Traffic Impact Study
Crossroads of Orland Park
Orland Park, Illinois

Prepared For:

INTER CONTINENTAL REAL ESTATE
& DEVELOPMENT CORPORATION

KLOA
Kenig, Lindgren, O'Hara, Aboona, Inc.

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1. Introduction

This report summarizes the methodologies, results, and findings of a traffic impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for the proposed Crossroads of Orland Park, a mixed-use development of retail/commercial and residential land uses to be located on the south side of 159th Street (US Route 6) between LaGrange Road (US Route 45) and 94th Avenue in Orland Park, Illinois. As proposed, the site will be developed with a 107-room hotel, a 6,000 square-foot high-turnover restaurant, two 4,000 square-foot fast food restaurants with drive-through service, and 132 apartment units in three buildings. Access to the development is proposed to be provided via a right-in/right-out access drive off 159th Street, a right-in/right-out access drive off LaGrange Road, and the existing right-in/right-out access drive off LaGrange Road that serves Brookdale senior living and the La-Z-Boy furniture store. As part of the development, this existing access drive off LaGrange Road is proposed to be modified to allow inbound left-turn movements. In addition, the development will provide cross-access to the north with the right-in/right-out access drive that serves the existing Pep Boys Auto Parts and Service store. **Figure 1** shows the location of the site in relation to the area roadway system. **Figure 2** shows an aerial view of the site.

The purpose of this study was to examine background traffic conditions, assess the impact that the proposed development will have on traffic conditions in the area, and determine if any roadway or access improvements are necessary to accommodate the traffic generated by the proposed development. The sections of this report present the following:

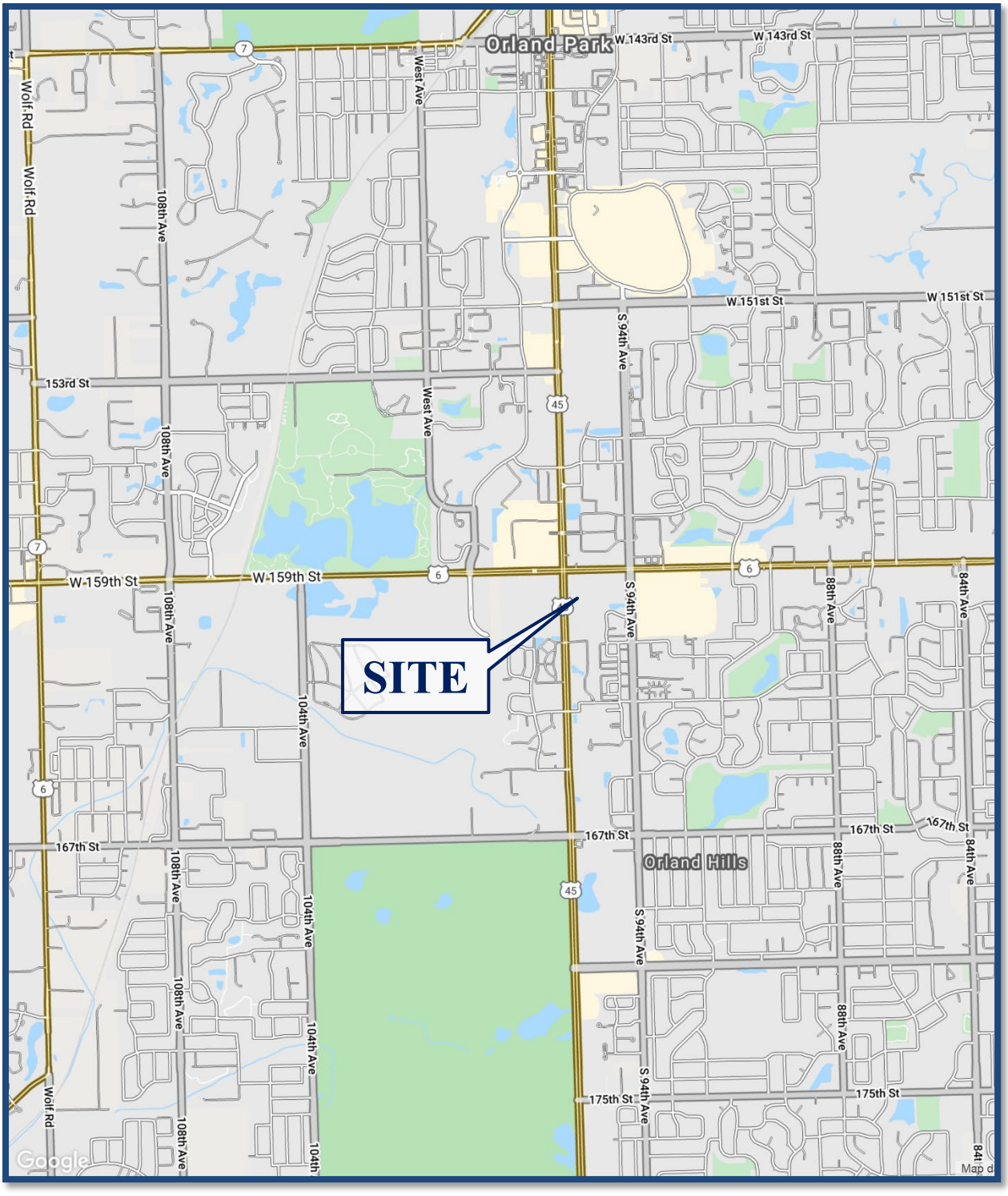
- Existing roadway conditions
- A description of the proposed development
- Directional distribution of the development traffic
- Vehicle trip generation for the development
- Future traffic conditions including access to the development
- Traffic analyses for the weekday morning, weekday evening, and Saturday midday peak hours
- Recommendations with respect to adequacy of the site access and adjacent roadway system

Traffic capacity analyses were conducted for the weekday morning, weekday evening and Saturday midday peak hours for the following conditions:

1. Base Conditions – Analyzes the capacity of the existing roadway system using peak hour traffic counts conducted in 2017 increased by a regional growth factor to represent pre-pandemic traffic conditions.

2. Year 2028 No-Build Conditions – Analyzes the capacity of the existing roadway system using the base traffic volumes increased by an ambient area growth factor (not attributable to any particular development).

3. Projected Conditions – Analyzes the capacity of the future roadway system using the projected traffic volumes which include the existing traffic volumes, ambient area growth, and the traffic estimated to be generated by the proposed development.



Site Location **Figure 1**

Aerial View of Site **Figure 2**

2. Existing Conditions

Existing traffic and roadway conditions were documented based on field visits and traffic counts provided by the Village of Orland Park. The following provides a detailed description of the physical characteristics of the roadways including geometry and traffic control, adjacent land uses, and peak hour traffic volumes.

Site Location

The site, which is currently vacant, is bounded by Pep Boys Auto Parts & Service, 159th Street, a KFC fast food restaurant, and a BP fuel center to the north; 94th Avenue to the east; Brookdale senior living and the Boardwalk subdivision to the south; and LaGrange Road and a La-Z-Boy furniture store to the west. Other land uses in the vicinity of the site are primarily commercial and residential and include the Orland Town Center and Bettenhausen car dealership on the east side of 94th Avenue and Lake View Plaza on the north side of 159th Street.

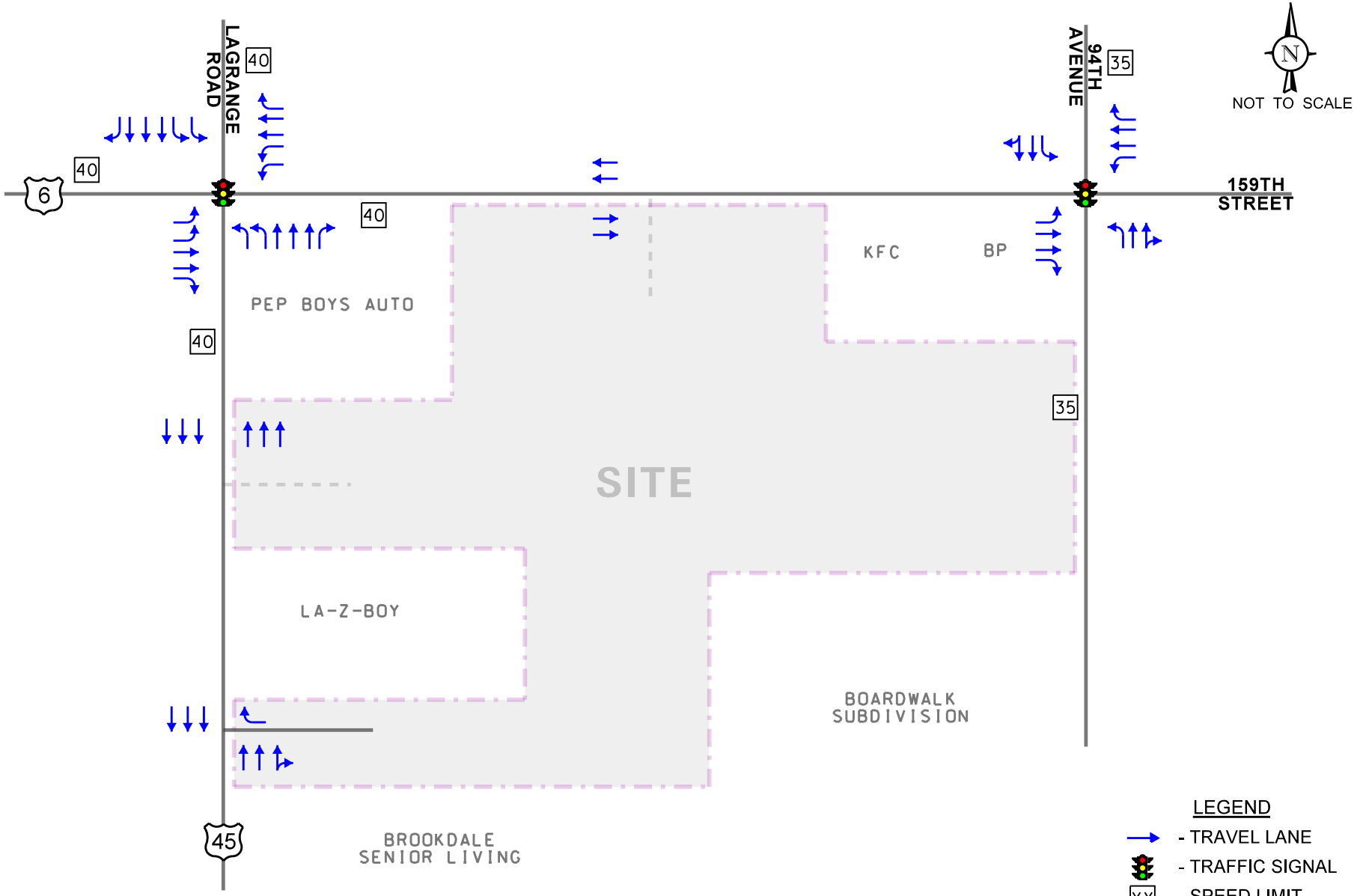
Existing Roadway System Characteristics

The characteristics of the existing roadways that surround the proposed development are illustrated in **Figure 3** and described below.

159th Street (US Route 6) is an east-west, other principal arterial roadway that provides two lanes in each direction generally divided by a landscape raised median. At its signalized intersection with LaGrange Road, 159th Street provides dual left-turn lanes, two through lanes, and a right-turn lane on both approaches. At its signalized intersection with 94th Avenue, 159th Street provides an exclusive left-turn lane, two through lanes, and a right-turn lane on both approaches. 159th Street is under the jurisdiction of the Illinois Department of Transportation (IDOT), has a posted speed limit of 40 mph, is designated as a Strategic Regional Arterial (SRA) route, and carries an Annual Average Daily Traffic (AADT) volume of 28,000 vehicles west of LaGrange Road and 33,500 vehicles east of LaGrange Road (IDOT 2021).

LaGrange Road (US Route 45) is a north-south, other principal arterial roadway that provides three lanes in each direction divided by a landscape median. At its signalized intersection with 159th Street, LaGrange Road provides dual left-turn lanes, three through lanes, and a right-turn lane on both approaches. LaGrange Road is under IDOT's jurisdiction, has a posted speed limit of 40 mph, is designated as an SRA route, and carries an AADT volume of 41,600 vehicles north of 159th Street and 40,400 vehicles south of 159th Street (IDOT 2021).

94th Avenue is a north-south major collector that provides two lanes in each direction and has a posted speed limit of 35 mph. At its signalized intersection with 159th Street, 94th Avenue provides an exclusive left-turn lane, a through lane, and a through/right-turn lane on both approaches. 94th Avenue is under the jurisdiction of the Cook County Department of Transportation and Highways (CCDOTH) and has an AADT volume of 13,600 vehicles north of 159th Street and 10,800 vehicles south of 159th Street (IDOT 2022).



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Existing Roadway Characteristics

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Figure: 3

Traffic Signal Interconnect

The traffic signals included in this study are part of a 23-signal interconnect system that extends along LaGrange Road from 167th Street to 142nd Street, along 159th Street from Ravinia Avenue to 76th Avenue, and along 143rd Street from Ravinia Avenue to John Humphrey Drive. The traffic signal at the intersection of 159th Street with LaGrange Road is the master controller signal.

Base Traffic Volumes

Due to the Covid-19 pandemic, traffic counts were not conducted at the area intersections. As such, in order to determine current traffic conditions in the vicinity of the site, KLOA, Inc. utilized peak period traffic counts provided by the Village of Orland Park previously conducted in June 2017 during the weekday morning, weekday evening, and Saturday midday peak periods. The traffic counts were conducted at the intersections of 159th Street with LaGrange Road and 94th Avenue.

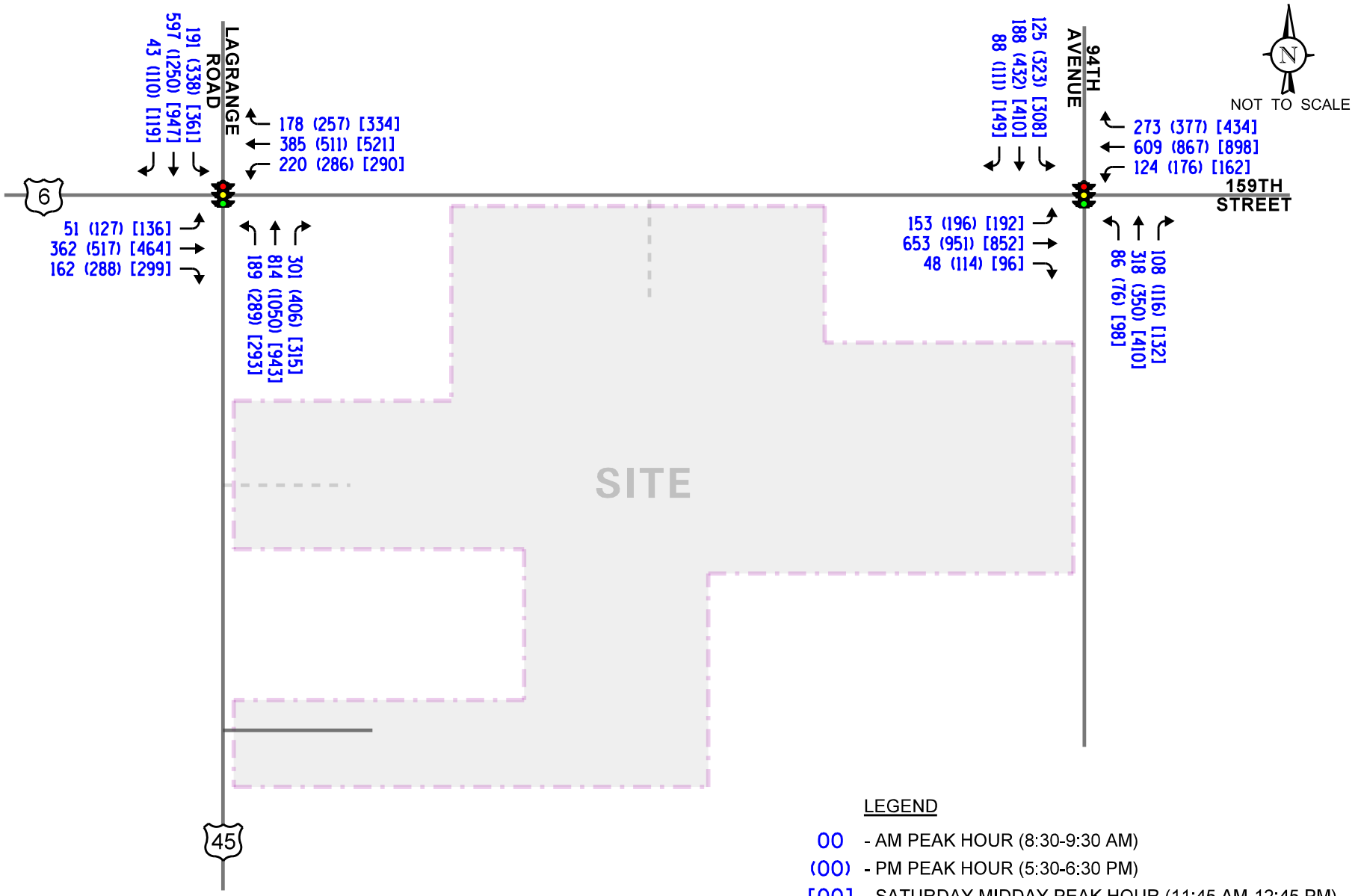
In order to accurately represent Year 2020 conditions, the 2017 volumes were increased by a regional growth factor to account for the increase in existing traffic related to normal growth in the area (i.e., not attributable to any particular planned development). Based on AADT projections provided by the Chicago Metropolitan Agency for Planning (CMAP), area traffic volumes are projected to increase by a compound annual growth rate of 0.7 percent per year. As such, traffic volumes were increased by 2.1 percent (three years) to represent Year 2020 base conditions. A copy of the CMAP projections letter is included in the Appendix.

The results of the traffic counts show that the peak hours of traffic generally occur between 8:30 A.M. and 9:30 A.M. during the morning peak period, between 5:30 P.M. and 6:30 P.M. during the evening peak period, and between 11:45 A.M. and 12:45 P.M. during the Saturday midday peak period. Copies of the traffic count summary sheets are included in the Appendix. The base traffic volumes are illustrated in **Figure 4.**

Crash Analysis

KLOA, Inc. obtained crash data for the most recent available past five years (2018 to 2022) for the intersections of 159th Street with LaGrange Road and 94th Avenue. A review of the crash data revealed no fatalities were reported at either intersection during the review period. A summary of the crash data for the intersections is shown in **Tables 1** and **2**[1].

[1] IDOT DISCLAIMER: The motor vehicle crash data referenced herein was provided by the Illinois Department of Transportation. Any conclusions drawn from analysis of the aforementioned data are the sole responsibility of the data recipient(s). Additionally, for coding years 2015 to present, the Bureau of Data Collection uses the exact latitude/longitude supplied by the investigating law enforcement agency to locate crashes. Therefore, location data may vary in previous years since data prior to 2015 was physically located by bureau personnel.



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Year 2020 Base Traffic Volumes

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Table 1
159TH STREET WITH LAGRANGE ROAD - CRASH SUMMARY

Year	Type of Accident Frequency						
	Angle	Object	Rear End	Sideswipe	Turning	Other	Total
2018	0	1	8	2	2	0	13
2019	1	0	8	3	4	0	16
2020	0	2	10	0	5	1	18
2021	0	2	11	2	7	0	22
2022	1	0	15	1	5	1	23
Total	**2**	**5**	**52**	**8**	**23**	**2**	**92**
Average/Year	**<1.0**	**1.0**	**10.4**	**1.6**	**4.6**	**<1.0**	**18.4**

Table 2
159TH STREET WITH 94TH AVENUE - CRASH SUMMARY

Year	Type of Accident Frequency						
	Angle	Object	Rear End	Sideswipe	Turning	Other	Total
2018	1	1	17	1	11	0	31
2019	1	0	13	0	13	0	27
2020	1	1	12	3	4	0	21
2021	2	0	7	2	17	0	28
2022	2	0	10	0	5	1	18
Total	**7**	**2**	**59**	**6**	**50**	**1**	**125**
Average/Year	**1.2**	**<1.0**	**11.8**	**1.2**	**10.0**	**<1.0**	**25**

3. Traffic Characteristics of the Proposed Development

To evaluate the impact of the subject development on the area roadway system, it was necessary to quantify the number of vehicle trips the site will generate during the three peak hours and then determine the directions from which the proposed traffic will approach and depart the site.

Proposed Site and Development Plan

The Crossroads of Orland Park is a proposed mixed-use development of retail/commercial and residential land uses to be located on the south side of 159th Street between LaGrange Road and 94th Avenue in Orland Park, Illinois. As proposed, the site will be developed with a 107-room hotel, a 6,000 square-foot high-turnover restaurant, two 4,000 square-foot fast food restaurants with drive-through service, and approximately 132 apartment units in three buildings. Access to the development will be provided as follows:

- A right-in/right-out access drive off 159th Street located approximately 650 feet east of LaGrange Road. This access drive will provide one inbound lane and one outbound lane restricted to right-turn movements only via the landscape median and appropriate signage. Outbound movements will be under stop sign control. As part of the development, a right-turn lane will be provided on 159th Street at this access drive and will provide 125 feet of storage and a 135-foot taper.

- A right-in/right-out access drive off LaGrange Road located approximately 650 feet south of 159th Street. This access drive will provide one inbound lane and one outbound lane restricted to right-turn movements only via the landscape median and appropriate signage. Outbound movements will be under stop sign control.

- The existing access drive on LaGrange Road that serves the La-Z-Boy and Brookdale developments. This access drive is located approximately 950 feet south of 159th Street and currently provides one inbound lane and one outbound lane restricted to right-turn movements. As part of this development, a median break is proposed to be provided on LaGrange Road to allow for three-quarters (right-in, left-in, right-out) access. Further, a southbound left-turn lane will be provided within the landscaped median on LaGrange Road serving this access drive. The turn lane will provide 185 feet of storage and a 200-foot taper.

- Connection to the existing right-in/right-out access drive on LaGrange Road that serves the Pep Boys Auto Parts & Service facility. This existing access drive is located approximately 400 feet south of 159th Street and provides one inbound lane and one outbound lane restricted to right-turn movements via the raised median on LaGrange Road.

A copy of the preliminary site plan is included in the Appendix.

Directional Distribution

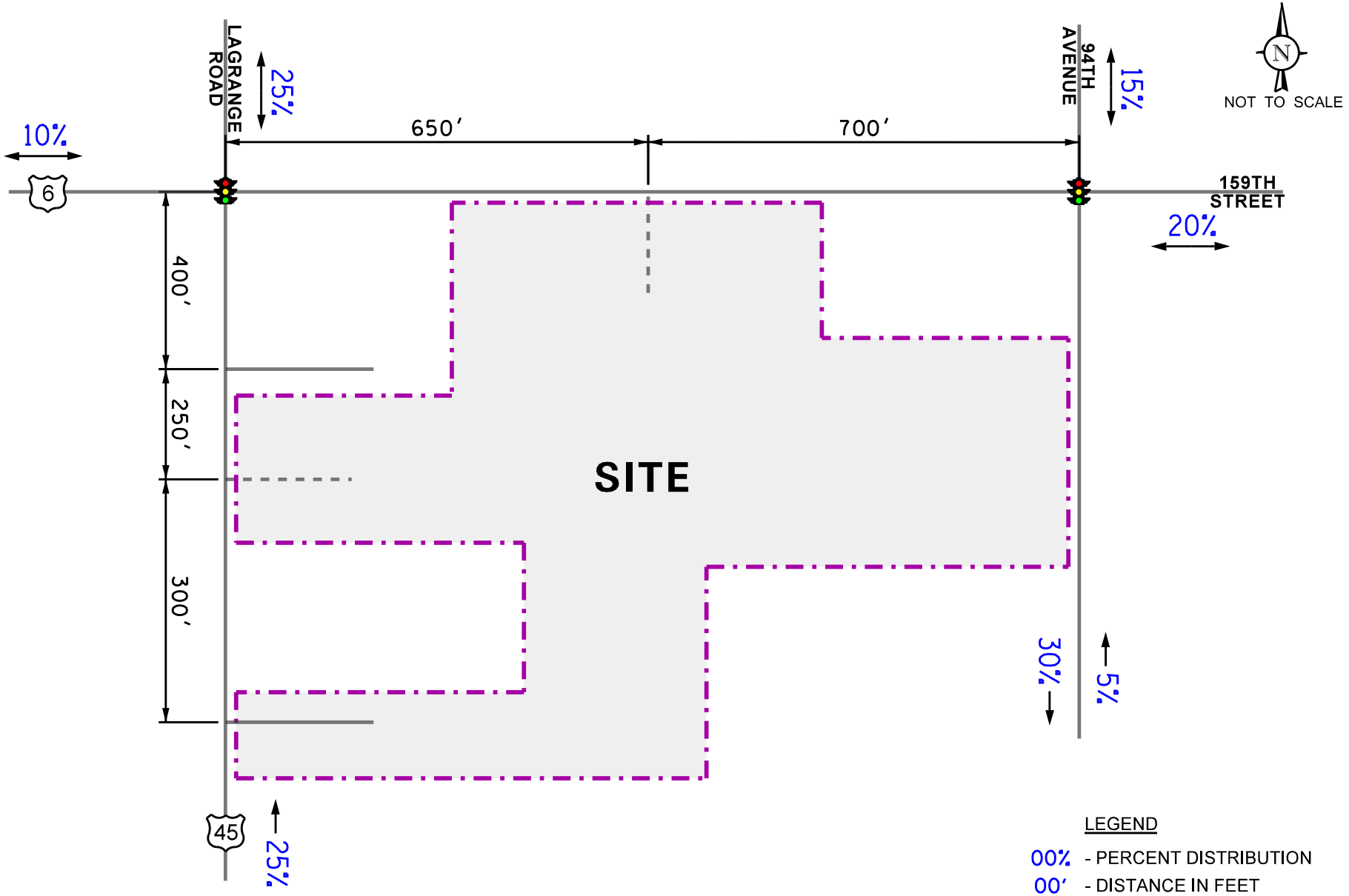
The directions from which patrons, residents, and employees of the proposed development will approach and depart the site were estimated based on existing travel patterns, as determined from the traffic counts. **Figure 5** illustrates the directional distribution of the site-generated traffic. Figure 5 also shows the distance, in feet, between the existing and proposed access intersections.

Development Traffic Generation

The estimate of vehicle traffic to be generated by the proposed development is based upon the proposed land use types and sizes. The vehicle trip generation for the overall development was calculated using data published in the ITE *Trip Generation Manual*, 11th Edition. Copies of the ITE trip generation worksheets are included in the Appendix.

In addition, it is important to note that it is anticipated that some of the customer traffic may be residents of the proposed apartment units or guests at the proposed hotel. In order to account for the interaction between uses, a 10 percent interaction reduction was taken. Further, some traffic generated by the development, particularly the fast-food restaurant, may be traffic diverted from the existing traffic on the roadway system. However, in order to provide a conservative analysis, no pass-by reduction was taken.

Table 3 shows the estimated vehicle trip generation for the weekday morning, weekday evening, and Saturday midday peak hours as well as the weekday daily two-way traffic volumes for the overall development.



