975239, Location: 38.953452, -94.36396



Independence Ave. & Town Centre Blvd. - TMC

Thu Aug 4, 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: 975239, Location: 38.953452, -94.36396

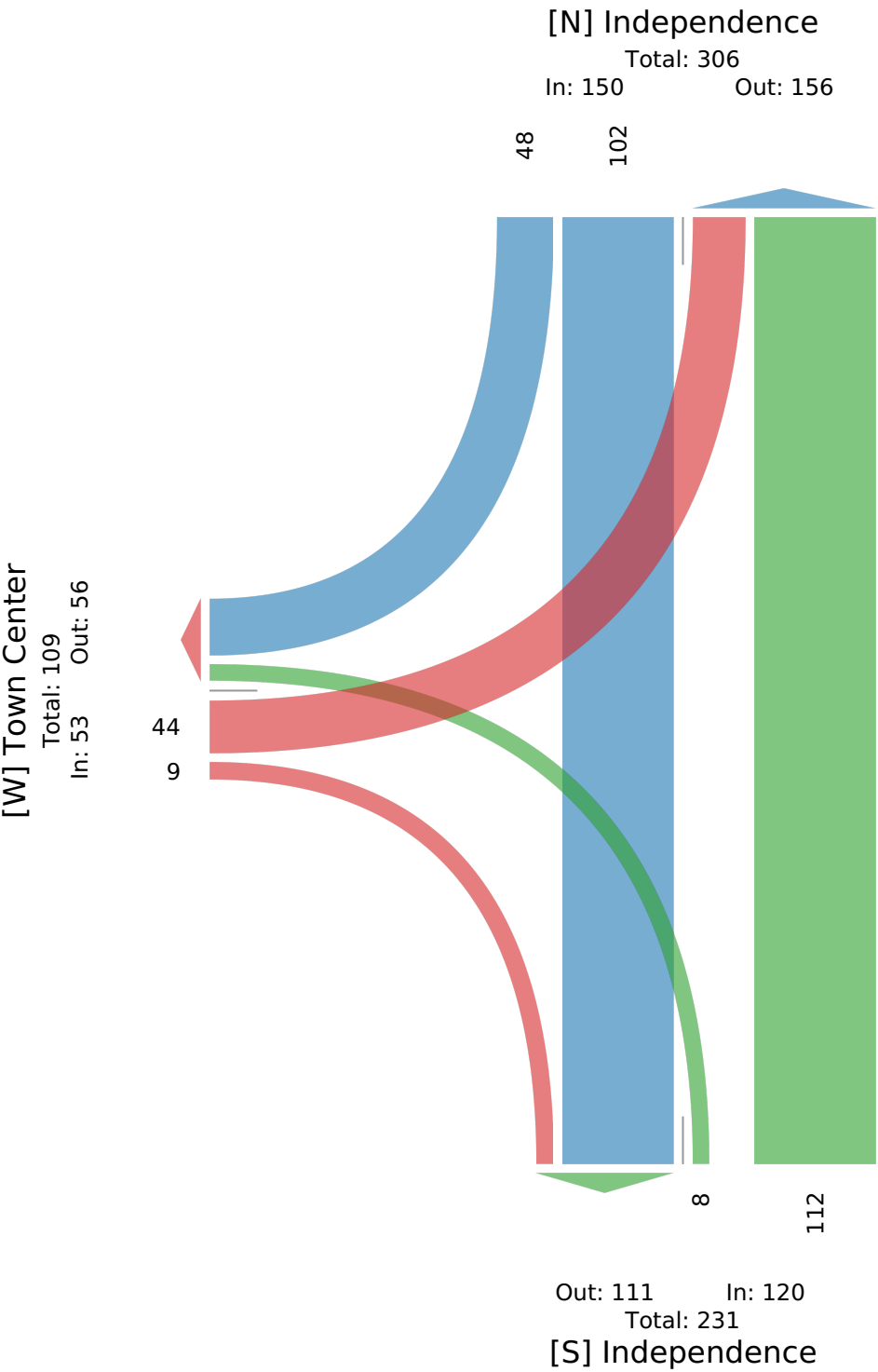


Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Town Center Eastbound				Independence Northbound				Independence Southbound				
Time	L	R	U	App	L	T	U	App	T	R	U	App	Int
2022-08-04 4:30PM	14	1	0	15	3	26	0	29	27	18	0	45	89
4:45PM	7	1	0	8	1	26	0	27	23	4	0	27	62
5:00PM	14	6	0	20	1	34	0	35	30	14	0	44	99
5:15PM	9	1	0	10	3	26	0	29	22	12	0	34	73
Total	44	9	0	53	8	112	0	120	102	48	0	150	323
% Approach	83.0%	17.0%	0%	-	6.7%	93.3%	0%	-	68.0%	32.0%	0%	-	-
% Total	13.6%	2.8%	0%	16.4%	2.5%	34.7%	0%	37.2%	31.6%	14.9%	0%	46.4%	-
PHF	0.786	0.375	-	0.663	0.667	0.824	-	0.857	0.850	0.667	-	0.833	0.816
Lights	44	9	0	53	8	111	0	119	100	47	0	147	319
% Lights	100%	100%	0%	100%	100%	99.1%	0%	99.2%	98.0%	97.9%	0%	98.0%	98.8%
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	1	0	3	4
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	0.9%	0%	0.8%	2.0%	2.1%	0%	2.0%	1.2%

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

Independence Ave. & Town Centre Blvd. - TMC
Thu Aug 4, 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: 975239, Location: 38.953452, -94.36396



Independence Ave. & Town Centre Dr. - TMC

Thu Aug 4, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975240, Location: 38.9498, -94.364056



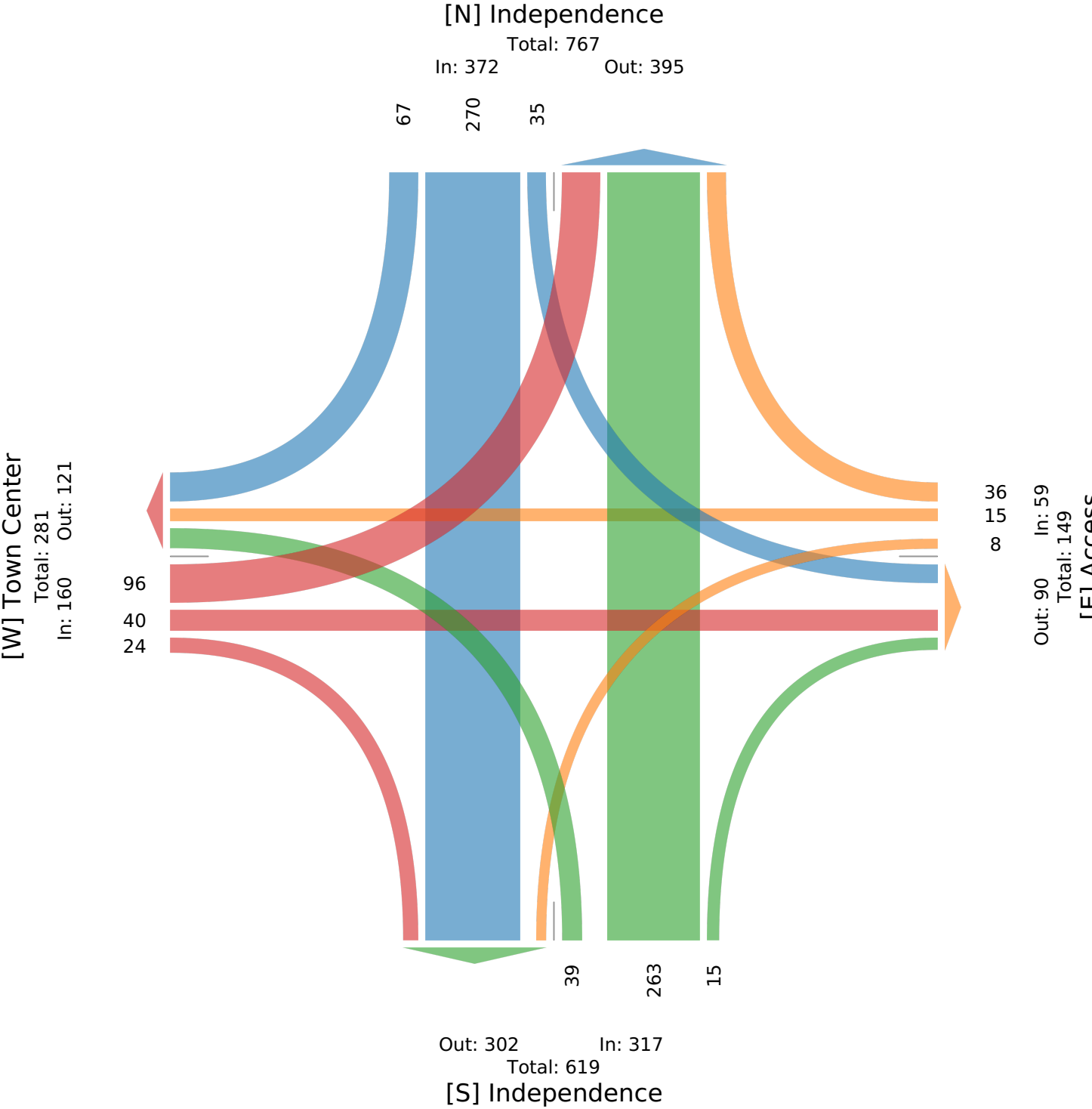
Provided by: Gewalt Hamilton Associates Inc.

625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Town Center Eastbound					Access Westbound					Independence Northbound					Independence Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-08-04 7:00AM	0	4	1	0	5	0	0	0	0	0	0	9	0	0	9	0	5	1	0	6	20
7:15AM	6	2	4	0	12	0	2	0	0	2	2	19	2	0	23	2	11	2	0	15	52
7:30AM	7	6	3	0	16	0	0	0	0	0	3	27	2	0	32	1	9	3	0	13	61
7:45AM	13	4	1	0	18	0	0	3	0	3	2	28	1	0	31	1	15	3	0	19	71
Hourly Total	26	16	9	0	51	0	2	3	0	5	7	83	5	0	95	4	40	9	0	53	204
8:00AM	9	3	0	0	12	1	1	1	0	3	2	18	0	0	20	7	7	5	0	19	54
8:15AM	1	3	3	0	7	1	1	2	0	4	2	17	0	0	19	1	10	1	0	12	42
8:30AM	5	1	2	0	8	0	0	4	0	4	4	12	1	0	17	1	16	3	0	20	49
8:45AM	10	2	3	0	15	1	0	4	0	5	3	17	1	0	21	2	15	5	0	22	63
Hourly Total	25	9	8	0	42	3	2	11	0	16	11	64	2	0	77	11	48	14	0	73	208
4:00PM	5	2	1	0	8	1	0	1	0	2	4	19	1	0	24	3	16	2	0	21	55
4:15PM	4	4	1	0	9	1	2	2	0	5	3	24	0	0	27	3	20	5	0	28	69
4:30PM	5	2	0	0	7	0	0	5	0	5	3	22	2	0	27	2	28	3	0	33	72
4:45PM	5	3	1	0	9	0	0	3	0	3	4	11	1	0	16	2	25	10	0	37	65
Hourly Total	19	11	3	0	33	2	2	11	0	15	14	76	4	0	94	10	89	20	0	119	261
5:00PM	8	1	1	0	10	2	2	5	0	9	2	12	1	0	15	5	33	6	0	44	78
5:15PM	8	1	0	0	9	0	1	5	0	6	1	14	1	0	16	2	29	5	0	36	67
5:30PM	7	0	2	0	9	0	5	0	0	5	3	12	1	0	16	2	22	5	0	29	59
5:45PM	3	2	1	0	6	1	1	1	0	3	1	2	1	0	4	1	9	8	0	18	31
Hourly Total	26	4	4	0	34	3	9	11	0	23	7	40	4	0	51	10	93	24	0	127	235
Total	96	40	24	0	160	8	15	36	0	59	39	263	15	0	317	35	270	67	0	372	908
% Approach	60.0%	25.0%	15.0%	0%	-	13.6%	25.4%	61.0%	0%	-	12.3%	83.0%	4.7%	0%	-	9.4%	72.6%	18.0%	0%	-	-
% Total	10.6%	4.4%	2.6%	0%	17.6%	0.9%	1.7%	4.0%	0%	6.5%	4.3%	29.0%	1.7%	0%	34.9%	3.9%	29.7%	7.4%	0%	41.0%	-
Lights	93	40	24	0	157	7	14	35	0	56	35	262	15	0	312	33	259	61	0	353	878
% Lights	96.9%	100%	100%	0%	98.1%	87.5%	93.3%	97.2%	0%	94.9%	89.7%	99.6%	100%	0%	98.4%	94.3%	95.9%	91.0%	0%	94.9%	96.7%
Articulated Trucks	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	5	3	0	8	10
% Articulated Trucks	1.0%	0%	0%	0%	0.6%	0%	0%	0%	0%	0%	2.6%	0%	0%	0%	0.3%	0%	1.9%	4.5%	0%	2.2%	1.1%
Buses and Single-Unit Trucks	2	0	0	0	2	1	1	1	0	3	3	1	0	0	4	2	6	3	0	11	20
% Buses and Single-Unit Trucks	2.1%	0%	0%	0%	1.3%	12.5%	6.7%	2.8%	0%	5.1%	7.7%	0.4%	0%	0%	1.3%	5.7%	2.2%	4.5%	0%	3.0%	2.2%

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

Independence Ave. & Town Centre Dr. - TMC
Thu Aug 4, 2022
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 975240, Location: 38.9498, -94.364056



Independence Ave. & Town Centre Dr. - TMC

Thu Aug 4, 2022

AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975240, Location: 38.9498, -94.364056

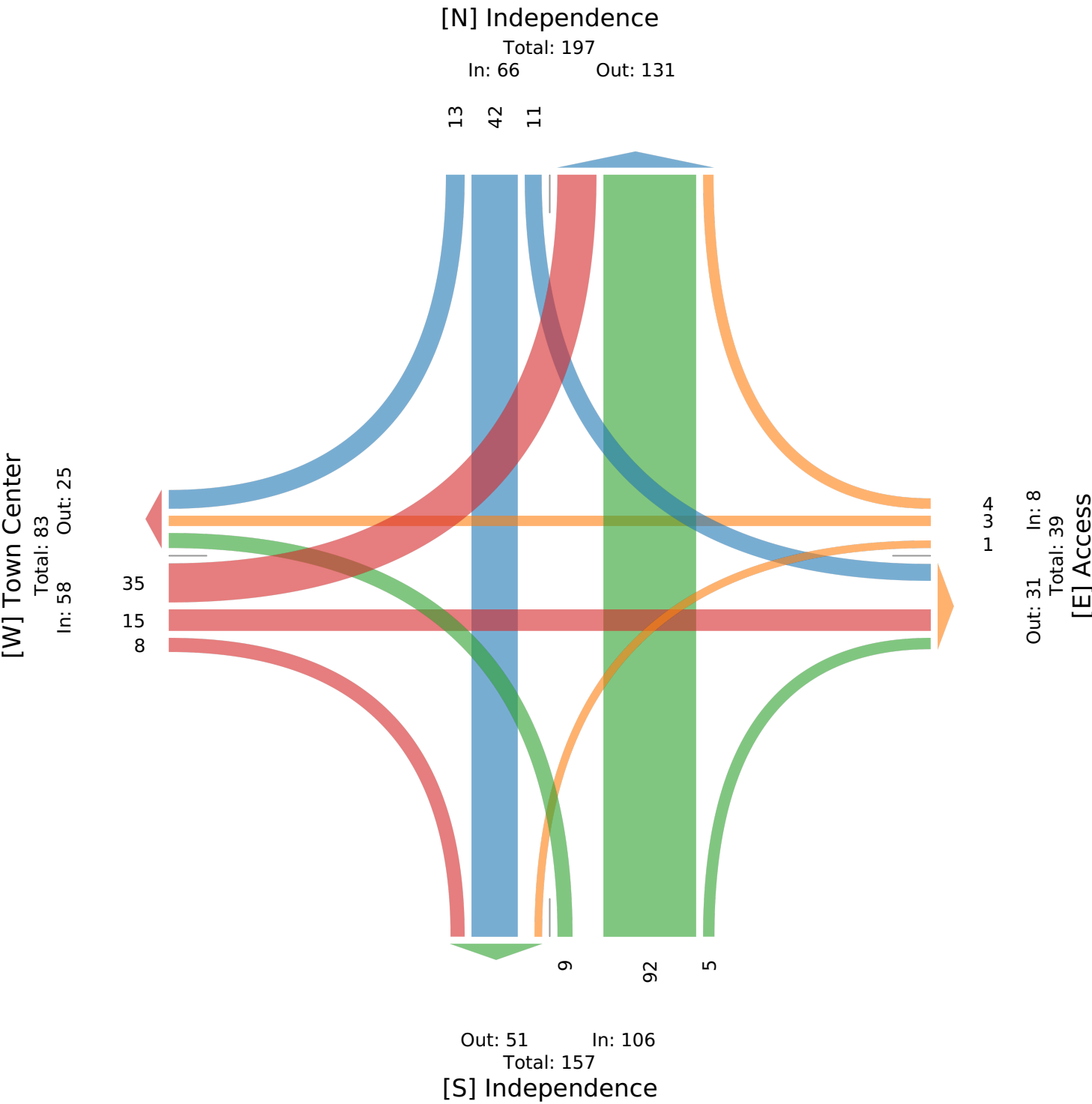


Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Town Center Eastbound					Access Westbound					Independence Northbound					Independence Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-08-04 7:15AM	6	2	4	0	12	0	2	0	0	2	2	19	2	0	23	2	11	2	0	15	52
7:30AM	7	6	3	0	16	0	0	0	0	0	3	27	2	0	32	1	9	3	0	13	61
7:45AM	13	4	1	0	18	0	0	3	0	3	2	28	1	0	31	1	15	3	0	19	71
8:00AM	9	3	0	0	12	1	1	1	0	3	2	18	0	0	20	7	7	5	0	19	54
Total	35	15	8	0	58	1	3	4	0	8	9	92	5	0	106	11	42	13	0	66	238
% Approach	60.3%	25.9%	13.8%	0%	-	12.5%	37.5%	50.0%	0%	-	8.5%	86.8%	4.7%	0%	-	16.7%	63.6%	19.7%	0%	-	-
% Total	14.7%	6.3%	3.4%	0%	24.4%	0.4%	1.3%	1.7%	0%	3.4%	3.8%	38.7%	2.1%	0%	44.5%	4.6%	17.6%	5.5%	0%	27.7%	-
PHF	0.673	0.625	0.500	-	0.806	0.250	0.375	0.333	-	0.667	0.750	0.821	0.625	-	0.828	0.393	0.700	0.650	-	0.868	0.838
Lights	34	15	8	0	57	1	2	4	0	7	6	92	5	0	103	11	41	8	0	60	227
% Lights	97.1%	100%	100%	0%	98.3%	100%	66.7%	100%	0%	87.5%	66.7%	100%	100%	0%	97.2%	100%	97.6%	61.5%	0%	90.9%	95.4%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3	0	3	4
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11.1%	0%	0%	0%	0.9%	0%	0%	23.1%	0%	4.5%	1.7%
Buses and Single-Unit Trucks	1	0	0	0	1	0	1	0	0	1	2	0	0	0	2	0	1	2	0	3	7
% Buses and Single-Unit Trucks	2.9%	0%	0%	0%	1.7%	0%	33.3%	0%	0%	12.5%	22.2%	0%	0%	0%	1.9%	0%	2.4%	15.4%	0%	4.5%	2.9%

