BERTIN ENGINEERING

TRAFFIC IMPACT STUDY

Residential Development
Grover's Mill Road
Lawrence, New Jersey

BE: 21-210TR

March 19, 2024
Revised May 1, 2025

PREPARED FOR:

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Residential Development
Grover's Mill Road
Lawrence, New Jersey

BE: 21-210TR

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Residential Development
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1.0 Introduction

This report addresses the traffic impact associated with the development of a proposed residential development by Tricone Company. The site is located on the north side of Grovers Mill Road at the intersection with the Mall Access Road in the Township of Lawerence, Mercer County, New Jersey.

The traffic impact study includes:

(a) An inventory of the existing roads and traffic controls;
(b) Traffic counts at the Grovers Mill Road – Mall Access Road intersection & the Mall Access Road – Outer Ring Road intersection to determine the existing traffic in the area;
(c) An estimate of the traffic to be generated by the project; and
(d) An analysis of the impact this traffic will have on local traffic.

2.0 Site

2.1 The site is located in the AT-3 (Apartment & Township Residential) Zone of the Township of Lawrence. The land uses in the area are a combination of residential and commercial, including the "Quaker Bridge Mall" to the north, car dealerships along Route 1 to the west and residential developments to the east.

2.2 The property is located on the north side of Grovers Mill Road as seen below.

Figure 1 – Street Location

Figure 2 - Aerial

2.3 The property is currently vacant and entirely wooded. The site is 6.86 acres in area with approximately 600 feet of frontage along Grovers Mill Road and approximately 630 feet of frontage along Mall Access Road.

2.4 Bus stops are available in the area on Grover's Mill Road to the east of the site and at the Quaker Bridge Mall to the north of the site. School bus routes currently travel along Grover's Mill Road.

2.5 The rationale for choosing this area is that the location is consistent with existing residential uses in the area and has convenient access to nearby transit via bus stops and close proximity to major highways.

3.0 Roadways

3.1 **Grovers Mill Road (County Route 638)** is a county roadway that travels in a general east-west direction. It contains one travel lane in each direction separated by a solid yellow double line. There is no curbing or sidewalks on either side of the roadway and the posted speed limit is 40 MPH in the vicinity of the site.

3.2 **Mall Access Road** is a local roadway that runs from Grovers Mill Road to the south to Outer Ring Road of the Quaker Bridge Mall to the north. It contains one lane in each direction separated by a solid yellow double line. There is curbing with no sidewalks along both sides of the road and the posted speed limit is 25 MPH in the vicinity of the site.

3.3 **Outer Ring Road** is a private roadway that circulates around the "Quaker Bridge Mall" to the north of the site. It contains two lanes in each direction separated by a solid yellow double line. There is curbing with no sidewalks along both sides of the road and the posted speed limit is 25 MPH in the vicinity of the site.

3.4 The **Grovers Mill Road – Mall Access Road intersection** is a stop-controlled intersection located to southwest of the site with the Mall Access Road acting as the minor roadway approach. The Grovers Mill Road eastbound approach contains two approach lanes including a left-turn only lane and a thru lane. The Grovers Mill Road westbound approach contains one shared thru-right turn lane. The Mall Access Road approach contains two approach lanes including a left-turn only lane and a right-turn only lane.

3.5 The **Mall Access Road – Outer Ring Road intersection** is a stop-controlled intersection located northwest of the site with the Mall Access Road acting as the minor roadway approach. The Outer Ring Road eastbound approach contains two approach lanes including a shared right-turn/thru lane and a thru only lane. The Outer Ring Road westbound approach contains two approach lanes including a shared left-turn/thru lane and a thru only lane. The Mall Access Road approach contains two approach lanes including a left-turn only lane and a right-turn only lane.

4.0 Traffic Activity

4.1 A study of traffic activity was conducted at the Grovers Mill Road – Mall Access Road intersection. Traffic was observed and counted on Thursday, December 12, 2024, during the morning peak period between the hours of 7:00 AM and 9:00 AM and the evening peak period between the hours of 4:00 PM and 6:00 PM. Traffic was also observed and counted on Saturday, December 14, 2024, during the weekend peak period between the hours of 11:00 AM and 1:00 PM. The traffic activity for the weekday morning, weekday evening and weekend are summarized in the following table. The traffic count sheets are attached, and the peak-hour traffic volume is shown in ***Figure 3****.*

GROVERS MILL ROAD – MALL ACCESS ROAD INTERSECTION Peak-Hour Traffic						
Peak Hour	*Grovers Mill Road*				*Mall Access Road*	
	Eastbound		*Westbound*		*Southbound*	
	Left	*Thru*	*Thru*	*Right*	*Left*	*Right*
AM (7:30-8:30)	*27*	*505*	*54*	*48*	*7*	*26*
PM (4:45-5:45)	*84*	*621*	*36*	*81*	*55*	*31*
SAT (11:15-12:15	*146*	*407*	*70*	*46*	*49*	*34*

4.2 *The majority of traffic travels on Grovers Mill Road eastbound with the greater volume in the PM peak-hour. Mall Access Road was found to have more volume in the PM & SAT peak-hours. The maximum observed queue on the southbound approach of Mall Access Road was 2-3 vehicles.*

4.3 *A study of traffic activity was also conducted at the Mall Access Road – Outer Ring Road intersection. Traffic was observed and counted on Thursday, December 12, 2024 & Saturday, December 14, 2024 during the same time frames as the Grovers Mill Road – Mall Access Road intersection. The traffic activity for the weekday morning, weekday evening and weekend are summarized in the following table. The traffic count sheets are attached, and the peak-hour traffic volume is shown in* ***Figure 3****.*

MALL ACCESS ROAD – OUTER RING INTERSECTION Peak-Hour Traffic						
Peak Hour	*Outer Ring Road*				*Mall Access Road*	
	Eastbound		*Westbound*		*Northbound*	
	Thru	*Right*	*Left*	*Thru*	*Left*	*Right*
AM (8:00-9:00)	*27*	*32*	*7*	*31*	*74*	*10*
PM (4:15-5:15)	*68*	*46*	*25*	*196*	*127*	*56*
SAT (12:00-1:00)	*98*	*53*	*28*	*114*	*94*	*108*

4.4 *During the weekday, the majority of traffic on Mall Access Road eastbound turns left onto Outer Ring Road with a greater volume in the PM peak-hour. During the weekend. the distribution is more balanced with slightly more vehicles turning right in the SAT peak-hour.*

The majority of traffic on Outer Ring Road travels eastbound in the AM peak-hour and westbound in the PM peak-hour. The maximum observed queue on the northbound approach of Mall Access Road was 2-3 vehicles.