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Estimated Directional Distribution

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Figure: 5

Table 3
ESTIMATED VEHICLE TRIP GENERATION FOR PROPOSED DEVELOPMENT

ITE Land-Use Code	Type/Size	Weekday Morning Peak Hour			Weekday Evening Peak Hour			Saturday Midday Peak Hour			Weekday Daily	
		In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Retail/Commercial												
310	Hotel – 107 rooms	26	20	46	26	25	51	45	35	80	368	368
932	High-Turnover (Sit-Down) Restaurant – 6,000 s.f.	31	26	57	33	21	54	34	33	67	322	322
934	Fast-Food Restaurant with Drive-Through Window – 4,000 s.f.	91	87	178	69	63	132	113	108	221	935	935
934	Fast-Food Restaurant with Drive-Through Window – 4,000 s.f.	91	87	178	69	63	132	113	108	221	935	935
	Gross Retail/Commercial Trips:	239	220	459	197	172	369	305	284	589	2560	2560
	Less Internal Trips (10%):	*-24*	*-22*	*-46*	*-20*	*-17*	*-37*	*-31*	*-28*	*-59*	*-256*	*-256*
Total Net New Retail/Commercial Trips:		**215**	**198**	**413**	**177**	**155**	**332**	**274**	**256**	**530**	**2,304**	**2,304**
Residential												
220	Multi-Family Housing (Low-Rise) – 132 units	15	49	64	48	29	77	27	27	54	461	461
Total Development New Vehicle Trips:		**230**	**247**	**477**	**225**	**184**	**409**	**301**	**283**	**584**	**2,765**	**2,765**

4. Projected Traffic Conditions

The total projected traffic volumes include the existing traffic volumes increased by a regional growth rate and the traffic estimated to be generated by the proposed subject development.

Development Traffic Assignment

The estimated weekday morning and weekday evening peak hour traffic volumes that will be generated by the proposed development were assigned to the roadway system in accordance with the previously described directional distribution (Figure 5). The traffic assignment for development is illustrated in **Figure 6.**

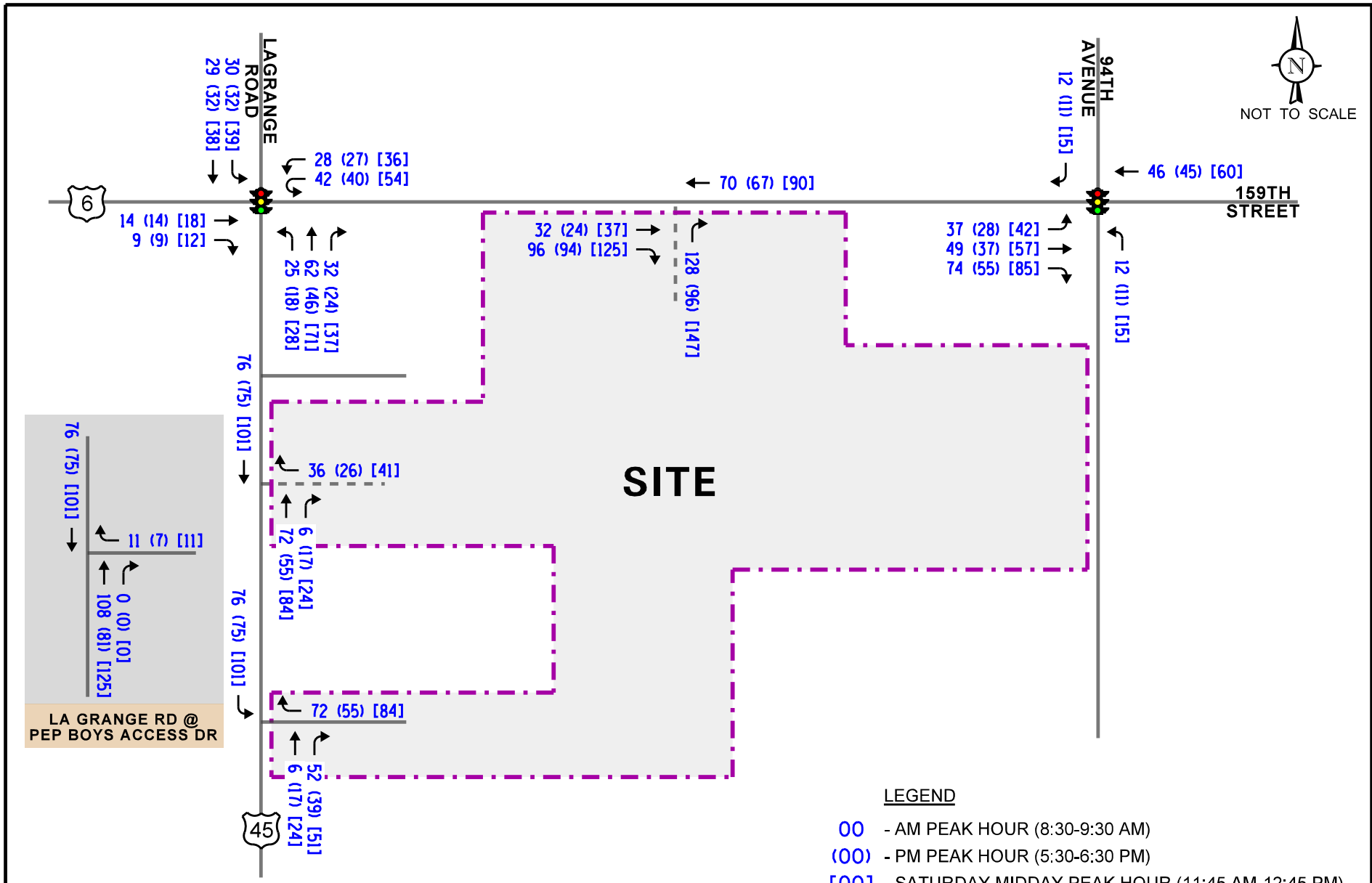
Background (No-Build) Traffic Conditions

As with base conditions, the existing traffic volumes were increased by a regional compound growth factor of 0.7 percent per year. As such, the base traffic volumes (Year 2020) were increased by 5.7 percent (eight years) to project Year 2028 no-build conditions.

The Year 2028 no-build traffic volumes are illustrated in **Figure 7.**

Year 2028 Total Projected Traffic Conditions

The development-generated traffic was added to the Year 2028 no-build traffic volumes to determine the Year 2028 total projected traffic volumes, as shown in **Figure 8**.



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Estimated Site-Generated Traffic Volumes

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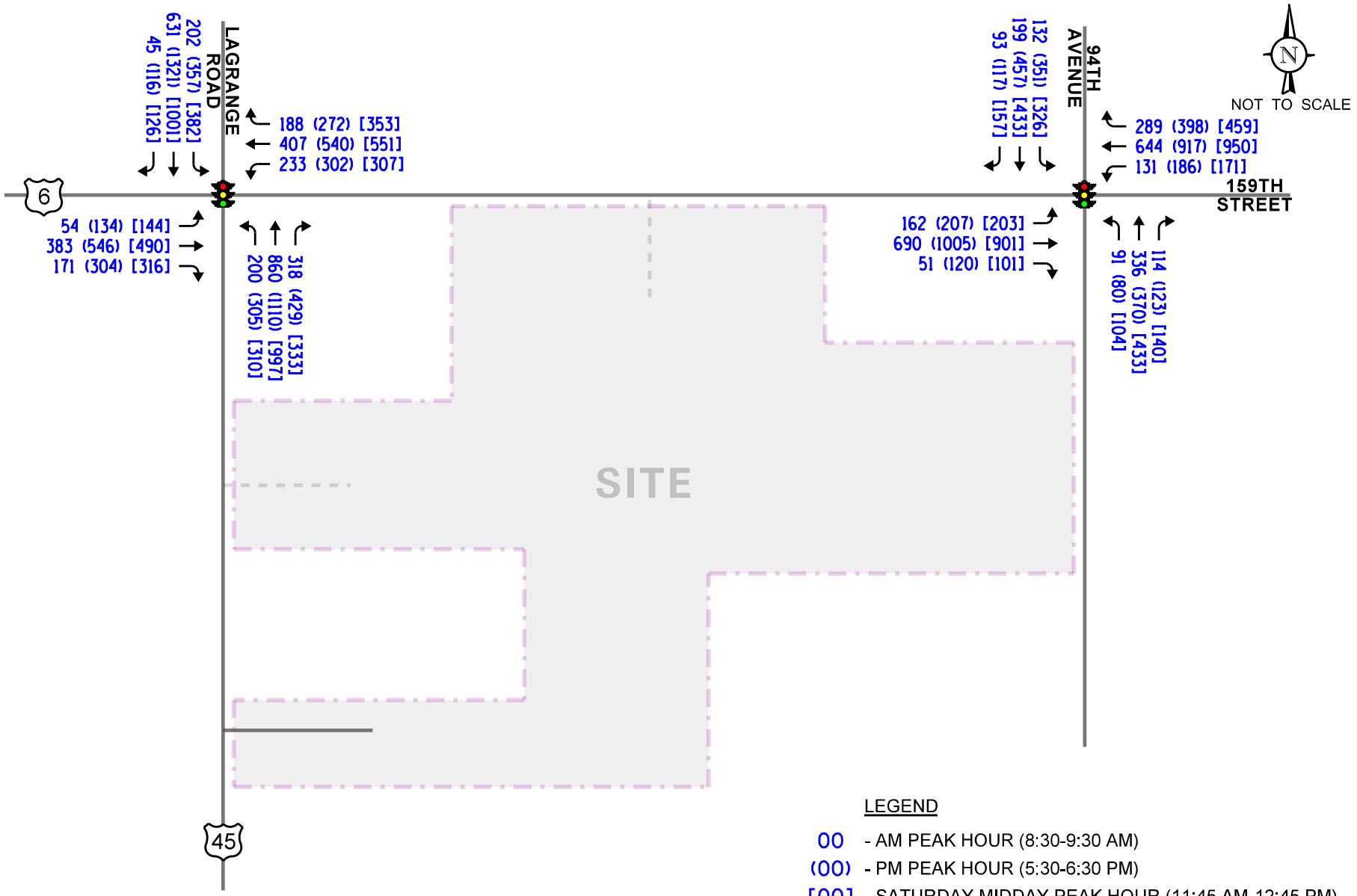
Figure: 6



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Year 2028 No-Build Traffic Volumes

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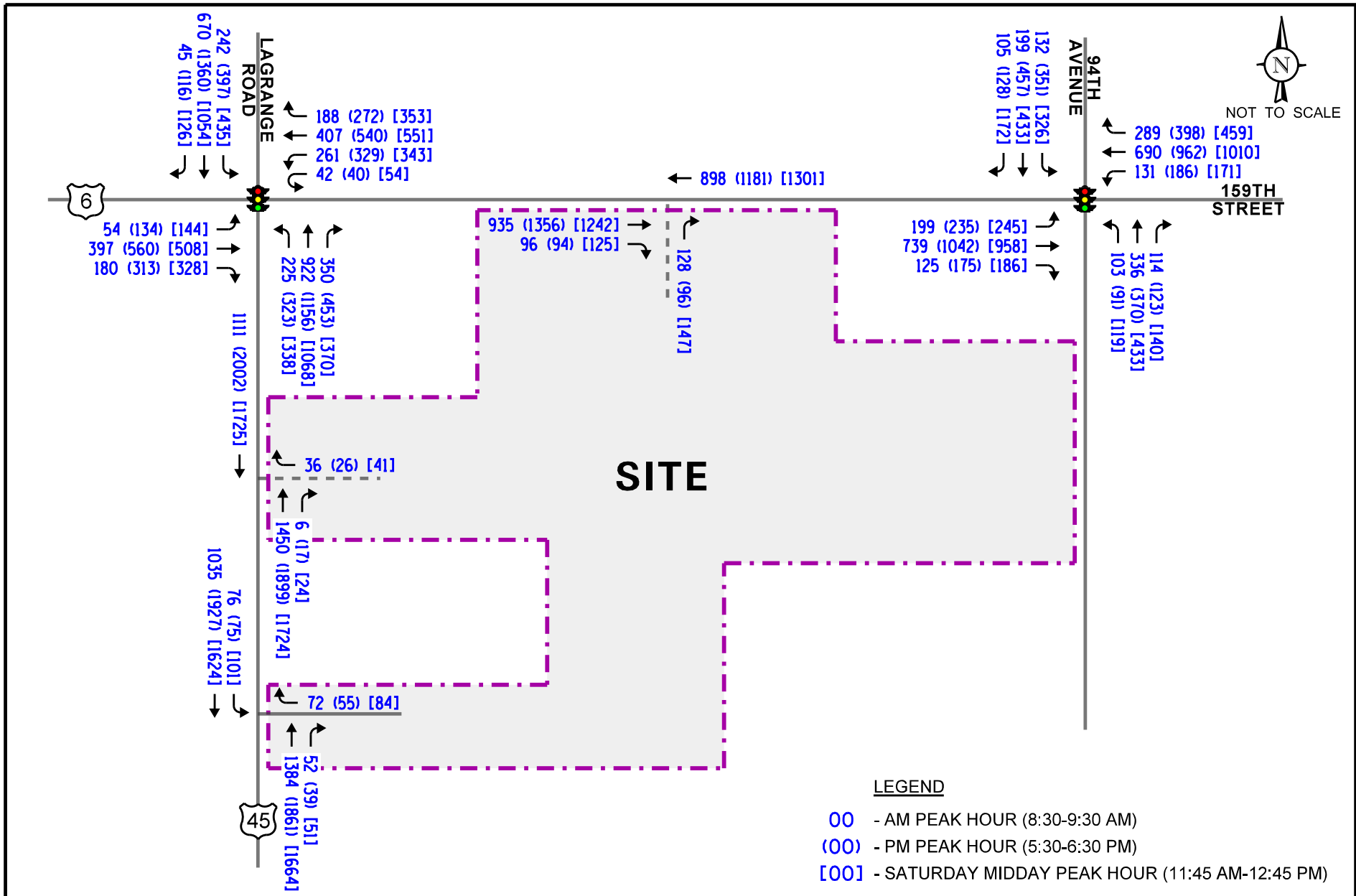

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Year 2028 Total Projected Traffic Volumes

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Figure: 8

5. Traffic Analysis and Recommendations

Capacity analyses were performed for the key intersections included in the study area to determine the ability of the existing roadway system to accommodate existing and future traffic demands. Analyses were performed for the weekday morning, weekday evening, and Saturday midday peak hours for the base, Year 2028 no-build, and Year 2028 total projected conditions.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM), 6th Edition* and analyzed using Synchro/SimTraffic 11 software. The analysis for the traffic-signal controlled intersections were accomplished using programed cycle lengths and phasings to determine the average overall vehicle delay and levels of service.

The analyses for the unsignalized intersections determine the average control delay to vehicles at an intersection. Control delay is the elapsed time from a vehicle joining the queue at a stop sign (includes the time required to decelerate to a stop) until its departure from the stop sign and resumption of free flow speed. The methodology analyzes each intersection approach controlled by a stop sign and considers traffic volumes on all approaches and lane characteristics.

The ability of an intersection to accommodate traffic flow is expressed in terms of level of service, which is assigned a letter from A to F based on the average control delay experienced by vehicles passing through the intersection. The *Highway Capacity Manual* definitions for levels of service and the corresponding control delay for signalized intersections and unsignalized intersections are included in the Appendix of this report.

A summary of the traffic analysis results showing the level of service and delay (measured in seconds) for the intersections for the base, Year 2028 no-build, and Year 2028 total projected conditions are presented in **Tables 4 through 6**. A discussion of each of the intersections follows.

Table 4
CAPACITY ANALYSIS RESULTS – 159TH STREET WITH LAGRANGE ROAD

Peak Hour	Condition	Eastbound			Westbound			Northbound			Southbound			Overall
		L	T	R	L	T	R	L	T	R	L	T	R	
Weekday Morning	Base Conditions	E 56.3	D 51.7	C 32.6	D 45.7	D 37.8	C 26.7	E 57.4	C 24.9	B 14.5	E 57.6	C 23.3	B 15.2	C 33.6
		D – 46.8			D – 37.5			C – 27.2			C – 30.7			
	Year 2028 No Build Conditions	E 56.4	D 51.7	C 32.1	D 45.3	D 35.8	C 24.9	E 57.3	C 26.4	B 15.4	E 57.5	C 24.6	B 16.0	C 33.9
		D – 46.6			D – 36.0			C – 28.4			C – 31.7			
	Year 2028 Projected Conditions	E 56.4	D 51.8	C 31.5	D 49.9	D 34.0	C 22.2	E 57.7	C 29.0	B 16.9	E 58.5	C 26.5	B 17.0	D 35.4
		D – 46.4			D – 36.9			C – 30.5			C – 34.2			
Weekday Evening	Base Conditions	E 63.1	E 57.1	D 37.6	E 68.9	E 68.1	C 26.8	E 69.2	C 32.5	B 19.9	E 64.7	C 31.9	B 16.5	D 43.4
		D – 51.9			E – 58.3			D – 35.6			D – 37.4			
	Year 2028 No Build Conditions	E 63.4	E 57.9	D 37.8	E 66.7	E 70.8	C 29.0	E 70.7	C 34.0	C 21.0	E 65.8	C 33.5	B 16.8	D 44.6
		D – 52.4			E – 59.5			D – 37.0			D – 38.8			
	Year 2028 Projected Conditions	E 63.4	E 59.0	D 38.3	E 69.0	E 67.9	C 31.5	E 73.7	D 36.0	C 22.1	E 68.8	D 35.0	B 17.3	D 46.2
		D – 53.1			E – 59.9			D – 39.0			D – 41.1			
Saturday Midday	Base Conditions	E 63.3	E 56.1	D 36.5	D 41.0	D 41.0	C 33.6	E 62.4	C 33.7	B 19.7	E 60.9	C 31.5	B 18.0	D 39.9
		D – 50.6			D – 38.9			D – 36.2			D – 37.8			
	Year 2028 No Build Conditions	E 63.6	E 56.7	D 36.5	D 39.3	D 39.7	C 31.5	E 62.8	D 35.3	C 20.7	E 61.3	C 33.0	B 18.6	D 40.3
		D – 51.0			D – 37.2			D – 37.6			D – 38.9			
	Year 2028 Projected Conditions	E 63.6	E 57.8	D 36.4	D 43.9	D 36.2	C 27.7	E 63.6	D 38.7	C 22.6	E 62.9	D 35.4	B 19.6	D 41.6
		D – 51.5			D – 36.2			D – 40.1			D – 41.6			

Delay is measured in seconds; L – Left, T – Through, R - Right

Table 5
CAPACITY ANALYSIS RESULTS – 159TH STREET WITH 94th AVENUE

Peak Hour	Condition	Eastbound			Westbound			Northbound		Southbound		Overall
		L	T	R	L	T	R	L	T/R	L	T/R	
Weekday Morning	Base Conditions	A 9.3	B 17.2	B 11.8	B 14.0	C 24.6	B 13.2	C 27.7	D 55.0	C 33.3	D 42.7	C 27.1
		B – 15.5			C – 20.2			D – 50.4		D – 39.8		
	Year 2028 No Build Conditions	B 10.6	B 18.4	B 12.7	B 14.8	C 25.8	B 14.1	C 27.6	D 54.7	C 34.0	D 42.2	C 27.8
		B – 16.7			C – 21.3			D – 50.1		D – 39.6		
	Year 2028 Projected Conditions	B 14.2	C 20.1	B 13.1	B 15.1	C 27.0	B 14.8	C 28.6	D 54.7	C 34.4	D 43.2	C 28.3
		B – 18.2			C – 22.4			D – 49.8		D – 40.5		
Weekday Evening	Base Conditions	C 29.8	D 35.2	B 12.0	C 22.3	C 32.3	B 14.8	C 27.8	E 59.8	D 51.0	D 43.3	D 36.2
		C – 32.3			C – 26.4			D – 55.3		D – 46.2		
	Year 2028 No Build Conditions	D 36.6	D 36.8	B 12.4	C 28.1	C 34.5	B 15.9	C 27.5	E 59.5	E 60.2	D 42.9	D 38.5
		C – 34.6			C – 28.8			E – 55.1		D – 49.5		
	Year 2028 Projected Conditions	D 44.2	D 37.3	B 12.8	C 31.1	D 37.3	B 17.2	C 28.4	E 59.5	E 62.3	D 43.8	D 39.7
		D – 35.5			C – 31.4			D – 54.7		D – 50.7		
Saturday Midday	Base Conditions	D 37.3	C 26.7	B 15.4	C 26.8	D 38.8	B 18.0	C 26.7	E 61.8	D 54.1	D 40.4	D 37.1
		C – 27.5			C – 31.5			E – 56.4		D - 45.3		
	Year 2028 No Build Conditions	E 56.0	C 29.7	B 16.2	C 33.2	D 42.4	B 19.5	C 26.9	E 63.1	E 65.2	D 40.3	D 40.8
		C – 33.0			C – 34.7			E – 57.5		D – 49.2		
	Year 2028 Projected Conditions	E 79.8	C 33.5	B 19.1	D 38.3	D 47.5	C 20.6	C 28.4	E 63.1	E 65.3	D 41.2	D 44.3
		C – 39.7			D – 39.6			E – 57.1		D – 49.7		

Delay is Measured in Seconds L – Left, T – Through, R - Right

Table 6
CAPACITY ANALYSIS RESULTS – UNSIGNALIZED INTERSECTIONS
YEAR 2028 TOTAL PROJECTED CONDITIONS

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
159th Street with the Proposed Right-In/Right-Out Access Drive						
• Northbound Approach	B	14.1	C	18.0	C	18.8
LaGrange Road with the Proposed Right-In/Right-Out Access Drive						
• Westbound Approach	C	18.7	D	25.0	C	23.4

LOS = Level of Service
Delay is measured in seconds.

Discussion and Recommendations

The following is an evaluation of the analyzed intersections based on the projected traffic volumes and the capacity analyses performed.

159th Street with LaGrange Road

The results of the capacity analysis indicate that overall this intersection currently operates at Level of Service (LOS) C during the weekday morning peak hour and LOS D during the weekday evening and Saturday midday peak hours. Further, all movements operate at LOS E or better during all three peak hours. Under Year 2028 no-build traffic conditions, this intersection is projected to continue to operate at the same LOS during the peak hours with increases in delay of approximately one second or less. All approaches are projected to continue operating at the same LOS.

Under Year 2028 total projected traffic conditions, this intersection is projected to operate at LOS during the weekday morning, weekday evening, and Saturday midday peak hours with increases in delay of approximately one to two seconds. Further, all approaches are projected to continue to operate at the same LOS. In addition, further inspection of the capacity analysis indicated that the 95th percentile northbound queues are not projected to exceed 360 feet and therefore will not extend to or block the proposed right-in/right-out access drive off LaGrange Road. As such, the traffic estimated to be generated by the proposed development will have a limited impact on the operations of this intersection and no geometric or traffic control improvements will be required as part of the development.

159th Street with 94th Avenue

The results of the capacity analysis indicate that overall this intersection currently operates at LOS C during the weekday morning peak hour and LOS D during the weekday evening and Saturday midday peak hours. Further, all movements operate at LOS E or better during all three peak hours. Under Year 2028 no-build traffic conditions, this intersection is projected to continue to operate at the same LOS during the peak hours with increases in delay of less than four seconds. All approaches are projected to continue operating at the same LOS.

Under Year 2028 total projected traffic conditions, this intersection is projected to continue to operate at the same LOS during the weekday morning, weekday evening, and Saturday midday peak hours as under no-build conditions with increases in delay of approximately one, one, and four seconds, respectively. In addition, the 95th percentile eastbound queues from this intersection are not projected to exceed 525 feet and therefore will not extend to or block the location of the proposed right-in/right-out access drive off 159th Street. As such, the traffic estimated to be generated by the proposed development will have a limited impact on the operations of this intersection and no geometric or traffic control improvements will be required as part of the development.

159th Street with the Proposed Right-In/Right-Out Access Drive

As proposed, a right-in/right-out access drive will be provided off 159th Street located approximately 650 feet east of LaGrange Road. This access drive will provide two inbound lanes and one outbound lane restricted to right-turn movements only via the landscape median and appropriate signage. Outbound movements will be under stop sign control. As part of the development, a right-turn lane will be provided on 159th Street at this access drive and will provide 125 feet of storage and a 135-foot taper.

Under Year 2028 total projected traffic conditions, outbound movements from the proposed access drive are projected to operate at LOS B during the weekday morning peak hour and LOS C during the weekday evening and Saturday midday peak hours. Further, 95th percentile northbound queues will not exceed one to two vehicles, indicating that vehicles will be able to exit the site efficiently and will not impact internal circulation. As such, this access drive will be adequate in accommodating the traffic estimated to be generated by the proposed development.

LaGrange Road with the Proposed Right-In/Right-Out Access Drive

As proposed, a right-in/right-out access drive will be provided off LaGrange Road located approximately 650 feet south of 159th Street. This access drive will provide one inbound lane and one outbound lane restricted to right turn only movements via the landscape median and appropriate signage. Outbound movements will be under stop sign control.

Under Year 2028 total projected traffic conditions, outbound movements from the proposed access drive are projected to operate at LOS C during the weekday morning and Saturday midday peak hours and LOS D during the weekday evening peak hour. Further, 95th percentile westbound queues are not projected to exceed one to two vehicles which indicates that vehicles will be able to exit the site efficiently and will not impact internal circulation. As such, this access drive will be adequate in accommodating the traffic estimated to be generated by the proposed development.

LaGrange Road with the La-Z-Boy/Brookdale Access Drive

As proposed, a median break will be provided on LaGrange Road at the location of the existing La-Z-Boy/Brookdale access drive to allow for three-quarters (right-in, left-in, right-out) access. Further, a southbound left-turn lane will be provided within the landscape median serving this access drive. The turn lane will provide 185 feet of storage and a 200-foot taper. This modification, which will allow for southbound left-turn movements at this access drive, should be provided given the following:

- Allowing this movement will reduce the volume of turns required to enter the site for many vehicles, thus providing a more direct and less circuitous route.

- Allowing this movement will reduce the volume of southbound left-turn movements at the signalized intersection of 159th Street with 94th Avenue.

- The access drive will also serve traffic generated by the existing La-Z-Boy and Brookdale facilities, and allowing left-turn inbound movements at this access drive will provide more direct access to these uses.

- The southbound left-turn movement is expected to operate at a good LOS.

- 95th percentile southbound queues are projected to not exceed three vehicles and can be accommodated within the proposed turn lane.

- The proposed left-turn lane will provide 185 feet of storage and a 200-foot taper, which is consistent with turn lane lengths required in IDOT's *Bureau of Design and Environment* (BDE) Manual for a roadway with a 40 mile per hour speed limit.

- The exclusive left-turn lane will be provided within the existing median and will not require widening of the roadway.

As such, the modification of this access drive to allow for southbound left-turn movements should be provided to ensure efficient and flexible access is provided.

6. Conclusion

Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) conducted a traffic impact study for the proposed Crossroads of Orland Park, a mixed-use development of retail/commercial and residential land uses to be located on the south side of 159th Street between LaGrange Road and 94th Avenue in Orland Park, Illinois. Access to the development is proposed to be provided via a right-in/right-out access drive off 159th Street, a right-in/right-out access drive off LaGrange Road, and the existing right-in/right-out access drive off LaGrange Road that serves Brookdale senior living and the La-Z-Boy furniture store to be modified to a three-quarter access drive by providing an exclusive southbound left-turn lane within the existing raised median. Based on the proposed development plan and the traffic capacity analyses for the full buildout of the development, the findings and recommendations of this study are outlined below:

- The traffic projected to be generated by the proposed development will be reduced due to interaction between the proposed uses.

- The intersections of 159th Street with LaGrange Road and 94th Avenue have sufficient reserve capacity to accommodate the development-generated traffic.

- The proposed access system will be adequate in accommodating the traffic projected to be generated by the proposed development and will serve to provide efficient and flexible access.

- Inbound left-turn movements should be permitted at the La-Z-Boy/Brookdale access drive on LaGrange Road and a southbound left-turn lane lane should be provided on LaGrange Road serving the access drive.

- An eastbound right-turn lane should be provided on 159th Street serving the proposed right-in/right-out access drive.