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

Independence Ave. & Town Centre Dr. - TMC
Thu Aug 4, 2022
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 975240, Location: 38.9498, -94.364056



Independence Ave. & Town Centre Dr. - TMC

Thu Aug 4, 2022

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975240, Location: 38.9498, -94.364056



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

Leg Direction	Town Center Eastbound					Access Westbound					Independence Northbound					Independence Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-08-04 4:15PM	4	4	1	0	9	1	2	2	0	5	3	24	0	0	27	3	20	5	0	28	69
4:30PM	5	2	0	0	7	0	0	5	0	5	3	22	2	0	27	2	28	3	0	33	72
4:45PM	5	3	1	0	9	0	0	3	0	3	4	11	1	0	16	2	25	10	0	37	65
5:00PM	8	1	1	0	10	2	2	5	0	9	2	12	1	0	15	5	33	6	0	44	78
Total	22	10	3	0	35	3	4	15	0	22	12	69	4	0	85	12	106	24	0	142	284
% Approach	62.9%	28.6%	8.6%	0%	-	13.6%	18.2%	68.2%	0%	-	14.1%	81.2%	4.7%	0%	-	8.5%	74.6%	16.9%	0%	-	-
% Total	7.7%	3.5%	1.1%	0%	12.3%	1.1%	1.4%	5.3%	0%	7.7%	4.2%	24.3%	1.4%	0%	29.9%	4.2%	37.3%	8.5%	0%	50.0%	-
PHF	0.688	0.625	0.750	-	0.875	0.375	0.500	0.750	-	0.611	0.750	0.719	0.500	-	0.787	0.600	0.803	0.600	-	0.807	0.910
Lights	22	10	3	0	35	3	4	15	0	22	11	69	4	0	84	10	104	24	0	138	279
% Lights	100%	100%	100%	0%	100%	100%	100%	100%	0%	100%	91.7%	100%	100%	0%	98.8%	83.3%	98.1%	100%	0%	97.2%	98.2%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.9%	0%	0%	0.7%	0.4%
Buses and Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	1	0	0	3	4
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8.3%	0%	0%	0%	1.2%	16.7%	0.9%	0%	0%	2.1%	1.4%

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

Independence Ave. & Town Centre Dr. - TMC

Thu Aug 4, 2022

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

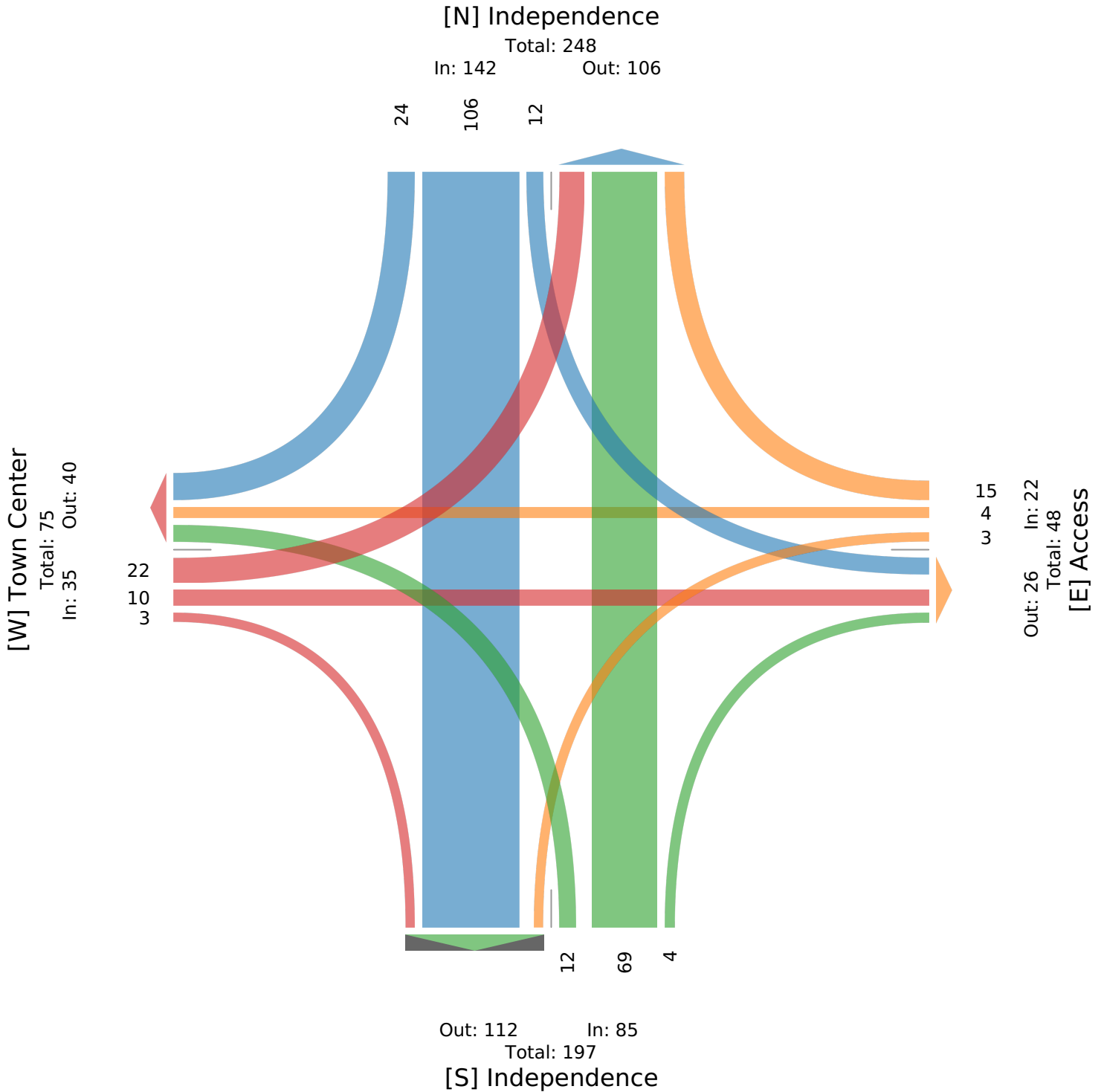
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975240, Location: 38.9498, -94.364056



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



Town Centre Blvd. & Town Centre Dr. - TMC

Thu Aug 4, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975241, Location: 38.950089, -94.369356

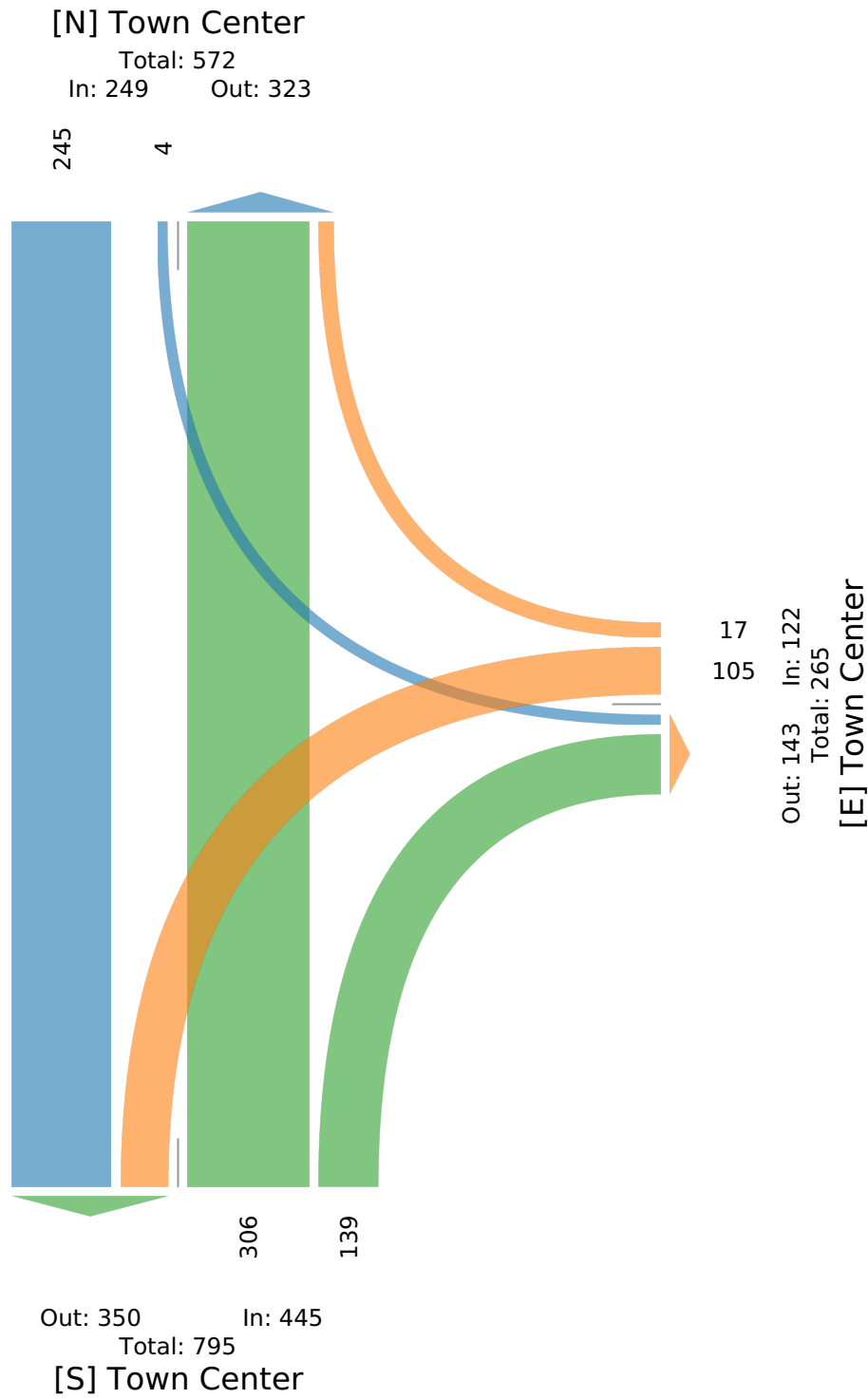


Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Town Center Westbound				Town Center Northbound				Town Center Southbound				
Time	L	R	U	App	T	R	U	App	L	T	U	App	Int
2022-08-04 7:00AM	0	0	0	0	16	2	0	18	0	16	0	16	34
7:15AM	2	0	0	2	16	9	0	25	0	10	0	10	37
7:30AM	2	3	0	5	26	18	0	44	0	9	0	9	58
7:45AM	3	4	0	7	18	20	0	38	0	7	0	7	52
Hourly Total	7	7	0	14	76	49	0	125	0	42	0	42	181
8:00AM	6	1	0	7	15	12	0	27	0	10	0	10	44
8:15AM	6	1	0	7	22	6	0	28	0	8	0	8	43
8:30AM	5	2	0	7	12	9	0	21	1	8	0	9	37
8:45AM	8	2	0	10	13	10	0	23	1	8	0	9	42
Hourly Total	25	6	0	31	62	37	0	99	2	34	0	36	166
4:00PM	6	3	0	9	25	8	0	33	0	27	0	27	69
4:15PM	9	0	0	9	15	4	0	19	0	23	0	23	51
4:30PM	7	0	0	7	26	7	0	33	1	20	0	21	61
4:45PM	13	0	0	13	24	9	0	33	0	14	0	14	60
Hourly Total	35	3	0	38	90	28	0	118	1	84	0	85	241
5:00PM	9	1	0	10	25	5	0	30	0	24	0	24	64
5:15PM	8	0	0	8	13	8	0	21	0	25	0	25	54
5:30PM	10	0	0	10	13	7	0	20	0	19	0	19	49
5:45PM	11	0	0	11	27	5	0	32	1	17	0	18	61
Hourly Total	38	1	0	39	78	25	0	103	1	85	0	86	228
Total	105	17	0	122	306	139	0	445	4	245	0	249	816
% Approach	86.1%	13.9%	0%	-	68.8%	31.2%	0%	-	1.6%	98.4%	0%	-	-
% Total	12.9%	2.1%	0%	15.0%	37.5%	17.0%	0%	54.5%	0.5%	30.0%	0%	30.5%	-
Lights	101	12	0	113	299	137	0	436	4	241	0	245	794
% Lights	96.2%	70.6%	0%	92.6%	97.7%	98.6%	0%	98.0%	100%	98.4%	0%	98.4%	97.3%
Articulated Trucks	0	3	0	3	3	0	0	3	0	1	0	1	7
% Articulated Trucks	0%	17.6%	0%	2.5%	1.0%	0%	0%	0.7%	0%	0.4%	0%	0.4%	0.9%
Buses and Single-Unit Trucks	4	2	0	6	4	2	0	6	0	3	0	3	15
% Buses and Single-Unit Trucks	3.8%	11.8%	0%	4.9%	1.3%	1.4%	0%	1.3%	0%	1.2%	0%	1.2%	1.8%

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

Town Centre Blvd. & Town Centre Dr. - TMC
Thu Aug 4, 2022
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 975241, Location: 38.950089, -94.369356



Town Centre Blvd. & Town Centre Dr. - TMC

Thu Aug 4, 2022

AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975241, Location: 38.950089, -94.369356

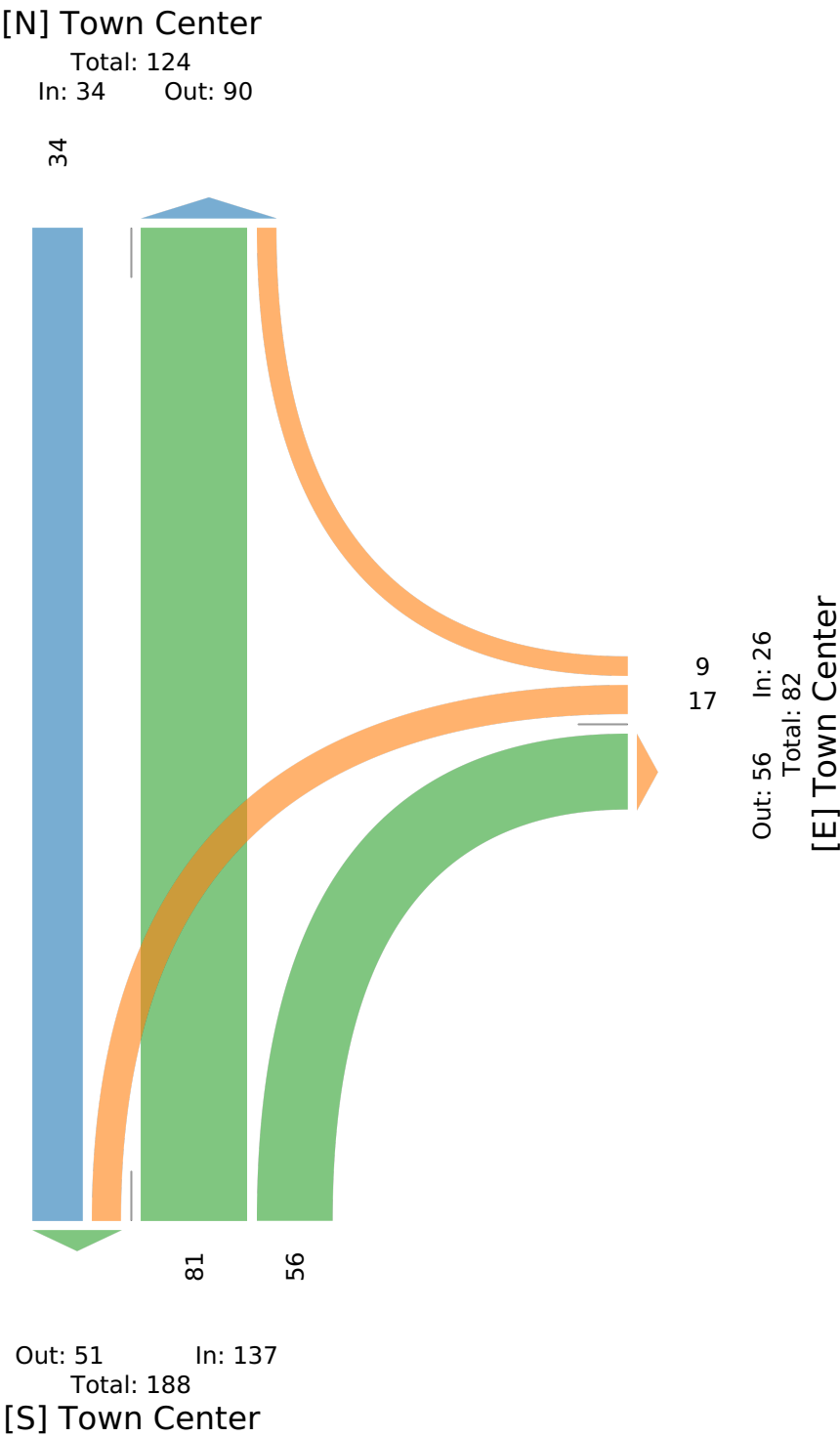


Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Town Center Westbound				Town Center Northbound				Town Center Southbound				
Time	L	R	U	App	T	R	U	App	L	T	U	App	Int
2022-08-04 7:30AM	2	3	0	5	26	18	0	44	0	9	0	9	58
7:45AM	3	4	0	7	18	20	0	38	0	7	0	7	52
8:00AM	6	1	0	7	15	12	0	27	0	10	0	10	44
8:15AM	6	1	0	7	22	6	0	28	0	8	0	8	43
Total	17	9	0	26	81	56	0	137	0	34	0	34	197
% Approach	65.4%	34.6%	0%	-	59.1%	40.9%	0%	-	0%	100%	0%	-	-
% Total	8.6%	4.6%	0%	13.2%	41.1%	28.4%	0%	69.5%	0%	17.3%	0%	17.3%	-
PHF	0.708	0.563	-	0.929	0.779	0.700	-	0.778	-	0.850	-	0.850	0.849
Lights	14	4	0	18	77	54	0	131	0	33	0	33	182
% Lights	82.4%	44.4%	0%	69.2%	95.1%	96.4%	0%	95.6%	0%	97.1%	0%	97.1%	92.4%
Articulated Trucks	0	3	0	3	2	0	0	2	0	0	0	0	5
% Articulated Trucks	0%	33.3%	0%	11.5%	2.5%	0%	0%	1.5%	0%	0%	0%	0%	2.5%
Buses and Single-Unit Trucks	3	2	0	5	2	2	0	4	0	1	0	1	10
% Buses and Single-Unit Trucks	17.6%	22.2%	0%	19.2%	2.5%	3.6%	0%	2.9%	0%	2.9%	0%	2.9%	5.1%