4.5 *There was minimal truck traffic observed with more volume in the morning. At the AM peak-hour, a total of 45 trucks were observed at the Grovers Mill Road–Mall Access Road intersection and a total of 14 trucks were observed at the Mall Access Road–Outer Ring Road intersection.*

4.6 *There was minimal pedestrian traffic during the studied time periods with one pedestrian observed crossing Mall Access Road in the AM peak hour.*

5.0 Proposed Development

5.1 The applicant proposes to construct five (5) residential buildings at the project site including multi-family apartment buildings and townhouse buildings. There will be two (2) 4-story buildings and three (3) 3-story buildings and a total of 100 units are proposed within the development.

There is parking provided in front of the proposed buildings as well as garage parking located under two (2) multi-family apartment buildings.

5.2 The site will have two access driveways along the Mall Access Road including a right-turn only ingress and egress driveway closest to Grovers Mill Road and a full movement driveway closest to the Outer Ring Road.

5.3 Trash rooms are provided near the garage entrance for both apartment buildings to be picked up by a private hauler.

5.4 The development will also include a proposed pool with pool house and dog run located in the center of the property across from the southern apartment building.

6.0 Site Circulation & Pedestrian Access

6.1 The proposed interior parking aisles will be 24 feet wide for two-way traffic to provide adequate circulation and the proposed parking spaces will be 9 feet x18 feet.

6.2 The site circulation complies with the Lawrence Township Master Plan as the layout was designed to provide efficient movements of people and goods. Private garbage haulers can safely circulate the site for trash pick-up during non-peak traffic hours.

6.3 Sidewalks which are 5 feet wide are proposed from Mall Access Road that access the building entrances of the multi-family apartment buildings. Interior crosswalks are also provided which access the interior townhouses.

7.0 Parking

7.1 The Township of Lawrence zoning ordinance requires 1.8 spaces for every 1-Bedroom apartment unit, 2.0 spaces for every 2-Bedroom apartment unit and 2.1 spaces for every 3-Bedroom apartment unit. The total number of spaces required by ordinance is calculated below:

1-Bedroom (18 Units)	*= 18 x 1.8*	*= 32 spaces*
2-Bedroom (46 Units)	*= 46 x 2.0*	*= 92 spaces*
3-Bedroom (20 Units)	*= 20 x 2.1*	*= 42 spaces*
		166 spaces required

7.2 *There will be a total of **150 parking spaces** provided for the apartment buildings included 45 spaces for the northernmost Building 'A' (22 surface spaces and 23 garage spaces), 77 parking spaces for the southernmost Building 'F' (44 surface spaces and 33 garage spaces) and 28 spaces for the centermost Building 'D'.*

7.3 *The ADA requires 5 accessible parking spaces for lots from 101 to 150 spaces. Five (5) accessible handicap spaces are provided, which are located within both parking garages and in front of the proposed pool.*

7.4 *The Township of Lawrence zoning ordinance requires 2.4 spaces for each townhouse unit for a total of 39 parking spaces. Each proposed townhouse will provide 2 garage spaces and 1 driveway space for a total of **48 parking spaces** provided for the 16 proposed townhouse units.*

7.5 *There will be 21 electric vehicle supply equipment (EVSE) spaces proposed and according to recent state legislature, EV spaces shall be counted as 2 for the purpose of complying with the required parking resulting in no more than 10% of required.*

*When accounting for this, 13 of the EVSE can be counted as 2, which will bring the total amount of parking required down to **192 parking spaces**, where **198 parking spaces** are provided in total.*

8.0 Traffic Generation and Distribution

8.1 *The amount of traffic to be generated has been determined from data published in the TRIP GENERATION, 11th Edition manual, published by the Institute of Transportation Engineers (ITE). "Multifamily Housing (Low-Rise)" (Land Use Code 220) & "Multifamily Housing (Mide-Rise)" (Land Use Code 221) will be used for the proposed use and the table below shows the anticipated traffic to be generated by the proposed development during the weekday & weekend peak-hours.*

SITE GENERATED TRAFFIC									
Land Use	*AM Peak Hour*			*PM Peak Hour*			*SAT Peak Hour*		
	In	*Out*	*Total*	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Multi-Family Residential (Mid-Rise) (70 Units)	*6*	*19*	*25*	*17*	*10*	*27*	*14*	*13*	*27*
Multi-Family Residential (Low-Rise) (30 Units)	*3*	*11*	*14*	*11*	*6*	*17*	*6*	*6*	*12*
Total Trips Generated	***9***	***30***	***39***	***28***	***16***	***44***	***20***	***19***	***39***

8.2 *The site-generated traffic has been dispersed onto Mall Access Road as per the existing traffic distribution and the anticipated movements and is shown in **Figure 4A & 4B.***

8.3 *Since the Outer Ring Road is a private road owned by the mall, analysis has been performed under the scenario that this roadway can be accessed by the proposed trips* ***(Figure 4A)*** *and the scenario where Outer Ring Road cannot be accessed by the proposed trips* ***(Figure 4B)***.

9.0 Traffic Impact

9.1 *It is anticipated that the residential development will be completed in 2028, the "Build-Year". The traffic growth rate used by the NJDOT for this area is 1.0% per year. The "No Build Year" traffic is shown on* ***Figure 5*** *and the combined site-generated and "No Build Year" traffic, which is the "Build-Year Traffic", is shown on* ***Figure 6A & 6B***.

The "Build-Year Traffic" has been analyzed under the two scenarios described in Section 8.3 above. The first scenario is proposed site traffic having the ability to use Outer Ring Road to access the development ***(Figure 6A)*** *and the second scenario is proposed site traffic having no access to Outer Ring Road and all trips to utilize Grovers Mill Road* ***(Figure 6B)***.

9.2 *A capacity analysis has been performed to determine the operating conditions, or Level of Service (LOS), at the Grovers Mill Road – Mall Access Road intersection during existing conditions, "no build-year" conditions, and both "build-year" traffic conditions. The results of this analysis are shown in the tables below and the worksheets attached.*

GROVERS MILL ROAD – MALL ACCESS ROAD INTERSECTION Level of Service (LOS) Analysis – **Existing & No-Build**						
	Morning Peak-Hour		Afternoon Peak-Hour		Saturday Peak-Hour	
Approach	Existing	No Build	Existing	No Build	Existing	No Build
Southbound (Mall Access Road)	B (10.0 sec.)	B (10.1 sec.)	C (16.0 sec.)	C (16.7 sec.)	C (15.9 sec.)	C (16.7 sec.)
Eastbound (Grovers Mill Road)	A (0.4 sec.)	A (0.4 sec.)	A (0.9 sec.)	A (0.9 sec.)	A (2.1 sec.)	A (2.1 sec.)