Appendix

CMAP 2050 Projections Letter
Traffic Count Summary Sheets
Preliminary Site Plan
ITE Trip Generation Sheets
Level of Service Criteria
Capacity Analysis Summary Sheets

CMAP 2050 Projections Letter

Chicago Metropolitan Agency for Planning

233 South Wacker Drive
Suite 800
Chicago, Illinois 60606

312 454 0400
www.cmap.illinois.gov

May 29, 2020

Javier Millan
Senior Consultant
Kenig, Lindgren, O'Hara and Aboona, Inc.
9575 West Higgins Road
Suite 400
Rosemont, IL 60018

Subject: ***159th Street @ LaGrange Road and @ 94th Avenue***
IDOT

Dear Mr. Millan:

In response to a request made on your behalf and dated May 19, 2020, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current Volumes	Year 2050 ADT
159th St east of LaGrange Rd	32,200	38,300
159th St west of LaGrange Rd	28,600	35,400
LaGrange Rd north of 159th St	43,500	51,400
LaGrange Rd south of 159th St	43,700	50,900
94th Ave north of 159th St	16,500	21,400
94th Ave south of 159th St	13,100	18,400

Traffic projections are developed using existing ADT data provided in the request letter and the results from the March 2020 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

If you have any questions, please call me at (312) 386-8806.

Sincerely,

Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

cc: Quigley (IDOT)
\2020_TrafficForecast\OrlandPark\ck-52-20\ck-52-20.docx

Traffic Count Summary Sheets

Gewalt Hamilton Associates

850 Forest Edge Drive Vernon Hills, IL
Civil - Municipal - Traffic

4092.885
159th St & 94th Ave
6:30-9:30, 11:00-1:00, 3:30-6:30
Gewalt Hamilton Associates, Inc.

File Name : 15763-15899_S_94th_Ave_421942_06-20-2017
Site Code : 4092.885
Start Date : 6/20/2017
Page No : 1

Groups Printed- Lights - Other Vehicles - Pedestrians

	159th St Eastbound					159th St Westbound					94th Ave Northbound					94th Ave Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30 AM	13	72	3	0	88	9	97	29	2	137	10	40	8	0	58	9	16	14	0	39	322
06:45 AM	19	109	1	0	129	16	102	34	0	152	12	44	20	0	76	11	13	16	0	40	397
Total	32	181	4	0	217	25	199	63	2	289	22	84	28	0	134	20	29	30	0	79	719
07:00 AM	28	94	7	0	129	16	81	23	0	120	12	58	23	0	93	17	19	13	0	49	391
07:15 AM	35	108	4	0	147	21	126	45	0	192	13	67	21	0	101	5	17	11	0	33	473
07:30 AM	31	102	3	0	136	16	125	40	0	181	21	76	30	0	127	17	29	15	0	61	505
07:45 AM	34	149	8	0	191	29	154	71	1	255	25	76	33	0	134	15	29	20	0	64	644
Total	128	453	22	0	603	82	486	179	1	748	71	277	107	0	455	54	94	59	0	207	2013
08:00 AM	50	108	8	0	166	29	124	39	4	196	19	69	38	0	126	20	31	20	0	71	559
08:15 AM	28	118	14	0	160	32	166	45	0	243	27	81	36	0	144	24	34	18	0	76	623
08:30 AM	49	146	14	0	209	26	145	60	0	231	26	59	18	1	104	27	48	13	1	89	633
08:45 AM	37	174	7	0	218	35	152	64	0	251	20	105	33	0	158	28	49	26	3	106	733
Total	164	546	43	0	753	122	587	208	4	921	92	314	125	1	532	99	162	77	4	342	2548
09:00 AM	33	148	15	1	197	29	127	61	0	217	21	78	27	0	126	28	46	21	0	95	635
09:15 AM	31	147	11	0	189	31	163	82	1	277	17	69	28	1	115	39	41	26	0	106	687
Total	64	295	26	1	386	60	290	143	1	494	38	147	55	1	241	67	87	47	0	201	1322
11:00 AM	58	192	25	0	275	36	172	90	0	298	14	91	31	0	136	72	82	30	0	184	893
11:15 AM	43	164	12	0	219	31	186	92	1	310	25	96	31	1	153	66	85	35	0	186	868
11:30 AM	37	186	18	0	241	39	193	101	0	333	31	91	30	0	152	87	66	19	0	172	898
11:45 AM	49	201	21	0	271	38	203	108	0	349	28	105	34	0	167	69	97	38	0	204	991
Total	187	743	76	0	1006	144	754	391	1	1290	98	383	126	1	608	294	330	122	0	746	3650
12:00 PM	53	214	25	0	292	31	200	100	0	331	23	88	33	0	144	72	91	41	1	205	972
12:15 PM	45	189	22	1	257	53	205	108	0	366	25	99	36	0	160	79	98	30	0	207	990
12:30 PM	41	236	26	0	303	37	245	109	1	392	20	110	26	0	156	82	116	37	0	235	1086
12:45 PM	36	214	22	0	272	38	210	96	1	345	27	86	38	0	151	83	100	39	0	222	990
Total	175	853	95	1	1124	159	860	413	2	1434	95	383	133	0	611	316	405	147	1	869	4038

Gewalt Hamilton Associates

850 Forest Edge Drive Vernon Hills, IL
Civil - Municipal - Traffic

4092.885
159th St & 94th Ave
6:30-9:30, 11:00-1:00, 3:30-6:30
Gewalt Hamilton Associates, Inc.

File Name : 15763-15899_S_94th_Ave_421942_06-20-2017
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Start Date : 6/20/2017
Page No : 2

Groups Printed- Lights - Other Vehicles - Pedestrians

	159th St Eastbound					159th St Westbound					94th Ave Northbound					94th Ave Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:30 PM	36	204	25	0	265	39	187	96	0	322	29	85	29	0	143	82	114	34	0	230	960
03:45 PM	49	250	21	0	320	48	213	85	0	346	25	98	34	0	157	85	96	26	0	207	1030
Total	85	454	46	0	585	87	400	181	0	668	54	183	63	0	300	167	210	60	0	437	1990
04:00 PM	31	235	29	0	295	44	215	95	0	354	30	73	15	0	118	87	128	41	0	256	1023
04:15 PM	33	208	21	0	262	48	198	73	0	319	24	78	31	0	133	77	130	32	0	239	953
04:30 PM	42	220	29	0	291	52	211	83	0	346	25	64	30	0	119	69	91	32	1	193	949
04:45 PM	49	232	27	0	308	31	186	100	0	317	20	94	33	0	147	86	111	31	0	228	1000
Total	155	895	106	0	1156	175	810	351	0	1336	99	309	109	0	517	319	460	136	1	916	3925
05:00 PM	39	252	23	0	314	39	216	82	0	337	23	79	30	0	132	84	94	43	0	221	1004
05:15 PM	46	235	29	0	310	34	194	82	0	310	32	81	26	1	140	76	110	39	0	225	985
05:30 PM	46	241	24	0	311	38	199	76	0	313	25	86	34	0	145	73	109	26	0	208	977
05:45 PM	59	231	27	0	317	35	192	101	0	328	23	89	20	1	133	79	108	26	0	213	991
Total	190	959	103	0	1252	146	801	341	0	1288	103	335	110	2	550	312	421	134	0	867	3957
06:00 PM	43	228	33	0	304	50	189	97	0	336	16	93	28	0	137	93	101	32	0	226	1003
06:15 PM	44	249	28	0	321	49	218	95	0	362	10	75	32	1	118	71	105	25	0	201	1002
Grand Total	1267	5856	582	2	7707	1099	5594	2462	11	9166	698	2583	916	6	4203	1812	2404	869	6	5091	26167
Apprch %	16.4	76	7.6	0		12	61	26.9	0.1		16.6	61.5	21.8	0.1		35.6	47.2	17.1	0.1		
Total %	4.8	22.4	2.2	0	29.5	4.2	21.4	9.4	0	35	2.7	9.9	3.5	0	16.1	6.9	9.2	3.3	0	19.5	
Lights	1173	5693	574	0	7440	1091	5409	2414	0	8914	683	2570	905	0	4158	1768	2379	839	0	4986	25498
% Lights	92.6	97.2	98.6	0	96.5	99.3	96.7	98.1	0	97.3	97.9	99.5	98.8	0	98.9	97.6	99	96.5	0	97.9	97.4
Other Vehicles	94	163	8	0	265	8	185	48	0	241	15	13	11	0	39	44	25	30	0	99	644
% Other Vehicles	7.4	2.8	1.4	0	3.4	0.7	3.3	1.9	0	2.6	2.1	0.5	1.2	0	0.9	2.4	1	3.5	0	1.9	2.5
Pedestrians	0	0	0	2	2	0	0	0	11	11	0	0	0	6	6	0	0	0	6	6	25
% Pedestrians	0	0	0	100	0	0	0	0	100	0.1	0	0	0	100	0.1	0	0	0	100	0.1	0.1

Gewalt Hamilton Associates

850 Forest Edge Drive Vernon Hills, IL
Civil - Municipal - Traffic

4092.885
159th St & 94th Ave
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Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:30 AM																					
08:30 AM	**49**	146	14	0	209	26	145	60	0	231	**26**	59	18	**1**	104	27	48	13	1	89	633
08:45 AM	37	**174**	7	0	**218**	**35**	152	64	0	251	20	**105**	**33**	0	**158**	28	**49**	**26**	**3**	**106**	**733**
09:00 AM	33	148	**15**	**1**	197	29	127	61	0	217	21	78	27	0	126	28	46	21	0	95	635
09:15 AM	31	147	11	0	189	31	**163**	**82**	**1**	**277**	17	69	28	1	115	**39**	41	26	0	106	687
Total Volume	150	615	47	1	813	121	587	267	1	976	84	311	106	2	503	122	184	86	4	396	2688
% App. Total	18.5	75.6	5.8	0.1		12.4	60.1	27.4	0.1		16.7	61.8	21.1	0.4		30.8	46.5	21.7	1		
PHF	.765	.884	.783	.250	.932	.864	.900	.814	.250	.881	.808	.740	.803	.500	.796	.782	.939	.827	.333	.934	.917
Lights	134	587	46	0	767	120	549	257	0	926	83	310	104	0	497	110	172	79	0	361	2551
% Lights	89.3	95.4	97.9	0	94.3	99.2	93.5	96.3	0	94.9	98.8	99.7	98.1	0	98.8	90.2	93.5	91.9	0	91.2	94.9
Other Vehicles	16	28	1	0	45	1	38	10	0	49	1	1	2	0	4	12	12	7	0	31	129
% Other Vehicles	10.7	4.6	2.1	0	5.5	0.8	6.5	3.7	0	5.0	1.2	0.3	1.9	0	0.8	9.8	6.5	8.1	0	7.8	4.8
Pedestrians	0	0	0	1	1	0	0	0	1	1	0	0	0	2	2	0	0	0	4	4	8
% Pedestrians	0	0	0	100	0.1	0	0	0	100	0.1	0	0	0	100	0.4	0	0	0	100	1.0	0.3
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	49	201	21	0	271	38	203	108	0	349	**28**	105	34	0	**167**	69	97	38	0	204	991
12:00 PM	**53**	214	25	0	292	31	200	100	0	331	23	88	33	0	144	72	91	**41**	**1**	205	972
12:15 PM	45	189	22	**1**	257	**53**	205	108	0	366	25	99	**36**	0	160	79	98	30	0	207	990
12:30 PM	41	**236**	**26**	0	**303**	37	**245**	**109**	**1**	**392**	20	**110**	26	0	156	**82**	**116**	37	0	**235**	**1086**
Total Volume	188	840	94	1	1123	159	853	425	1	1438	96	402	129	0	627	302	402	146	1	851	4039
% App. Total	16.7	74.8	8.4	0.1		11.1	59.3	29.6	0.1		15.3	64.1	20.6	0		35.5	47.2	17.2	0.1		
PHF	.887	.890	.904	.250	.927	.750	.870	.975	.250	.917	.857	.914	.896	.000	.939	.921	.866	.890	.250	.905	.930
Lights	175	816	92	0	1083	157	828	415	0	1400	93	400	128	0	621	293	397	138	0	828	3932
% Lights	93.1	97.1	97.9	0	96.4	98.7	97.1	97.6	0	97.4	96.9	99.5	99.2	0	99.0	97.0	98.8	94.5	0	97.3	97.4
Other Vehicles	13	24	2	0	39	2	25	10	0	37	3	2	1	0	6	9	5	8	0	22	104
% Other Vehicles	6.9	2.9	2.1	0	3.5	1.3	2.9	2.4	0	2.6	3.1	0.5	0.8	0	1.0	3.0	1.2	5.5	0	2.6	2.6
Pedestrians	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	3
% Pedestrians	0	0	0	100	0.1	0	0	0	100	0.1	0	0	0	0	0	0	0	0	100	0.1	0.1

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Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:30 PM																					
05:30 PM	46	241	24	0	311	38	199	76	0	313	**25**	86	**34**	0	**145**	73	**109**	26	0	208	977
05:45 PM	**59**	231	27	0	317	35	192	**101**	0	328	23	89	20	**1**	133	79	108	26	0	213	991
06:00 PM	43	228	**33**	0	304	**50**	189	97	0	336	16	**93**	28	0	137	**93**	101	**32**	0	**226**	**1003**
06:15 PM	44	**249**	28	0	**321**	49	**218**	95	0	**362**	10	75	32	1	118	71	105	25	0	201	1002
Total Volume	192	949	112	0	1253	172	798	369	0	1339	74	343	114	2	533	316	423	109	0	848	3973
% App. Total	15.3	75.7	8.9	0		12.8	59.6	27.6	0		13.9	64.4	21.4	0.4		37.3	49.9	12.9	0		
PHF	.814	.953	.848	.000	.976	.860	.915	.913	.000	.925	.740	.922	.838	.500	.919	.849	.970	.852	.000	.938	.990
Lights	191	945	111	0	1247	171	791	365	0	1327	74	342	114	0	530	314	421	107	0	842	3946
% Lights	99.5	99.6	99.1	0	99.5	99.4	99.1	98.9	0	99.1	100	99.7	100	0	99.4	99.4	99.5	98.2	0	99.3	99.3
Other Vehicles	1	4	1	0	6	1	7	4	0	12	0	1	0	0	1	2	2	2	0	6	25
% Other Vehicles	0.5	0.4	0.9	0	0.5	0.6	0.9	1.1	0	0.9	0	0.3	0	0	0.2	0.6	0.5	1.8	0	0.7	0.6
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	2
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0.4	0	0	0	0	0	0.1

Gewalt Hamilton Associates

850 Forest Edge Drive Vernon Hills, IL
Civil - Municipal - Traffic

4092.885
US 45 & 159th St
6:30-9:30, 11:00-1:00, 3:30-6:30
Gewalt Hamilton Associates, Inc.

File Name : 15901_South_La_Grange_Road_421941_06-20-2017
Site Code : 4092.885
Start Date : 6/20/2017
Page No : 1

Groups Printed- Lights - Other Vehicles - Pedestrians

	159th St Eastbound					159th St Westbound					US-45 Northbound					US-45 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30 AM	4	36	24	0	64	29	69	29	0	127	34	209	19	0	262	19	118	7	0	144	597
06:45 AM	1	53	22	0	76	33	68	20	0	121	30	163	40	0	233	27	93	7	0	127	557
Total	5	89	46	0	140	62	137	49	0	248	64	372	59	0	495	46	211	14	0	271	1154
07:00 AM	5	58	24	0	87	31	52	31	0	114	23	187	51	0	261	23	133	4	0	160	622
07:15 AM	8	61	28	0	97	34	68	30	0	132	33	190	53	0	276	25	148	6	0	179	684
07:30 AM	1	55	29	0	85	38	102	32	0	172	46	231	56	0	333	32	158	12	0	202	792
07:45 AM	6	81	42	0	129	47	90	38	0	175	52	220	76	0	348	33	162	15	0	210	862
Total	20	255	123	0	398	150	312	131	0	593	154	828	236	0	1218	113	601	37	0	751	2960
08:00 AM	9	65	47	0	121	54	99	26	0	179	54	216	71	0	341	41	142	9	0	192	833
08:15 AM	7	71	30	0	108	51	91	50	0	192	52	209	49	0	310	34	151	7	0	192	802
08:30 AM	15	85	36	0	136	52	92	43	0	187	35	217	90	0	342	31	141	10	0	182	847
08:45 AM	8	91	45	0	144	44	108	46	0	198	67	210	90	0	367	36	167	13	0	216	925
Total	39	312	158	0	509	201	390	165	0	756	208	852	300	0	1360	142	601	39	0	782	3407
09:00 AM	13	73	41	0	127	54	80	41	0	175	44	187	64	0	295	57	148	10	0	215	812
09:15 AM	14	106	37	0	157	65	97	44	0	206	39	183	51	0	273	63	129	9	0	201	837
Total	27	179	78	0	284	119	177	85	0	381	83	370	115	0	568	120	277	19	0	416	1649
11:00 AM	25	96	57	0	178	60	124	54	0	238	78	214	79	0	371	76	196	26	0	298	1085
11:15 AM	28	89	69	0	186	55	101	61	0	217	71	221	64	0	356	70	214	22	0	306	1065
11:30 AM	24	102	65	0	191	58	113	69	0	240	71	259	58	0	388	76	236	21	0	333	1152
11:45 AM	36	100	72	0	208	70	107	80	0	257	89	253	98	0	440	79	210	23	0	312	1217
Total	113	387	263	0	763	243	445	264	0	952	309	947	299	0	1555	301	856	92	0	1249	4519
12:00 PM	32	108	73	1	214	54	140	73	0	267	77	229	81	0	387	92	220	28	1	341	1209
12:15 PM	28	122	72	0	222	67	115	84	0	266	58	241	62	0	361	89	235	38	0	362	1211
12:30 PM	37	124	76	1	238	93	148	90	0	331	63	201	68	0	332	94	263	28	0	385	1286
12:45 PM	45	124	74	0	243	84	130	81	0	295	64	214	75	0	353	58	214	40	0	312	1203
Total	142	478	295	2	917	298	533	328	0	1159	262	885	286	0	1433	333	932	134	1	1400	4909

Gewalt Hamilton Associates

850 Forest Edge Drive Vernon Hills, IL
Civil - Municipal - Traffic

4092.885
US 45 & 159th St
6:30-9:30, 11:00-1:00, 3:30-6:30
Gewalt Hamilton Associates, Inc.

File Name : 15901_South_La_Grange_Road_421941_06-20-2017
Site Code : 4092.885
Start Date : 6/20/2017
Page No : 2

Groups Printed- Lights - Other Vehicles - Pedestrians

	159th St Eastbound					159th St Westbound					US-45 Northbound					US-45 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:30 PM	23	116	64	0	203	67	139	74	0	280	78	222	79	0	379	81	314	23	0	418	1280
03:45 PM	31	134	81	0	246	84	125	71	0	280	56	217	82	0	355	97	333	33	0	463	1344
Total	54	250	145	0	449	151	264	145	0	560	134	439	161	0	734	178	647	56	0	881	2624
04:00 PM	20	114	69	0	203	83	133	66	0	282	48	216	71	0	335	111	307	31	0	449	1269
04:15 PM	32	108	62	0	202	75	112	74	0	261	51	213	72	0	336	79	303	30	0	412	1211
04:30 PM	28	119	84	0	231	58	123	83	0	264	47	201	71	0	319	88	273	20	0	381	1195
04:45 PM	24	136	68	0	228	76	112	60	0	248	58	252	99	0	409	81	300	24	0	405	1290
Total	104	477	283	0	864	292	480	283	0	1055	204	882	313	0	1399	359	1183	105	0	1647	4965
05:00 PM	28	147	78	0	253	102	132	73	0	307	53	194	81	0	328	85	264	25	0	374	1262
05:15 PM	24	126	83	0	233	63	128	73	0	264	72	296	101	0	469	90	297	22	1	410	1376
05:30 PM	34	144	73	0	251	78	124	66	0	268	55	228	74	0	357	87	301	28	0	416	1292
05:45 PM	28	114	71	0	213	55	132	61	0	248	84	277	113	0	474	77	304	26	1	408	1343
Total	114	531	305	0	950	298	516	273	0	1087	264	995	369	0	1628	339	1166	101	2	1608	5273
06:00 PM	38	122	55	0	215	84	116	52	0	252	72	227	110	0	409	77	322	32	0	431	1307
06:15 PM	29	136	69	0	234	71	138	53	0	262	78	259	80	0	417	95	239	32	0	366	1279
Grand Total	685	3216	1820	2	5723	1969	3508	1828	0	7305	1832	7056	2328	0	11216	2103	7035	661	3	9802	34046
Apprch %	12	56.2	31.8	0		27	48	25	0		16.3	62.9	20.8	0		21.5	71.8	6.7	0		
Total %	2	9.4	5.3	0	16.8	5.8	10.3	5.4	0	21.5	5.4	20.7	6.8	0	32.9	6.2	20.7	1.9	0	28.8	
Lights	672	3120	1772	0	5564	1867	3434	1779	0	7080	1802	6820	2204	0	10826	2059	6812	650	0	9521	32991
% Lights	98.1	97	97.4	0	97.2	94.8	97.9	97.3	0	96.9	98.4	96.7	94.7	0	96.5	97.9	96.8	98.3	0	97.1	96.9
Other Vehicles	13	96	48	0	157	102	74	49	0	225	30	236	124	0	390	44	223	11	0	278	1050
% Other Vehicles	1.9	3	2.6	0	2.7	5.2	2.1	2.7	0	3.1	1.6	3.3	5.3	0	3.5	2.1	3.2	1.7	0	2.8	3.1
Pedestrians	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	5
% Pedestrians	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0

Gewalt Hamilton Associates

850 Forest Edge Drive Vernon Hills, IL
Civil - Municipal - Traffic

4092.885
US 45 & 159th St
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Gewalt Hamilton Associates, Inc.

File Name : 15901_South_La_Grange_Road_421941_06-20-2017
Site Code : 4092.885
Start Date : 6/20/2017
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	159th St Eastbound					159th St Westbound					US-45 Northbound					US-45 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:30 AM																					
08:30 AM	**15**	85	36	0	136	52	92	43	0	187	35	**217**	**90**	0	342	31	141	10	0	182	847
08:45 AM	8	91	**45**	0	144	44	**108**	**46**	0	198	**67**	210	90	0	**367**	36	**167**	**13**	0	**216**	**925**
09:00 AM	13	73	41	0	127	54	80	41	0	175	44	187	64	0	295	57	148	10	0	215	812
09:15 AM	14	**106**	37	0	**157**	**65**	97	44	0	**206**	39	183	51	0	273	**63**	129	9	0	201	837
Total Volume	50	355	159	0	564	215	377	174	0	766	185	797	295	0	1277	187	585	42	0	814	3421
% App. Total	8.9	62.9	28.2	0		28.1	49.2	22.7	0		14.5	62.4	23.1	0		23	71.9	5.2	0		
PHF	.833	.837	.883	.000	.898	.827	.873	.946	.000	.930	.690	.918	.819	.000	.870	.742	.876	.808	.000	.942	.925
Lights	50	337	149	0	536	194	367	174	0	735	185	748	272	0	1205	182	556	42	0	780	3256
% Lights	100	94.9	93.7	0	95.0	90.2	97.3	100	0	96.0	100	93.9	92.2	0	94.4	97.3	95.0	100	0	95.8	95.2
Other Vehicles	0	18	10	0	28	21	10	0	0	31	0	49	23	0	72	5	29	0	0	34	165
% Other Vehicles	0	5.1	6.3	0	5.0	9.8	2.7	0	0	4.0	0	6.1	7.8	0	5.6	2.7	5.0	0	0	4.2	4.8
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	36	100	72	0	208	70	107	80	0	257	**89**	**253**	**98**	0	**440**	79	210	23	0	312	1217
12:00 PM	32	108	73	**1**	214	54	140	73	0	267	77	229	81	0	387	92	220	28	**1**	341	1209
12:15 PM	28	122	72	0	222	67	115	84	0	266	58	241	62	0	361	89	235	**38**	0	362	1211
12:30 PM	**37**	**124**	**76**	1	**238**	**93**	**148**	**90**	0	**331**	63	201	68	0	332	**94**	**263**	28	0	**385**	**1286**
Total Volume	133	454	293	2	882	284	510	327	0	1121	287	924	309	0	1520	354	928	117	1	1400	4923
% App. Total	15.1	51.5	33.2	0.2		25.3	45.5	29.2	0		18.9	60.8	20.3	0		25.3	66.3	8.4	0.1		
PHF	.899	.915	.964	.500	.926	.763	.861	.908	.000	.847	.806	.913	.788	.000	.864	.941	.882	.770	.250	.909	.957
Lights	128	442	283	0	853	268	499	317	0	1084	276	899	291	0	1466	348	897	117	0	1362	4765
% Lights	96.2	97.4	96.6	0	96.7	94.4	97.8	96.9	0	96.7	96.2	97.3	94.2	0	96.4	98.3	96.7	100	0	97.3	96.8
Other Vehicles	5	12	10	0	27	16	11	10	0	37	11	25	18	0	54	6	31	0	0	37	155
% Other Vehicles	3.8	2.6	3.4	0	3.1	5.6	2.2	3.1	0	3.3	3.8	2.7	5.8	0	3.6	1.7	3.3	0	0	2.6	3.1
Pedestrians	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
% Pedestrians	0	0	0	100	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0.1	0.1

Gewalt Hamilton Associates

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Civil - Municipal - Traffic

4092.885
US 45 & 159th St
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File Name : 15901_South_La_Grange_Road_421941_06-20-2017
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	159th St Eastbound					159th St Westbound					US-45 Northbound					US-45 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:15 PM																					
05:15 PM	24	126	**83**	0	233	63	128	**73**	0	264	72	**296**	101	0	469	**90**	297	22	**1**	410	**1376**
05:30 PM	34	**144**	73	0	**251**	78	124	66	0	**268**	55	228	74	0	357	87	301	28	0	416	1292
05:45 PM	28	114	71	0	213	55	**132**	61	0	248	**84**	277	**113**	0	**474**	77	304	26	1	408	1343
06:00 PM	**38**	122	55	0	215	**84**	116	52	0	252	72	227	110	0	409	77	**322**	**32**	0	**431**	1307
Total Volume	124	506	282	0	912	280	500	252	0	1032	283	1028	398	0	1709	331	1224	108	2	1665	5318
% App. Total	13.6	55.5	30.9	0		27.1	48.4	24.4	0		16.6	60.2	23.3	0		19.9	73.5	6.5	0.1		
PHF	.816	.878	.849	.000	.908	.833	.947	.863	.000	.963	.842	.868	.881	.000	.901	.919	.950	.844	.500	.966	.966
Lights	124	498	277	0	899	274	496	250	0	1020	279	1012	394	0	1685	330	1203	108	0	1641	5245
% Lights	100	98.4	98.2	0	98.6	97.9	99.2	99.2	0	98.8	98.6	98.4	99.0	0	98.6	99.7	98.3	100	0	98.6	98.6
Other Vehicles	0	8	5	0	13	6	4	2	0	12	4	16	4	0	24	1	21	0	0	22	71
% Other Vehicles	0	1.6	1.8	0	1.4	2.1	0.8	0.8	0	1.2	1.4	1.6	1.0	0	1.4	0.3	1.7	0	0	1.3	1.3
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0.1	0.0