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

Town Centre Blvd. & Town Centre Dr. - TMC
Thu Aug 4, 2022
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 975241, Location: 38.950089, -94.369356



Town Centre Blvd. & Town Centre Dr. - TMC

Thu Aug 4, 2022

PM Peak (4 PM - 5 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975241, Location: 38.950089, -94.369356

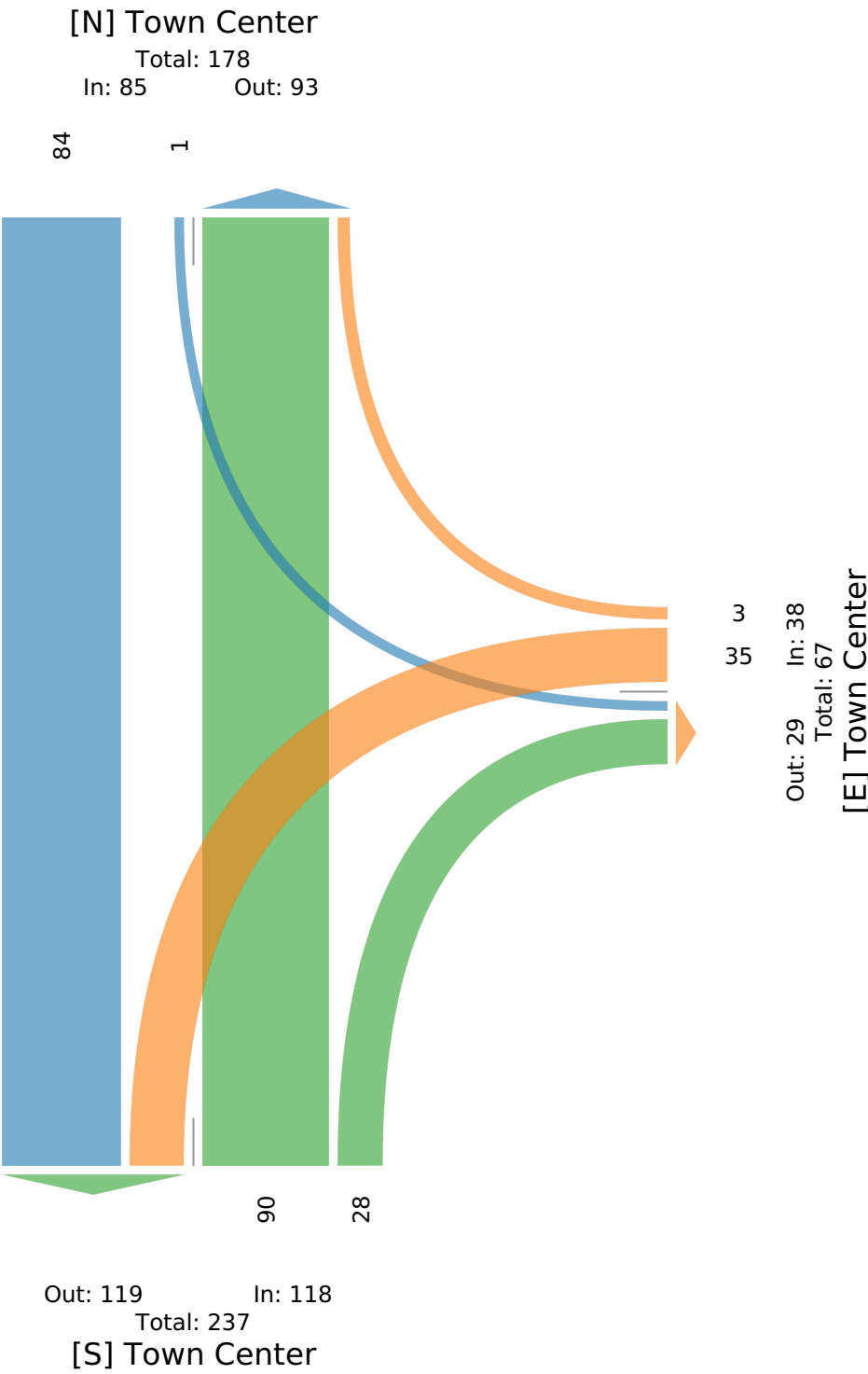


Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Town Center Westbound				Town Center Northbound				Town Center Southbound				
Time	L	R	U	App	T	R	U	App	L	T	U	App	Int
2022-08-04 4:00PM	6	3	0	9	25	8	0	33	0	27	0	27	69
4:15PM	9	0	0	9	15	4	0	19	0	23	0	23	51
4:30PM	7	0	0	7	26	7	0	33	1	20	0	21	61
4:45PM	13	0	0	13	24	9	0	33	0	14	0	14	60
Total	35	3	0	38	90	28	0	118	1	84	0	85	241
% Approach	92.1%	7.9%	0%	-	76.3%	23.7%	0%	-	1.2%	98.8%	0%	-	-
% Total	14.5%	1.2%	0%	15.8%	37.3%	11.6%	0%	49.0%	0.4%	34.9%	0%	35.3%	-
PHF	0.673	0.250	-	0.731	0.865	0.778	-	0.894	0.250	0.778	-	0.787	0.873
Lights	35	3	0	38	88	28	0	116	1	83	0	84	238
% Lights	100%	100%	0%	100%	97.8%	100%	0%	98.3%	100%	98.8%	0%	98.8%	98.8%
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	2	0	0	2	0	1	0	1	3
% Buses and Single-Unit Trucks	0%	0%	0%	0%	2.2%	0%	0%	1.7%	0%	1.2%	0%	1.2%	1.2%

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

Town Centre Blvd. & Town Centre Dr. - TMC
Thu Aug 4, 2022
PM Peak (4 PM - 5 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 975241, Location: 38.950089, -94.369356



Town Centre Blvd. & Colbern Road - TMC

Thu Aug 4, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975242, Location: 38.946368, -94.369562



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

Leg Direction	Colbern Eastbound					Colbern Westbound					Town Center Northbound					Town Center Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-08-04 7:00AM	17	53	6	0	76	2	193	1	0	196	0	0	2	0	2	7	0	9	0	16	290
7:15AM	23	59	1	0	83	10	239	5	1	255	2	0	3	0	5	2	0	10	0	12	355
7:30AM	39	104	1	0	144	4	246	2	0	252	1	0	3	0	4	5	0	6	0	11	411
7:45AM	37	108	2	0	147	2	220	3	0	225	0	0	3	0	3	5	0	6	0	11	386
Hourly Total	116	324	10	0	450	18	898	11	1	928	3	0	11	0	14	19	0	31	0	50	1442
8:00AM	24	93	5	0	122	7	189	2	0	198	3	0	1	0	4	4	0	11	0	15	339
8:15AM	25	79	1	0	105	4	193	3	0	200	3	0	2	0	5	6	0	6	0	12	322
8:30AM	19	72	5	0	96	5	194	3	0	202	1	0	3	0	4	7	0	8	0	15	317
8:45AM	17	110	2	0	129	14	155	4	0	173	5	1	4	0	10	7	0	9	0	16	328
Hourly Total	85	354	13	0	452	30	731	12	0	773	12	1	10	0	23	24	0	34	0	58	1306
4:00PM	22	223	4	0	249	8	170	9	0	187	7	0	4	0	11	19	0	15	0	34	481
4:15PM	9	223	3	0	235	3	135	8	0	146	3	1	6	0	10	22	0	14	0	36	427
4:30PM	24	225	2	0	251	2	202	9	1	214	3	0	5	0	8	23	0	11	0	34	507
4:45PM	20	225	4	0	249	5	191	8	0	204	4	1	2	0	7	15	0	11	0	26	486
Hourly Total	75	896	13	0	984	18	698	34	1	751	17	2	17	0	36	79	0	51	0	130	1901
5:00PM	25	240	2	1	268	0	201	10	0	211	5	0	4	0	9	33	0	14	0	47	535
5:15PM	20	257	2	0	279	0	179	6	0	185	4	1	6	0	11	20	1	19	0	40	515
5:30PM	9	213	1	0	223	8	195	3	0	206	2	0	7	0	9	21	0	9	0	30	468
5:45PM	26	224	2	0	252	6	162	8	0	176	3	0	13	0	16	16	0	11	0	27	471
Hourly Total	80	934	7	1	1022	14	737	27	0	778	14	1	30	0	45	90	1	53	0	144	1989
Total	356	2508	43	1	2908	80	3064	84	2	3230	46	4	68	0	118	212	1	169	0	382	6638
% Approach	12.2%	86.2%	1.5%	0%	-	2.5%	94.9%	2.6%	0.1%	-	39.0%	3.4%	57.6%	0%	-	55.5%	0.3%	44.2%	0%	-	-
% Total	5.4%	37.8%	0.6%	0%	43.8%	1.2%	46.2%	1.3%	0%	48.7%	0.7%	0.1%	1.0%	0%	1.8%	3.2%	0%	2.5%	0%	5.8%	-
Lights	346	2471	43	1	2861	76	3020	84	2	3182	46	4	67	0	117	209	0	165	0	374	6534
% Lights	97.2%	98.5%	100%	100%	98.4%	95.0%	98.6%	100%	100%	98.5%	100%	100%	98.5%	0%	99.2%	98.6%	0%	97.6%	0%	97.9%	98.4%
Articulated Trucks	3	8	0	0	11	0	18	0	0	18	0	0	0	0	0	1	0	0	0	1	30
% Articulated Trucks	0.8%	0.3%	0%	0%	0.4%	0%	0.6%	0%	0%	0.6%	0%	0%	0%	0%	0%	0.5%	0%	0%	0%	0.3%	0.5%
Buses and Single-Unit Trucks	7	29	0	0	36	4	26	0	0	30	0	0	1	0	1	2	1	4	0	7	74
% Buses and Single-Unit Trucks	2.0%	1.2%	0%	0%	1.2%	5.0%	0.8%	0%	0%	0.9%	0%	0%	1.5%	0%	0.8%	0.9%	100%	2.4%	0%	1.8%	1.1%

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

Town Centre Blvd. & Colbern Road - TMC

Thu Aug 4, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

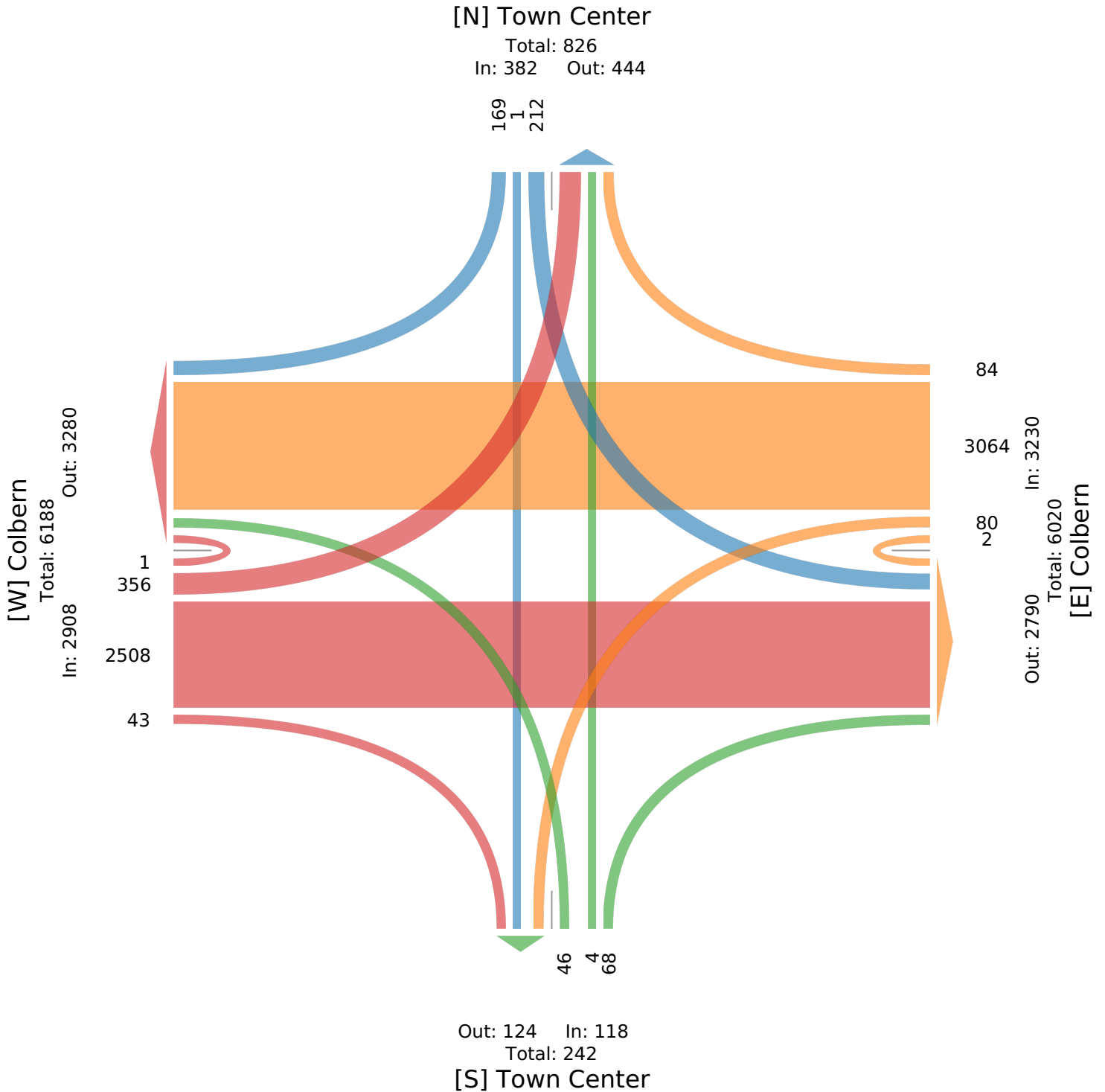
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975242, Location: 38.946368, -94.369562



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



Town Centre Blvd. & Colbern Road - TMC

Thu Aug 4, 2022

AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975242, Location: 38.946368, -94.369562



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

Leg Direction	Colbern Eastbound					Colbern Westbound					Town Center Northbound					Town Center Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-08-04 7:15AM	23	59	1	0	83	10	239	5	1	255	2	0	3	0	5	2	0	10	0	12	355
7:30AM	39	104	1	0	144	4	246	2	0	252	1	0	3	0	4	5	0	6	0	11	411
7:45AM	37	108	2	0	147	2	220	3	0	225	0	0	3	0	3	5	0	6	0	11	386
8:00AM	24	93	5	0	122	7	189	2	0	198	3	0	1	0	4	4	0	11	0	15	339
Total	123	364	9	0	496	23	894	12	1	930	6	0	10	0	16	16	0	33	0	49	1491
% Approach	24.8%	73.4%	1.8%	0%	-	2.5%	96.1%	1.3%	0.1%	-	37.5%	0%	62.5%	0%	-	32.7%	0%	67.3%	0%	-	-
% Total	8.2%	24.4%	0.6%	0%	33.3%	1.5%	60.0%	0.8%	0.1%	62.4%	0.4%	0%	0.7%	0%	1.1%	1.1%	0%	2.2%	0%	3.3%	-
PHF	0.788	0.843	0.450	-	0.844	0.575	0.909	0.600	0.250	0.912	0.500	-	0.833	-	0.800	0.800	-	0.750	-	0.817	0.907
Lights	116	351	9	0	476	23	883	12	1	919	6	0	10	0	16	14	0	29	0	43	1454
% Lights	94.3%	96.4%	100%	0%	96.0%	100%	98.8%	100%	100%	98.8%	100%	0%	100%	0%	100%	87.5%	0%	87.9%	0%	87.8%	97.5%
Articulated Trucks	2	2	0	0	4	0	3	0	0	3	0	0	0	0	0	1	0	0	0	1	8
% Articulated Trucks	1.6%	0.5%	0%	0%	0.8%	0%	0.3%	0%	0%	0.3%	0%	0%	0%	0%	0%	6.3%	0%	0%	0%	2.0%	0.5%
Buses and Single-Unit Trucks	5	11	0	0	16	0	8	0	0	8	0	0	0	0	0	1	0	4	0	5	29
% Buses and Single-Unit Trucks	4.1%	3.0%	0%	0%	3.2%	0%	0.9%	0%	0%	0.9%	0%	0%	0%	0%	0%	6.3%	0%	12.1%	0%	10.2%	1.9%

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

Town Centre Blvd. & Colbern Road - TMC

Thu Aug 4, 2022

AM Peak (7:15 AM - 8:15 AM)