GROVERS MILL ROAD – MALL ACCESS ROAD INTERSECTION Level of Service (LOS) Analysis – **Build-Year**						
	Morning Peak-Hour		Afternoon Peak-Hour		Saturday Peak-Hour	
Approach	Build-Year *(With O.R.R.)	Build-Year *(Without O.R.R.)	Build-Year *(With O.R.R.)	Build-Year *(Without O.R.R.)	Build-Year *(With O.R.R.)	Build-Year *(Without O.R.R.)
Southbound (Mall Access Road)	B (10.6 sec.)	B (11.0 sec.)	C (17.6 sec.)	C (18.0 sec.)	C (17.4 sec.)	C (17.8 sec.)
Eastbound (Grovers Mill Road)	A (0.4 sec.)	A (0.4 sec.)	A (1.0 sec.)	A (1.0 sec.)	A (2.2 sec.)	A (2.2 sec.)

**Build-Year Analysis With & Without Proposed Trip Access to Outer Ring Road (O.R.R.)*

9.3 *The LOS of the Grovers Mill Road – Mall Access Road intersection is not significantly impacted by the site-generated traffic with no approach LOS impact with the additional of the site generated trips. The Mall Access Road approach delay increased by 0.5 seconds in the AM peak hour, 0.9 seconds in the PM peak hour and 0.7 seconds in the SAT peak hour.*

9.4 *The LOS will also remain the same for all approaches without access to Outer Ring Road with a Mall Access Road approach delay increase of 0.9 seconds in the AM peak hour, 1.3 seconds in the PM peak hour and 1.1 seconds in the SAT peak hour.*

9.5 *An access driveway to a broadcasting station exists on the south side of the intersection, which was not utilized during the site investigation and, therefore, not included in the analysis.*

9.6 *A capacity analysis has been performed to determine the operating conditions, or Level of Service (LOS), at the Outer Ring Road – Mall Access Road intersection during existing conditions, "no build-year" conditions, and "build-year" traffic conditions. The results of this analysis are shown in the table below and the worksheets attached.*

OUTER RING ROAD – MALL ACCESS ROAD INTERSECTION Level of Service (LOS) Analysis									
	Morning Peak-Hour			Afternoon Peak-Hour			Saturday Peak-Hour		
Approach	Existing	No Build	Build-Year	Existing	No Build	Build-Year	Existing	No Build	Build-Year
Northbound (Mall Access Road)	A (9.2 sec.)	A (9.3 sec.)	A (9.3 sec.)	B (10.8 sec.)	B (10.9 sec.)	B (11.0 sec.)	B (10.4 sec.)	B (10.5 sec.)	B (10.6 sec.)
Westbound (Outer Ring Road)	A (1.4 sec.)	A (1.4 sec.)	A (1.4 sec.)	A (1.0 sec.)	A (1.0 sec.)	A (1.0 sec.)	A (1.6 sec.)	A (1.6 sec.)	A (1.7 sec.)

9.7 *The LOS of the Outer Ring Road – Mall Access Road intersection is not significantly impacted by the site-generated traffic and no approach LOS is degraded upon completion of the project. The Mall Access Road approach delay increases by 0.1 seconds in the PM & SAT peak hours.*

9.8 A capacity analysis has also been performed at the proposed northernmost site driveway on Mall Access Road during the weekday peak hours under both "Build-Year" conditions and the results are shown in the table below and the worksheets attached.

Mall Access Road – Proposed Northern Site Driveway Intersection Level of Service (LOS) *(Build-Year 2028)*						
	AM Peak-Hour		*PM Peak-Hour*		*SAT Peak-Hour*	
	Build-Year **(With O.R.R.)*	***Build-Year*** **(Without O.R.R.)*	***Build-Year*** **(With O.R.R.)*	***Build-Year*** **(Without O.R.R.)*	***Build-Year*** **(With O.R.R.)*	***Build-Year*** **(Without O.R.R.)*
Northern Site Driveway (Westbound)	*A (9.2 sec)*	*A (9.3 sec)*	*B (10.2 sec)*	*B (10.3 sec)*	*B (10.5 sec)*	*B (10.8 sec)*
Mall Access Road (Southbound)	*A (0.2 sec)*	*A (0.0 sec)*	*A (0.4 sec)*	*A (0.0 sec)*	*A (0.5 sec)*	*A (0.0 sec)*

**Build-Year Analysis With & Without Proposed Trip Access to Outer Ring Road (O.R.R.)*

9.9 The LOS of the Mall Access Road – Northern Site Driveway Intersection during peak hours will be acceptable upon completion of the project.

9.10 A capacity analysis has also been performed at the proposed southernmost site driveway on Mall Access Road during the weekday peak hours under the both "Build-Year" conditions and the results are shown in the table below and the worksheets attached.

Mall Access Road – Proposed Southern Site Driveway Intersection Level of Service (LOS) *(Build-Year 2028)*						
	AM Peak-Hour		*PM Peak-Hour*		*SAT Peak-Hour*	
	Build-Year **(With O.R.R.)*	***Build-Year*** **(Without O.R.R.)*	***Build-Year*** **(With O.R.R.)*	***Build-Year*** **(Without O.R.R.)*	***Build-Year*** **(With O.R.R.)*	***Build-Year*** **(Without O.R.R.)*
Southern Site Driveway (Westbound)	*A (8.7 sec)*	*A (8.7 sec)*	*A (9.2 sec)*	*A (9.2 sec)*	*A (9.5 sec)*	*A (9.5 sec)*

**Build-Year Analysis With & Without Proposed Trip Access to Outer Ring Road (O.R.R.)*

9.11 The LOS of the Mall Access Road – Southern Site Driveway Intersection during peak hours will be acceptable upon completion of the project.

10.0 Conclusion

The proposed development will not have a substantial negative impact on area traffic for the reasons discussed in this report and summarized below:

(a) The proposed residential development is compatible from a traffic generation standpoint with the surrounding properties in the area;