Preliminary Site Plan

PRELIMINARY SITE PLAN
FOR
THE CROSSROADS OF ORLAND PARK
ORLAND PARK, ILLINOIS

LEGEND

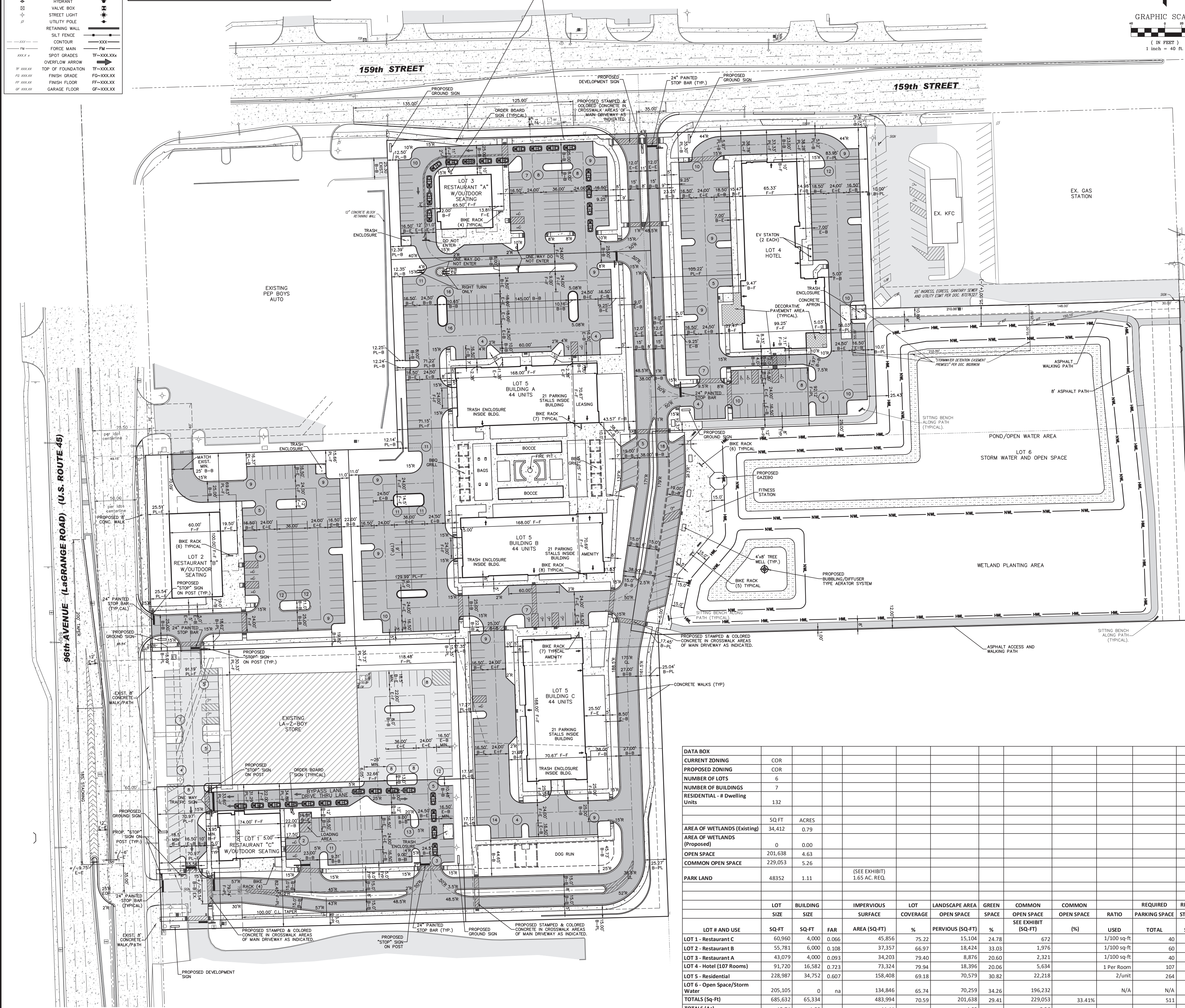
EXISTING		PROPOSED
	SANITARY SEWER	
	SANITARY SERVICE	
	SANITARY MANHOLE	
	STORM SEWER	
	STORM SERVICE	
	CATCH BASIN	
	OPEN LID STORM MANHOLE	
	CLOSED LID STORM MANHOLE	
	STORM INLET	
	FLARED END SECTION	
	WATER MAIN	WM
	WATER SERVICE	WS
	VALVE VAULT	
	B-BOX	
	HYDRANT	
	VALVE BOX	
	STREET LIGHT	
	UTILITY POLE	
	RETAINING WALL	
	SILT FENCE	
	CONTOUR	XXX
	FORCE MAIN	FM
	SPOT GRADES	TF~XXX.XXx
	OVERFLOW ARROW	
	TOP OF FOUNDATION	TF=XXX.XX
	FINISH GRADE	FG=XXX.XX
	FINISH FLOOR	FF=XXX.XX
	GARAGE FLOOR	GF=XXX.XX

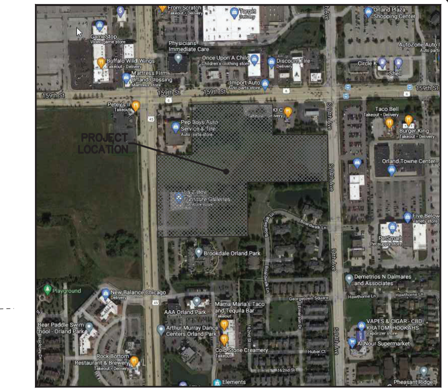
LEGAL DESCRIPTION

LOT 1 OF CROSSROADS OF ORLAND, BEING A CONSOLIDATION IN THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 36 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED MAY 3, 1999, AS DOCUMENT NUMBER 99423793, IN COOK COUNTY, ILLINOIS;

LESS: BEGINNING AT THE MOST NORTHERLY NORTHEAST CORNER OF SAID LOT 1; THENCE ON AN ASSUMED BEARING SOUTH 88 DEGREES 25 MINUTES 40 SECONDS WEST, ON THE NORTH LINE OF SAID LOT 1, A DISTANCE OF 568.51 FEET TO A WESTERLY LINE OF SAID LOT 1; THEN SOUTH 2 DEGREES 04 MINUTES 14 SECONDS EAST A DISTANCE OF 13 FEET ALONG SAID WESTERNLINE ; THENCE NORTH 88 DEGREES 25 MINUTES 40 SECONDS EAST A DISTANCE OF 568.50 FEET TO AN EASTERLY LINE OF SAID LOT 1; THENCE NORTH 2 DEGREES 00 MINUTES 36 SECONDS WEST A DISTANCE OF 13.00 FEET TO THE POINT OF BEGINNING; AND

LESS: BEGINNING AT THE SOUTHWEST CORNER OF SAID LOT 1, THENCE ON AN ASSUMED BEARING NORTH 1 DEGREE 59 MINUTES 31 SECONDS WEST, ON THE WEST LINE OF SAID LOT 1, A DISTANCE OF 232.26 FEET; THENCE NORTH 88 DEGREES 25 MINUTES 40 SECONDS EAST A DISTANCE OF 12.00 FEET; THENCE SOUTH 1 DEGREE 59 MINUTES 31 SECONDS EAST A DISTANCE OF 232.27 FEET TO THE SOUTH LINE OF SAID LOT 1; THENCE SOUTH 88 DEGREES 29 MINUTES 14 SECONDS WEST, ON THE SOUTH LINE OF SAID LOT 1, A DISTANCE OF 12 FEET TO THE POINT OF BEGINNING, ALL IN COUNTY, ILLINOIS.





LOCATION MAP
NOT TO SCALE

8' ASPHALT BIKE PATH. TAPER TO MATCH THE EXISTING CONCRETE NORTH & SOUTH WALKS.

Call Before You Dig
JULIE ILLINOIS ONE-CALL SYSTEM
CALL 1-800-892-0123 or 811
AT LEAST 48 HOURS (2 WORKING DAYS) BEFORE YOU DIG
WWW.ILLINOIS1CALL.COM

NOTES:

1) ALL STANDARD STALLS ARE 9' WIDE EDGE TO EDGE.
2) ALL RADII ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
3) ALL PROPOSED RADII ARE 4' UNLESS NOTED OTHERWISE.
4) ALL ISLANDS ARE MINIMUM 8' B-B UNLESS NOTED OTHERWISE.
5) ALL SIDEWALKS & PEDESTRIAN CROSSINGS MUST COMPLY WITH ADA & ILLINOIS ACCESSIBILTY CODE.
6) CROSS WALKS SHOWN ON CROSS ROADS DRIVE (MAIN LOOPED ROADWAY) SHALL BE STAMPED AND STAINED CONCRETE.
7) ALL OTHER DRIVEWAY CROSS WALKS SHALL BE STRIPED AND W/PAINT.
8) ALL FIRE LANES SHALL BE PROPERLY POSTED WITH SIGNS AND/OR PAVEMENT MARKINGS.

BENCHMARKS

INITIAL BENCHMARK: NGS CONTROL MONUMENT DK 2006, BEING A BRASS DISK LOCATED IN THE SOUTHWEST QUADRANT OF WILL/COOK ROAD AND 167TH STREET, 39 FT. WEST OF THE CENTERLINE OF WILL/COOK ROAD, 54 FT. SOUTH OF THE CENTERLINE OF 167TH STREET, 10 FT. WEST OF A TRAFFIC SIGNAL HAND HOLE AND 1 FT. NORTHEAST OF AN ORANGE CARSONITE MARKER. ELEVATION: 751.92 (NAVD88)

BENCHMARK SE: NORTHEAST BOLT OF FIRE HYDRANT AT THE ENTRANCE INTO LAY-Z-BOY FURNITURE STORE ALONG THE EAST RIGHT-OF-WAY OF LAGRANGE ROAD. 970 FEET SOUTH OF THE CENTERLINE OF 159TH STREET. ELEVATION: 711.35 (NAVD88)

BENCHMARK NW: SOUTHEAST BOLT OF FIRE HYDRANT 100 FEET EAST OF PEP BOYS LOCATED AT THE SOUTHEAST CORNER OF LAGRANGE AND 159TH STREET. ELEVATION: 710.36 NAVD88

BENCHMARK NE: SOUTHEAST BOLT OF FIRE HYDRANT SOUTH RIGHT-OF-WAY OF 159TH STREET. 540 FEET WEST OF THE CENTERLINE OF 94TH AVENUE. 1ST ENTRANCE WEST OF THE ENTRANCE INTO KFC. ELEVATION: 711.17 (NAVD88)

BENCHMARK EAST: SET CHISELED SQUARE ON THE NORTH SIDE OF A HEADWALL ALONG THE WEST RIGHT-OF-WAY LINE OF 94TH AVENUE, 340 FEET SOUTH OF THE CENTERLINE OF 159TH STREET. ELEVATION: 698.92 (NAVD88)

SITE DATA

AREA: 685,633 SQUARE FEET OR 15.740 ACRES

PARCEL IDENTIFICATION NUMBER

27-22-100-028-0000
27-22-100-029-0000

BASIS OF BEARING

THE BASIS OF BEARINGS IS THE ILLINOIS STATE PLANE SYSTEM - EAST ZONE

DATA BOX																			
CURRENT ZONING	COR																		
PROPOSED ZONING	COR																		
NUMBER OF LOTS	6																		
NUMBER OF BUILDINGS	7																		
RESIDENTIAL - # Dwelling Units	132																		
	SQ FT	ACRES																	
AREA OF WETLANDS (Existing)	34,412	0.79																	
AREA OF WETLANDS (Proposed)	0	0.00																	
OPEN SPACE	201,638	4.63																	
COMMON OPEN SPACE	229,053	5.26																	
PARK LAND	48352	1.11		(SEE EXHIBIT) 1.65 AC. REQ.															
	LOT	BUILDING		IMPERVIOUS	LOT	LANDSCAPE AREA	GREEN	COMMON	COMMON		REQUIRED	REQUIRED	REQUIRED	PROVIDED	PROVIDED	PROVIDED	REQUIRED	PROVIDED
	SIZE	SIZE		SURFACE	COVERAGE	OPEN SPACE	SPACE	OPEN SPACE	OPEN SPACE	RATIO	PARKING SPACE	STANDARD	ACCESSIBLE	PARKING SAPACES	STANDARD	ACCESSIBLE	BICYCLE	BICYCLE
LOT # AND USE	SQ-FT	SQ-FT	FAR	AREA (SQ-FT)	%	PERVIOUS (SQ-FT)	%	SEE EXHIBIT (SQ-FT)	(%)	USED	TOTAL	SPACES	SPACES	TOTAL	SPACES	SPACES	SPACES	SPACES
LOT 1 - Restaurant C	60,960	4,000	0.066	45,856	75.22	15,104	24.78	672		1/100 sq-ft	40	38	2	42	40	2	4	4
LOT 2 - Restaurant B	55,781	6,000	0.108	37,357	66.97	18,424	33.03	1,976		1/100 sq-ft	60	57	3	60	57	3	6	6
LOT 3 - Restaurant A	43,079	4,000	0.093	34,203	79.40	8,876	20.60	2,321		1/100 sq-ft	40	38	2	42	40	2	4	4
LOT 4 - Hotel (107 Rooms)	91,720	16,582	0.723	73,324	79.94	18,396	20.06	5,634		1 Per Room	107	102	5	107	102	5	10	0
LOT 5 - Residential	228,987	34,752	0.607	158,408	69.18	70,579	30.82	22,218		2/unit	264	257	7	232 (1.76/UNIT)	225	7	23	22
LOT 6 - Open Space/Storm Water	205,105	0	na	134,846	65.74	70,259	34.26	196,232		N/A	N/A	N/A	N/A	18	17	1	0	11
TOTALS (Sq-Ft)	685,632	65,334		483,994	70.59	201,638	29.41	229,053	33.41%		511	492	19	501	481	20	47	47
TOTALS (Ac)	15.74	1.50		11.11		4.63		5.26										
				(HWL=146,034)														
				(NWL=77493)														
				MEAN/AVG= 111764														

NO.	DATE	REVISIONS DESCRIPTION	BY
1	08-18-21	PER CLIENT/LAND PLANNER REVIEW	SDS
2	09-16-22	PER CLIENT/LAND PLANNER REVIEW	SDS
3	10-24-22	PER - HOTEL PARKING	SDS
4	03-22-23	PER - CLIENT/VILLAGE REVIEW	SDS
5	09-13-23	PER - CLIENT/VILLAGE REVIEW	SDS

INTER-CONTINENTAL REAL ESTATE
2221 CAMDEN COURT - SUITE 200
OAK BROOK, ILLINOIS 60523
630-560-8104

PRELIMINARY SITE PLAN / PLAT
FOR
CROSSROADS OF ORLAND PARK
S.E. CORNER 159TH & LA GRANGE RD.
ORLAND PARK, ILLINOIS

DESIGNTEK ENGINEERING, INC.
CONSULTING, CIVIL ENGINEERING & LAND SURVEYING
9930 W. 190TH STREET, SUITE L
MOKENA, ILLINOIS 60448
(708) 326-4961
FAX: (708) 326-4692
IL PROF. LIC. NO.: 184-003740

DEI

PROJECT INFORMATION
Project No.: 16-0025
Scale: 1" = 40'
Date: 01-05-2021
Design By: SDS
Drawn By: NSM
Checked By: SDS

PRELIMINARY SITE PLAN

ITE Trip Generation Sheets

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

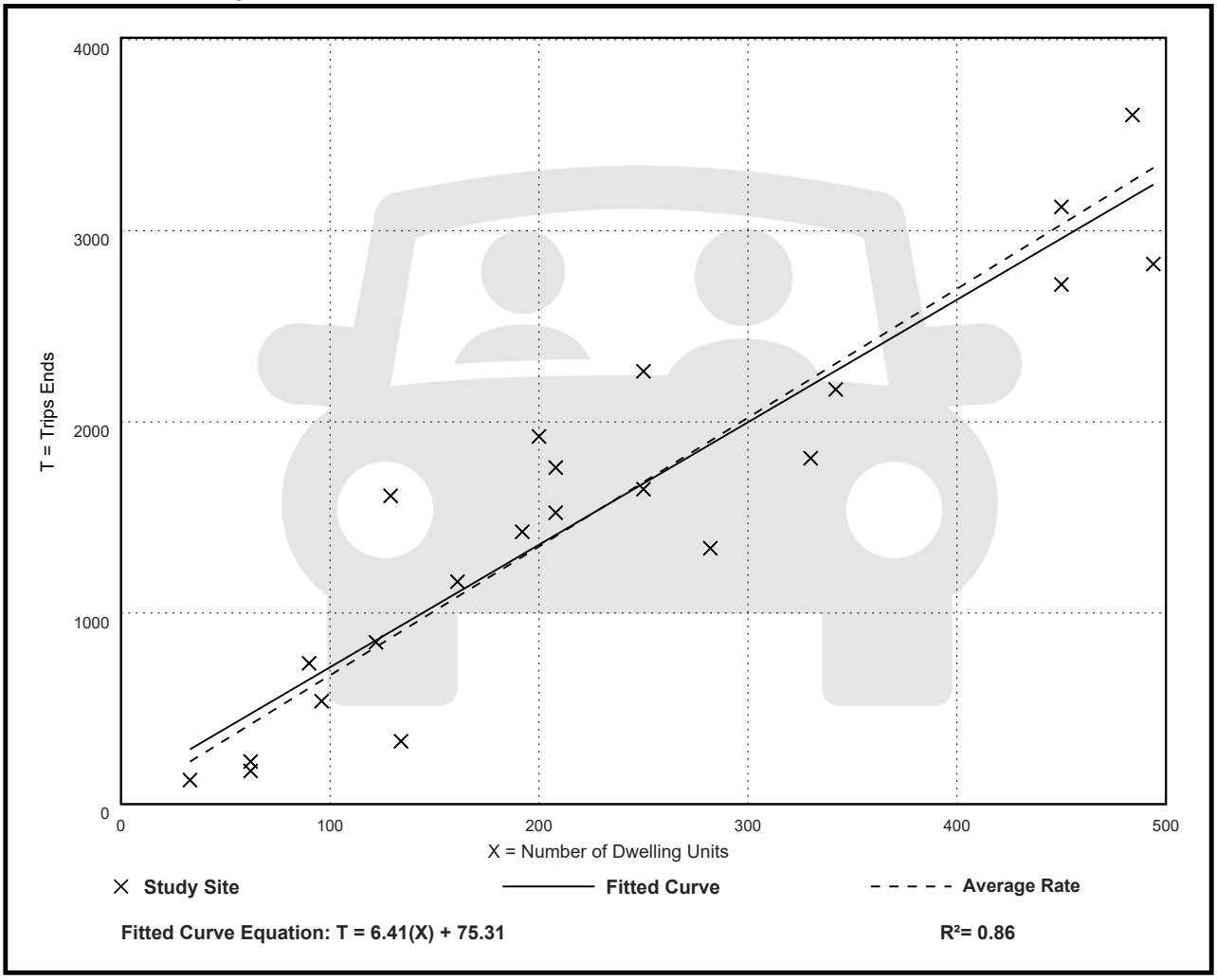
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

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

Vehicle Trip Generation per Dwelling Unit

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

Data Plot and Equation



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

R^2= 0.86

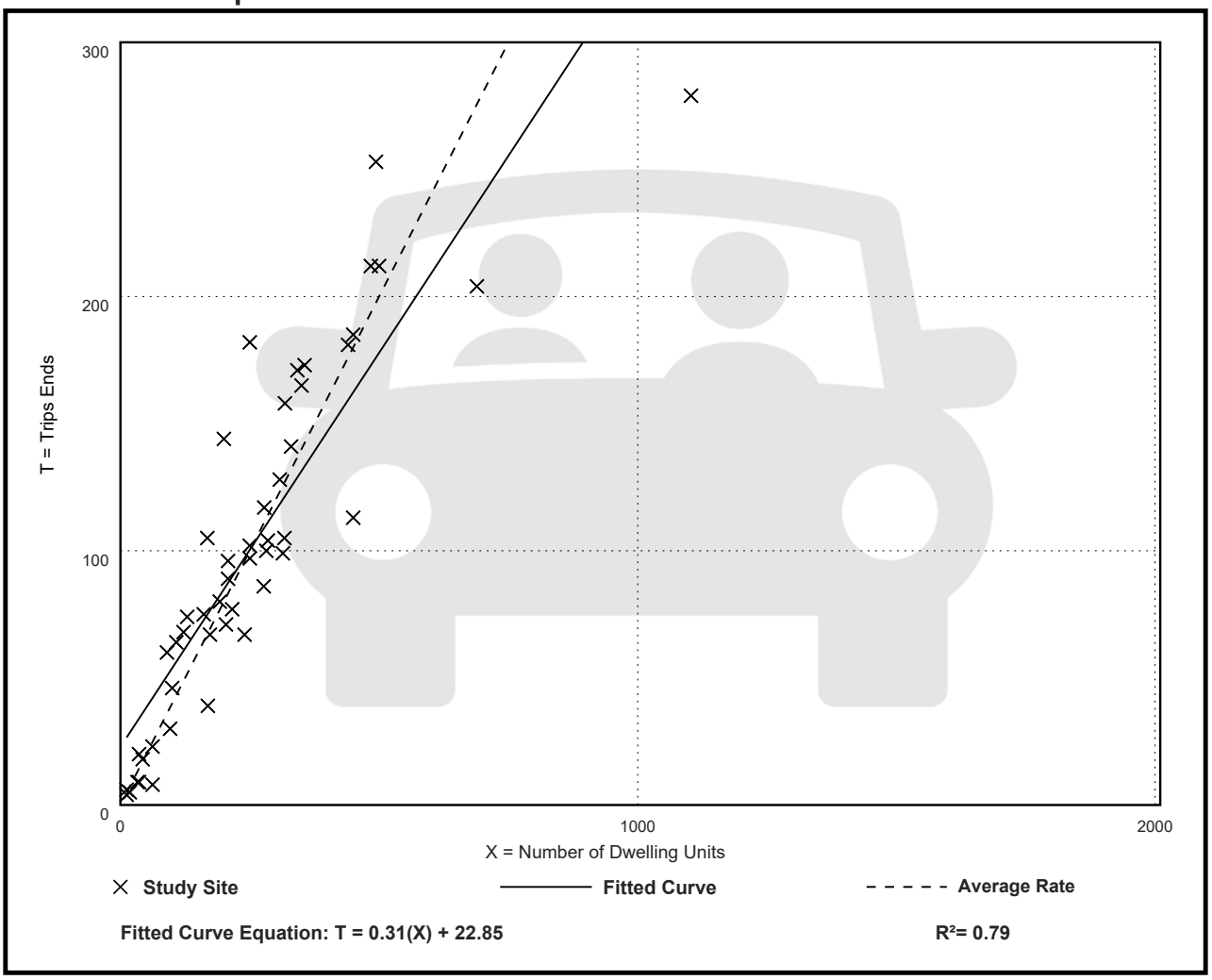
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

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

Vehicle Trip Generation per Dwelling Unit

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

Data Plot and Equation



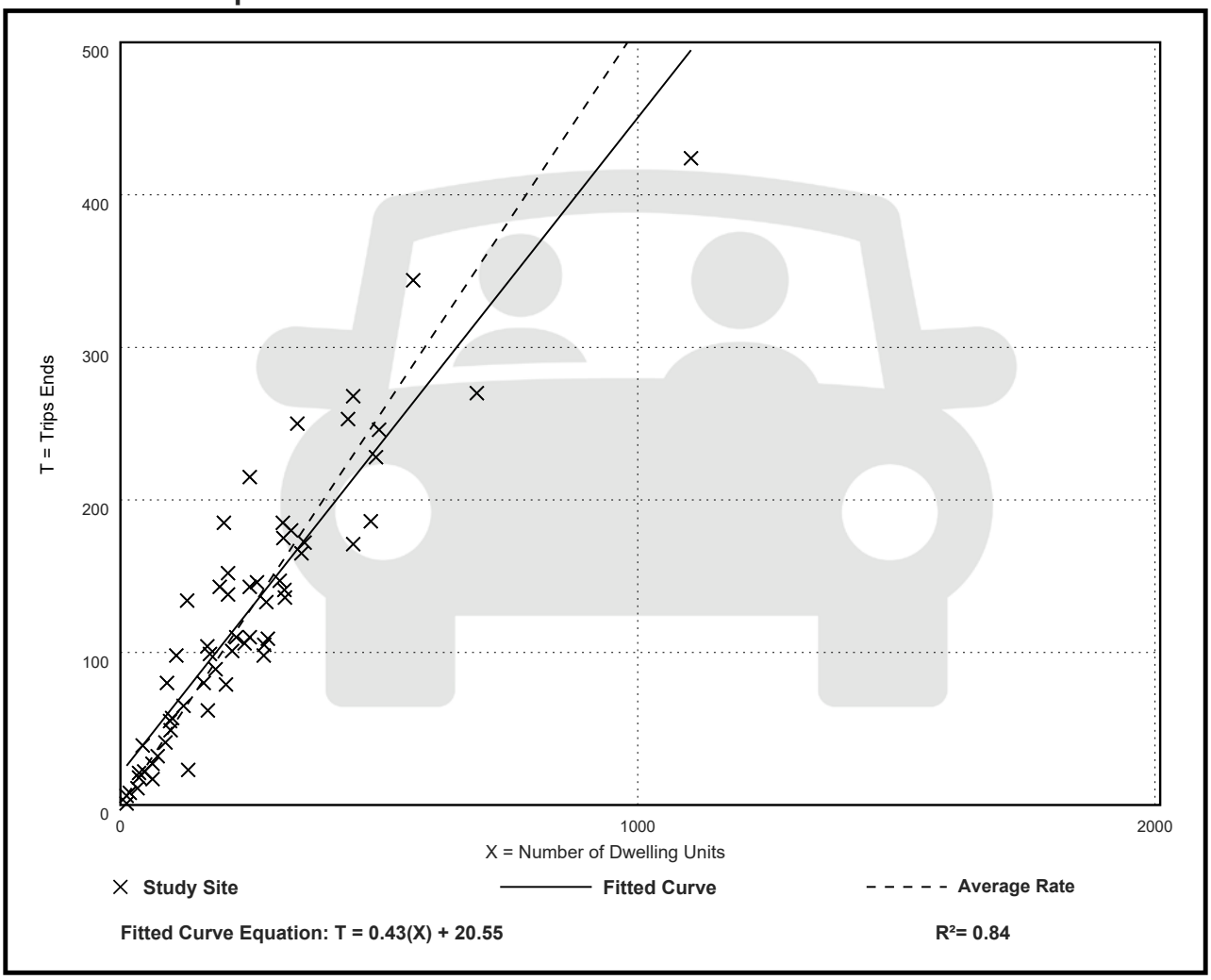
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