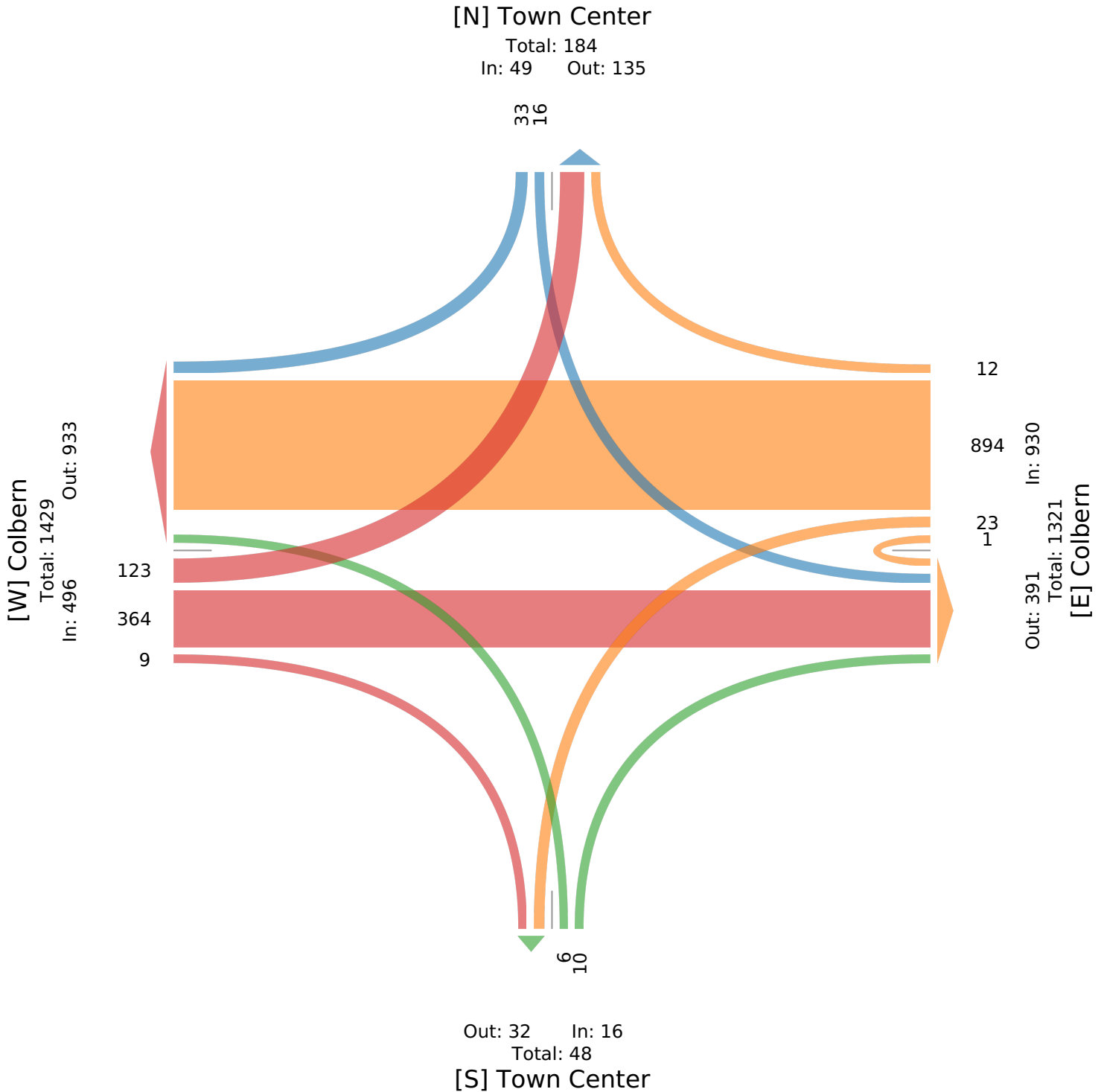
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975242, Location: 38.946368, -94.369562



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



Town Centre Blvd. & Colbern Road - TMC

Thu Aug 4, 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: 975242, Location: 38.946368, -94.369562



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

Leg Direction	Colbern Eastbound					Colbern Westbound					Town Center Northbound					Town Center Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-08-04 4:30PM	24	225	2	0	251	2	202	9	1	214	3	0	5	0	8	23	0	11	0	34	507
4:45PM	20	225	4	0	249	5	191	8	0	204	4	1	2	0	7	15	0	11	0	26	486
5:00PM	25	240	2	1	268	0	201	10	0	211	5	0	4	0	9	33	0	14	0	47	535
5:15PM	20	257	2	0	279	0	179	6	0	185	4	1	6	0	11	20	1	19	0	40	515
Total	89	947	10	1	1047	7	773	33	1	814	16	2	17	0	35	91	1	55	0	147	2043
% Approach	8.5%	90.4%	1.0%	0.1%	-	0.9%	95.0%	4.1%	0.1%	-	45.7%	5.7%	48.6%	0%	-	61.9%	0.7%	37.4%	0%	-	-
% Total	4.4%	46.4%	0.5%	0%	51.2%	0.3%	37.8%	1.6%	0%	39.8%	0.8%	0.1%	0.8%	0%	1.7%	4.5%	0%	2.7%	0%	7.2%	-
PHF	0.890	0.921	0.625	0.250	0.938	0.350	0.957	0.825	0.250	0.951	0.800	0.500	0.708	-	0.795	0.689	0.250	0.724	-	0.782	0.955
Lights	88	943	10	1	1042	7	765	33	1	806	16	2	16	0	34	90	0	55	0	145	2027
% Lights	98.9%	99.6%	100%	100%	99.5%	100%	99.0%	100%	100%	99.0%	100%	100%	94.1%	0%	97.1%	98.9%	0%	100%	0%	98.6%	99.2%
Articulated Trucks	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	4
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.2%
Buses and Single-Unit Trucks	1	4	0	0	5	0	4	0	0	4	0	0	1	0	1	1	1	0	0	2	12
% Buses and Single-Unit Trucks	1.1%	0.4%	0%	0%	0.5%	0%	0.5%	0%	0%	0.5%	0%	0%	5.9%	0%	2.9%	1.1%	100%	0%	0%	1.4%	0.6%

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

Town Centre Blvd. & Colbern Road - TMC

Thu Aug 4, 2022

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

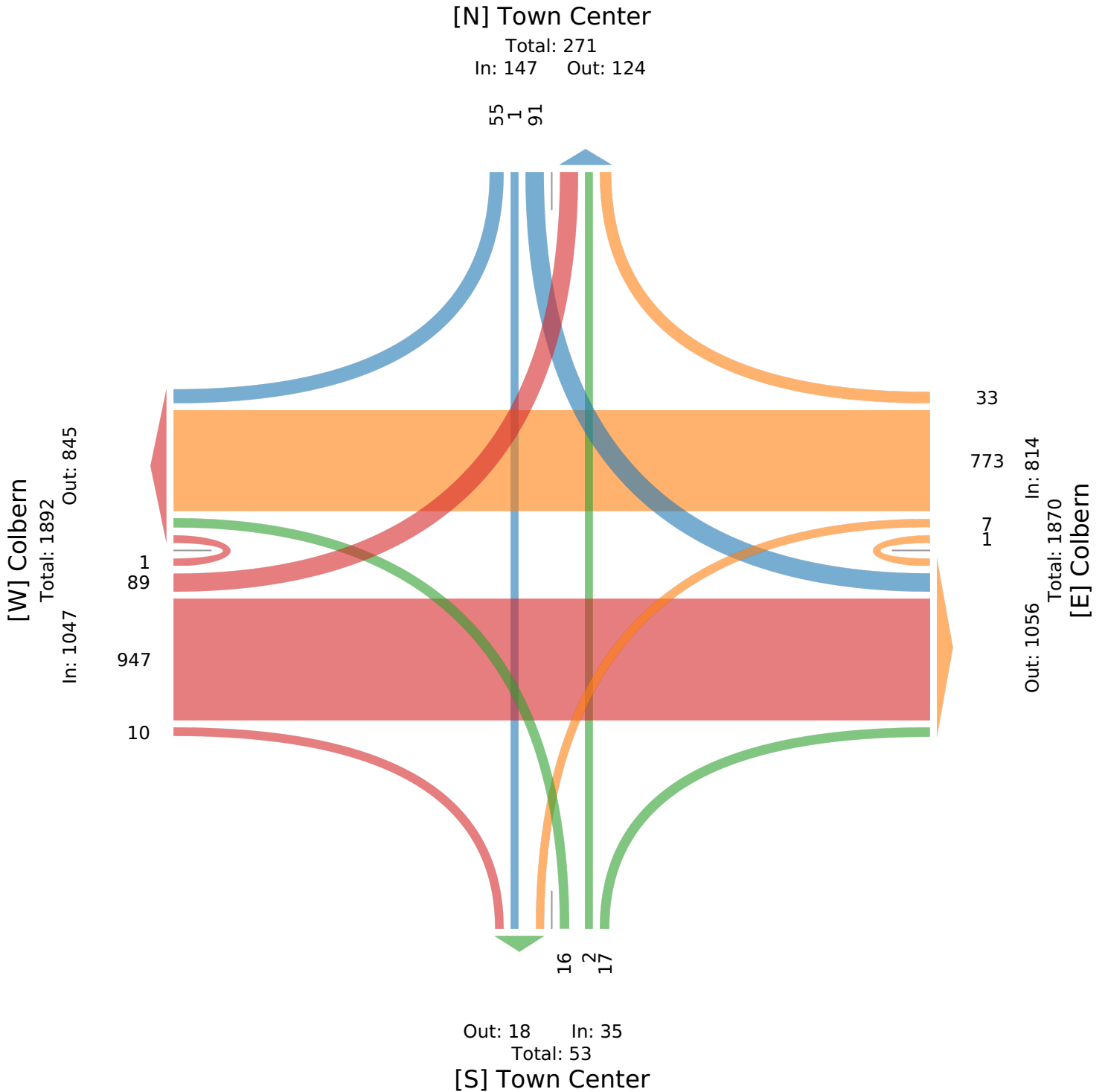
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 975242, Location: 38.946368, -94.369562

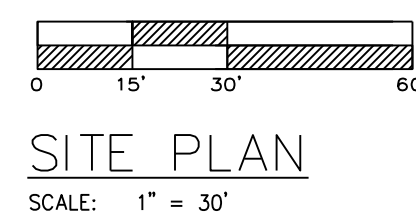
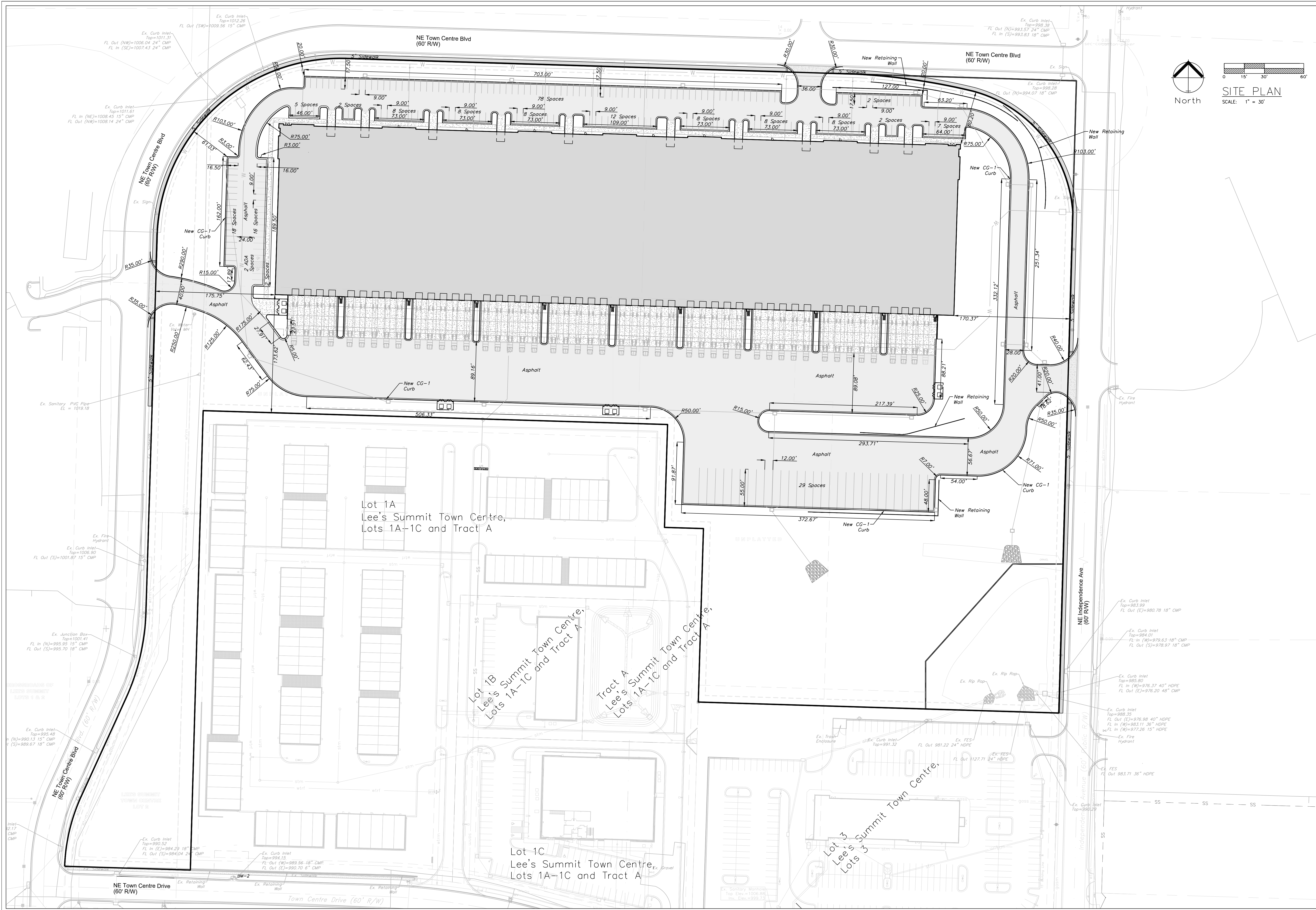


Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



Appendix C: Site Plan



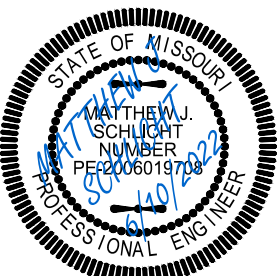


Professional Registration
Missouri
Engineering 2005002188-D
Surveying 2005000519-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

TOWN CENTRE VACANT GROUND
LEES SUMMIT, JACKSON COUNTY, MISSOURI

Project:
TOWN CENTRE,
LSMO
Issue Date:
June 10, 2022

SITE PLAN
Preliminary Plans for:
Town Centre Future Lot 4
Lee's Summit, Jackson County, Missouri



Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25526

REVISIONS

Appendix D: ITE Trip Generation Manual Sheets



Warehousing (150)

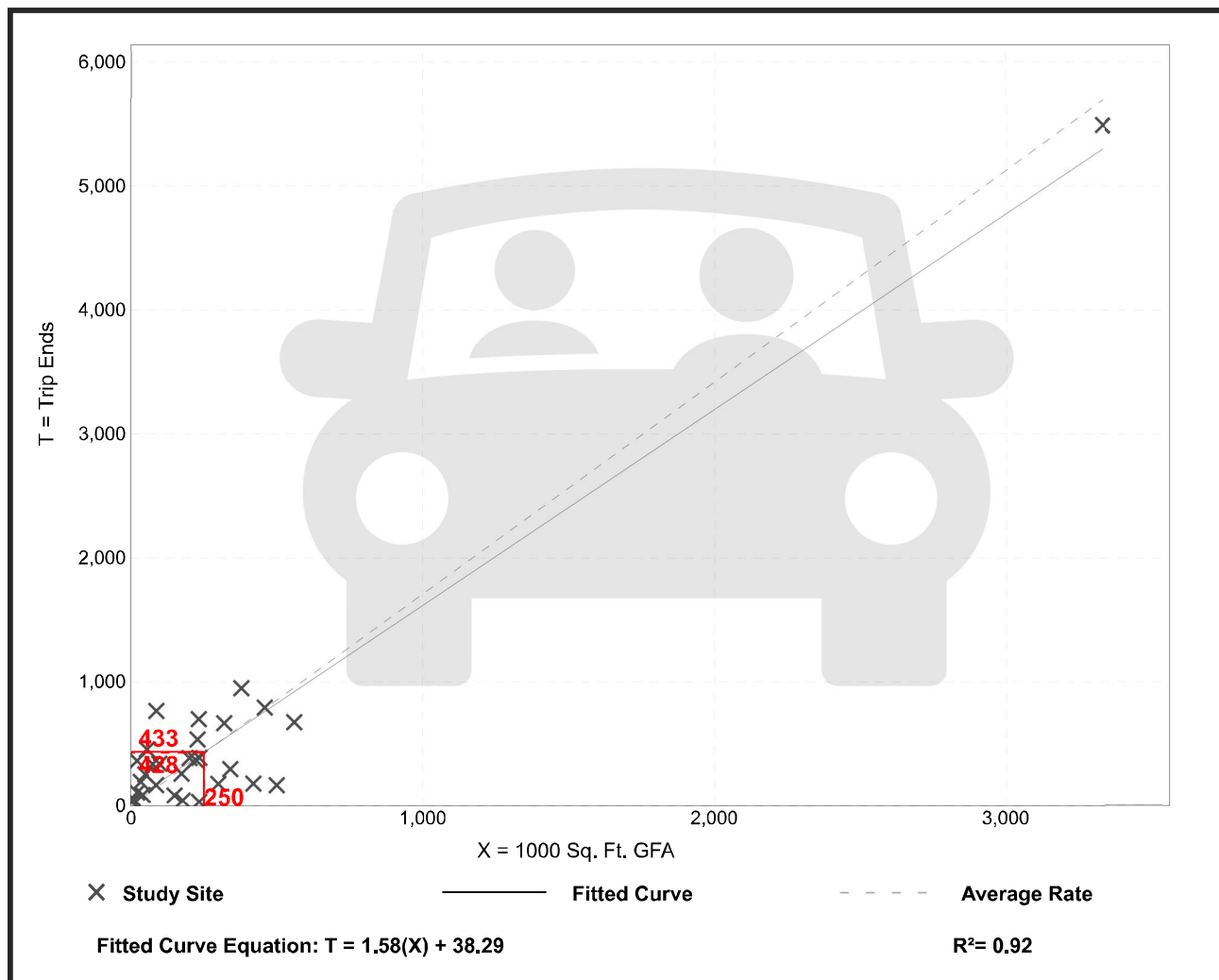
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 31
Avg. 1000 Sq. Ft. GFA: 292
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.71	0.15 - 16.93	1.48