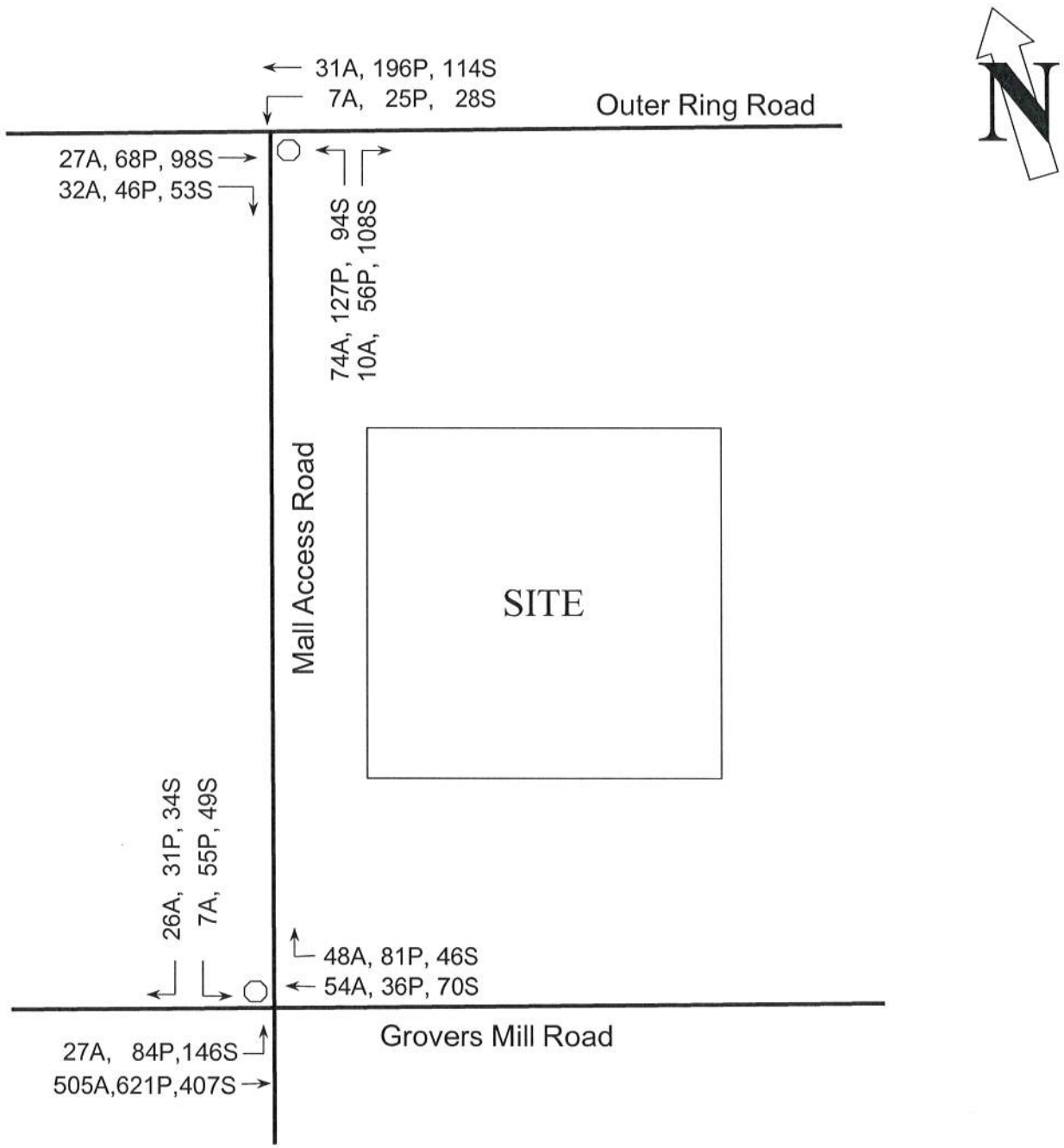
(b) The proposed access driveways for the site are properly located to provide sufficient sight visibility of the street traffic;

(c) The on-site vehicular traffic circulation is safe and efficient;

(d) The proposed sidewalks promote transit use and a reduction in vehicle trips.

(e) The overall LOS of the intersections studied are adequate upon completion of the project, and

(f) The LOS of both site driveways are adequate upon completion of the project.



LEGEND

12A = AM Peak-hour traffic
12P = PM Peak-hour traffic
12S = Saturday Peak-hour traffic
= Traffic Signal
= Stop Sign

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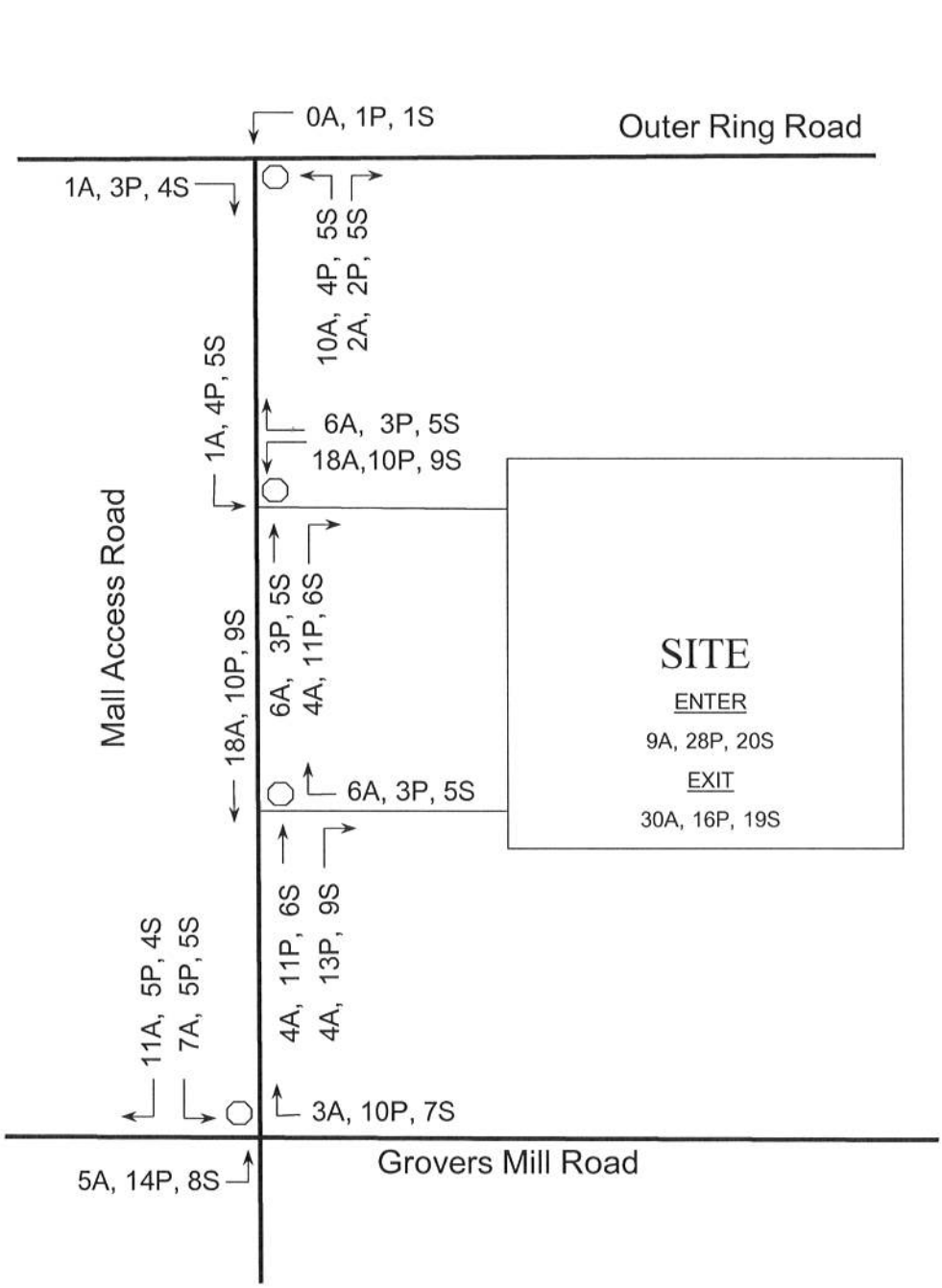
Existing Peak-Hour Traffic (2024)