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

Vehicle Trip Generation per Dwelling Unit

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

Data Plot and Equation



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

Vehicle Trip Ends vs: Dwelling Units
On a: Saturday, Peak Hour of Generator

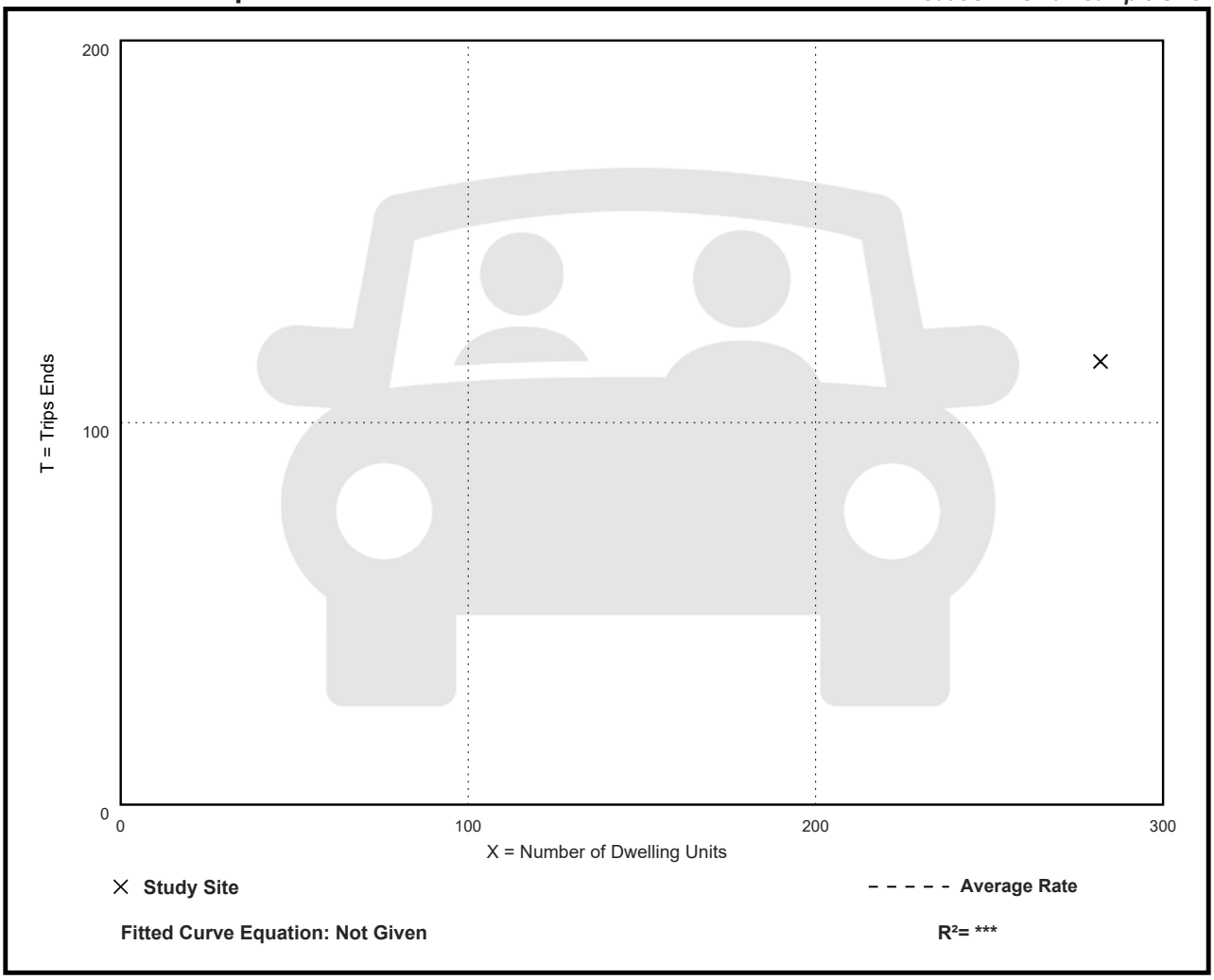
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Dwelling Units: 282
Directional Distribution: Not Available

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.41	0.41 - 0.41	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ***

General Office Building
(710)

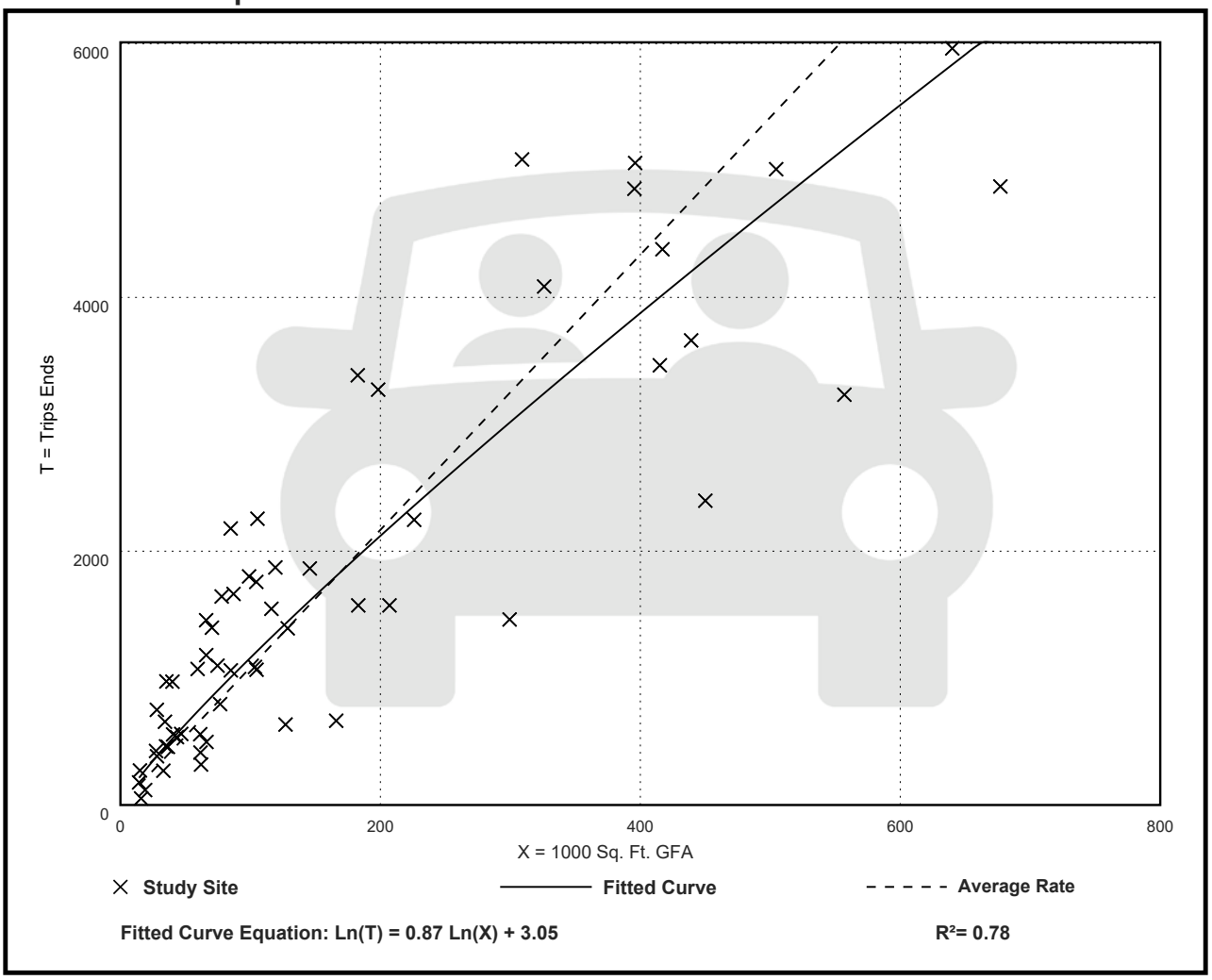
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 59
Avg. 1000 Sq. Ft. GFA: 163
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
10.84	3.27 - 27.56	4.76

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.87 Ln(X) + 3.05

R^2= 0.78

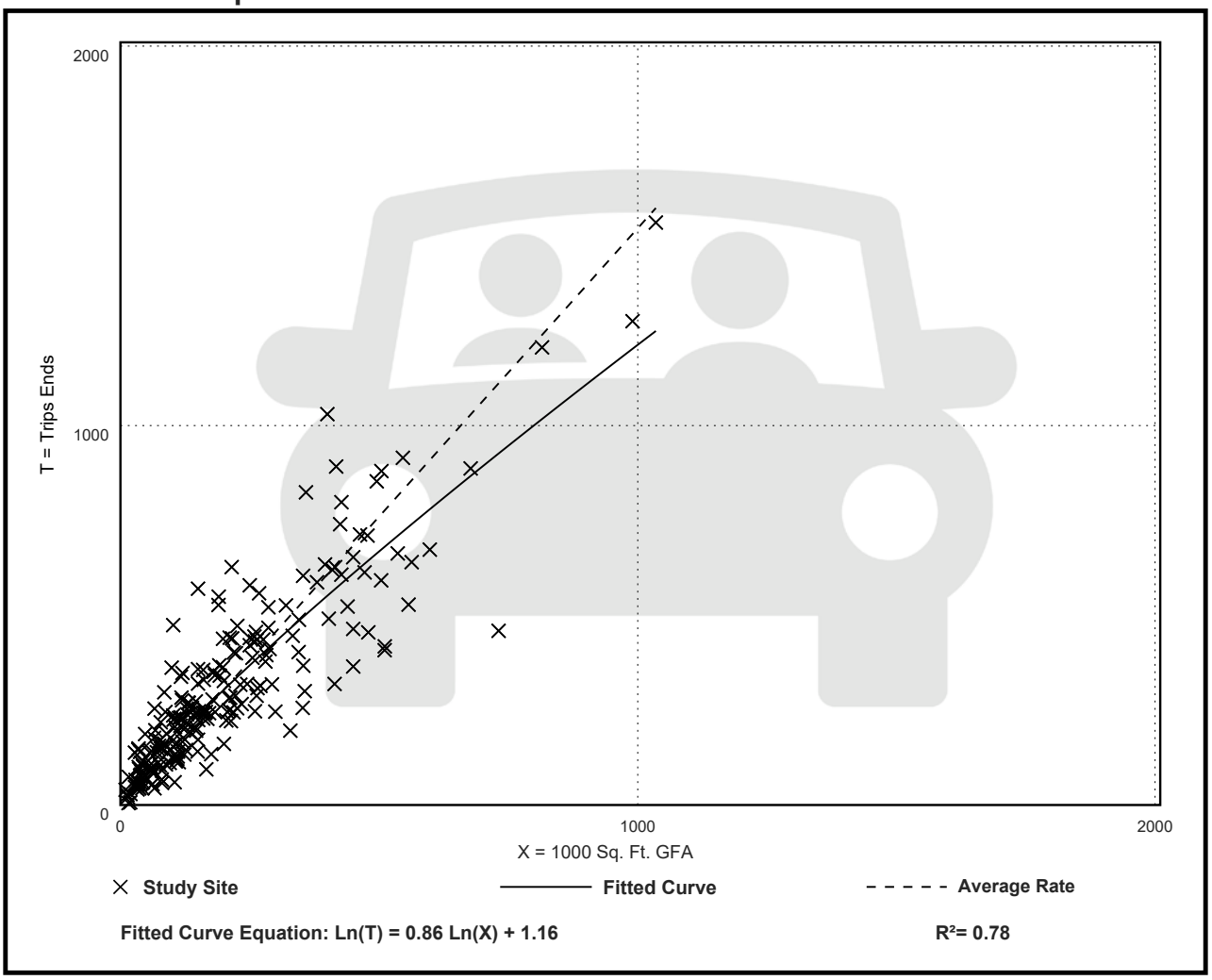
General Office Building
(710)

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: 221
Avg. 1000 Sq. Ft. GFA: 201
Directional Distribution: 88% entering, 12% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.52	0.32 - 4.93	0.58

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.86 Ln(X) + 1.16

R^2= 0.78

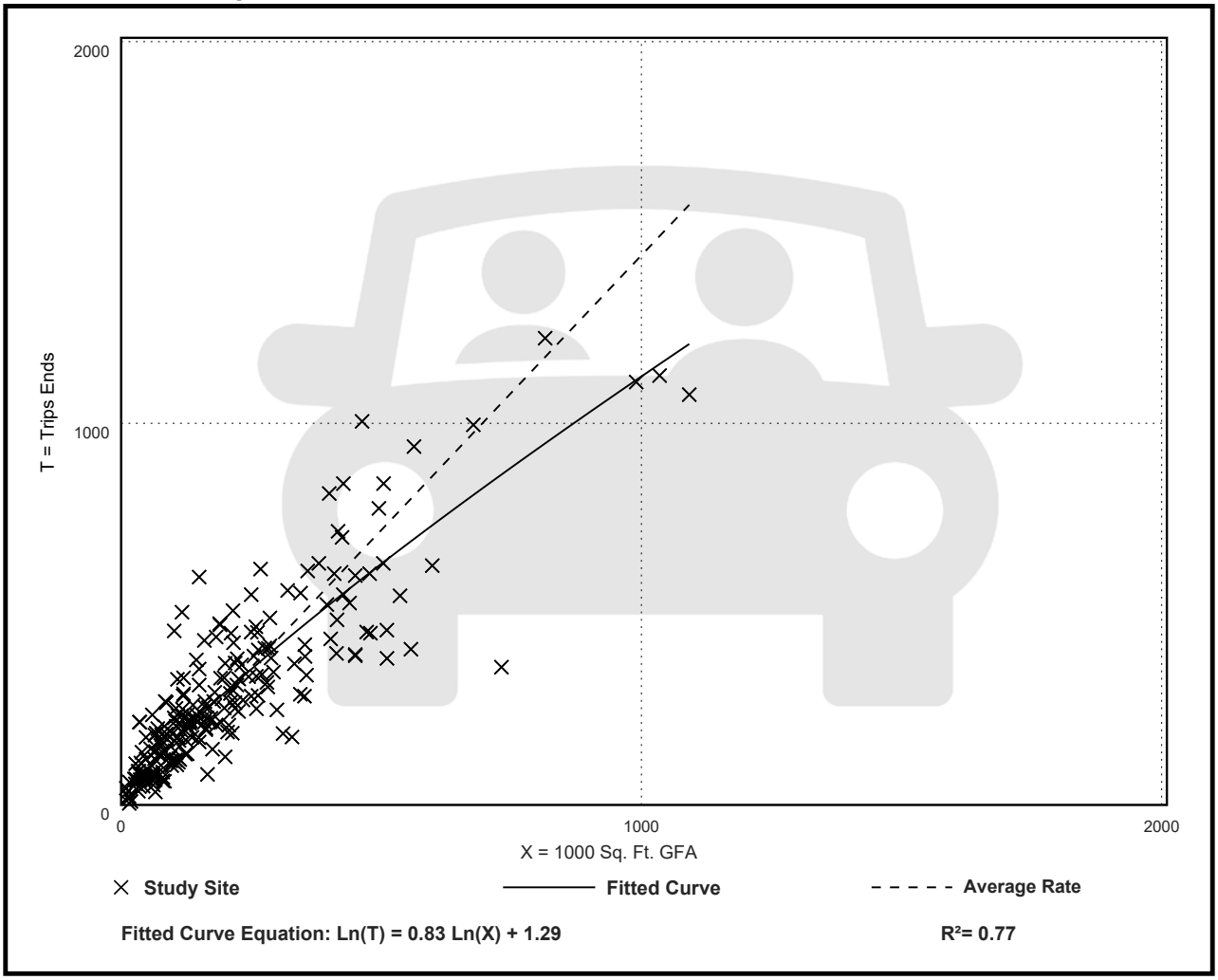
General Office Building
(710)

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: 232
Avg. 1000 Sq. Ft. GFA: 199
Directional Distribution: 17% entering, 83% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.44	0.26 - 6.20	0.60

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.83 Ln(X) + 1.29

R^2= 0.77

General Office Building
(710)

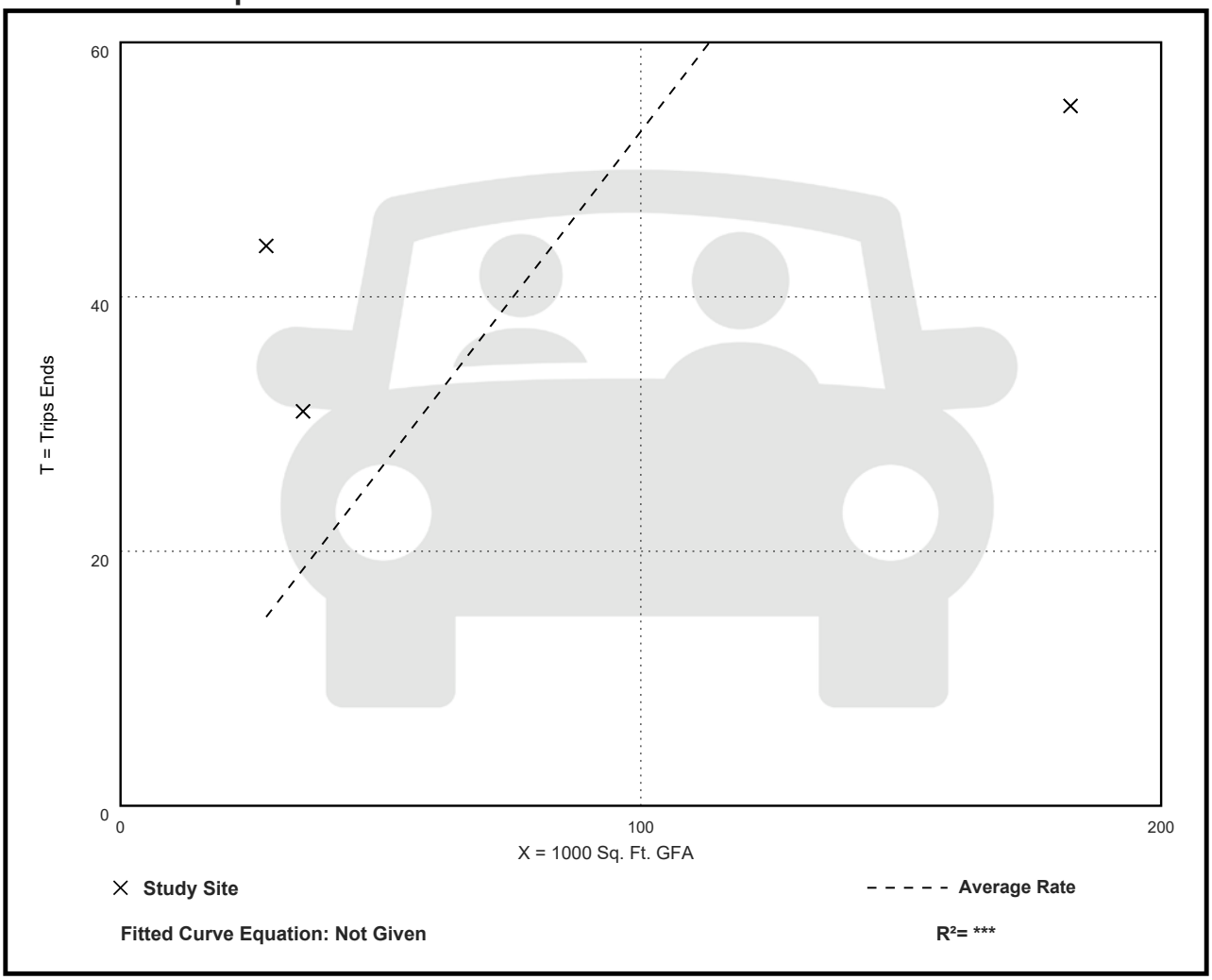
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. 1000 Sq. Ft. GFA: 82
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.53	0.30 - 1.57	0.52

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant (932)

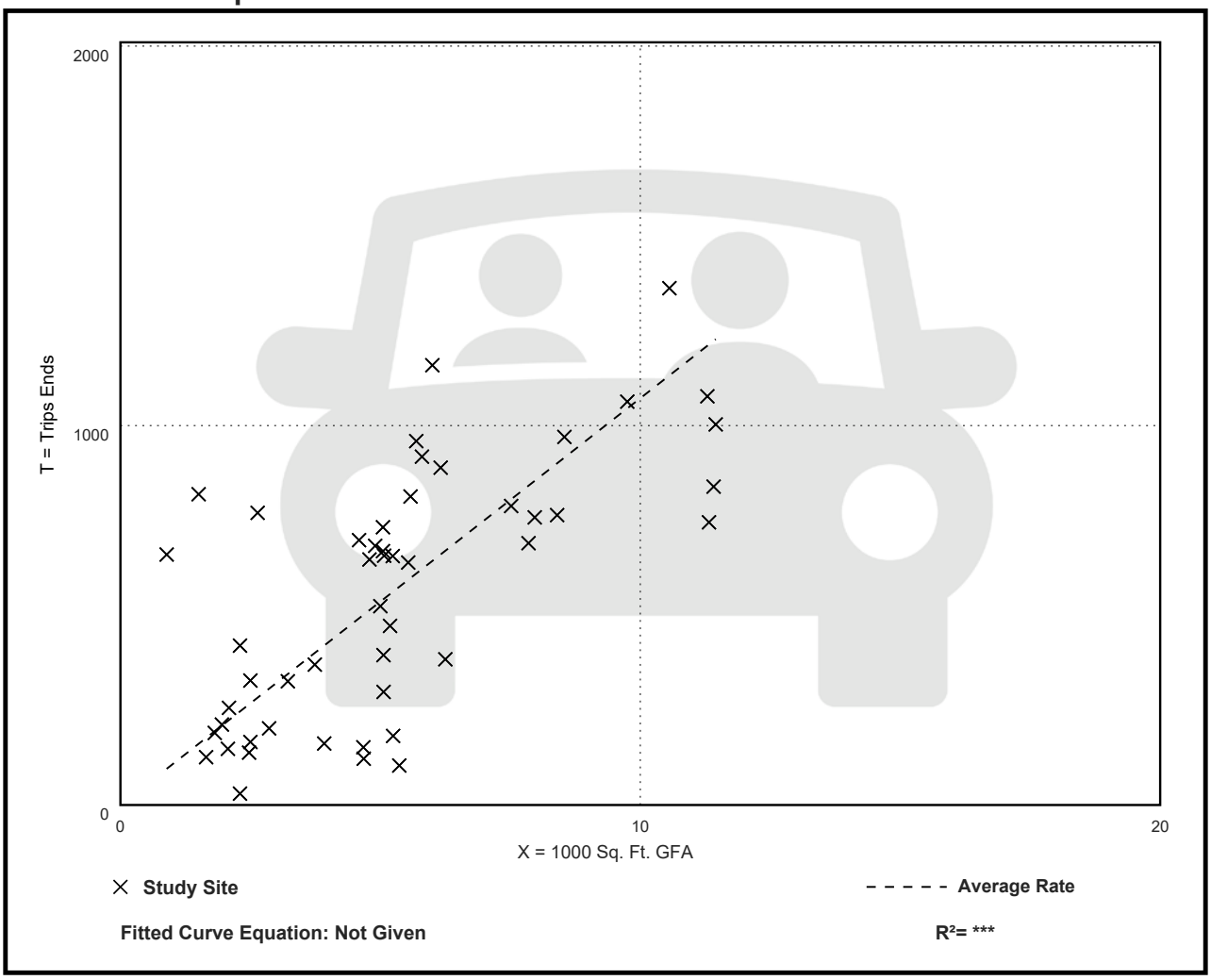
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 50
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
107.20	13.04 - 742.41	66.72

Data Plot and Equation



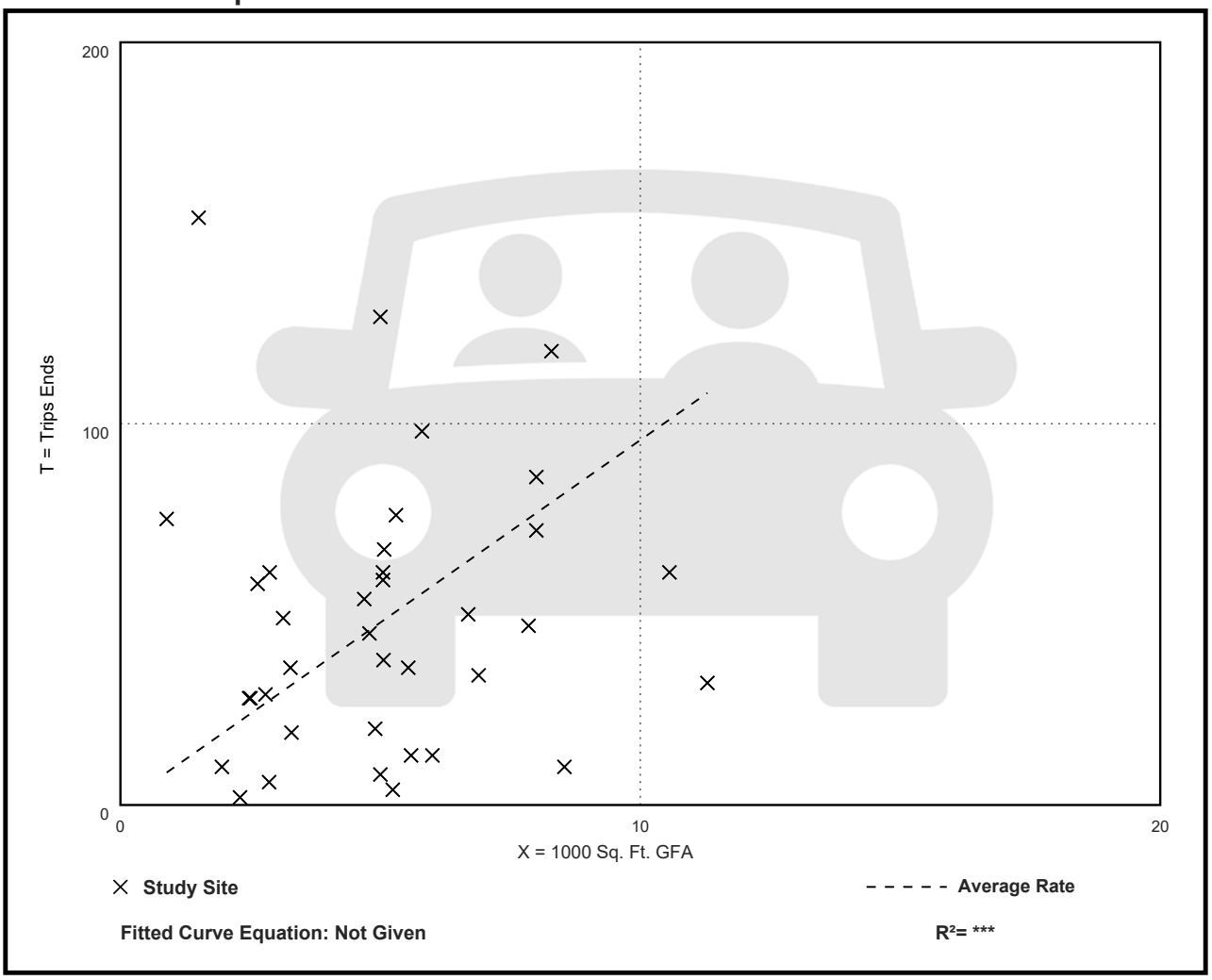
High-Turnover (Sit-Down) Restaurant
(932)

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: 37
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.57	0.76 - 102.39	11.61

Data Plot and Equation



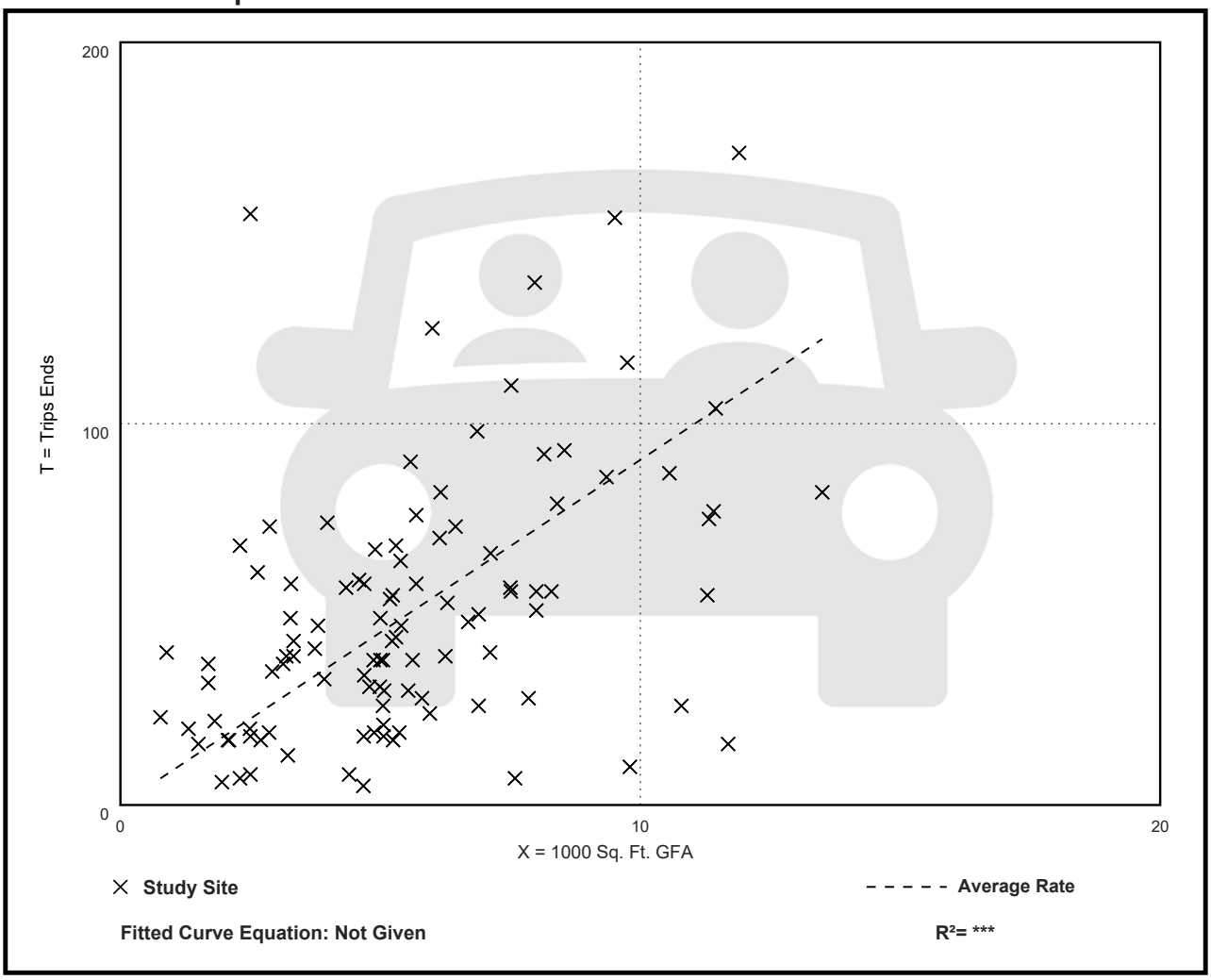
High-Turnover (Sit-Down) Restaurant (932)