Data Plot and Equation



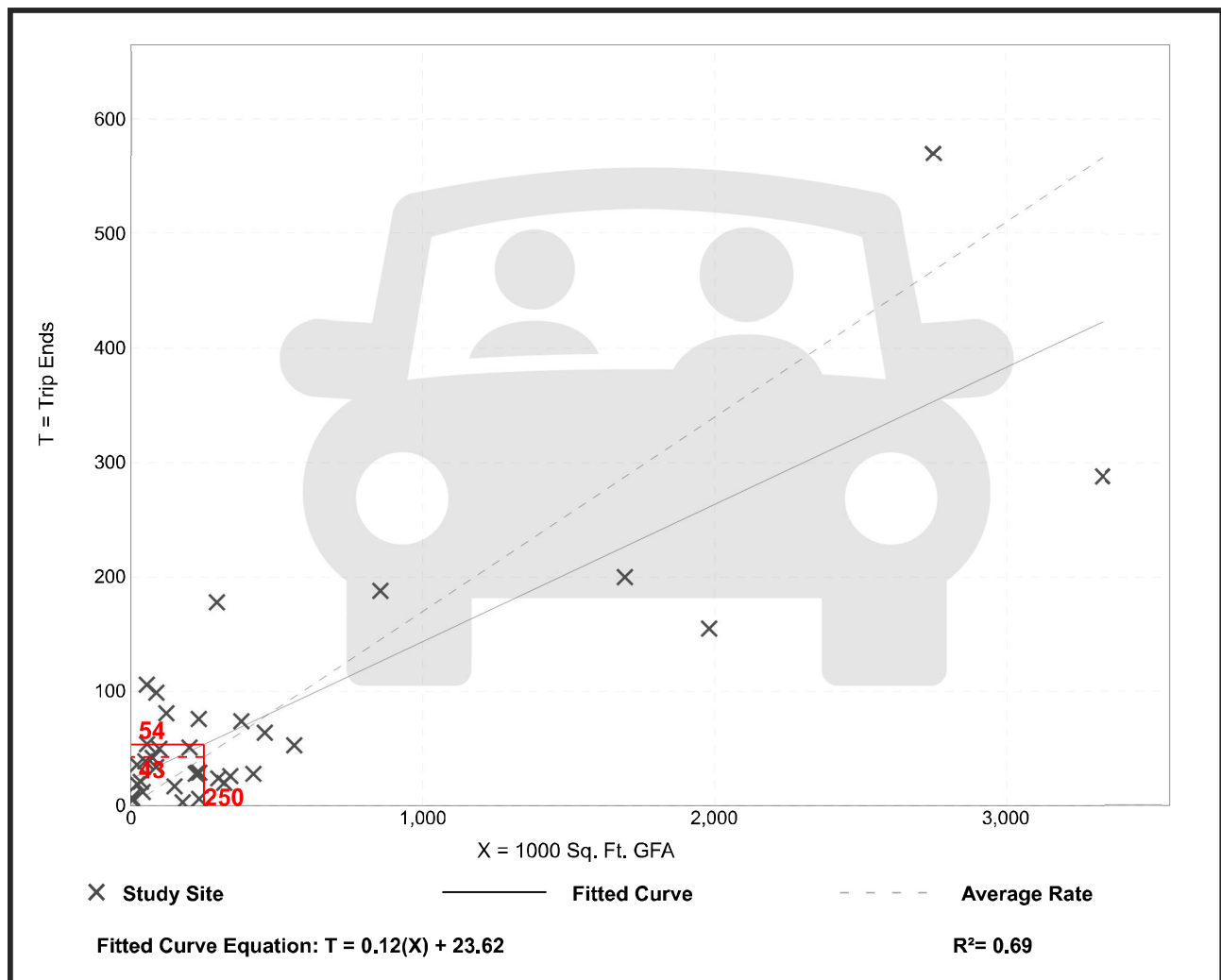
Warehousing (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
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: 36
 Avg. 1000 Sq. Ft. GFA: 448
 Directional Distribution: 77% entering, 23% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.17	0.02 - 1.93	0.19

Data Plot and Equation



Warehousing

(150)

Truck Trip Ends vs: 1000 Sq. Ft. GFA

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: 23

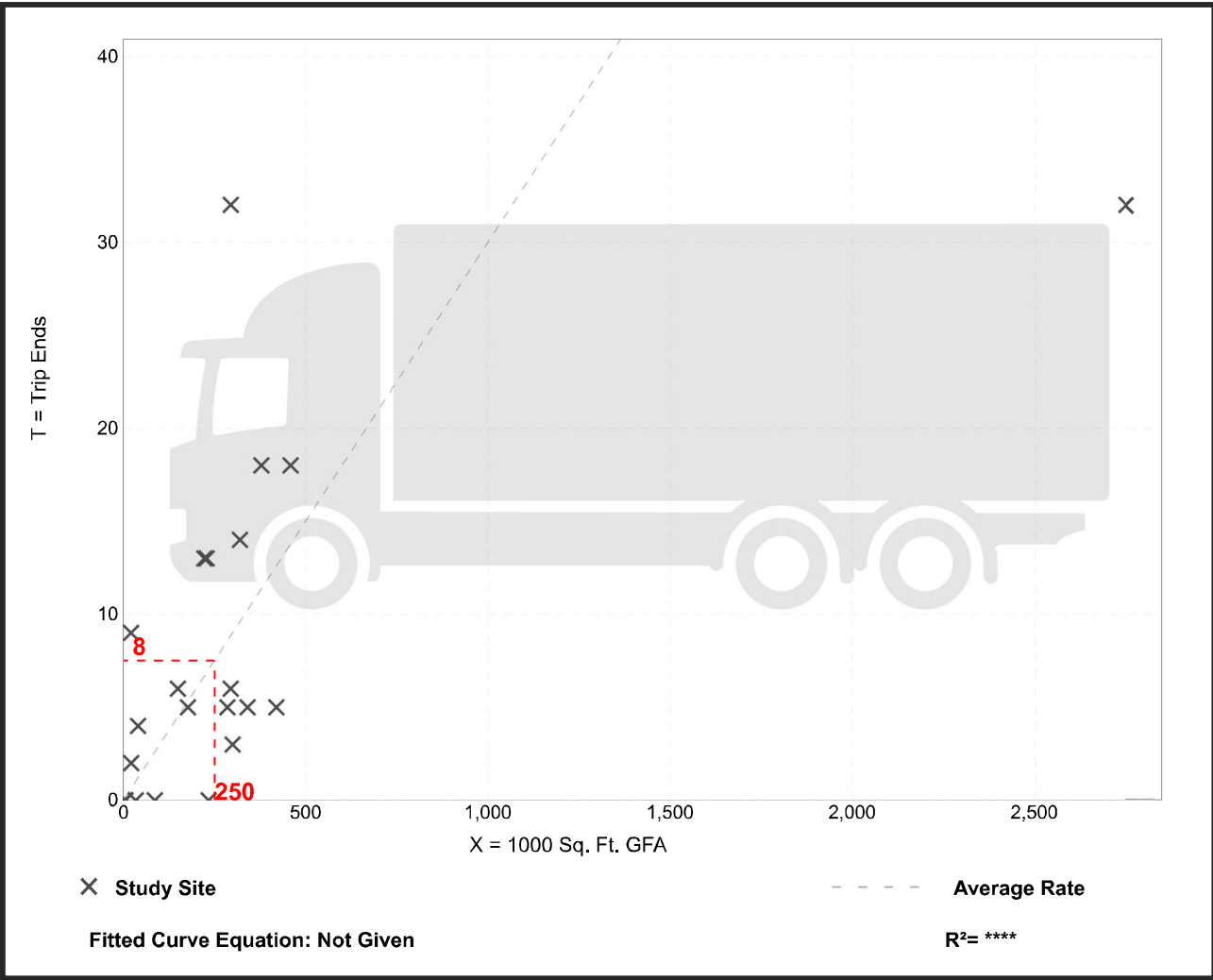
Avg. 1000 Sq. Ft. GFA: 308

Directional Distribution: 52% entering, 48% exiting

Truck Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.03	0.00 - 0.42	0.03

Data Plot and Equation



Warehousing

(150)

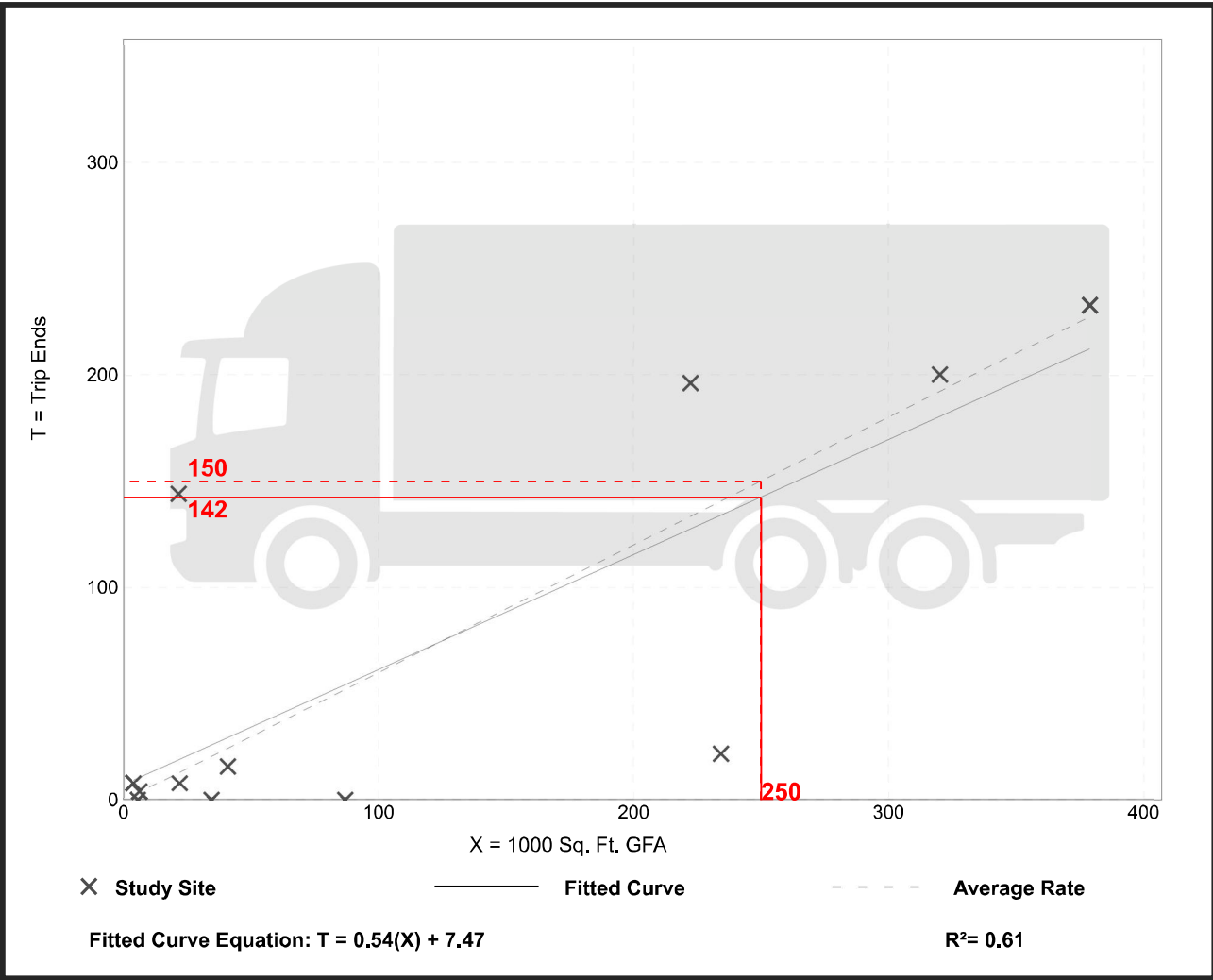
Truck Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 12
Avg. 1000 Sq. Ft. GFA: 115
Directional Distribution: 50% entering, 50% exiting

Truck Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.60	0.00 - 6.66	0.86

Data Plot and Equation



Warehousing (150)

Truck Trip Ends vs: 1000 Sq. Ft. GFA

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: 21

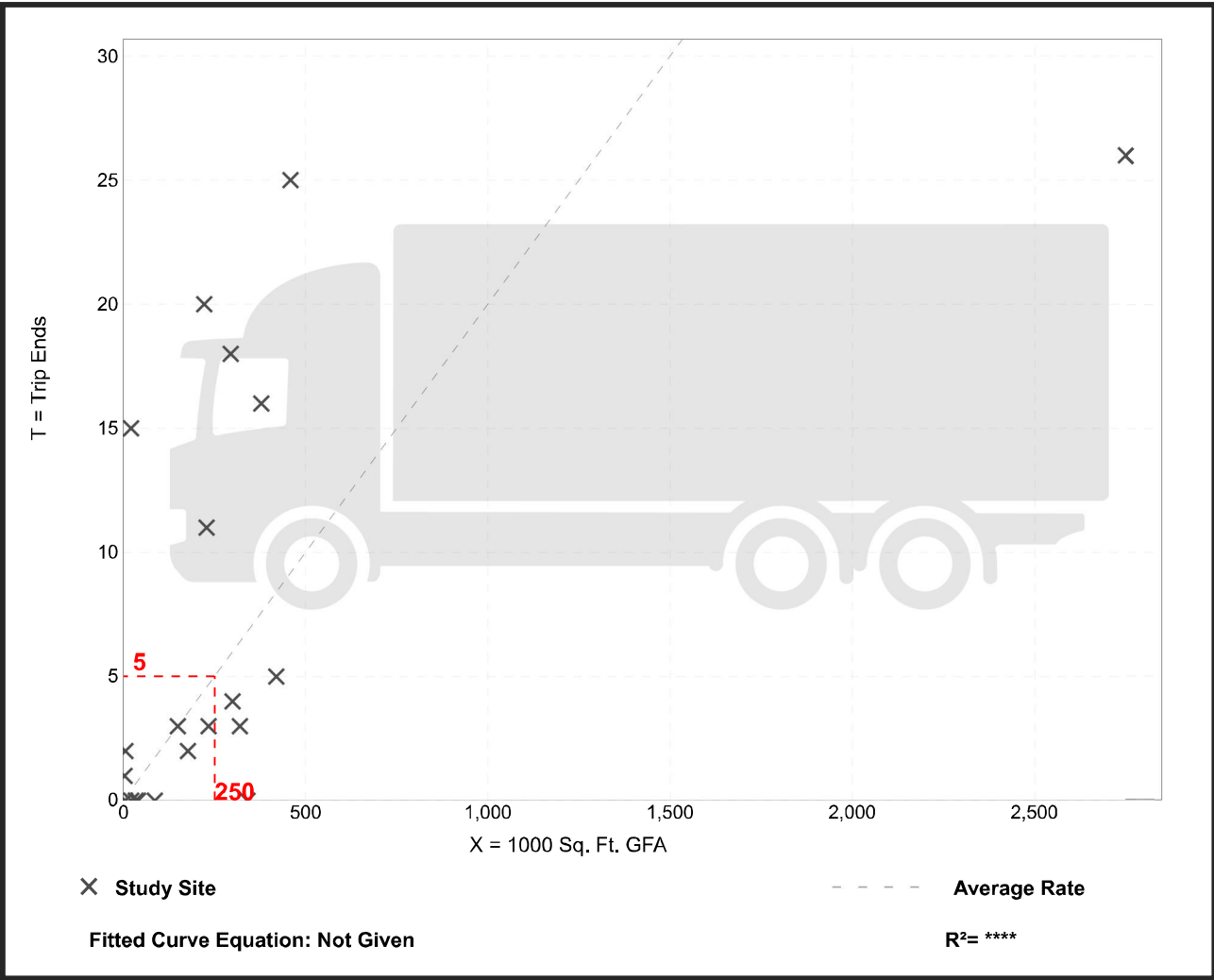
Avg. 1000 Sq. Ft. GFA: 309

Directional Distribution: 52% entering, 48% exiting

Truck Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.02	0.00 - 0.69	0.05

Data Plot and Equation



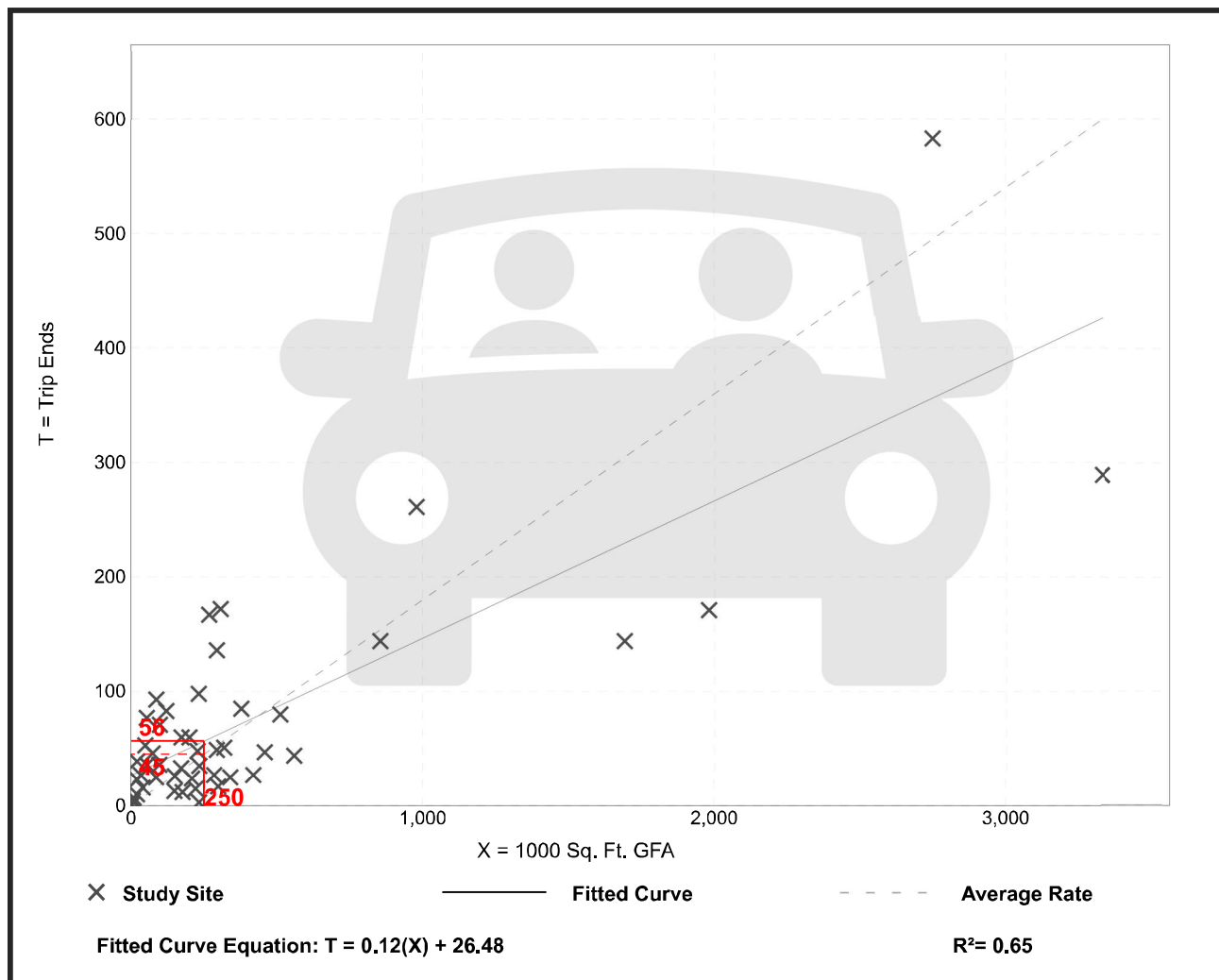
Warehousing (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
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: 49
 Avg. 1000 Sq. Ft. GFA: 400
 Directional Distribution: 28% entering, 72% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.18	0.01 - 1.80	0.18