Grovers Mill Road & Mall Access Road
Lawrence, New Jersey

May, 2025

BE No. 21-210

FIGURE 3



LEGEND

12A = AM Peak-hour traffic
12P = PM Peak-hour traffic
12S = Saturday Peak-hour traffic
= Traffic Signal
= Stop Sign

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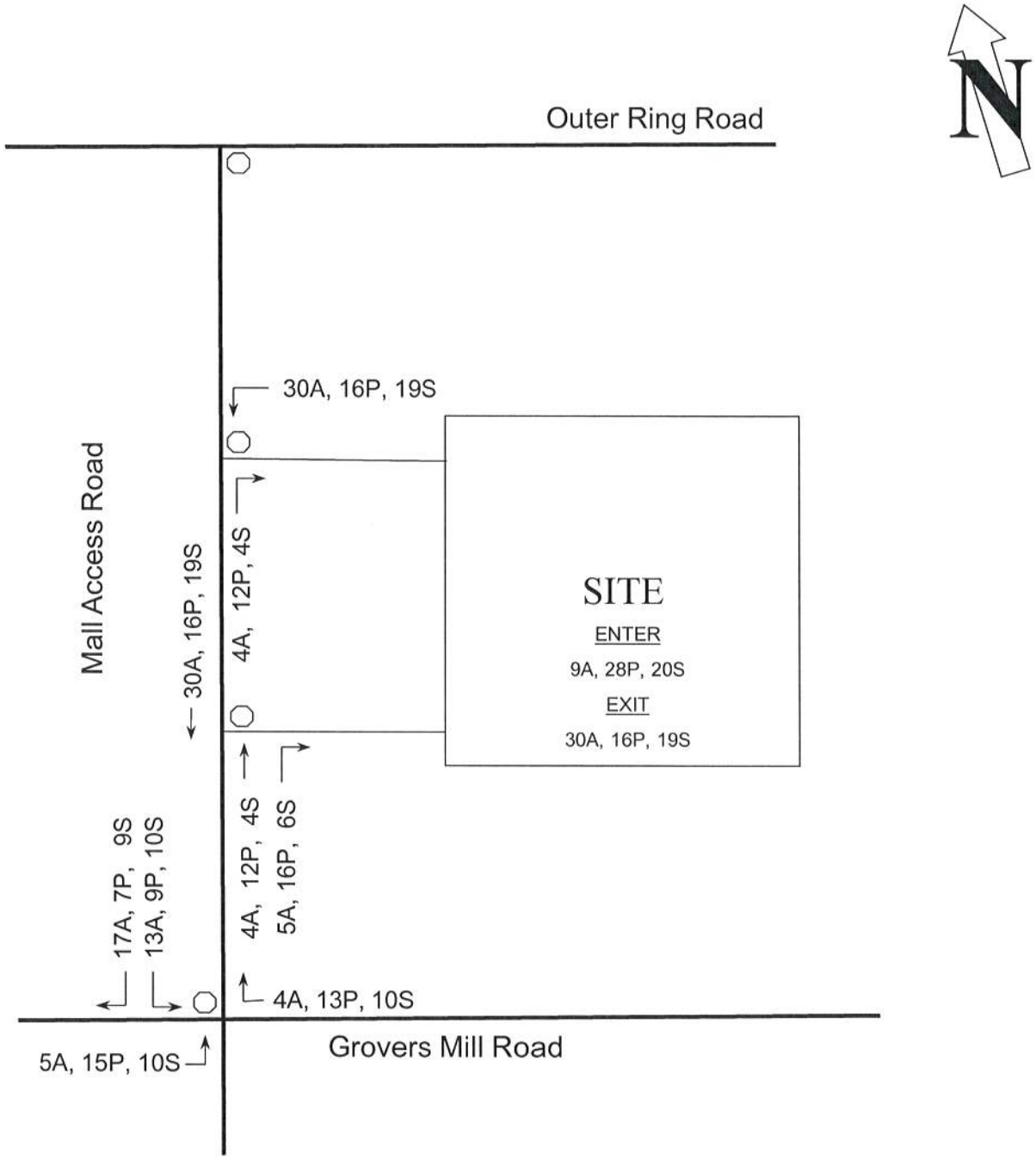
Site Generated Peak-Hour Traffic With Outer Ring Road Access (2028)

Grovers Mill Road & Mall Access Road Lawrence, New Jersey

May, 2025

BE No. 21-210

FIGURE 4A



LEGEND

12A = AM Peak-hour traffic
12P = PM Peak-hour traffic
12S = Saturday Peak-hour traffic
= Traffic Signal
= Stop Sign

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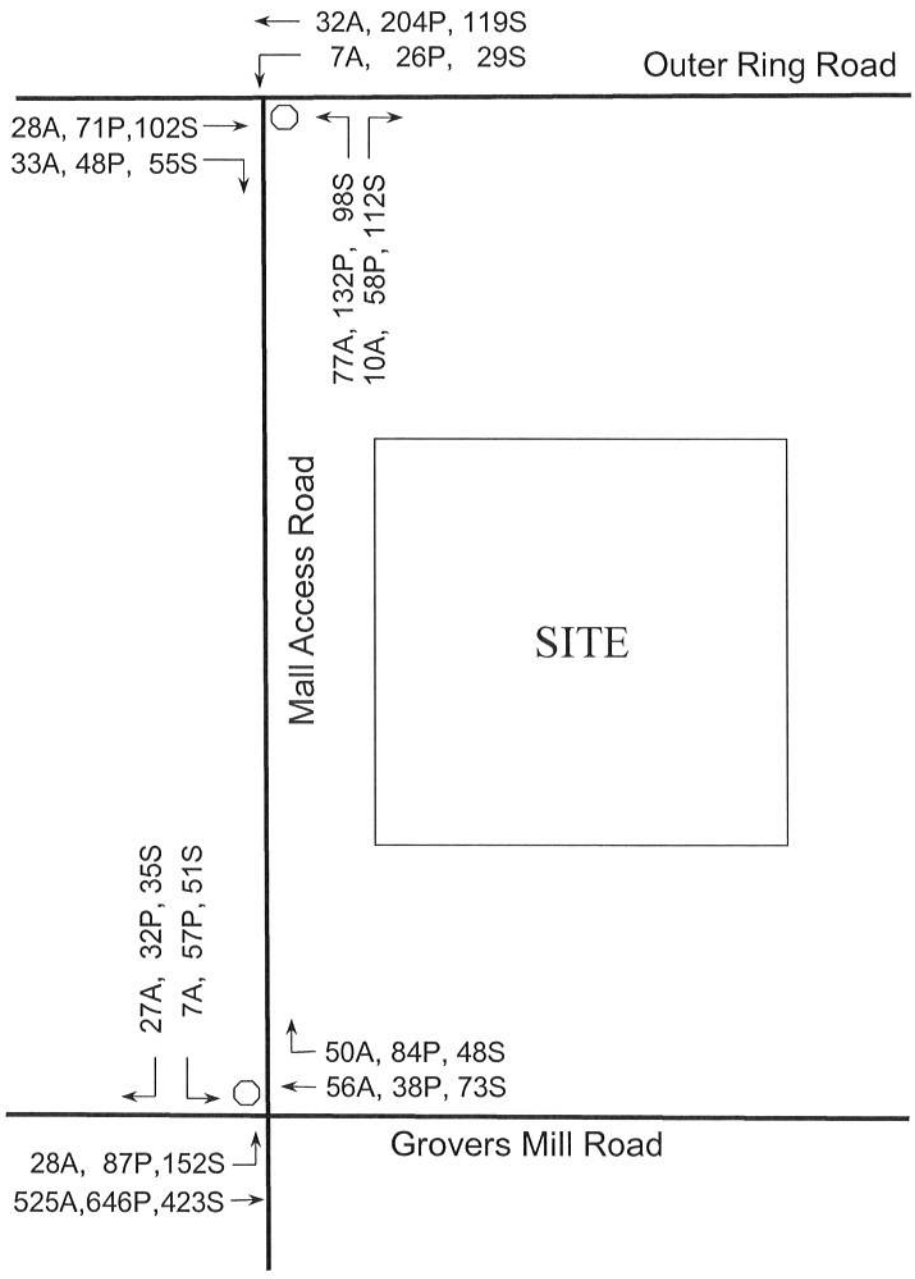
Site Generated Peak-Hour Traffic Without Outer Ring Road Access (2028)