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: 104
Avg. 1000 Sq. Ft. GFA: 6
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.05	0.92 - 62.00	6.18

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant (932)

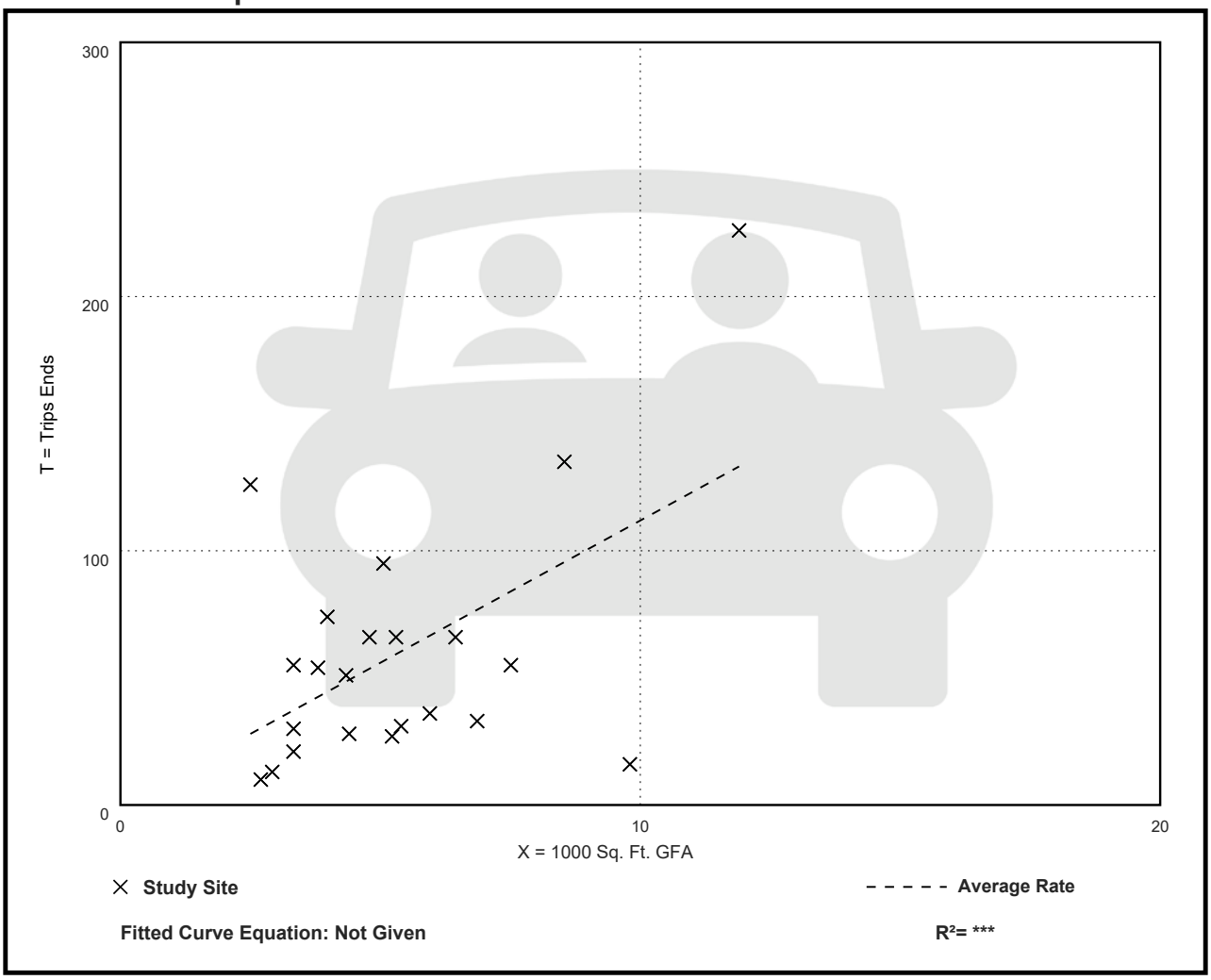
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
11.19	1.63 - 50.40	8.30

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

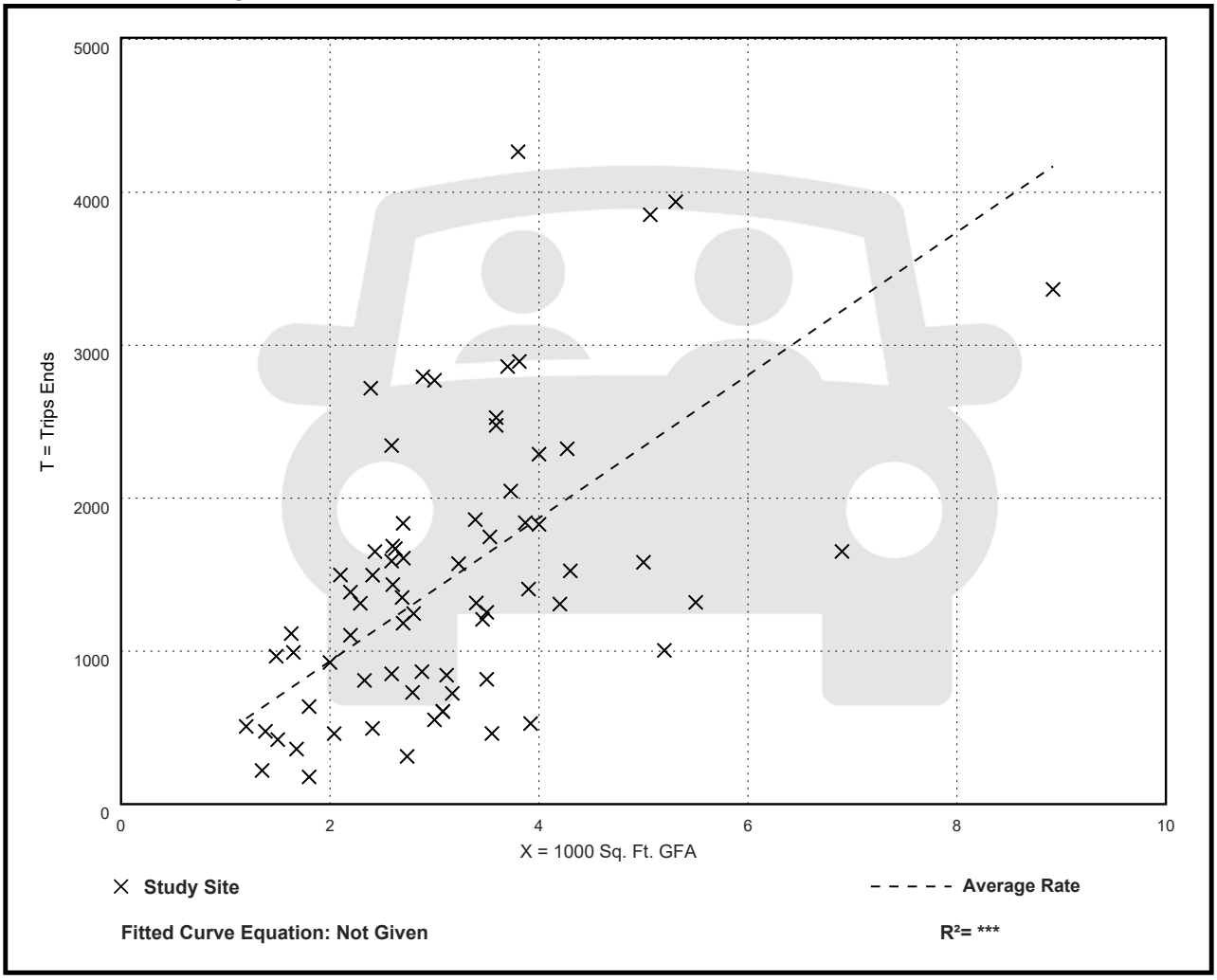
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 71
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
467.48	98.89 - 1137.66	238.62

Data Plot and Equation



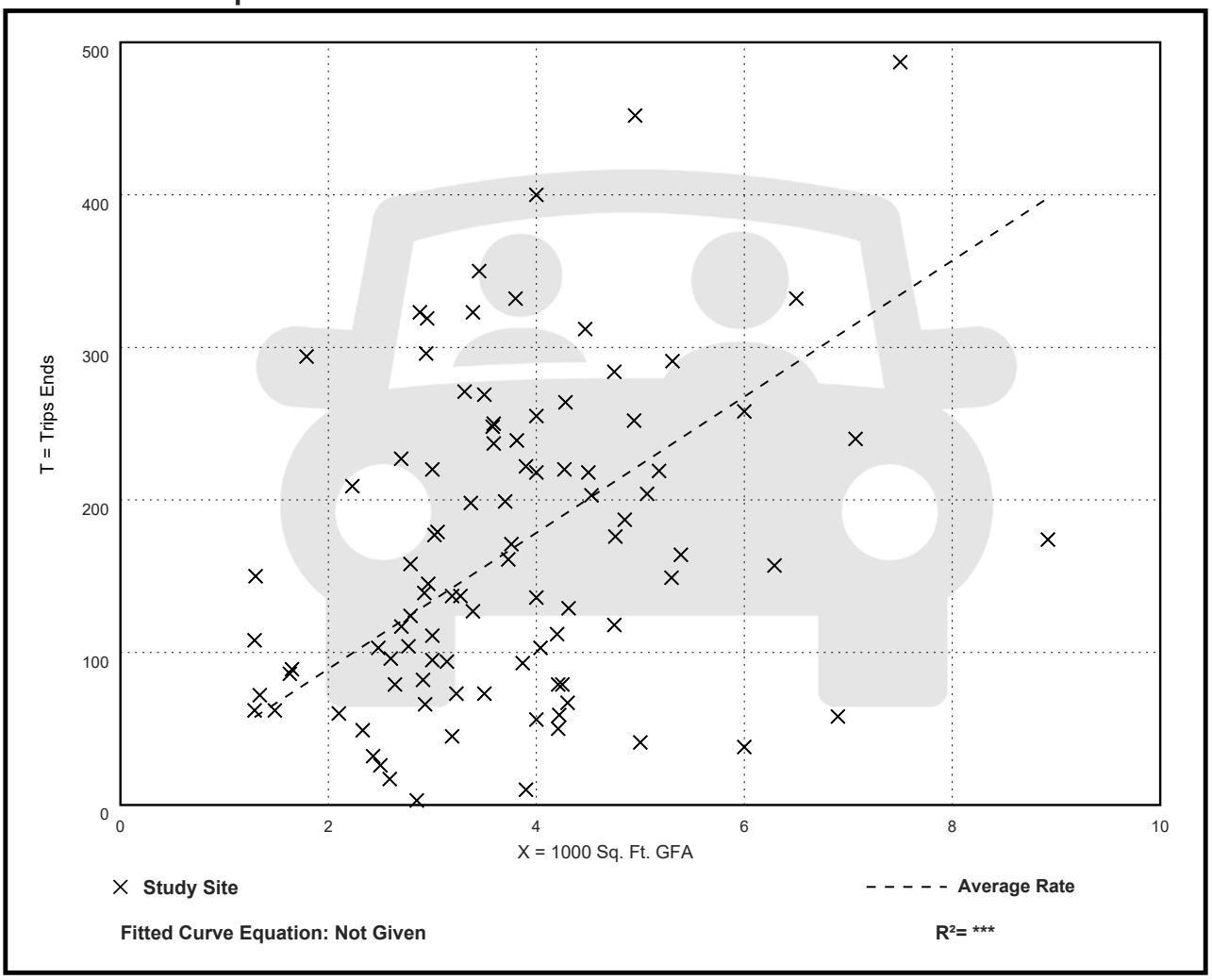
Fast-Food Restaurant with Drive-Through Window (934)

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: 96
Avg. 1000 Sq. Ft. GFA: 4
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
44.61	1.05 - 164.25	27.14

Data Plot and Equation



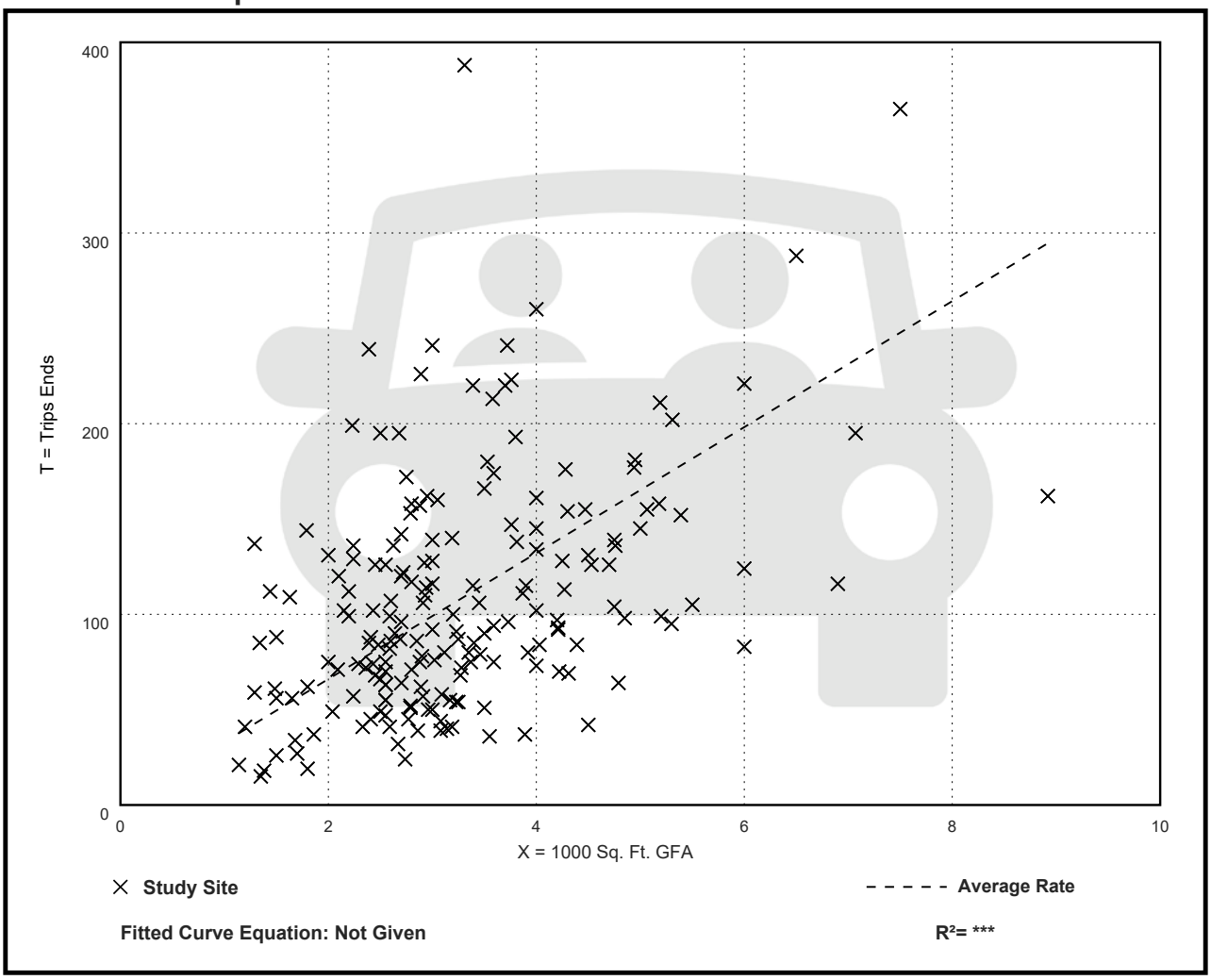
Fast-Food Restaurant with Drive-Through Window (934)

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: 190
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
33.03	8.77 - 117.22	17.59

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

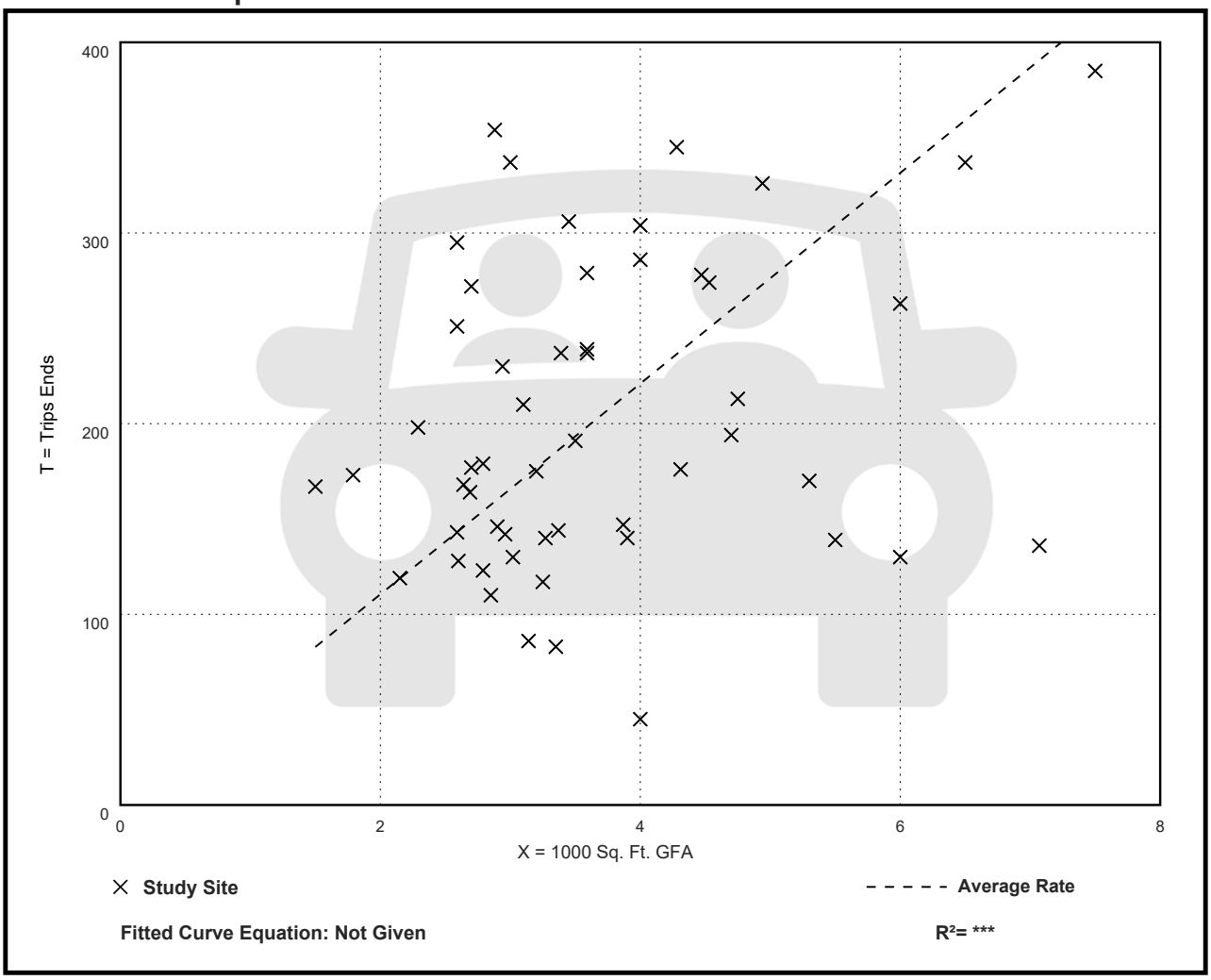
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 53
Avg. 1000 Sq. Ft. GFA: 4
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
55.25	11.25 - 122.92	24.62

Data Plot and Equation



Level of Service Criteria

LEVEL OF SERVICE CRITERIA

Signalized Intersections		
Level of Service	Interpretation	Average Control Delay (seconds per vehicle)
A	Favorable progression. Most vehicles arrive during the green indication and travel through the intersection without stopping.	≤10
B	Good progression, with more vehicles stopping than for Level of Service A.	>10 - 20
C	Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear. Number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 - 35
D	The volume-to-capacity ratio is high and either progression is ineffective or the cycle length is too long. Many vehicles stop and individual cycle failures are noticeable.	>35 - 55
E	Progression is unfavorable. The volume-to-capacity ratio is high and the cycle length is long. Individual cycle failures are frequent.	>55 - 80
F	The volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80.0

Unsignalized Intersections	
Level of Service	Average Total Delay (SEC/VEH)
A	0 - 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50

Source: *Highway Capacity Manual*, 2010.

Capacity Analysis Summary Sheets

Year 2020 Base Weekday Morning Peak Hour Conditions

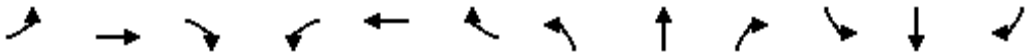
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	362	162	220	385	178	189	814	301	191	597	43
Future Volume (vph)	51	362	162	220	385	178	189	814	301	191	597	43
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	165		400	185		420	300		175	192		135
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	240			290			300			290		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3502	3619	1524	3183	3689	1615	3502	5151	1495	3400	5200	1615
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3502	3619	1524	3183	3689	1615	3502	5151	1495	3400	5200	1615
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		1477			1358			1753			1180	
Travel Time (s)		25.2			23.1			29.9			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	6%	10%	3%	0%	0%	6%	8%	3%	5%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	389	174	237	414	191	203	875	324	205	642	46
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0
Minimum Split (s)	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5
Total Split (s)	16.0	30.0	21.0	22.0	36.0	21.0	21.0	47.0	22.0	21.0	47.0	16.0
Total Split (%)	13.3%	25.0%	17.5%	18.3%	30.0%	17.5%	17.5%	39.2%	18.3%	17.5%	39.2%	13.3%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min	None	None	C-Min	None	None	C-Min	None
Act Effct Green (s)	7.3	19.9	38.1	14.1	28.7	47.2	12.2	52.5	72.6	12.5	52.8	66.1
Actuated g/C Ratio	0.06	0.17	0.32	0.12	0.24	0.39	0.10	0.44	0.60	0.10	0.44	0.55

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.26	0.65	0.36	0.64	0.47	0.30	0.57	0.39	0.36	0.58	0.28	0.05
Control Delay	56.3	51.7	32.6	45.7	37.8	26.7	57.4	24.9	14.5	57.6	23.3	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	51.7	32.6	45.7	37.8	26.7	57.4	24.9	14.5	57.6	23.3	15.2
LOS	E	D	C	D	D	C	E	C	B	E	C	B
Approach Delay		46.8			37.5			27.2			30.7	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	21	150	104	93	161	125	78	165	119	79	114	16
Queue Length 95th (ft)	42	195	152	96	208	183	114	236	211	115	169	40
Internal Link Dist (ft)		1397			1278			1673			1100	
Turn Bay Length (ft)	165		400	185		420	300		175	192		135
Base Capacity (vph)	335	723	538	464	939	688	481	2255	947	467	2288	946
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.54	0.32	0.51	0.44	0.28	0.42	0.39	0.34	0.44	0.28	0.05

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 33.6 Intersection LOS: C
Intersection Capacity Utilization 56.7% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: LaGrange Road & 159th Street



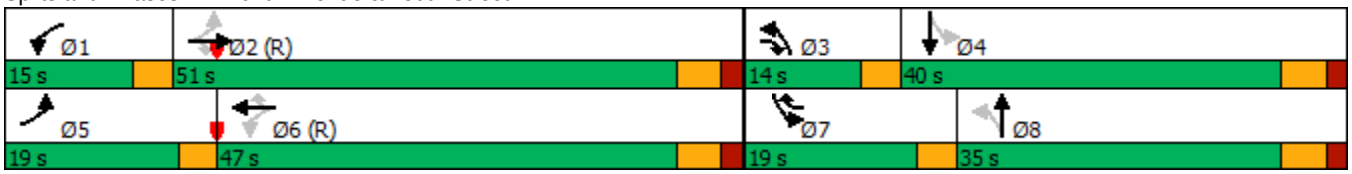
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	653	48	124	609	273	86	318	108	125	188	88
Future Volume (vph)	153	653	48	124	609	273	86	318	108	125	188	88
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	325		325	110		290	140		0	235		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	220			135			145			165		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.962			0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1626	3619	1583	1787	3585	1553	1787	3430	0	1641	3223	0
Flt Permitted	0.321			0.319			0.569			0.233		
Satd. Flow (perm)	549	3619	1583	600	3585	1553	1070	3430	0	402	3223	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		1358			1068			1429			1130	
Travel Time (s)		23.1			18.2			27.8			22.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	11%	5%	2%	1%	6%	4%	1%	1%	2%	10%	6%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	166	710	52	135	662	297	93	463	0	136	300	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	3	1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0	6.5	6.5	14.0		6.5	14.0	
Total Split (s)	19.0	51.0	14.0	15.0	47.0	19.0	14.0	35.0		19.0	40.0	
Total Split (%)	15.8%	42.5%	11.7%	12.5%	39.2%	15.8%	11.7%	29.2%		15.8%	33.3%	
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0		3.5	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None		None	None	
Act Effct Green (s)	70.3	56.5	72.2	67.1	54.9	74.3	33.6	21.4		40.4	25.1	
Actuated g/C Ratio	0.59	0.47	0.60	0.56	0.46	0.62	0.28	0.18		0.34	0.21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.39	0.42	0.05	0.31	0.40	0.31	0.26	0.76		0.50	0.45	
Control Delay	9.3	17.2	11.8	14.0	24.6	13.2	27.7	55.0		33.3	42.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	9.3	17.2	11.8	14.0	24.6	13.2	27.7	55.0		33.3	42.7	
LOS	A	B	B	B	C	B	C	D		C	D	
Approach Delay		15.4			20.2			50.4			39.8	
Approach LOS		B			C			D			D	
Queue Length 50th (ft)	17	173	18	42	174	100	50	181		75	107	
Queue Length 95th (ft)	110	295	m52	88	279	190	79	228		110	141	
Internal Link Dist (ft)		1278			988			1349			1050	
Turn Bay Length (ft)	325		325	110		290	140			235		
Base Capacity (vph)	470	1716	969	463	1644	995	376	828		301	913	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.35	0.41	0.05	0.29	0.40	0.30	0.25	0.56		0.45	0.33	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 17 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 27.1 Intersection LOS: C
Intersection Capacity Utilization 60.3% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: 94th Avenue & 159th Street