Data Plot and Equation



Appendix E: Synchro Reports

HCM 6th TWSC
1: Independence Ave & Town Centre Blvd

Existing Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	59	11	0	84	72	16
Future Vol, veh/h	59	11	0	84	72	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	7	27	2	2	4	19
Mvmt Flow	66	12	0	93	80	18
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	182	89	98	0	-	0
Stage 1	89	-	-	-	-	-
Stage 2	93	-	-	-	-	-
Critical Hdwy	6.47	6.47	4.12	-	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.543	2.218	-	-	-
Pot Cap-1 Maneuver	796	904	1495	-	-	-
Stage 1	922	-	-	-	-	-
Stage 2	918	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	796	904	1495	-	-	-
Mov Cap-2 Maneuver	796	-	-	-	-	-
Stage 1	922	-	-	-	-	-
Stage 2	918	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.8	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1495	-	796	904	-	-
HCM Lane V/C Ratio	-	-	0.082	0.014	-	-
HCM Control Delay (s)	0	-	9.9	9	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	0	-	-

HCM 6th TWSC
2: Independence Ave & Town Centre Dr

Existing Conditions
AM Peak Hour

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	35	15	8	1	3	4	9	92	5	10	41	12
Future Vol, veh/h	35	15	8	1	3	4	9	92	5	10	41	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	2	2	2	33	2	33	2	2	2	2	42
Mvmt Flow	39	17	9	1	3	4	10	102	6	11	46	13

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	204	203	53	213	206	105	59	0	0	108	0	0
Stage 1	75	75	-	125	125	-	-	-	-	-	-	-
Stage 2	129	128	-	88	81	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.52	6.22	7.12	6.83	6.22	4.43	-	-	4.12	-	-
Critical Hdwy Stg 1	6.13	5.52	-	6.12	5.83	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.52	-	6.12	5.83	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.018	3.318	3.518	4.297	3.318	2.497	-	-	2.218	-	-
Pot Cap-1 Maneuver	752	693	1014	744	639	949	1368	-	-	1483	-	-
Stage 1	932	833	-	879	737	-	-	-	-	-	-	-
Stage 2	872	790	-	920	771	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	737	683	1014	716	630	949	1368	-	-	1483	-	-
Mov Cap-2 Maneuver	737	683	-	716	630	-	-	-	-	-	-	-
Stage 1	925	827	-	873	732	-	-	-	-	-	-	-
Stage 2	858	784	-	887	766	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.3		9.7		0.6		1.2	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1368	-	-	750	771	1483	-
HCM Lane V/C Ratio	0.007	-	-	0.086	0.012	0.007	-
HCM Control Delay (s)	7.7	-	-	10.3	9.7	7.4	-
HCM Lane LOS	A	-	-	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0	0	-

HCM 6th TWSC
3: Town Centre Blvd & Town Centre Dr

Existing Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	8	75	59	0	36
Future Vol, veh/h	13	8	75	59	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	23	50	5	3	2	8
Mvmt Flow	14	9	83	66	0	40
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	123	83	0	0	149	0
Stage 1	83	-	-	-	-	-
Stage 2	40	-	-	-	-	-
Critical Hdwy	6.63	6.7	-	-	4.12	-
Critical Hdwy Stg 1	5.63	-	-	-	-	-
Critical Hdwy Stg 2	5.63	-	-	-	-	-
Follow-up Hdwy	3.707	3.75	-	-	2.218	-
Pot Cap-1 Maneuver	824	859	-	-	1432	-
Stage 1	890	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	824	859	-	-	1432	-
Mov Cap-2 Maneuver	824	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.3	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 824 859	1432	-		
HCM Lane V/C Ratio	-	- 0.018 0.01	-	-		
HCM Control Delay (s)	-	- 9.4 9.2	0	-		
HCM Lane LOS	-	- A A	A	-		
HCM 95th %tile Q(veh)	-	- 0.1 0	0	-		

Queues

4: Town Centre Blvd & Colbern Road

Existing Conditions

AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	137	414	26	1006	18	9	9	37
v/c Ratio	0.30	0.16	0.04	0.64	0.05	0.05	0.05	0.11
Control Delay	6.4	7.2	6.4	17.6	0.3	35.4	35.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	7.2	6.4	17.6	0.3	35.4	35.4	0.7
Queue Length 50th (ft)	12	20	2	148	0	3	3	0
Queue Length 95th (ft)	47	87	13	292	0	21	21	0
Internal Link Dist (ft)	1724			1879	221	710		
Turn Bay Length (ft)	175	75			180			180
Base Capacity (vph)	546	2894	584	2686	731	497	497	601
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.14	0.04	0.37	0.02	0.02	0.02	0.06
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

4: Town Centre Blvd & Colbern Road

Existing Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	364	9	23	894	12	6	0	10	16	0	33
Future Volume (vph)	123	364	9	23	894	12	6	0	10	16	0	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00			0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	0.95	1.00
Satd. Flow (prot)	1703	3460		1770	3532			1676		1517	1517	1442
Flt Permitted	0.16	1.00		0.51	1.00			0.98		0.95	0.95	1.00
Satd. Flow (perm)	291	3460		949	3532			1676		1517	1517	1442
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	137	404	10	26	993	13	7	0	11	18	0	37
RTOR Reduction (vph)	0	1	0	0	1	0	0	18	0	0	0	35
Lane Group Flow (vph)	137	413	0	26	1005	0	0	0	0	9	9	2
Heavy Vehicles (%)	6%	4%	2%	2%	2%	2%	2%	2%	2%	13%	2%	12%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	49.5	42.0		34.1	32.6			1.6		3.3	3.3	3.3
Effective Green, g (s)	49.5	42.0		34.1	32.6			1.6		3.3	3.3	3.3
Actuated g/C Ratio	0.68	0.58		0.47	0.45			0.02		0.05	0.05	0.05
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	411	2007		463	1590			37		69	69	65
v/s Ratio Prot	c0.05	0.12		0.00	c0.28			c0.00		c0.01	0.01	
v/s Ratio Perm	0.18			0.03								0.00
v/c Ratio	0.33	0.21		0.06	0.63			0.01		0.13	0.13	0.03
Uniform Delay, d1	6.5	7.2		10.3	15.3			34.6		33.2	33.2	33.0
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.1		0.1	0.8			0.1		0.9	0.9	0.2
Delay (s)	7.0	7.3		10.3	16.1			34.7		34.0	34.0	33.2
Level of Service	A	A		B	B			C		C	C	C
Approach Delay (s)		7.2			16.0			34.7			33.5	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			13.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			72.4			Sum of lost time (s)			24.0			
Intersection Capacity Utilization			53.4%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
1: Independence Ave & Town Centre Blvd

Existing Conditions
PM Peak Hour

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	9	8	112	102	48
Future Vol, veh/h	44	9	8	112	102	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	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	10	9	122	111	52
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	277	137	163	0	-	0
Stage 1	137	-	-	-	-	-
Stage 2	140	-	-	-	-	-
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	713	911	1416	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	887	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	708	911	1416	-	-	-
Mov Cap-2 Maneuver	708	-	-	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	887	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.2	0.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1416	-	708	911	-	-
HCM Lane V/C Ratio	0.006	-	0.068	0.011	-	-
HCM Control Delay (s)	7.6	0	10.5	9	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0	-	-

HCM 6th TWSC
2: Independence Ave & Town Centre Dr

Existing Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↵	↵		↵	↵	
Traffic Vol, veh/h	26	7	2	2	3	18	10	59	5	11	109	26
Future Vol, veh/h	26	7	2	2	3	18	10	59	5	11	109	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	2	2	2	10	2	2	18	2	2
Mvmt Flow	28	8	2	2	3	20	11	64	5	12	118	28
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	256	247	132	250	259	67	146	0	0	69	0	0
Stage 1	156	156	-	89	89	-	-	-	-	-	-	-
Stage 2	100	91	-	161	170	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.52	6.22	7.12	6.52	6.22	4.2	-	-	4.28	-	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.018	3.318	3.518	4.018	3.318	2.29	-	-	2.362	-	-
Pot Cap-1 Maneuver	693	655	917	703	645	997	1388	-	-	1436	-	-
Stage 1	842	769	-	918	821	-	-	-	-	-	-	-
Stage 2	901	820	-	841	758	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	668	645	917	686	635	997	1388	-	-	1436	-	-
Mov Cap-2 Maneuver	668	645	-	686	635	-	-	-	-	-	-	-
Stage 1	835	763	-	911	814	-	-	-	-	-	-	-
Stage 2	873	813	-	824	752	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	10.7		9.1			1			0.6			
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1388	-	-	674	895	1436	-	-				
HCM Lane V/C Ratio	0.008	-	-	0.056	0.028	0.008	-	-				
HCM Control Delay (s)	7.6	-	-	10.7	9.1	7.5	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-				

HCM 6th TWSC
3: Town Centre Blvd & Town Centre Dr

Existing Conditions
PM Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	37	1	88	29	1	83
Future Vol, veh/h	37	1	88	29	1	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	2	2	2
Mvmt Flow	40	1	96	32	1	90
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	188	96	0	0	128	0
Stage 1	96	-	-	-	-	-
Stage 2	92	-	-	-	-	-
Critical Hdwy	6.43	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	799	960	-	-	1458	-
Stage 1	925	-	-	-	-	-
Stage 2	929	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	798	960	-	-	1458	-
Mov Cap-2 Maneuver	798	-	-	-	-	-
Stage 1	925	-	-	-	-	-
Stage 2	928	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.8	0	0.1			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 798 960 1458		-		
HCM Lane V/C Ratio	-	- 0.05 0.001 0.001		-		
HCM Control Delay (s)	-	- 9.8 8.8 7.5		0		
HCM Lane LOS	-	- A A A		A		
HCM 95th %tile Q(veh)	-	- 0.2 0 0		-		

Queues
4: Town Centre Blvd & Colbern Road

Existing Conditions
PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	97	1040	8	876	37	49	51	60
v/c Ratio	0.22	0.46	0.02	0.51	0.18	0.22	0.24	0.18
Control Delay	9.1	11.8	8.9	19.2	25.3	34.6	34.9	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	11.8	8.9	19.2	25.3	34.6	34.9	1.2
Queue Length 50th (ft)	19	140	2	173	8	21	22	0
Queue Length 95th (ft)	45	302	8	270	39	62	64	0
Internal Link Dist (ft)		1724		1879	221		710	
Turn Bay Length (ft)	175		75			180		180
Base Capacity (vph)	487	2785	352	2596	669	542	533	602
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.37	0.02	0.34	0.06	0.09	0.10	0.10
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

4: Town Centre Blvd & Colbern Road

Existing Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	947	10	7	773	33	16	2	17	91	1	55
Future Volume (vph)	89	947	10	7	773	33	16	2	17	91	1	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	0.99			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	0.95	1.00
Satd. Flow (prot)	1770	3534		1770	3517			1669		1681	1656	1583
Flt Permitted	0.21	1.00		0.25	1.00			0.98		0.95	0.95	1.00
Satd. Flow (perm)	388	3534		461	3517			1669		1681	1656	1583
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)	97	1029	11	8	840	36	17	2	18	99	1	60
RTOR Reduction (vph)	0	0	0	0	2	0	0	17	0	0	0	55
Lane Group Flow (vph)	97	1040	0	8	874	0	0	20	0	49	51	5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	6%	2%	100%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	44.8	38.3		33.2	32.5			3.6		6.2	6.2	6.2
Effective Green, g (s)	44.8	38.3		33.2	32.5			3.6		6.2	6.2	6.2
Actuated g/C Ratio	0.62	0.53		0.46	0.45			0.05		0.09	0.09	0.09
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	362	1859		222	1570			82		143	141	134
v/s Ratio Prot	c0.02	c0.29		0.00	0.25			c0.01		0.03	c0.03	
v/s Ratio Perm	0.14			0.02								0.00
v/c Ratio	0.27	0.56		0.04	0.56			0.24		0.34	0.36	0.04
Uniform Delay, d1	7.2	11.6		10.9	14.8			33.3		31.4	31.4	30.6
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.4		0.1	0.4			1.5		1.4	1.6	0.1
Delay (s)	7.6	11.9		11.0	15.3			34.8		32.8	33.0	30.7
Level of Service	A	B		B	B			C		C	C	C
Approach Delay (s)		11.6			15.2			34.8			32.1	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			14.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			72.8			Sum of lost time (s)			24.0			
Intersection Capacity Utilization			54.4%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
1: Independence Ave & Town Centre Blvd

Existing plus Development Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	11	0	85	74	20
Future Vol, veh/h	60	11	0	85	74	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	7	27	2	2	4	19
Mvmt Flow	67	12	0	94	82	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	187	93	104	0	-	0
Stage 1	93	-	-	-	-	-
Stage 2	94	-	-	-	-	-
Critical Hdwy	6.47	6.47	4.12	-	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.543	2.218	-	-	-
Pot Cap-1 Maneuver	791	900	1488	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	791	900	1488	-	-	-
Mov Cap-2 Maneuver	791	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.9	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1488	-	791	900	-	-
HCM Lane V/C Ratio	-	-	0.084	0.014	-	-
HCM Control Delay (s)	0	-	10	9.1	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	0	-	-

HCM 6th TWSC
2: Independence Ave & Town Centre Dr

Existing plus Development Conditions

AM Peak Hour

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖		↗	↖	
Traffic Vol, veh/h	35	15	8	1	3	4	9	100	5	10	44	12
Future Vol, veh/h	35	15	8	1	3	4	9	100	5	10	44	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	2	2	2	33	2	33	2	2	2	2	42
Mvmt Flow	39	17	9	1	3	4	10	111	6	11	49	13
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	216	215	56	225	218	114	62	0	0	117	0	0
Stage 1	78	78	-	134	134	-	-	-	-	-	-	-
Stage 2	138	137	-	91	84	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.52	6.22	7.12	6.83	6.22	4.43	-	-	4.12	-	-
Critical Hdwy Stg 1	6.13	5.52	-	6.12	5.83	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.52	-	6.12	5.83	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.018	3.318	3.518	4.297	3.318	2.497	-	-	2.218	-	-
Pot Cap-1 Maneuver	738	683	1011	730	629	939	1365	-	-	1471	-	-
Stage 1	928	830	-	869	730	-	-	-	-	-	-	-
Stage 2	863	783	-	916	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	723	673	1011	702	620	939	1365	-	-	1471	-	-
Mov Cap-2 Maneuver	723	673	-	702	620	-	-	-	-	-	-	-
Stage 1	922	824	-	863	725	-	-	-	-	-	-	-
Stage 2	849	778	-	883	764	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	10.3		9.8			0.6			1.1			
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1365	-	-	738	760	1471	-	-				
HCM Lane V/C Ratio	0.007	-	-	0.087	0.012	0.008	-	-				
HCM Control Delay (s)	7.7	-	-	10.3	9.8	7.5	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.3	0	0	-	-				

HCM 6th TWSC
3: Town Centre Blvd & Town Centre Dr

Existing plus Development Conditions
AM Peak Hour

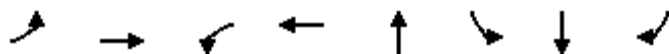
Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	8	102	59	0	44
Future Vol, veh/h	13	8	102	59	0	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	23	50	5	3	2	8
Mvmt Flow	14	9	113	66	0	49
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	162	113	0	0	179	0
Stage 1	113	-	-	-	-	-
Stage 2	49	-	-	-	-	-
Critical Hdwy	6.63	6.7	-	-	4.12	-
Critical Hdwy Stg 1	5.63	-	-	-	-	-
Critical Hdwy Stg 2	5.63	-	-	-	-	-
Follow-up Hdwy	3.707	3.75	-	-	2.218	-
Pot Cap-1 Maneuver	782	825	-	-	1397	-
Stage 1	862	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	782	825	-	-	1397	-
Mov Cap-2 Maneuver	782	-	-	-	-	-
Stage 1	862	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.6	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 782 825	1397	-		
HCM Lane V/C Ratio	-	- 0.018 0.011	-	-		
HCM Control Delay (s)	-	- 9.7 9.4	0	-		
HCM Lane LOS	-	- A A	A	-		
HCM 95th %tile Q(veh)	-	- 0.1 0	0	-		

Queues

Existing plus Development Conditions

4: Town Centre Blvd & Colbern Road

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	160	414	26	1017	18	11	11	41
v/c Ratio	0.33	0.16	0.04	0.63	0.05	0.07	0.07	0.13
Control Delay	6.4	6.9	6.6	18.2	0.3	37.5	37.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	6.9	6.6	18.2	0.3	37.5	37.5	0.8
Queue Length 50th (ft)	15	20	2	156	0	4	4	0
Queue Length 95th (ft)	54	87	13	315	0	24	24	0
Internal Link Dist (ft)		1724		1879	221		710	
Turn Bay Length (ft)	175		75			180		180
Base Capacity (vph)	596	2883	582	2577	639	458	458	569
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.14	0.04	0.39	0.03	0.02	0.02	0.07
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