Grovers Mill Road & Mall Access Road Lawrence, New Jersey

May, 2025

BE No. 21-210

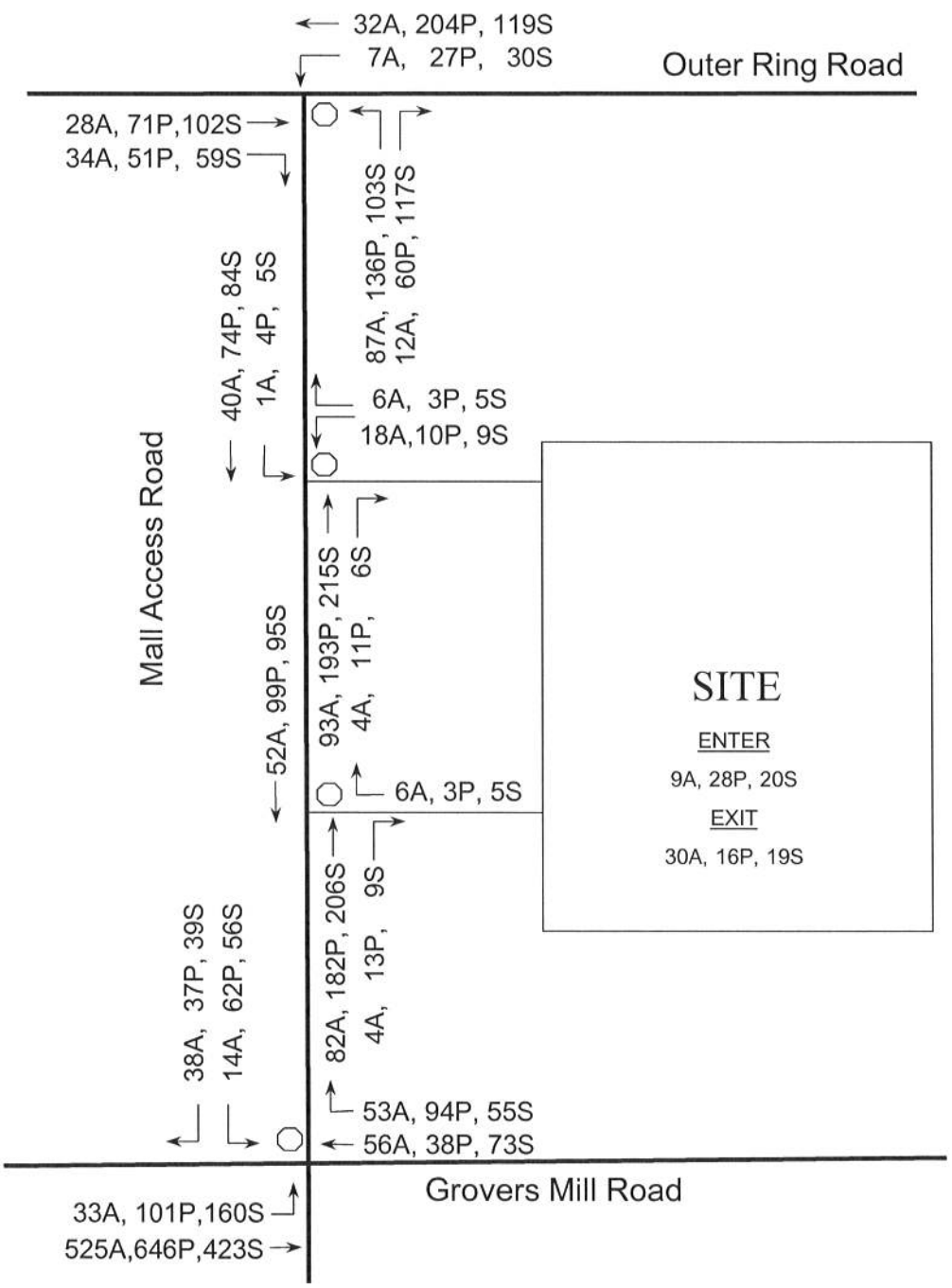
FIGURE 4B



LEGEND

12A = AM Peak-hour traffic
12P = PM Peak-hour traffic
12S = Saturday Peak-hour traffic
= Traffic Signal
= Stop Sign

BERTIN ENGINEERING 66 GLEN AVENUE GLEN ROCK, NJ 07452 (201) 670-6688	**No Build Year Peak-Hour Traffic (1% Increase) (2028)**	May, 2025
		BE No. 21-210
	Grovers Mill Road & Mall Access Road Lawrence, New Jersey	FIGURE 5



LEGEND

12A = AM Peak-hour traffic
12P = PM Peak-hour traffic
12S = Saturday Peak-hour traffic
= Traffic Signal
= Stop Sign