Capacity Analysis Summary Sheets

Year 2020 Base Existing Weekday Evening Peak Hour Conditions

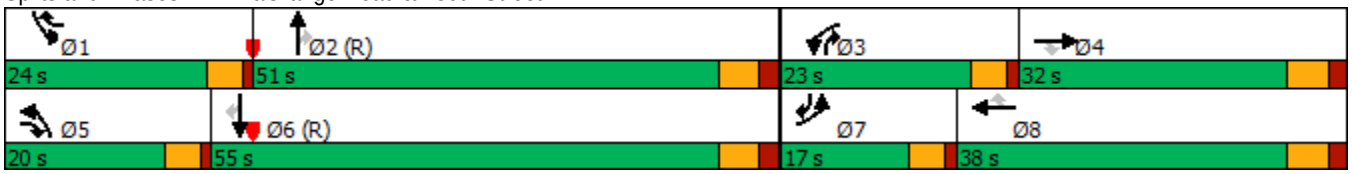
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	517	288	286	511	257	289	1050	406	338	1250	110
Future Volume (vph)	127	517	288	286	511	257	289	1050	406	338	1250	110
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	165		400	185		420	300		175	192		135
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	240			290			300			290		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3502	3725	1583	3433	3762	1599	3467	5353	1599	3467	5353	1615
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3502	3725	1583	3433	3762	1599	3467	5353	1599	3467	5353	1615
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		1477			1358			1753			1180	
Travel Time (s)		25.2			23.1			29.9			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	2%	1%	1%	1%	2%	1%	1%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	131	533	297	295	527	265	298	1082	419	348	1289	113
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0
Minimum Split (s)	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5
Total Split (s)	17.0	32.0	20.0	23.0	38.0	24.0	20.0	51.0	23.0	24.0	55.0	17.0
Total Split (%)	13.1%	24.6%	15.4%	17.7%	29.2%	18.5%	15.4%	39.2%	17.7%	18.5%	42.3%	13.1%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min	None	None	C-Min	None	None	C-Min	None
Act Effct Green (s)	10.1	24.7	45.3	16.2	30.8	54.2	14.7	50.7	72.9	17.4	53.4	69.5
Actuated g/C Ratio	0.08	0.19	0.35	0.12	0.24	0.42	0.11	0.39	0.56	0.13	0.41	0.53

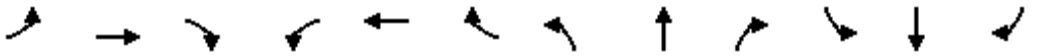
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.48	0.75	0.54	0.69	0.59	0.40	0.76	0.52	0.47	0.75	0.59	0.13
Control Delay	63.1	57.1	37.6	68.9	68.1	26.8	69.2	32.5	19.9	64.7	31.9	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.1	57.1	37.6	68.9	68.1	26.8	69.2	32.5	19.9	64.7	31.9	16.5
LOS	E	E	D	E	E	C	E	C	B	E	C	B
Approach Delay		51.9			58.3			35.6			37.4	
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	55	220	191	132	249	83	126	267	214	146	323	50
Queue Length 95th (ft)	87	287	285	177	308	223	176	320	305	197	376	82
Internal Link Dist (ft)		1397			1278			1673			1100	
Turn Bay Length (ft)	165		400	185		420	300		175	192		135
Base Capacity (vph)	336	751	562	488	944	692	414	2087	924	520	2200	893
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.71	0.53	0.60	0.56	0.38	0.72	0.52	0.45	0.67	0.59	0.13

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 43.4 Intersection LOS: D
Intersection Capacity Utilization 70.4% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: LaGrange Road & 159th Street





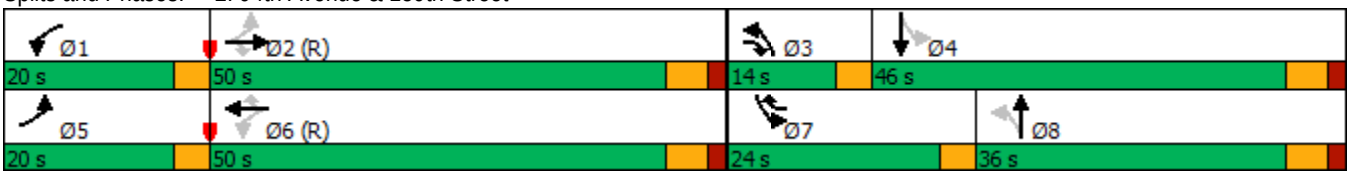
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	951	114	176	867	377	76	350	116	323	432	111
Future Volume (vph)	196	951	114	176	867	377	76	350	116	323	432	111
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	325		325	110		290	140		0	235		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	220			135			145			165		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.963			0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3762	1599	1787	3762	1599	1805	3450	0	1787	3456	0
Flt Permitted	0.203			0.163			0.447			0.217		
Satd. Flow (perm)	382	3762	1599	307	3762	1599	849	3450	0	408	3456	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		1358			1068			1429			1130	
Travel Time (s)		23.1			18.2			27.8			22.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	1%	0%	1%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	961	115	178	876	381	77	471	0	326	548	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	3	1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0	6.5	6.5	14.0		6.5	14.0	
Total Split (s)	20.0	50.0	14.0	20.0	50.0	24.0	14.0	36.0		24.0	46.0	
Total Split (%)	15.4%	38.5%	10.8%	15.4%	38.5%	18.5%	10.8%	27.7%		18.5%	35.4%	
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0		3.5	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None		None	None	
Act Effct Green (s)	68.9	53.4	68.2	69.5	53.7	81.0	34.2	23.0		50.3	35.5	
Actuated g/C Ratio	0.53	0.41	0.52	0.53	0.41	0.62	0.26	0.18		0.39	0.27	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.58	0.62	0.14	0.57	0.56	0.38	0.27	0.77		0.85	0.58	
Control Delay	29.8	35.2	12.0	22.3	32.3	14.8	27.8	59.8		51.0	43.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	29.8	35.2	12.0	22.3	32.3	14.8	27.8	59.8		51.0	43.3	
LOS	C	D	B	C	C	B	C	E		D	D	
Approach Delay		32.3			26.4			55.3			46.2	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	87	269	30	74	304	149	40	201		197	204	
Queue Length 95th (ft)	m144	436	m48	120	408	266	72	250		#323	263	
Internal Link Dist (ft)		1278			988			1349			1050	
Turn Bay Length (ft)	325		325	110		290	140			235		
Base Capacity (vph)	392	1545	859	360	1554	1001	312	796		387	1063	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.51	0.62	0.13	0.49	0.56	0.38	0.25	0.59		0.84	0.52	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 88 (68%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 36.2 Intersection LOS: D
Intersection Capacity Utilization 82.7% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: 94th Avenue & 159th Street



Capacity Analysis Summary Sheets

Year 2020 Base Saturday Midday Peak Hour Conditions

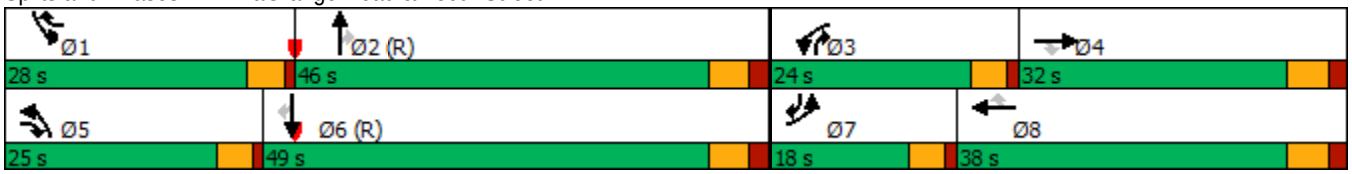
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	464	299	290	521	334	293	943	315	361	947	119
Future Volume (vph)	136	464	299	290	521	334	293	943	315	361	947	119
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	165		400	185		420	300		175	192		135
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	240			290			300			290		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3367	3689	1568	3303	3725	1568	3367	5301	1524	3433	5301	1615
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3367	3689	1568	3303	3725	1568	3367	5301	1524	3433	5301	1615
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		1477			1358			1753			1180	
Travel Time (s)		25.2			23.1			29.9			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	3%	6%	2%	3%	4%	3%	6%	2%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	142	483	311	302	543	348	305	982	328	376	986	124
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0
Minimum Split (s)	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5
Total Split (s)	18.0	32.0	25.0	24.0	38.0	28.0	25.0	46.0	24.0	28.0	49.0	18.0
Total Split (%)	13.8%	24.6%	19.2%	18.5%	29.2%	21.5%	19.2%	35.4%	18.5%	21.5%	37.7%	13.8%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min	None	None	C-Min	None	None	C-Min	None
Act Effct Green (s)	10.8	23.8	46.8	16.8	29.9	55.5	17.0	48.8	71.5	19.6	51.4	68.2
Actuated g/C Ratio	0.08	0.18	0.36	0.13	0.23	0.43	0.13	0.38	0.55	0.15	0.40	0.52

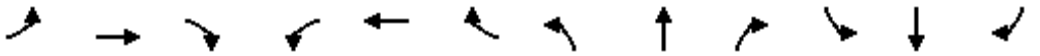
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.51	0.71	0.55	0.71	0.64	0.52	0.69	0.49	0.39	0.73	0.47	0.15
Control Delay	63.3	56.1	36.5	41.0	41.0	33.6	62.4	33.7	19.7	60.9	31.5	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.3	56.1	36.5	41.0	41.0	33.6	62.4	33.7	19.7	60.9	31.5	18.0
LOS	E	E	D	D	D	C	E	C	B	E	C	B
Approach Delay		50.6			38.9			36.2			37.8	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	60	200	203	123	236	268	128	238	160	156	230	54
Queue Length 95th (ft)	93	259	283	150	304	355	173	306	249	205	296	96
Internal Link Dist (ft)		1397			1278			1673			1100	
Turn Bay Length (ft)	165		400	185		420	300		175	192		135
Base Capacity (vph)	349	737	607	495	924	715	530	1988	870	620	2096	880
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.66	0.51	0.61	0.59	0.49	0.58	0.49	0.38	0.61	0.47	0.14

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 39.9 Intersection LOS: D
Intersection Capacity Utilization 65.9% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: LaGrange Road & 159th Street





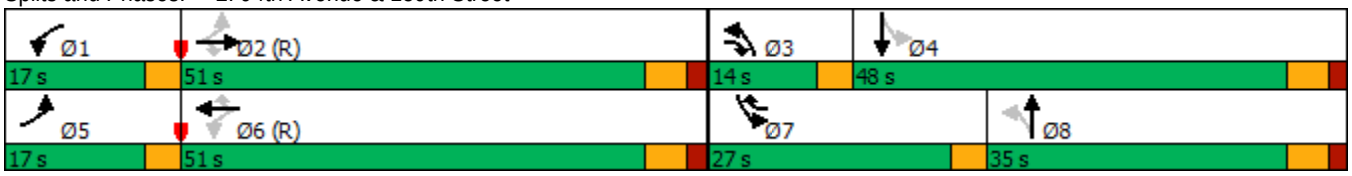
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	852	96	162	898	434	98	410	132	308	410	149
Future Volume (vph)	192	852	96	162	898	434	98	410	132	308	410	149
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	325		325	110		290	140		0	235		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	220			135			145			165		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.963			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3689	1583	1787	3689	1583	1752	3442	0	1752	3395	0
Flt Permitted	0.133			0.174			0.425			0.158		
Satd. Flow (perm)	236	3689	1583	327	3689	1583	784	3442	0	291	3395	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		1358			1068			1429			1130	
Travel Time (s)		23.1			18.2			27.8			22.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	3%	2%	1%	3%	2%	3%	1%	1%	3%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	206	916	103	174	966	467	105	583	0	331	601	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	3	1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0	6.5	6.5	14.0		6.5	14.0	
Total Split (s)	17.0	51.0	14.0	17.0	51.0	27.0	14.0	35.0		27.0	48.0	
Total Split (%)	13.1%	39.2%	10.8%	13.1%	39.2%	20.8%	10.8%	26.9%		20.8%	36.9%	
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0		3.5	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None		None	None	
Act Effct Green (s)	66.1	50.3	65.8	62.7	48.6	77.5	38.1	26.1		55.1	39.6	
Actuated g/C Ratio	0.51	0.39	0.51	0.48	0.37	0.60	0.29	0.20		0.42	0.30	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.77	0.64	0.13	0.60	0.70	0.49	0.35	0.84		0.87	0.58	
Control Delay	37.3	26.7	15.4	26.8	38.8	18.0	26.7	61.8		54.1	40.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	37.3	26.7	15.4	26.8	38.8	18.0	26.7	61.8		54.1	40.4	
LOS	D	C	B	C	D	B	C	E		D	D	
Approach Delay		27.5			31.5			56.4			45.3	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	89	353	49	77	377	228	52	248		203	223	
Queue Length 95th (ft)	#217	436	m86	125	460	323	88	312		#353	280	
Internal Link Dist (ft)		1278			988			1349			1050	
Turn Bay Length (ft)	325		325	110		290	140			235		
Base Capacity (vph)	276	1427	813	314	1378	954	314	767		390	1096	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.75	0.64	0.13	0.55	0.70	0.49	0.33	0.76		0.85	0.55	

Intersection Summary

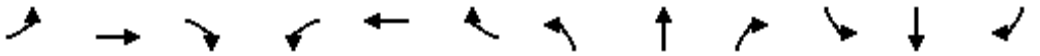
Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 37.1 Intersection LOS: D
Intersection Capacity Utilization 83.5% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: 94th Avenue & 159th Street



Capacity Analysis Summary Sheets

Year 2026 No Build Weekday Morning Peak Hour Conditions



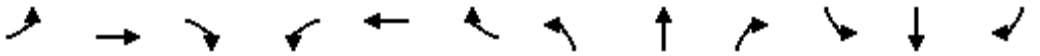
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	383	171	233	407	188	200	860	318	202	631	45
Future Volume (vph)	54	383	171	233	407	188	200	860	318	202	631	45
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	165		400	185		420	300		175	192		135
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	240			290			300			290		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3502	3619	1524	3183	3689	1615	3502	5151	1495	3400	5200	1615
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3502	3619	1524	3183	3689	1615	3502	5151	1495	3400	5200	1615
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		1477			1358			1753			1180	
Travel Time (s)		25.2			23.1			29.9			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	6%	10%	3%	0%	0%	6%	8%	3%	5%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	412	184	251	438	202	215	925	342	217	678	48
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0
Minimum Split (s)	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5
Total Split (s)	16.0	30.0	21.0	22.0	36.0	21.0	21.0	47.0	22.0	21.0	47.0	16.0
Total Split (%)	13.3%	25.0%	17.5%	18.3%	30.0%	17.5%	17.5%	39.2%	18.3%	17.5%	39.2%	13.3%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min	None	None	C-Min	None	None	C-Min	None
Act Effct Green (s)	7.4	20.5	39.2	14.6	29.8	48.7	12.7	50.9	71.5	12.9	51.2	64.6
Actuated g/C Ratio	0.06	0.17	0.33	0.12	0.25	0.41	0.11	0.42	0.60	0.11	0.43	0.54

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.27	0.67	0.37	0.65	0.48	0.31	0.58	0.42	0.38	0.59	0.31	0.06
Control Delay	56.4	51.7	32.1	45.3	35.8	24.9	57.3	26.4	15.4	57.5	24.6	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.4	51.7	32.1	45.3	35.8	24.9	57.3	26.4	15.4	57.5	24.6	16.0
LOS	E	D	C	D	D	C	E	C	B	E	C	B
Approach Delay		46.6			36.0			28.4			31.7	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	22	157	107	99	170	132	82	183	134	84	126	17
Queue Length 95th (ft)	44	206	158	90	215	187	120	253	227	121	180	42
Internal Link Dist (ft)		1397			1278			1673			1100	
Turn Bay Length (ft)	165		400	185		420	300		175	192		135
Base Capacity (vph)	335	723	546	464	953	703	481	2184	926	467	2217	924
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.57	0.34	0.54	0.46	0.29	0.45	0.42	0.37	0.46	0.31	0.05

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 33.9 Intersection LOS: C
Intersection Capacity Utilization 58.2% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: LaGrange Road & 159th Street



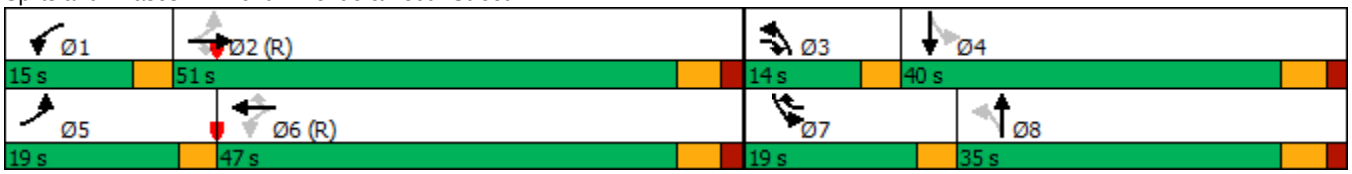
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	690	51	131	644	289	91	336	114	132	199	93
Future Volume (vph)	162	690	51	131	644	289	91	336	114	132	199	93
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	325		325	110		290	140		0	235		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	220			135			145			165		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.962			0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1626	3619	1583	1787	3585	1553	1787	3430	0	1641	3223	0
Flt Permitted	0.296			0.297			0.560			0.220		
Satd. Flow (perm)	507	3619	1583	559	3585	1553	1053	3430	0	380	3223	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		1358			1068			1429			1130	
Travel Time (s)		23.1			18.2			27.8			22.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	11%	5%	2%	1%	6%	4%	1%	1%	2%	10%	6%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	176	750	55	142	700	314	99	489	0	143	317	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	3	1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0	6.5	6.5	14.0		6.5	14.0	
Total Split (s)	19.0	51.0	14.0	15.0	47.0	19.0	14.0	35.0		19.0	40.0	
Total Split (%)	15.8%	42.5%	11.7%	12.5%	39.2%	15.8%	11.7%	29.2%		15.8%	33.3%	
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0		3.5	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None		None	None	
Act Effct Green (s)	69.8	55.6	71.2	66.0	53.6	73.0	34.4	22.3		41.3	26.0	
Actuated g/C Ratio	0.58	0.46	0.59	0.55	0.45	0.61	0.29	0.19		0.34	0.22	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.44	0.45	0.06	0.35	0.44	0.33	0.28	0.77		0.53	0.45	
Control Delay	10.6	18.4	12.7	14.8	25.8	14.1	27.6	54.7		34.0	42.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.6	18.4	12.7	14.8	25.8	14.1	27.6	54.7		34.0	42.2	
LOS	B	B	B	B	C	B	C	D		C	D	
Approach Delay		16.7			21.3			50.1			39.6	
Approach LOS		B			C			D			D	
Queue Length 50th (ft)	18	181	22	46	192	111	52	191		78	113	
Queue Length 95th (ft)	113	320	m57	90	296	210	84	238		117	147	
Internal Link Dist (ft)		1278			988			1349			1050	
Turn Bay Length (ft)	325		325	110		290	140			235		
Base Capacity (vph)	448	1680	954	436	1605	974	378	828		296	913	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.39	0.45	0.06	0.33	0.44	0.32	0.26	0.59		0.48	0.35	

Intersection Summary

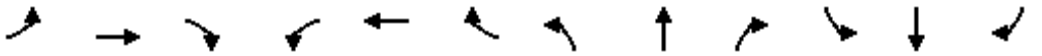
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 17 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 27.8 Intersection LOS: C
Intersection Capacity Utilization 62.8% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: 94th Avenue & 159th Street



Capacity Analysis Summary Sheets

Year 2026 No Build Weekday Evening Peak Hour Conditions



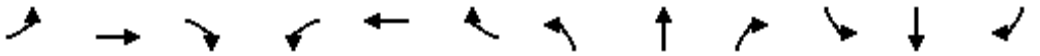
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	546	304	302	540	272	305	1110	429	357	1321	116
Future Volume (vph)	134	546	304	302	540	272	305	1110	429	357	1321	116
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	165		400	185		420	300		175	192		135
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	240			290			300			290		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3502	3725	1583	3433	3762	1599	3467	5353	1599	3467	5353	1615
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3502	3725	1583	3433	3762	1599	3467	5353	1599	3467	5353	1615
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		1477			1358			1753			1180	
Travel Time (s)		25.2			23.1			29.9			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	2%	1%	1%	1%	2%	1%	1%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	563	313	311	557	280	314	1144	442	368	1362	120
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0
Minimum Split (s)	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5
Total Split (s)	17.0	32.0	20.0	23.0	38.0	24.0	20.0	51.0	23.0	24.0	55.0	17.0
Total Split (%)	13.1%	24.6%	15.4%	17.7%	29.2%	18.5%	15.4%	39.2%	17.7%	18.5%	42.3%	13.1%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min	None	None	C-Min	None	None	C-Min	None
Act Effct Green (s)	10.3	25.3	46.2	16.5	31.5	55.3	14.9	49.4	71.9	17.8	52.2	68.5
Actuated g/C Ratio	0.08	0.19	0.36	0.13	0.24	0.43	0.11	0.38	0.55	0.14	0.40	0.53

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.50	0.78	0.56	0.71	0.61	0.41	0.79	0.56	0.50	0.77	0.63	0.14
Control Delay	63.4	57.9	37.8	66.7	70.8	29.0	70.7	34.0	21.0	65.8	33.5	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	57.9	37.8	66.7	70.8	29.0	70.7	34.0	21.0	65.8	33.5	16.8
LOS	E	E	D	E	E	C	E	C	C	E	C	B
Approach Delay		52.4			59.5			37.0			38.8	
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	58	236	206	138	263	99	134	290	231	154	348	53
Queue Length 95th (ft)	91	303	303	186	324	240	#189	342	328	208	402	87
Internal Link Dist (ft)		1397			1278			1673			1100	
Turn Bay Length (ft)	165		400	185		420	300		175	192		135
Base Capacity (vph)	336	748	569	488	943	701	413	2032	908	520	2150	878
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.75	0.55	0.64	0.59	0.40	0.76	0.56	0.49	0.71	0.63	0.14

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 44.6 Intersection LOS: D
Intersection Capacity Utilization 73.4% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: LaGrange Road & 159th Street



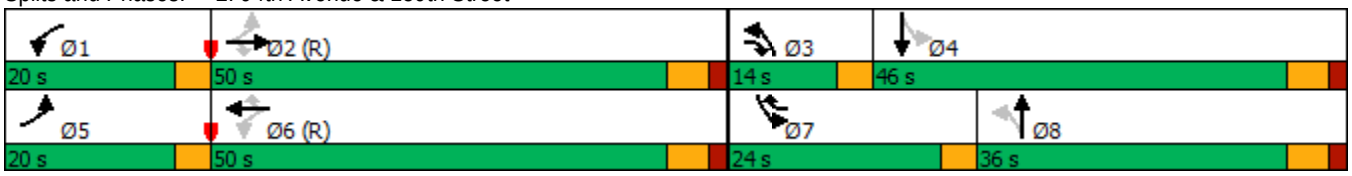
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	1005	120	186	917	398	80	370	123	351	457	117
Future Volume (vph)	207	1005	120	186	917	398	80	370	123	351	457	117
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	325		325	110		290	140		0	235		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	220			135			145			165		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.963			0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3762	1599	1787	3762	1599	1805	3451	0	1787	3456	0
Flt Permitted	0.173			0.131			0.429			0.204		
Satd. Flow (perm)	325	3762	1599	246	3762	1599	815	3451	0	384	3456	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		1358			1068			1429			1130	
Travel Time (s)		23.1			18.2			27.8			22.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	1%	0%	1%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	1015	121	188	926	402	81	498	0	355	580	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	3	1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0	6.5	6.5	14.0		6.5	14.0	
Total Split (s)	20.0	50.0	14.0	20.0	50.0	24.0	14.0	36.0		24.0	46.0	
Total Split (%)	15.4%	38.5%	10.8%	15.4%	38.5%	18.5%	10.8%	27.7%		18.5%	35.4%	
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0		3.5	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None		None	None	
Act Effct Green (s)	67.3	51.3	66.2	68.4	51.9	79.6	35.3	23.9		51.7	36.8	
Actuated g/C Ratio	0.52	0.39	0.51	0.53	0.40	0.61	0.27	0.18		0.40	0.28	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.66	0.68	0.15	0.64	0.62	0.41	0.28	0.78		0.92	0.59	
Control Delay	36.6	36.8	12.4	28.1	34.5	15.9	27.5	59.5		60.2	42.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	36.6	36.8	12.4	28.1	34.5	15.9	27.5	59.5		60.2	42.9	
LOS	D	D	B	C	C	B	C	E		E	D	
Approach Delay		34.6			28.8			55.1			49.5	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	90	257	31	75	317	165	43	212		226	225	
Queue Length 95th (ft)	m166	485	m48	148	437	285	73	262		#385	275	
Internal Link Dist (ft)		1278			988			1349			1050	
Turn Bay Length (ft)	325		325	110		290	140			235		
Base Capacity (vph)	360	1484	834	330	1501	979	311	796		387	1063	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.58	0.68	0.15	0.57	0.62	0.41	0.26	0.63		0.92	0.55	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 88 (68%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 38.5 Intersection LOS: D
Intersection Capacity Utilization 87.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: 94th Avenue & 159th Street



Capacity Analysis Summary Sheets

Year 2026 No Build Saturday Midday Peak Hour Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	490	316	307	551	353	310	997	333	382	1001	126
Future Volume (vph)	144	490	316	307	551	353	310	997	333	382	1001	126
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	165		400	185		420	300		175	192		135
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	240			290			300			290		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3367	3689	1568	3303	3725	1568	3367	5301	1524	3433	5301	1615
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3367	3689	1568	3303	3725	1568	3367	5301	1524	3433	5301	1615
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		1477			1358			1753			1180	
Travel Time (s)		25.2			23.1			29.9			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	3%	6%	2%	3%	4%	3%	6%	2%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	510	329	320	574	368	323	1039	347	398	1043	131
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0
Minimum Split (s)	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0	7.5
Total Split (s)	18.0	32.0	25.0	24.0	38.0	28.0	25.0	46.0	24.0	28.0	49.0	18.0
Total Split (%)	13.8%	24.6%	19.2%	18.5%	29.2%	21.5%	19.2%	35.4%	18.5%	21.5%	37.7%	13.8%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min	None	None	C-Min	None	None	C-Min	None
Act Effct Green (s)	11.0	24.4	47.9	17.2	30.6	56.8	17.5	47.3	70.4	20.2	50.0	66.9
Actuated g/C Ratio	0.08	0.19	0.37	0.13	0.24	0.44	0.13	0.36	0.54	0.16	0.38	0.51

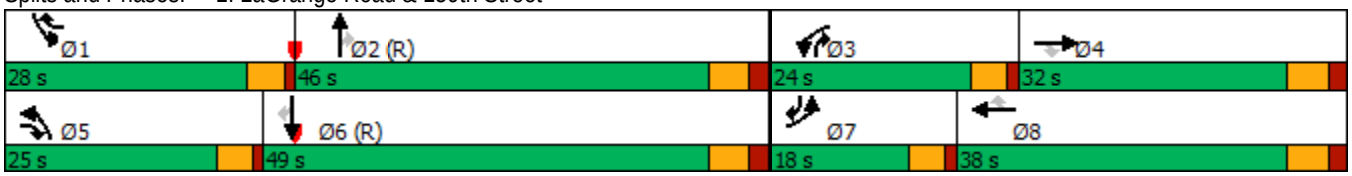
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.53	0.74	0.57	0.74	0.66	0.54	0.71	0.54	0.42	0.75	0.51	0.16
Control Delay	63.6	56.7	36.5	39.3	39.7	31.5	62.8	35.3	20.7	61.3	33.0	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.6	56.7	36.5	39.3	39.7	31.5	62.8	35.3	20.7	61.3	33.0	18.6
LOS	E	E	D	D	D	C	E	D	C	E	C	B
Approach Delay		51.0			37.2			37.6			38.9	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	63	211	213	125	247	283	136	264	177	165	254	59
Queue Length 95th (ft)	97	274	301	m149	320	m373	182	326	265	217	316	101
Internal Link Dist (ft)		1397			1278			1673			1100	
Turn Bay Length (ft)	165		400	185		420	300		175	192		135
Base Capacity (vph)	349	740	613	495	929	724	530	1927	853	620	2038	863
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.69	0.54	0.65	0.62	0.51	0.61	0.54	0.41	0.64	0.51	0.15