4: Town Centre Blvd & Colbern Road

Existing plus Development Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	364	9	23	897	18	6	0	10	20	0	37
Future Volume (vph)	144	364	9	23	897	18	6	0	10	20	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00			0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	0.95	1.00
Satd. Flow (prot)	1703	3460		1770	3529			1676		1517	1517	1442
Flt Permitted	0.16	1.00		0.51	1.00			0.98		0.95	0.95	1.00
Satd. Flow (perm)	288	3460		949	3529			1676		1517	1517	1442
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	160	404	10	26	997	20	7	0	11	22	0	41
RTOR Reduction (vph)	0	1	0	0	1	0	0	18	0	0	0	39
Lane Group Flow (vph)	160	413	0	26	1016	0	0	0	0	11	11	2
Heavy Vehicles (%)	6%	4%	2%	2%	2%	2%	2%	2%	2%	13%	2%	12%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	53.2	45.7		36.3	34.8			1.6		3.4	3.4	3.4
Effective Green, g (s)	53.2	45.7		36.3	34.8			1.6		3.4	3.4	3.4
Actuated g/C Ratio	0.70	0.60		0.48	0.46			0.02		0.04	0.04	0.04
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	431	2075		468	1611			35		67	67	64
v/s Ratio Prot	c0.06	0.12		0.00	c0.29			c0.00		c0.01	0.01	
v/s Ratio Perm	0.20			0.03								0.00
v/c Ratio	0.37	0.20		0.06	0.63			0.01		0.16	0.16	0.03
Uniform Delay, d1	6.8	6.9		10.6	15.8			36.5		35.0	35.0	34.8
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0		0.0	0.8			0.1		1.2	1.2	0.2
Delay (s)	7.3	7.0		10.7	16.6			36.6		36.2	36.2	35.0
Level of Service	A	A		B	B			D		D	D	D
Approach Delay (s)		7.1			16.5			36.6			35.4	
Approach LOS		A			B			D			D	
Intersection Summary												
HCM 2000 Control Delay			14.2			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			76.2			Sum of lost time (s)			24.0			
Intersection Capacity Utilization			54.8%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
5: Town Centre Blvd & West Site Access

Existing plus Development Conditions

AM Peak Hour

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	0	25	5	0	0	15	70	17	2	14	5
Future Vol, veh/h	10	0	25	5	0	0	15	70	17	2	14	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	5	2	2	8	2
Mvmt Flow	11	0	28	6	0	0	17	78	19	2	16	6
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	145	154	19	159	148	88	22	0	0	97	0	0
Stage 1	23	23	-	122	122	-	-	-	-	-	-	-
Stage 2	122	131	-	37	26	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	824	738	1059	807	743	970	1593	-	-	1496	-	-
Stage 1	995	876	-	882	795	-	-	-	-	-	-	-
Stage 2	882	788	-	978	874	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	817	729	1059	779	734	970	1593	-	-	1496	-	-
Mov Cap-2 Maneuver	817	729	-	779	734	-	-	-	-	-	-	-
Stage 1	984	875	-	872	786	-	-	-	-	-	-	-
Stage 2	873	779	-	951	873	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	8.8		9.7		1.1		0.7					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1593	-	-	976	779	1496	-	-				
HCM Lane V/C Ratio	0.01	-	-	0.04	0.007	0.001	-	-				
HCM Control Delay (s)	7.3	-	-	8.8	9.7	7.4	-	-				
HCM Lane LOS	A	-	-	A	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

HCM 6th TWSC
6: North Site Access & Town Centre Blvd

Existing plus Development Conditions

AM Peak Hour

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	65	10	2	13	5	3	0	1	5	0	5
Future Vol, veh/h	5	65	10	2	13	5	3	0	1	5	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	100	5	2	2	5	100	2	2	2	100	2	100
Mvmt Flow	6	72	11	2	14	6	3	0	1	6	0	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	20	0	0	83	0	0	114	114	78	111	116	17
Stage 1	-	-	-	-	-	-	90	90	-	21	21	-
Stage 2	-	-	-	-	-	-	24	24	-	90	95	-
Critical Hdwy	5.1	-	-	4.12	-	-	7.12	6.52	6.22	8.1	6.52	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	7.1	5.52	-
Follow-up Hdwy	3.1	-	-	2.218	-	-	3.518	4.018	3.318	4.4	4.018	4.2
Pot Cap-1 Maneuver	1139	-	-	1514	-	-	863	776	983	682	774	837
Stage 1	-	-	-	-	-	-	917	820	-	795	878	-
Stage 2	-	-	-	-	-	-	994	875	-	723	816	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1139	-	-	1514	-	-	853	771	983	678	769	837
Mov Cap-2 Maneuver	-	-	-	-	-	-	853	771	-	678	769	-
Stage 1	-	-	-	-	-	-	912	816	-	791	877	-
Stage 2	-	-	-	-	-	-	986	874	-	718	812	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.7			9.1			9.9		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	882	1139	-	-	1514	-	-	749				
HCM Lane V/C Ratio	0.005	0.005	-	-	0.001	-	-	0.015				
HCM Control Delay (s)	9.1	8.2	-	-	7.4	-	-	9.9				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0				

HCM 6th TWSC
7: Independence Ave & East Site Access

Existing plus Development Conditions
AM Peak Hour

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	3	5	0	5	8	79	30	20	63	2
Future Vol, veh/h	1	0	3	5	0	5	8	79	30	20	63	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	5	2
Mvmt Flow	1	0	3	6	0	6	9	88	33	22	70	2

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	241	254	71	240	239	105	72	0	0	121	0	0
Stage 1	115	115	-	123	123	-	-	-	-	-	-	-
Stage 2	126	139	-	117	116	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	713	650	991	714	662	949	1528	-	-	1467	-	-
Stage 1	890	800	-	881	794	-	-	-	-	-	-	-
Stage 2	878	782	-	888	800	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	697	636	991	700	647	949	1528	-	-	1467	-	-
Mov Cap-2 Maneuver	697	636	-	700	647	-	-	-	-	-	-	-
Stage 1	885	787	-	876	789	-	-	-	-	-	-	-
Stage 2	868	777	-	871	787	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9		9.5		0.5		1.8	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1528	-	-	896	806	1467	-
HCM Lane V/C Ratio	0.006	-	-	0.005	0.014	0.015	-
HCM Control Delay (s)	7.4	0	-	9	9.5	7.5	0
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-

HCM 6th TWSC
1: Independence Ave & Town Centre Blvd

Existing plus Development Conditions
PM Peak Hour

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	9	8	114	103	50
Future Vol, veh/h	48	9	8	114	103	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	10	9	124	112	54
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	281	139	166	0	-	0
Stage 1	139	-	-	-	-	-
Stage 2	142	-	-	-	-	-
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	709	909	1412	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	704	909	1412	-	-	-
Mov Cap-2 Maneuver	704	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	10.3	0.5	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1412	-	704	909	-	-
HCM Lane V/C Ratio	0.006	-	0.074	0.011	-	-
HCM Control Delay (s)	7.6	0	10.5	9	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0	-	-

HCM 6th TWSC
2: Independence Ave & Town Centre Dr

Existing plus Development Conditions

PM Peak Hour

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	26	7	2	2	3	18	10	62	5	11	117	26
Future Vol, veh/h	26	7	2	2	3	18	10	62	5	11	117	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	2	2	2	10	2	2	18	2	2
Mvmt Flow	28	8	2	2	3	20	11	67	5	12	127	28
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	268	259	141	262	271	70	155	0	0	72	0	0
Stage 1	165	165	-	92	92	-	-	-	-	-	-	-
Stage 2	103	94	-	170	179	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.52	6.22	7.12	6.52	6.22	4.2	-	-	4.28	-	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.018	3.318	3.518	4.018	3.318	2.29	-	-	2.362	-	-
Pot Cap-1 Maneuver	681	645	907	691	636	993	1378	-	-	1432	-	-
Stage 1	832	762	-	915	819	-	-	-	-	-	-	-
Stage 2	898	817	-	832	751	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	656	635	907	674	626	993	1378	-	-	1432	-	-
Mov Cap-2 Maneuver	656	635	-	674	626	-	-	-	-	-	-	-
Stage 1	825	756	-	908	812	-	-	-	-	-	-	-
Stage 2	870	810	-	815	745	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	10.8		9.2			1			0.5			
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1378	-	-	662	888	1432	-	-				
HCM Lane V/C Ratio	0.008	-	-	0.057	0.028	0.008	-	-				
HCM Control Delay (s)	7.6	-	-	10.8	9.2	7.5	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile O(veh)	0	-	-	0.2	0.1	0	-	-				

HCM 6th TWSC
3: Town Centre Blvd & Town Centre Dr

Existing plus Development Conditions
PM Peak Hour

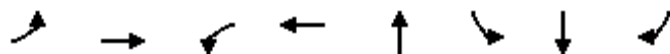
Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	37	1	97	29	1	110
Future Vol, veh/h	37	1	97	29	1	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	2	2	2
Mvmt Flow	40	1	105	32	1	120
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	227	105	0	0	137	0
Stage 1	105	-	-	-	-	-
Stage 2	122	-	-	-	-	-
Critical Hdwy	6.43	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	759	949	-	-	1447	-
Stage 1	917	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	758	949	-	-	1447	-
Mov Cap-2 Maneuver	758	-	-	-	-	-
Stage 1	917	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10	0	0.1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 758 949	1447	-		
HCM Lane V/C Ratio	-	- 0.053 0.001	0.001	-		
HCM Control Delay (s)	-	- 10 8.8	7.5	0		
HCM Lane LOS	-	- B A	A	A		
HCM 95th %tile Q(veh)	-	- 0.2 0	0	-		

Queues

Existing plus Development Conditions

4: Town Centre Blvd & Colbern Road

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	104	1040	8	887	37	57	59	73
v/c Ratio	0.24	0.46	0.02	0.51	0.18	0.25	0.26	0.22
Control Delay	9.4	11.9	9.0	19.4	25.7	35.2	35.4	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	11.9	9.0	19.4	25.7	35.2	35.4	2.1
Queue Length 50th (ft)	20	142	2	178	8	25	25	0
Queue Length 95th (ft)	49	307	8	278	40	70	71	5
Internal Link Dist (ft)		1724		1879	221		710	
Turn Bay Length (ft)	175		75			180		180
Base Capacity (vph)	482	2762	351	2566	661	536	529	597
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.38	0.02	0.35	0.06	0.11	0.11	0.12
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

4: Town Centre Blvd & Colbern Road

Existing plus Development Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	947	10	7	781	35	16	2	17	106	1	67
Future Volume (vph)	96	947	10	7	781	35	16	2	17	106	1	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	0.99			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	0.95	1.00
Satd. Flow (prot)	1770	3534		1770	3516			1669		1681	1660	1583
Flt Permitted	0.20	1.00		0.25	1.00			0.98		0.95	0.95	1.00
Satd. Flow (perm)	380	3534		462	3516			1669		1681	1660	1583
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)	104	1029	11	8	849	38	17	2	18	115	1	73
RTOR Reduction (vph)	0	0	0	0	2	0	0	17	0	0	0	67
Lane Group Flow (vph)	104	1040	0	8	885	0	0	20	0	57	59	6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	6%	2%	100%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	45.5	38.9		33.7	33.0			3.6		6.5	6.5	6.5
Effective Green, g (s)	45.5	38.9		33.7	33.0			3.6		6.5	6.5	6.5
Actuated g/C Ratio	0.62	0.53		0.46	0.45			0.05		0.09	0.09	0.09
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	359	1865		223	1574			81		148	146	139
v/s Ratio Prot	c0.03	c0.29		0.00	0.25			c0.01		0.03	c0.04	
v/s Ratio Perm	0.15			0.02								0.00
v/c Ratio	0.29	0.56		0.04	0.56			0.25		0.39	0.40	0.05
Uniform Delay, d1	7.4	11.6		11.0	15.0			33.7		31.7	31.8	30.8
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.4		0.1	0.5			1.6		1.7	1.8	0.1
Delay (s)	7.8	12.0		11.0	15.5			35.3		33.4	33.6	30.9
Level of Service	A	B		B	B			D		C	C	C
Approach Delay (s)		11.6			15.4			35.3			32.5	
Approach LOS		B			B			D			C	
Intersection Summary												
HCM 2000 Control Delay			15.3			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			73.7			Sum of lost time (s)			24.0			
Intersection Capacity Utilization			54.4%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
5: Town Centre Blvd & West Site Access

Existing plus Development Conditions

PM Peak Hour

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	25	0	25	17	0	2	25	31	6	1	56	10
Future Vol, veh/h	25	0	25	17	0	2	25	31	6	1	56	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	0	27	18	0	2	27	34	7	1	61	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	162	164	67	174	166	38	72	0	0	41	0	0
Stage 1	69	69	-	92	92	-	-	-	-	-	-	-
Stage 2	93	95	-	82	74	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	803	729	997	789	727	1034	1528	-	-	1568	-	-
Stage 1	941	837	-	915	819	-	-	-	-	-	-	-
Stage 2	914	816	-	926	833	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	790	715	997	757	713	1034	1528	-	-	1568	-	-
Mov Cap-2 Maneuver	790	715	-	757	713	-	-	-	-	-	-	-
Stage 1	924	836	-	899	804	-	-	-	-	-	-	-
Stage 2	896	801	-	900	832	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.3		9.7		3		0.1					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1528	-	-	882	779	1568	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.062	0.027	0.001	-	-				
HCM Control Delay (s)	7.4	-	-	9.3	9.7	7.3	-	-				
HCM Lane LOS	A	-	-	A	A	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-				

HCM 6th TWSC
6: North Site Access & Town Centre Blvd

Existing plus Development Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	50	3	1	52	5	10	0	2	5	0	5
Future Vol, veh/h	5	50	3	1	52	5	10	0	2	5	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	54	3	1	57	5	11	0	2	5	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	62	0	0	57	0	0	130	130	56	129	129	60
Stage 1	-	-	-	-	-	-	66	66	-	62	62	-
Stage 2	-	-	-	-	-	-	64	64	-	67	67	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1541	-	-	1547	-	-	843	761	1011	844	762	1005
Stage 1	-	-	-	-	-	-	945	840	-	949	843	-
Stage 2	-	-	-	-	-	-	947	842	-	943	839	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1541	-	-	1547	-	-	836	758	1011	840	759	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	836	758	-	840	759	-
Stage 1	-	-	-	-	-	-	942	837	-	946	842	-
Stage 2	-	-	-	-	-	-	941	841	-	938	836	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.1			9.2			9		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	861	1541	-	-	1547	-	-	915
HCM Lane V/C Ratio	0.015	0.004	-	-	0.001	-	-	0.012
HCM Control Delay (s)	9.2	7.3	-	-	7.3	-	-	9
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

HCM 6th TWSC
7: Independence Ave & East Site Access

Existing plus Development Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	8	25	0	20	3	100	5	5	106	1
Future Vol, veh/h	2	0	8	25	0	20	3	100	5	5	106	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	9	27	0	22	3	109	5	5	115	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	255	246	116	248	244	112	116	0	0	114	0	0
Stage 1	126	126	-	118	118	-	-	-	-	-	-	-
Stage 2	129	120	-	130	126	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	698	656	936	706	658	941	1473	-	-	1475	-	-
Stage 1	878	792	-	887	798	-	-	-	-	-	-	-
Stage 2	875	796	-	874	792	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	678	652	936	696	654	941	1473	-	-	1475	-	-
Mov Cap-2 Maneuver	678	652	-	696	654	-	-	-	-	-	-	-
Stage 1	876	789	-	885	796	-	-	-	-	-	-	-
Stage 2	853	794	-	862	789	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.2		9.9		0.2		0.3					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1473	-	-	870	787	1475	-	-				
HCM Lane V/C Ratio	0.002	-	-	0.012	0.062	0.004	-	-				
HCM Control Delay (s)	7.4	0	-	9.2	9.9	7.5	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-				

HCM 6th Roundabout
1: Independence Ave & Town Centre Blvd

Future Conditions
AM Peak Hour

Intersection			
Intersection Delay, s/veh	3.7		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	97	116	127
Demand Flow Rate, veh/h	107	118	136
Vehicles Circulating, veh/h	104	87	0
Vehicles Exiting, veh/h	32	124	205
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.9	3.7	3.6
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	107	118	136
Cap Entry Lane, veh/h	1241	1263	1380
Entry HV Adj Factor	0.907	0.980	0.934
Flow Entry, veh/h	97	116	127
Cap Entry, veh/h	1125	1238	1289
V/C Ratio	0.086	0.093	0.099
Control Delay, s/veh	3.9	3.7	3.6
LOS	A	A	A
95th %tile Queue, veh	0	0	0

HCM 6th TWSC
2: Independence Ave & Town Centre Dr

Future Conditions
AM Peak Hour

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↵	↵		↵	↵	
Traffic Vol, veh/h	43	19	10	2	4	5	11	121	7	13	54	15
Future Vol, veh/h	43	19	10	2	4	5	11	121	7	13	54	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	2	2	2	33	2	33	2	2	2	2	42
Mvmt Flow	48	21	11	2	4	6	12	134	8	14	60	17
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	264	263	69	275	267	138	77	0	0	142	0	0
Stage 1	97	97	-	162	162	-	-	-	-	-	-	-
Stage 2	167	166	-	113	105	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.52	6.22	7.12	6.83	6.22	4.43	-	-	4.12	-	-
Critical Hdwy Stg 1	6.13	5.52	-	6.12	5.83	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.52	-	6.12	5.83	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.018	3.318	3.518	4.297	3.318	2.497	-	-	2.218	-	-
Pot Cap-1 Maneuver	687	642	994	677	590	910	1347	-	-	1441	-	-
Stage 1	907	815	-	840	709	-	-	-	-	-	-	-
Stage 2	833	761	-	892	752	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	669	630	994	643	579	910	1347	-	-	1441	-	-
Mov Cap-2 Maneuver	669	630	-	643	579	-	-	-	-	-	-	-
Stage 1	899	807	-	832	703	-	-	-	-	-	-	-
Stage 2	815	754	-	851	744	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	10.9		10.2			0.6			1.2			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1347	-	-	689	709	1441	-	-				
HCM Lane V/C Ratio	0.009	-	-	0.116	0.017	0.01	-	-				
HCM Control Delay (s)	7.7	-	-	10.9	10.2	7.5	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile O(veh)	0	-	-	0.4	0.1	0	-	-				