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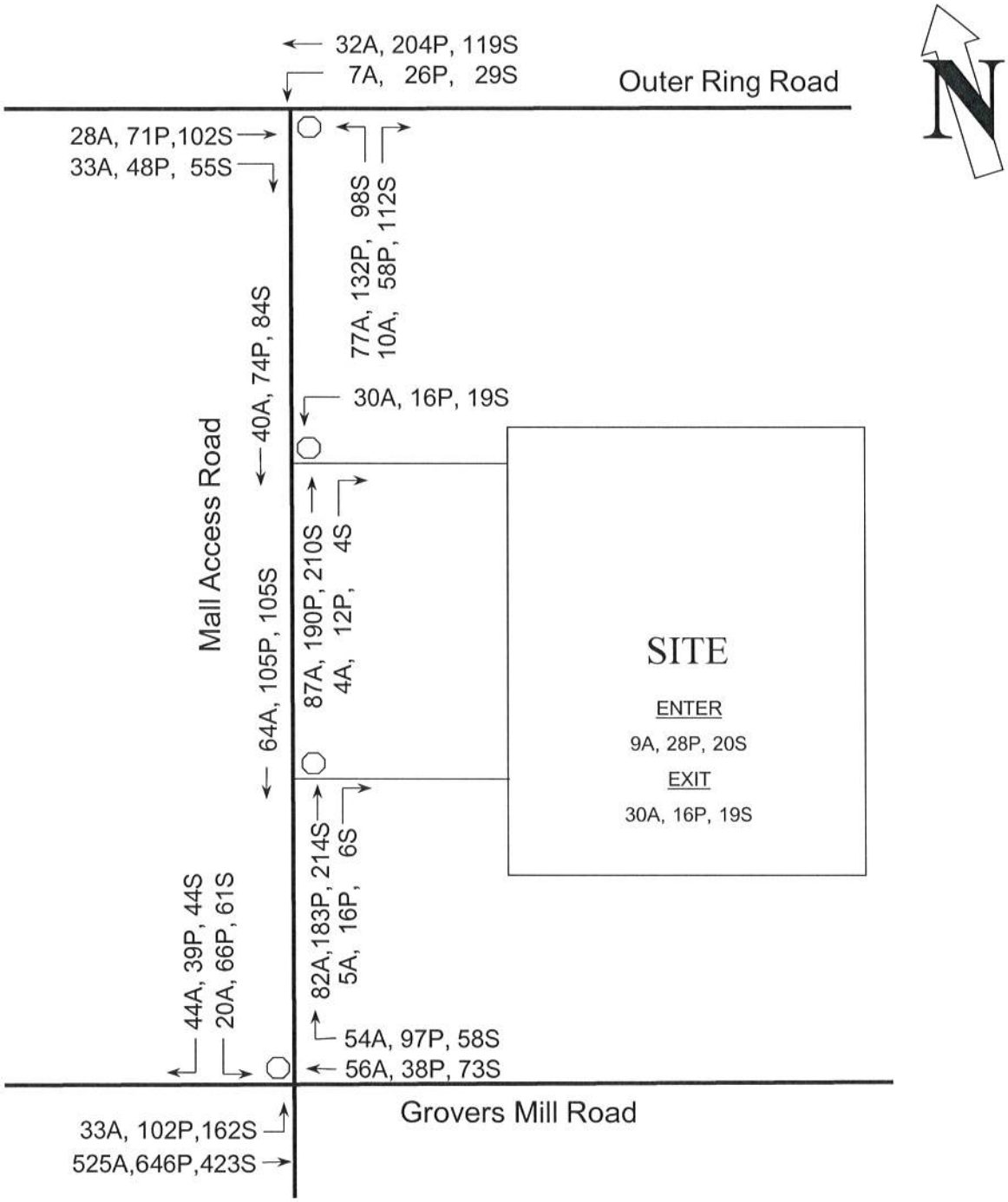
Build-Year Peak-Hour Traffic With Outer Ring Road Access (2028)

Grovers Mill Road & Mall Access Road Lawrence, New Jersey

May, 2025

BE No. 21-210

FIGURE 6A



LEGEND

12A = AM Peak-hour traffic
12P = PM Peak-hour traffic
12S = Saturday Peak-hour traffic
= Traffic Signal
= Stop Sign

BERTIN ENGINEERING 66 GLEN AVENUE GLEN ROCK, NJ 07452 (201) 670-6688	**Build-Year Peak-Hour Traffic Without Outer Ring Road Access (2028)**	May, 2025
		BE No. 21-210
	Grovers Mill Road & Mall Access Road Lawrence, New Jersey	FIGURE 6B

HCS Two-Way Stop-Control Report

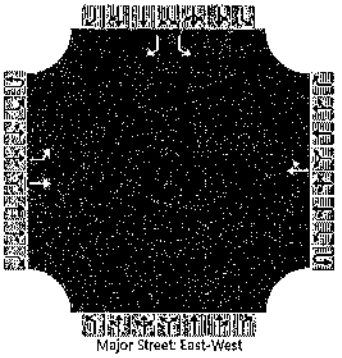
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2024
Time Analyzed	AM Existing
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Grovers Mill Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Grovers Mill Road
North/South Street	Mall Access Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		27	505				54	48						7		26
Percent Heavy Vehicles (%)		7												20		7
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.17												6.60		6.27
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.26												3.68		3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		28												7		27
Capacity, c (veh/h)		1451												391		963
v/c Ratio		0.02												0.02		0.03
95% Queue Length, Q_{95} (veh)		0.1												0.1		0.1
95% Queue Length, Q_{95} (ft)		2.6												2.9		2.6
Control Delay (s/veh)		7.5												14.4		8.8
Level of Service (LOS)		A												B		A
Approach Delay (s/veh)		0.4												10.0		
Approach LOS		A												B		

HCS Two-Way Stop-Control Report

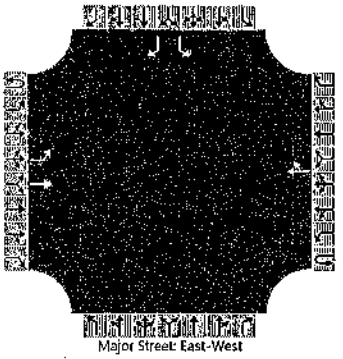
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	AM No-Build
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Grovers Mill Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Grovers Mill Road
North/South Street	Mall Access Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		28	525				56	50						7		27
Percent Heavy Vehicles (%)		7												20		7
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.17												6.60		6.27
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.26												3.68		3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		29												7		28
Capacity, c (veh/h)		1446												376		959
v/c Ratio		0.02												0.02		0.03
95% Queue Length, Q_{95} (veh)		0.1												0.1		0.1
95% Queue Length, Q_{95} (ft)		2.6												2.9		2.6
Control Delay (s/veh)		7.5												14.8		8.9
Level of Service (LOS)		A												B		A
Approach Delay (s/veh)	0.4												10.1			
Approach LOS	A												B			