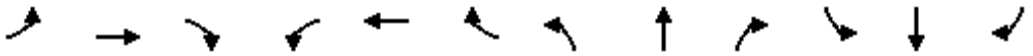
Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 40.3 Intersection LOS: D
Intersection Capacity Utilization 68.3% ICU Level of Service C
Analysis Period (min) 15

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

Splits and Phases: 1: LaGrange Road & 159th Street





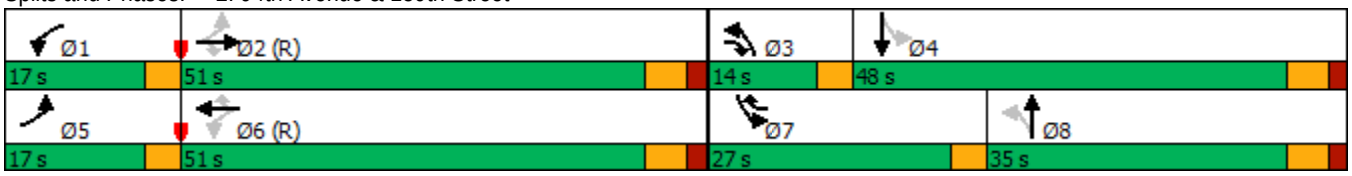
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	203	901	101	171	950	459	104	433	140	326	433	157
Future Volume (vph)	203	901	101	171	950	459	104	433	140	326	433	157
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	325		325	110		290	140		0	235		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	220			135			145			165		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.963			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3689	1583	1787	3689	1583	1752	3442	0	1752	3395	0
Flt Permitted	0.098			0.143			0.400			0.140		
Satd. Flow (perm)	174	3689	1583	269	3689	1583	738	3442	0	258	3395	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		1358			1068			1429			1130	
Travel Time (s)		23.1			18.2			27.8			22.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	3%	2%	1%	3%	2%	3%	1%	1%	3%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	969	109	184	1022	494	112	617	0	351	635	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	3	1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0	6.5	6.5	14.0		6.5	14.0	
Total Split (s)	17.0	51.0	14.0	17.0	51.0	27.0	14.0	35.0		27.0	48.0	
Total Split (%)	13.1%	39.2%	10.8%	13.1%	39.2%	20.8%	10.8%	26.9%		20.8%	36.9%	
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0		3.5	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None		None	None	
Act Effct Green (s)	64.9	48.7	64.3	61.1	46.5	75.8	39.0	26.9		56.2	40.6	
Actuated g/C Ratio	0.50	0.37	0.49	0.47	0.36	0.58	0.30	0.21		0.43	0.31	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.87	0.70	0.14	0.69	0.77	0.54	0.38	0.87		0.93	0.60	
Control Delay	56.0	29.7	16.2	33.2	42.4	19.5	26.9	63.1		65.2	40.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	56.0	29.7	16.2	33.2	42.4	19.5	26.9	63.1		65.2	40.3	
LOS	E	C	B	C	D	B	C	E		E	D	
Approach Delay		33.0			34.7			57.5			49.2	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	128	383	53	84	407	247	55	262		229	235	
Queue Length 95th (ft)	#283	471	m86	140	494	348	93	332		#410	297	
Internal Link Dist (ft)		1278			988			1349			1050	
Turn Bay Length (ft)	325		325	110		290	140			235		
Base Capacity (vph)	252	1381	793	286	1323	927	308	767		383	1096	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.87	0.70	0.14	0.64	0.77	0.53	0.36	0.80		0.92	0.58	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 40.8 Intersection LOS: D
Intersection Capacity Utilization 87.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: 94th Avenue & 159th Street



Capacity Analysis Summary Sheets

Total Projected Weekday Morning Peak Hour Conditions

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	54	397	180	42	261	407	188	225	922	350	242	670
Future Volume (vph)	54	397	180	42	261	407	188	225	922	350	242	670
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%				0%			0%			0%
Storage Length (ft)	165		400		185		420	300		175	192	
Storage Lanes	2		1		2		1	2		1	2	
Taper Length (ft)	240				290			300			290	
Lane Util. Factor	0.97	0.95	1.00	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91
Ped Bike Factor												
Frt			0.850				0.850			0.850		
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	3502	3619	1524	0	3216	3689	1615	3502	5151	1495	3400	5200
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	3502	3619	1524	0	3216	3689	1615	3502	5151	1495	3400	5200
Right Turn on Red			No				No			No		
Satd. Flow (RTOR)												
Link Speed (mph)		40				40			40			40
Link Distance (ft)		3161				662			652			2396
Travel Time (s)		53.9				11.3			11.1			40.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	6%	2%	10%	3%	0%	0%	6%	8%	3%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%				0%			0%			0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	427	194	0	327	438	202	242	991	376	260	720
Turn Type	Prot	NA	pm+ov	Prot	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	7	4	5	3!	3	8	1	5	2	3!	1	6
Permitted Phases			4				8			2		
Detector Phase	7	4	5	3	3	8	1	5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	7.5	21.0	7.5	7.5	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0
Total Split (s)	16.0	30.0	21.0	22.0	22.0	36.0	21.0	21.0	47.0	22.0	21.0	47.0
Total Split (%)	13.3%	25.0%	17.5%	18.3%	18.3%	30.0%	17.5%	17.5%	39.2%	18.3%	17.5%	39.2%
Yellow Time (s)	3.5	4.0	3.5	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0
All-Red Time (s)	1.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.5		4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	None	Min	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	7.4	20.9	40.3		16.2	31.7	51.7	13.4	47.9	70.0	14.0	48.5
Actuated g/C Ratio	0.06	0.17	0.34		0.14	0.26	0.43	0.11	0.40	0.58	0.12	0.40

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	45
Future Volume (vph)	45
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Grade (%)	
Storage Length (ft)	135
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1615
Flt Permitted	
Satd. Flow (perm)	1615
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	0.93
Growth Factor	100%
Heavy Vehicles (%)	0%
Bus Blockages (#/hr)	0
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	48
Turn Type	pm+ov
Protected Phases	7
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	7.5
Total Split (s)	16.0
Total Split (%)	13.3%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	61.9
Actuated g/C Ratio	0.52

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
v/c Ratio	0.27	0.68	0.38		0.76	0.45	0.29	0.62	0.48	0.43	0.65	0.34
Control Delay	56.4	51.8	31.5		49.9	34.0	22.2	57.7	29.0	16.9	58.5	26.5
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.4	51.8	31.5		49.9	34.0	22.2	57.7	29.0	16.9	58.5	26.5
LOS	E	D	C		D	C	C	E	C	B	E	C
Approach Delay		46.4				36.9			30.5			34.2
Approach LOS		D				D			C			C
Queue Length 50th (ft)	22	163	112		129	167	126	93	215	158	100	144
Queue Length 95th (ft)	44	214	166		136	217	183	132	274	255	142	193
Internal Link Dist (ft)		3081				582			572			2316
Turn Bay Length (ft)	165		400		185		420	300		175	192	
Base Capacity (vph)	335	723	551		469	986	729	481	2055	889	467	2101
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.59	0.35		0.70	0.44	0.28	0.50	0.48	0.42	0.56	0.34

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 35.4 Intersection LOS: D
Intersection Capacity Utilization 66.0% ICU Level of Service C
Analysis Period (min) 15
! Phase conflict between lane groups.

Splits and Phases: 1: LaGrange Road & 159th Street

Lane Group	SBR
v/c Ratio	0.06
Control Delay	17.0
Queue Delay	0.0
Total Delay	17.0
LOS	B
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	19
Queue Length 95th (ft)	42
Internal Link Dist (ft)	
Turn Bay Length (ft)	135
Base Capacity (vph)	888
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.05

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	739	125	131	690	289	103	336	114	132	199	105
Future Volume (vph)	199	739	125	131	690	289	103	336	114	132	199	105
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	325		325	110		290	140		0	235		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	220			135			145			165		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.962			0.948	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1626	3619	1583	1787	3585	1553	1787	3430	0	1641	3208	0
Flt Permitted	0.262			0.278			0.530			0.223		
Satd. Flow (perm)	448	3619	1583	523	3585	1553	997	3430	0	385	3208	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		696			1855			2501			1515	
Travel Time (s)		11.9			31.6			48.7			29.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	11%	5%	2%	1%	6%	4%	1%	1%	2%	10%	6%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	216	803	136	142	750	314	112	489	0	143	330	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	3	1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0	6.5	6.5	14.0		6.5	14.0	
Total Split (s)	19.0	51.0	14.0	15.0	47.0	19.0	14.0	35.0		19.0	40.0	
Total Split (%)	15.8%	42.5%	11.7%	12.5%	39.2%	15.8%	11.7%	29.2%		15.8%	33.3%	
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0		3.5	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None		None	None	
Act Effct Green (s)	71.0	55.8	71.7	65.0	52.7	71.8	34.7	22.3		40.8	25.5	
Actuated g/C Ratio	0.59	0.46	0.60	0.54	0.44	0.60	0.29	0.19		0.34	0.21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.55	0.48	0.14	0.37	0.48	0.34	0.32	0.77		0.53	0.48	
Control Delay	14.2	20.1	13.1	15.1	27.0	14.8	28.6	54.7		34.4	43.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.2	20.1	13.1	15.1	27.0	14.8	28.6	54.7		34.4	43.2	
LOS	B	C	B	B	C	B	C	D		C	D	
Approach Delay		18.2			22.4			49.8			40.5	
Approach LOS		B			C			D			D	
Queue Length 50th (ft)	41	196	53	46	214	116	60	191		78	118	
Queue Length 95th (ft)	m132	342	m119	89	318	211	94	238		118	154	
Internal Link Dist (ft)		616			1775			2421			1435	
Turn Bay Length (ft)	325		325	110		290	140			235		
Base Capacity (vph)	422	1682	957	416	1573	960	366	828		295	908	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.51	0.48	0.14	0.34	0.48	0.33	0.31	0.59		0.48	0.36	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 17 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 28.3 Intersection LOS: C
Intersection Capacity Utilization 66.1% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: 94th Avenue & 159th Street

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	36	1450	6	0	1111
Future Vol, veh/h	0	36	1450	6	0	1111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	6	0	0	5
Mvmt Flow	0	38	1526	6	0	1169

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	766	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	300	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	300	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	300	-
HCM Lane V/C Ratio	-	-	0.126	-
HCM Control Delay (s)	-	-	18.7	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.4	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	935	96	0	898	0	128
Future Vol, veh/h	935	96	0	898	0	128
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	125	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	3	0	0
Mvmt Flow	984	101	0	945	0	135

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	492
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	528
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	528
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	528	-	-	-
HCM Lane V/C Ratio	0.255	-	-	-
HCM Control Delay (s)	14.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1	-	-	-

Capacity Analysis Summary Sheets

Total Projected Weekday Evening Peak Hour Conditions

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	134	560	313	40	329	540	272	323	1156	453	397	1360
Future Volume (vph)	134	560	313	40	329	540	272	323	1156	453	397	1360
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%				0%			0%			0%
Storage Length (ft)	165		400		185		420	300		175	192	
Storage Lanes	2		1		2		1	2		1	2	
Taper Length (ft)	240				290			300			290	
Lane Util. Factor	0.97	0.95	1.00	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91
Ped Bike Factor												
Frt			0.850				0.850			0.850		
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	3502	3725	1583	0	3433	3762	1599	3467	5353	1599	3467	5353
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	3502	3725	1583	0	3433	3762	1599	3467	5353	1599	3467	5353
Right Turn on Red			No				No			No		
Satd. Flow (RTOR)												
Link Speed (mph)		40				40			40			40
Link Distance (ft)		3161				662			652			2396
Travel Time (s)		53.9				11.3			11.1			40.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	2%	2%	1%	1%	1%	2%	1%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%				0%			0%			0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	577	323	0	382	557	280	333	1192	467	409	1402
Turn Type	Prot	NA	pm+ov	Prot	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	7	4	5	3!	3	8	1	5	2	3!	1	6
Permitted Phases			4				8			2		
Detector Phase	7	4	5	3	3	8	1	5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	3.0	15.0	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	7.5	21.0	7.5	7.5	7.5	21.0	7.5	7.5	21.0	7.5	7.5	21.0
Total Split (s)	17.0	32.0	20.0	23.0	23.0	38.0	24.0	20.0	51.0	23.0	24.0	55.0
Total Split (%)	13.1%	24.6%	15.4%	17.7%	17.7%	29.2%	18.5%	15.4%	39.2%	17.7%	18.5%	42.3%
Yellow Time (s)	3.5	4.0	3.5	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0
All-Red Time (s)	1.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.5		4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	None	Min	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	10.3	25.3	46.4		17.8	32.8	57.3	15.1	47.4	71.2	18.6	50.8
Actuated g/C Ratio	0.08	0.19	0.36		0.14	0.25	0.44	0.12	0.36	0.55	0.14	0.39

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	116
Future Volume (vph)	116
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Grade (%)	
Storage Length (ft)	135
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1615
Flt Permitted	
Satd. Flow (perm)	1615
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	0.97
Growth Factor	100%
Heavy Vehicles (%)	0%
Bus Blockages (#/hr)	0
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	120
Turn Type	pm+ov
Protected Phases	7
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	7.5
Total Split (s)	17.0
Total Split (%)	13.1%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	67.1
Actuated g/C Ratio	0.52

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
v/c Ratio	0.50	0.80	0.57		0.81	0.59	0.40	0.83	0.61	0.53	0.83	0.67
Control Delay	63.4	59.0	38.3		69.0	67.9	31.5	73.7	36.0	22.1	68.8	35.0
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	59.0	38.3		69.0	67.9	31.5	73.7	36.0	22.1	68.8	35.0
LOS	E	E	D		E	E	C	E	D	C	E	D
Approach Delay		53.1				59.9			39.0			41.1
Approach LOS		D				E			D			D
Queue Length 50th (ft)	58	244	216		171	262	129	143	308	250	173	362
Queue Length 95th (ft)	91	312	315		#230	324	246	#212	360	353	#235	417
Internal Link Dist (ft)		3081				582			572			2316
Turn Bay Length (ft)	165		400		185		420	300		175	192	
Base Capacity (vph)	336	745	569		488	961	716	413	1950	883	520	2092
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.77	0.57		0.78	0.58	0.39	0.81	0.61	0.53	0.79	0.67

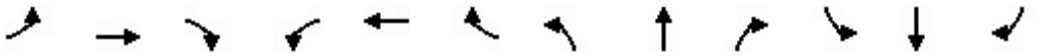
Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 46.2 Intersection LOS: D
Intersection Capacity Utilization 80.9% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 1: LaGrange Road & 159th Street

Lane Group	SBR
v/c Ratio	0.14
Control Delay	17.3
Queue Delay	0.0
Total Delay	17.3
LOS	B
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	53
Queue Length 95th (ft)	87
Internal Link Dist (ft)	
Turn Bay Length (ft)	135
Base Capacity (vph)	861
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.14

Intersection Summary



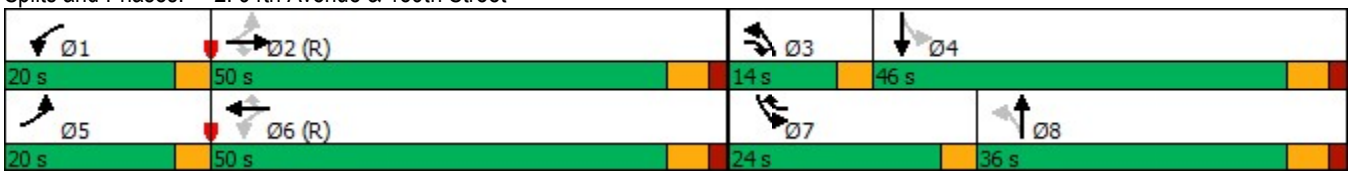
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	1042	175	186	962	398	91	370	123	351	457	128
Future Volume (vph)	235	1042	175	186	962	398	91	370	123	351	457	128
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	325		325	110		290	140		0	235		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	220			135			145			165		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.963			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3762	1599	1787	3762	1599	1805	3451	0	1787	3449	0
Flt Permitted	0.138			0.124			0.406			0.203		
Satd. Flow (perm)	260	3762	1599	233	3762	1599	771	3451	0	382	3449	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		696			1855			2501			1515	
Travel Time (s)		11.9			31.6			48.7			29.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	1%	0%	1%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	1053	177	188	972	402	92	498	0	355	591	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	3	1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0	3.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	7.5	21.0	7.5	7.5	21.0	7.5	7.5	14.0		7.5	14.0	
Total Split (s)	20.0	50.0	14.0	20.0	50.0	24.0	14.0	36.0		24.0	46.0	
Total Split (%)	15.4%	38.5%	10.8%	15.4%	38.5%	18.5%	10.8%	27.7%		18.5%	35.4%	
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0		3.5	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None		None	None	
Act Effct Green (s)	69.9	51.6	66.8	66.3	49.9	77.3	35.6	23.9		51.4	36.2	
Actuated g/C Ratio	0.54	0.40	0.51	0.51	0.38	0.59	0.27	0.18		0.40	0.28	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.73	0.70	0.22	0.66	0.67	0.42	0.32	0.78		0.93	0.62	
Control Delay	44.2	37.3	12.8	31.1	37.3	17.2	28.4	59.5		62.3	43.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	44.2	37.3	12.8	31.1	37.3	17.2	28.4	59.5		62.3	43.8	
LOS	D	D	B	C	D	B	C	E		E	D	
Approach Delay		35.5			31.4			54.7			50.7	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	124	288	49	75	356	179	50	212		226	233	
Queue Length 95th (ft)	m197	523	m75	153	465	285	82	262		#386	282	
Internal Link Dist (ft)		616			1775			2421			1435	
Turn Bay Length (ft)	325		325	110		290	140			235		
Base Capacity (vph)	346	1494	838	323	1443	951	302	796		382	1061	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.68	0.70	0.21	0.58	0.67	0.42	0.30	0.63		0.93	0.56	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 88 (68%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 39.7 Intersection LOS: D
Intersection Capacity Utilization 88.6% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: 94th Avenue & 159th Street



Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	26	1899	17	0	2002
Future Vol, veh/h	0	26	1899	17	0	2002
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	0	27	1999	18	0	2107

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1009	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	207	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	207	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	207	-
HCM Lane V/C Ratio	-	-	0.132	-
HCM Control Delay (s)	-	-	25	-
HCM Lane LOS	-	-	D	-
HCM 95th %tile Q(veh)	-	-	0.4	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1356	94	0	1181	0	96
Future Vol, veh/h	1356	94	0	1181	0	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	125	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	1427	99	0	1243	0	101

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	714
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	378
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	378
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	378	-	-	-
HCM Lane V/C Ratio	0.267	-	-	-
HCM Control Delay (s)	18	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	1.1	-	-	-

Capacity Analysis Summary Sheets

Total Projected Saturday Midday Peak Hour Conditions

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	144	508	328	54	343	551	353	338	1068	370	435	1054
Future Volume (vph)	144	508	328	54	343	551	353	338	1068	370	435	1054
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%				0%			0%			0%
Storage Length (ft)	165		400		185		420	300		175	192	
Storage Lanes	2		1		2		1	2		1	2	
Taper Length (ft)	240				290			300			290	
Lane Util. Factor	0.97	0.95	1.00	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91
Ped Bike Factor												
Frt			0.850				0.850			0.850		
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	3367	3689	1568	0	3321	3725	1568	3367	5301	1524	3433	5301
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	3367	3689	1568	0	3321	3725	1568	3367	5301	1524	3433	5301
Right Turn on Red			No				No			No		
Satd. Flow (RTOR)												
Link Speed (mph)		40				40			40			40
Link Distance (ft)		3161				662			652			2396
Travel Time (s)		53.9				11.3			11.1			40.8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.92	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	3%	2%	6%	2%	3%	4%	3%	6%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%				0%			0%			0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	529	342	0	416	574	368	352	1113	385	453	1098
Turn Type	Prot	NA	pm+ov	Prot	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	7	4	5	3!	3	8	1	5	2	3!	1	6
Permitted Phases			4				8			2		
Detector Phase	7	4	5	3	3	8	1	5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	8.0	3.0	3.0	3.0	8.0	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	9.5	24.0	9.5	9.5	9.5	24.0	9.5	9.5	24.0	9.5	9.5	24.0
Total Split (s)	18.0	32.0	25.0	24.0	24.0	38.0	28.0	25.0	46.0	24.0	28.0	49.0
Total Split (%)	13.8%	24.6%	19.2%	18.5%	18.5%	29.2%	21.5%	19.2%	35.4%	18.5%	21.5%	37.7%
Yellow Time (s)	3.5	4.0	3.5	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0
All-Red Time (s)	1.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	4.5		4.5	6.0	4.5	4.5	6.0	4.5	4.5	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	None	Min	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	11.0	24.5	48.7		18.9	32.4	60.1	18.3	44.0	68.9	21.6	47.3
Actuated g/C Ratio	0.08	0.19	0.37		0.15	0.25	0.46	0.14	0.34	0.53	0.17	0.36

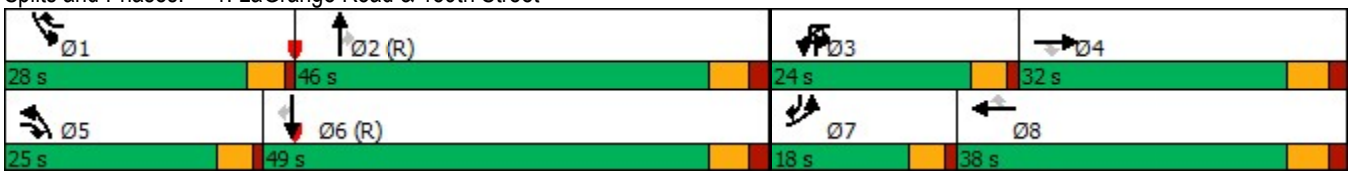
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	126
Future Volume (vph)	126
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Grade (%)	
Storage Length (ft)	135
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1615
Flt Permitted	
Satd. Flow (perm)	1615
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	0.96
Growth Factor	100%
Heavy Vehicles (%)	0%
Bus Blockages (#/hr)	0
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	131
Turn Type	pm+ov
Protected Phases	7
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	9.5
Total Split (s)	18.0
Total Split (%)	13.8%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	64.3
Actuated g/C Ratio	0.49

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
v/c Ratio	0.53	0.76	0.58		0.86	0.62	0.51	0.74	0.62	0.48	0.79	0.57
Control Delay	63.6	57.8	36.4		43.9	36.2	27.7	63.6	38.7	22.6	62.9	35.4
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.6	57.8	36.4		43.9	36.2	27.7	63.6	38.7	22.6	62.9	35.4
LOS	E	E	D		D	D	C	E	D	C	E	D
Approach Delay		51.5				36.2			40.1			41.6
Approach LOS		D				D			D			D
Queue Length 50th (ft)	63	221	220		168	245	280	146	299	208	188	282
Queue Length 95th (ft)	97	285	315		m#198	m306	m340	198	354	302	247	336
Internal Link Dist (ft)		3081				582			572			2316
Turn Bay Length (ft)	165		400		185		420	300		175	192	
Base Capacity (vph)	349	737	614		498	947	747	530	1793	814	620	1929
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.72	0.56		0.84	0.61	0.49	0.66	0.62	0.47	0.73	0.57

Intersection Summary

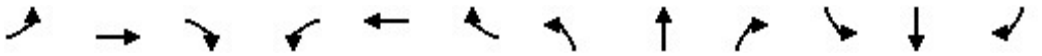
Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 41.6 Intersection LOS: D
Intersection Capacity Utilization 76.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 1: LaGrange Road & 159th Street



Lane Group	SBR
v/c Ratio	0.16
Control Delay	19.6
Queue Delay	0.0
Total Delay	19.6
LOS	B
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	62
Queue Length 95th (ft)	101
Internal Link Dist (ft)	
Turn Bay Length (ft)	135
Base Capacity (vph)	830
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.16

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	958	186	171	1010	459	119	433	140	326	433	172
Future Volume (vph)	245	958	186	171	1010	459	119	433	140	326	433	172
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	325		325	110		290	140		0	235		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	220			135			145			165		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.963			0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3689	1583	1787	3689	1583	1752	3442	0	1752	3382	0
Flt Permitted	0.084			0.122			0.376			0.142		
Satd. Flow (perm)	149	3689	1583	230	3689	1583	694	3442	0	262	3382	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		696			1855			2501			1515	
Travel Time (s)		11.9			31.6			48.7			29.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	3%	2%	1%	3%	2%	3%	1%	1%	3%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	263	1030	200	184	1086	494	128	617	0	351	651	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	3	1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	24.0	9.5	9.5	24.0	9.5	9.5	24.0		9.5	24.0	
Total Split (s)	17.0	51.0	14.0	17.0	51.0	27.0	14.0	35.0		27.0	48.0	
Total Split (%)	13.1%	39.2%	10.8%	13.1%	39.2%	20.8%	10.8%	26.9%		20.8%	36.9%	
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0		3.5	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None		None	None	
Act Effct Green (s)	64.8	48.5	64.4	59.2	44.2	73.4	39.3	26.9		56.1	40.2	
Actuated g/C Ratio	0.50	0.37	0.50	0.46	0.34	0.56	0.30	0.21		0.43	0.31	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.97	0.75	0.26	0.73	0.87	0.55	0.44	0.87		0.93	0.62	
Control Delay	79.8	33.5	19.1	38.3	48.5	20.6	28.4	63.1		65.3	41.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	79.8	33.5	19.1	38.3	48.5	20.6	28.4	63.1		65.3	41.2	
LOS	E	C	B	D	D	C	C	E		E	D	
Approach Delay		39.7			39.6			57.1			49.7	
Approach LOS		D			D			E			D	
Queue Length 50th (ft)	~206	408	114	84	444	247	63	262		228	243	
Queue Length 95th (ft)	m#388	514	m166	#157	535	348	104	332		#408	306	
Internal Link Dist (ft)		616			1775			2421			1435	
Turn Bay Length (ft)	325		325	110		290	140			235		
Base Capacity (vph)	271	1375	790	269	1276	897	298	767		382	1092	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.97	0.75	0.25	0.68	0.85	0.55	0.43	0.80		0.92	0.60	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 44.3 Intersection LOS: D
Intersection Capacity Utilization 91.3% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: 94th Avenue & 159th Street

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	41	1724	24	0	1725
Future Vol, veh/h	0	41	1724	24	0	1725
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	3
Mvmt Flow	0	43	1815	25	0	1816

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	920	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	238	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	238	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	238	-
HCM Lane V/C Ratio	-	-	0.181	-
HCM Control Delay (s)	-	-	23.4	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.6	-

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1242	125	0	1301	0	147
Future Vol, veh/h	1242	125	0	1301	0	147
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	125	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	0	0	2	0	0
Mvmt Flow	1307	132	0	1369	0	155

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	654
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	414
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	414
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	414	-	-	-
HCM Lane V/C Ratio	0.374	-	-	-
HCM Control Delay (s)	18.8	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	1.7	-	-	-