HCM 6th TWSC
3: Town Centre Blvd & Town Centre Dr

Future Conditions
AM Peak Hour

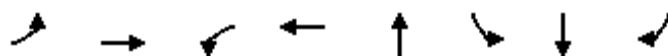
Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	10	119	72	0	52
Future Vol, veh/h	16	10	119	72	0	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	23	50	5	3	2	8
Mvmt Flow	18	11	132	80	0	58
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	190	132	0	0	212	0
Stage 1	132	-	-	-	-	-
Stage 2	58	-	-	-	-	-
Critical Hdwy	6.63	6.7	-	-	4.12	-
Critical Hdwy Stg 1	5.63	-	-	-	-	-
Critical Hdwy Stg 2	5.63	-	-	-	-	-
Follow-up Hdwy	3.707	3.75	-	-	2.218	-
Pot Cap-1 Maneuver	754	804	-	-	1358	-
Stage 1	845	-	-	-	-	-
Stage 2	914	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	754	804	-	-	1358	-
Mov Cap-2 Maneuver	754	-	-	-	-	-
Stage 1	845	-	-	-	-	-
Stage 2	914	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.7	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 754 804	1358	-		
HCM Lane V/C Ratio	-	- 0.024 0.014	-	-		
HCM Control Delay (s)	-	- 9.9 9.5	0	-		
HCM Lane LOS	-	- A A	A	-		
HCM 95th %tile Q(veh)	-	- 0.1 0	0	-		

Queues

4: Town Centre Blvd & Colbern Road

Future Conditions

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	191	506	32	1239	23	13	14	50
v/c Ratio	0.48	0.21	0.06	0.72	0.08	0.10	0.11	0.17
Control Delay	14.6	7.8	6.0	20.0	0.5	41.8	41.9	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.6	7.8	6.0	20.0	0.5	41.8	41.9	1.2
Queue Length 50th (ft)	19	50	3	224	0	6	6	0
Queue Length 95th (ft)	110	107	15	400	0	27	29	0
Internal Link Dist (ft)		1724		1879	221		710	
Turn Bay Length (ft)	175		75			180		180
Base Capacity (vph)	434	2577	546	2251	562	378	378	503
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.20	0.06	0.55	0.04	0.03	0.04	0.10
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

4: Town Centre Blvd & Colbern Road

Future Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	445	11	29	1094	21	8	0	13	24	0	45
Future Volume (vph)	172	445	11	29	1094	21	8	0	13	24	0	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00			0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	0.95	1.00
Satd. Flow (prot)	1703	3460		1770	3529			1677		1517	1517	1442
Flt Permitted	0.10	1.00		0.47	1.00			0.98		0.95	0.95	1.00
Satd. Flow (perm)	188	3460		868	3529			1677		1517	1517	1442
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	191	494	12	32	1216	23	9	0	14	27	0	50
RTOR Reduction (vph)	0	1	0	0	1	0	0	23	0	0	0	47
Lane Group Flow (vph)	191	505	0	32	1238	0	0	0	0	13	14	3
Heavy Vehicles (%)	6%	4%	2%	2%	2%	2%	2%	2%	2%	13%	2%	12%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	59.9	51.3		43.2	40.6			1.7		5.0	5.0	5.0
Effective Green, g (s)	59.9	51.3		43.2	40.6			1.7		5.0	5.0	5.0
Actuated g/C Ratio	0.71	0.61		0.51	0.48			0.02		0.06	0.06	0.06
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	371	2098		470	1693			33		89	89	85
v/s Ratio Prot	c0.08	0.15		0.00	c0.35			c0.00		0.01	c0.01	
v/s Ratio Perm	0.28			0.03								0.00
v/c Ratio	0.51	0.24		0.07	0.73			0.01		0.15	0.16	0.03
Uniform Delay, d1	11.3	7.7		10.3	17.6			40.6		37.8	37.8	37.5
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		0.1	1.7			0.2		0.8	0.8	0.2
Delay (s)	12.5	7.7		10.4	19.3			40.8		38.5	38.6	37.7
Level of Service	B	A		B	B			D		D	D	D
Approach Delay (s)		9.0			19.1			40.8			38.0	
Approach LOS		A			B			D			D	

Intersection Summary

HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	24.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th TWSC
5: Town Centre Blvd & West Site Access

Future Conditions
AM Peak Hour

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖		↗	↖	
Traffic Vol, veh/h	10	0	25	5	0	0	15	84	17	2	17	5
Future Vol, veh/h	10	0	25	5	0	0	15	84	17	2	17	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	5	2	2	8	2
Mvmt Flow	11	0	28	6	0	0	17	93	19	2	19	6
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	163	172	22	177	166	103	25	0	0	112	0	0
Stage 1	26	26	-	137	137	-	-	-	-	-	-	-
Stage 2	137	146	-	40	29	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	802	721	1055	785	727	952	1589	-	-	1478	-	-
Stage 1	992	874	-	866	783	-	-	-	-	-	-	-
Stage 2	866	776	-	975	871	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	795	712	1055	758	718	952	1589	-	-	1478	-	-
Mov Cap-2 Maneuver	795	712	-	758	718	-	-	-	-	-	-	-
Stage 1	981	873	-	856	774	-	-	-	-	-	-	-
Stage 2	857	767	-	948	870	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	8.9		9.8		0.9		0.6					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1589	-	-	965	758	1478	-	-				
HCM Lane V/C Ratio	0.01	-	-	0.04	0.007	0.002	-	-				
HCM Control Delay (s)	7.3	-	-	8.9	9.8	7.4	-	-				
HCM Lane LOS	A	-	-	A	A	A	-	-				
HCM 95th %tile O(veh)	0	-	-	0.1	0	0	-	-				

HCM 6th TWSC
6: North Site Access & Town Centre Blvd

Future Conditions
AM Peak Hour

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	80	10	2	16	5	3	0	1	5	0	5
Future Vol, veh/h	5	80	10	2	16	5	3	0	1	5	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	100	5	2	2	5	100	2	2	2	100	2	100
Mvmt Flow	6	89	11	2	18	6	3	0	1	6	0	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	24	0	0	100	0	0	135	135	95	132	137	21
Stage 1	-	-	-	-	-	-	107	107	-	25	25	-
Stage 2	-	-	-	-	-	-	28	28	-	107	112	-
Critical Hdwy	5.1	-	-	4.12	-	-	7.12	6.52	6.22	8.1	6.52	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	7.1	5.52	-
Follow-up Hdwy	3.1	-	-	2.218	-	-	3.518	4.018	3.318	4.4	4.018	4.2
Pot Cap-1 Maneuver	1134	-	-	1493	-	-	836	756	962	658	754	832
Stage 1	-	-	-	-	-	-	898	807	-	791	874	-
Stage 2	-	-	-	-	-	-	989	872	-	707	803	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1134	-	-	1493	-	-	826	751	962	654	749	832
Mov Cap-2 Maneuver	-	-	-	-	-	-	826	751	-	654	749	-
Stage 1	-	-	-	-	-	-	894	803	-	787	873	-
Stage 2	-	-	-	-	-	-	981	871	-	702	799	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.6			9.2			10		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	856	1134	-	-	1493	-	-	732				
HCM Lane V/C Ratio	0.005	0.005	-	-	0.001	-	-	0.015				
HCM Control Delay (s)	9.2	8.2	-	-	7.4	-	-	10				
HCM Lane LOS	A	A	-	-	A	-	-	B				
HCM 95th %tile O(veh)	0	0	-	-	0	-	-	0				

HCM 6th TWSC
7: Independence Ave & East Site Access

Future Conditions
AM Peak Hour

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	3	5	0	5	8	97	30	20	77	2
Future Vol, veh/h	1	0	3	5	0	5	8	97	30	20	77	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	5	2
Mvmt Flow	1	0	3	6	0	6	9	108	33	22	86	2

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	277	290	87	276	275	125	88	0	0	141	0	0
Stage 1	131	131	-	143	143	-	-	-	-	-	-	-
Stage 2	146	159	-	133	132	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	675	620	971	676	632	926	1508	-	-	1442	-	-
Stage 1	873	788	-	860	779	-	-	-	-	-	-	-
Stage 2	857	766	-	870	787	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	659	606	971	662	617	926	1508	-	-	1442	-	-
Mov Cap-2 Maneuver	659	606	-	662	617	-	-	-	-	-	-	-
Stage 1	867	775	-	854	774	-	-	-	-	-	-	-
Stage 2	846	761	-	853	774	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.2		9.7		0.4		1.5	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1508	-	-	868	772	1442	-
HCM Lane V/C Ratio	0.006	-	-	0.005	0.014	0.015	-
HCM Control Delay (s)	7.4	0	-	9.2	9.7	7.5	0
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-

HCM 6th Roundabout
1: Independence Ave & Town Centre Blvd

Future Conditions
PM Peak Hour

Intersection			
Intersection Delay, s/veh	3.9		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	75	162	203
Demand Flow Rate, veh/h	76	165	207
Vehicles Circulating, veh/h	140	64	11
Vehicles Exiting, veh/h	78	152	218
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.6	3.9	3.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	76	165	207
Cap Entry Lane, veh/h	1196	1293	1364
Entry HV Adj Factor	0.987	0.982	0.982
Flow Entry, veh/h	75	162	203
Cap Entry, veh/h	1181	1269	1340
V/C Ratio	0.064	0.128	0.152
Control Delay, s/veh	3.6	3.9	3.9
LOS	A	A	A
95th %tile Queue, veh	0	0	1

HCM 6th TWSC
2: Independence Ave & Town Centre Dr

Future Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	32	9	3	3	4	22	13	75	7	14	142	32
Future Vol, veh/h	32	9	3	3	4	22	13	75	7	14	142	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	2	2	2	10	2	2	18	2	2
Mvmt Flow	35	10	3	3	4	24	14	82	8	15	154	35
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	330	320	172	322	333	86	189	0	0	90	0	0
Stage 1	202	202	-	114	114	-	-	-	-	-	-	-
Stage 2	128	118	-	208	219	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.52	6.22	7.12	6.52	6.22	4.2	-	-	4.28	-	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.018	3.318	3.518	4.018	3.318	2.29	-	-	2.362	-	-
Pot Cap-1 Maneuver	619	597	872	631	587	973	1338	-	-	1410	-	-
Stage 1	795	734	-	891	801	-	-	-	-	-	-	-
Stage 2	871	798	-	794	722	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	591	584	872	611	575	973	1338	-	-	1410	-	-
Mov Cap-2 Maneuver	591	584	-	611	575	-	-	-	-	-	-	-
Stage 1	787	726	-	882	793	-	-	-	-	-	-	-
Stage 2	836	790	-	772	714	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.5		9.4		1.1		0.6					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1338	-	-	603	841	1410	-	-				
HCM Lane V/C Ratio	0.011	-	-	0.079	0.037	0.011	-	-				
HCM Control Delay (s)	7.7	-	-	11.5	9.4	7.6	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-				

HCM 6th TWSC
3: Town Centre Blvd & Town Centre Dr

Future Conditions
PM Peak Hour

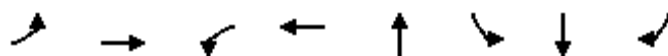
Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	2	117	36	2	129
Future Vol, veh/h	46	2	117	36	2	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	2	2	2
Mvmt Flow	50	2	127	39	2	140
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	271	127	0	0	166	0
Stage 1	127	-	-	-	-	-
Stage 2	144	-	-	-	-	-
Critical Hdwy	6.43	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	716	923	-	-	1412	-
Stage 1	896	-	-	-	-	-
Stage 2	881	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	715	923	-	-	1412	-
Mov Cap-2 Maneuver	715	-	-	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	879	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.3	0	0.1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 715 923 1412	-	-		
HCM Lane V/C Ratio	-	- 0.07 0.002 0.002	-	-		
HCM Control Delay (s)	-	- 10.4 8.9 7.6	-	0		
HCM Lane LOS	-	- B A A	-	A		
HCM 95th %tile Q(veh)	-	- 0.2 0 0	-	-		

Queues

4: Town Centre Blvd & Colbern Road

Future Conditions

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	126	1271	10	1082	48	70	70	87
v/c Ratio	0.36	0.59	0.04	0.73	0.28	0.35	0.36	0.24
Control Delay	10.6	13.3	9.0	23.9	30.3	43.0	43.3	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	13.3	9.0	23.9	30.3	43.0	43.3	1.6
Queue Length 50th (ft)	26	203	2	251	12	35	35	0
Queue Length 95th (ft)	59	420	9	385	53	93	93	0
Internal Link Dist (ft)		1724		1879	221		710	
Turn Bay Length (ft)	175		75			180		180
Base Capacity (vph)	423	2570	258	2182	444	407	398	528
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.49	0.04	0.50	0.11	0.17	0.18	0.16
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

4: Town Centre Blvd & Colbern Road

Future Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	1156	13	9	952	43	20	3	21	127	2	80
Future Volume (vph)	116	1156	13	9	952	43	20	3	21	127	2	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	0.99			0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	0.95	1.00
Satd. Flow (prot)	1770	3533		1770	3516			1672		1681	1643	1583
Flt Permitted	0.13	1.00		0.18	1.00			0.98		0.95	0.95	1.00
Satd. Flow (perm)	250	3533		331	3516			1672		1681	1643	1583
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)	126	1257	14	10	1035	47	22	3	23	138	2	87
RTOR Reduction (vph)	0	0	0	0	2	0	0	22	0	0	0	78
Lane Group Flow (vph)	126	1271	0	10	1080	0	0	26	0	70	70	9
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	6%	2%	100%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	54.9	48.2		39.5	38.8			4.2		9.4	9.4	9.4
Effective Green, g (s)	54.9	48.2		39.5	38.8			4.2		9.4	9.4	9.4
Actuated g/C Ratio	0.63	0.56		0.46	0.45			0.05		0.11	0.11	0.11
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	336	1968		162	1577			81		182	178	172
v/s Ratio Prot	c0.04	c0.36		0.00	0.31			c0.02		0.04	c0.04	
v/s Ratio Perm	0.19			0.03								0.01
v/c Ratio	0.38	0.65		0.06	0.68			0.32		0.38	0.39	0.05
Uniform Delay, d1	10.0	13.2		13.2	19.0			39.8		35.9	35.9	34.6
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.7		0.2	1.2			2.3		1.4	1.4	0.1
Delay (s)	10.7	14.0		13.3	20.2			42.1		37.2	37.3	34.7
Level of Service	B	B		B	C			D		D	D	C
Approach Delay (s)		13.7			20.2			42.1			36.3	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			18.6			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			86.5			Sum of lost time (s)			24.0			
Intersection Capacity Utilization			60.8%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
5: Town Centre Blvd & West Site Access

Future Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	25	0	25	17	0	2	25	38	6	1	67	10
Future Vol, veh/h	25	0	25	17	0	2	25	38	6	1	67	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	0	27	18	0	2	27	41	7	1	73	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	181	183	79	193	185	45	84	0	0	48	0	0
Stage 1	81	81	-	99	99	-	-	-	-	-	-	-
Stage 2	100	102	-	94	86	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	781	711	981	767	709	1025	1513	-	-	1559	-	-
Stage 1	927	828	-	907	813	-	-	-	-	-	-	-
Stage 2	906	811	-	913	824	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	769	697	981	736	696	1025	1513	-	-	1559	-	-
Mov Cap-2 Maneuver	769	697	-	736	696	-	-	-	-	-	-	-
Stage 1	910	827	-	891	798	-	-	-	-	-	-	-
Stage 2	888	796	-	887	823	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.5		9.9		2.7		0.1					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1513	-	-	862	759	1559	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.063	0.027	0.001	-	-				
HCM Control Delay (s)	7.4	-	-	9.5	9.9	7.3	-	-				
HCM Lane LOS	A	-	-	A	A	A	-	-				
HCM 95th %tile O(veh)	0.1	-	-	0.2	0.1	0	-	-				

HCM 6th TWSC
6: North Site Access & Town Centre Blvd

Future Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	61	3	1	64	5	10	0	2	5	0	5
Future Vol, veh/h	5	61	3	1	64	5	10	0	2	5	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	66	3	1	70	5	11	0	2	5	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	75	0	0	69	0	0	155	155	68	154	154	73
Stage 1	-	-	-	-	-	-	78	78	-	75	75	-
Stage 2	-	-	-	-	-	-	77	77	-	79	79	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1524	-	-	1532	-	-	812	737	995	813	738	989
Stage 1	-	-	-	-	-	-	931	830	-	934	833	-
Stage 2	-	-	-	-	-	-	932	831	-	930	829	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1524	-	-	1532	-	-	806	734	995	809	735	989
Mov Cap-2 Maneuver	-	-	-	-	-	-	806	734	-	809	735	-
Stage 1	-	-	-	-	-	-	928	828	-	931	832	-
Stage 2	-	-	-	-	-	-	926	830	-	925	827	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.1			9.4			9.1		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	832	1524	-	-	1532	-	-	890				
HCM Lane V/C Ratio	0.016	0.004	-	-	0.001	-	-	0.012				
HCM Control Delay (s)	9.4	7.4	-	-	7.4	-	-	9.1				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile O(veh)	0	0	-	-	0	-	-	0				

HCM 6th TWSC
7: Independence Ave & East Site Access

Future Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	8	25	0	20	3	123	5	5	130	1
Future Vol, veh/h	2	0	8	25	0	20	3	123	5	5	130	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	9	27	0	22	3	134	5	5	141	1
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	306	297	142	299	295	137	142	0	0	139	0	0
Stage 1	152	152	-	143	143	-	-	-	-	-	-	-
Stage 2	154	145	-	156	152	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	646	615	906	653	616	911	1441	-	-	1445	-	-
Stage 1	850	772	-	860	779	-	-	-	-	-	-	-
Stage 2	848	777	-	846	772	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	628	611	906	644	612	911	1441	-	-	1445	-	-
Mov Cap-2 Maneuver	628	611	-	644	612	-	-	-	-	-	-	-
Stage 1	848	769	-	858	777	-	-	-	-	-	-	-
Stage 2	826	775	-	835	769	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9.4		10.2			0.2			0.3			
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1441	-	-	832	740	1445	-	-				
HCM Lane V/C Ratio	0.002	-	-	0.013	0.066	0.004	-	-				
HCM Control Delay (s)	7.5	0	-	9.4	10.2	7.5	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0	0.2	0	-	-				