HCS Two-Way Stop-Control Report

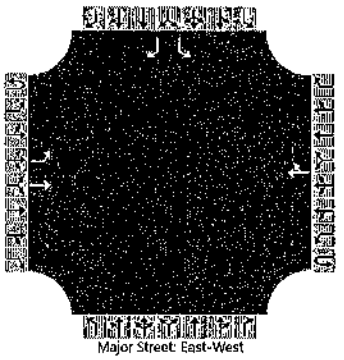
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	AM Build-Year - W O.R.R.
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Grovers Mill Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Grovers Mill Road
North/South Street	Mall Access Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		33	525				56	53						14		38
Percent Heavy Vehicles (%)		7												20		7
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.17												6.60		6.27
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.26												3.68		3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		34												15		40
Capacity, c (veh/h)		1443												369		957
v/c Ratio		0.02												0.04		0.04
95% Queue Length, Q_{95} (veh)		0.1												0.1		0.1
95% Queue Length, Q_{95} (ft)		2.6												2.9		2.6
Control Delay (s/veh)		7.6												15.2		8.9
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)		0.4												10.6		
Approach LOS		A												B		

HCS Two-Way Stop-Control Report

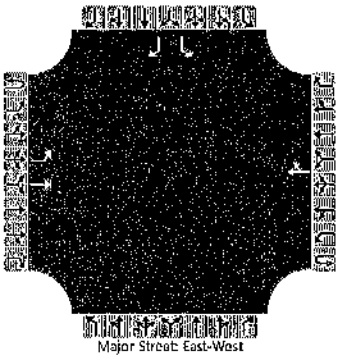
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	AM Build-Year - WO O.R.R.
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Grovers Mill Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Grovers Mill Road
North/South Street	Mall Access Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		33	525				56	54						20		44
Percent Heavy Vehicles (%)		7												20		7
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.17												6.60		6.27
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.26												3.68		3.36

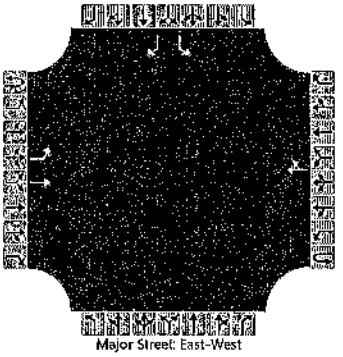
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		34												21		46
Capacity, c (veh/h)		1441												369		956
v/c Ratio		0.02												0.06		0.05
95% Queue Length, Q_{95} (veh)		0.1												0.2		0.2
95% Queue Length, Q_{95} (ft)		2.6												5.8		5.3
Control Delay (s/veh)		7.6												15.4		9.0
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)	0.4												11.0			
Approach LOS	A												B			

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Eric M. Hough	Intersection	Grovers Mill Road - Mall Access Road
Agency/Co.	Bertin Engineering	Jurisdiction	Lawrence
Date Performed	4-30-25	East/West Street	Grovers Mill Road
Analysis Year	2024	North/South Street	Mall Access Road
Time Analyzed	PM Existing	Peak Hour Factor	0.97
Intersection Orientation	East-West	Analysis Time Period (hrs)	1.00
Project Description	Proposed Residential - 21-210		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		84	621				36	81						55		31
Percent Heavy Vehicles (%)		2												0		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.40		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.50		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		87												57		32
Capacity, c (veh/h)		1467												296		979
v/c Ratio		0.06												0.19		0.03
95% Queue Length, Q_{95} (veh)		0.2												0.7		0.1
95% Queue Length, Q_{95} (ft)		5.1												17.5		2.6
Control Delay (s/veh)		7.6												20.0		8.8
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)		0.9												16.0		
Approach LOS		A												C		

HCS Two-Way Stop-Control Report

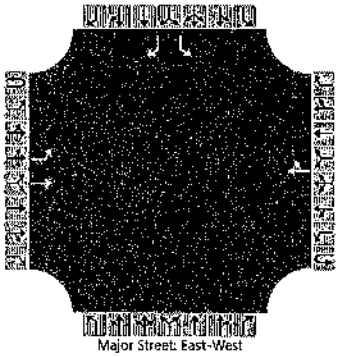
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	PM No-Build
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Grovers Mill Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Grovers Mill Road
North/South Street	Mall Access Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		87	646				38	84						57		32
Percent Heavy Vehicles (%)		2												0		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.40		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.50		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		90												59		33
Capacity, c (veh/h)		1461												282		974
v/c Ratio		0.06												0.21		0.03
95% Queue Length, Q_{95} (veh)		0.2												0.8		0.1
95% Queue Length, Q_{95} (ft)		5.1												20.0		2.6
Control Delay (s/veh)		7.6												21.1		8.8
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)	0.9												16.7			
Approach LOS	A												C			

HCS Two-Way Stop-Control Report

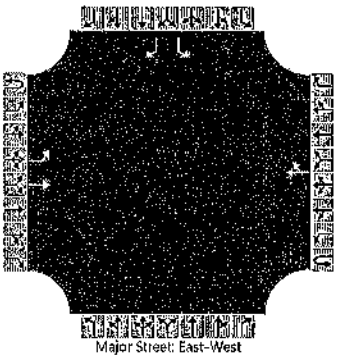
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	PM Build-Year - W O.R.R.
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Grovers Mill Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Grovers Mill Road
North/South Street	Mall Access Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		101	646				38	94						62		37
Percent Heavy Vehicles (%)		2												0		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.40		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.50		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		104												64		38
Capacity, c (veh/h)		1448												266		968
v/c Ratio		0.07												0.24		0.04
95% Queue Length, Q_{95} (veh)		0.2												0.9		0.1
95% Queue Length, Q_{95} (ft)		5.1												22.5		2.6
Control Delay (s/veh)		7.7												22.8		8.9
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)		1.0												17.6		
Approach LOS		A												C		

HCS Two-Way Stop-Control Report

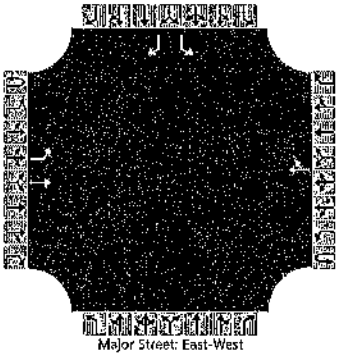
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	PM Build-Year - WO O.R.R.
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Grovers Mill Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Grovers Mill Road
North/South Street	Mall Access Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		102	646				38	97						66		39
Percent Heavy Vehicles (%)		2												0		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.40		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.50		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		105												68		40
Capacity, c (veh/h)		1444												264		966
v/c Ratio		0.07												0.26		0.04
95% Queue Length, Q_{95} (veh)		0.2												1.0		0.1
95% Queue Length, Q_{95} (ft)		5.1												25.0		2.6
Control Delay (s/veh)		7.7												23.3		8.9
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)		1.0												18.0		
Approach LOS		A												C		

HCS Two-Way Stop-Control Report

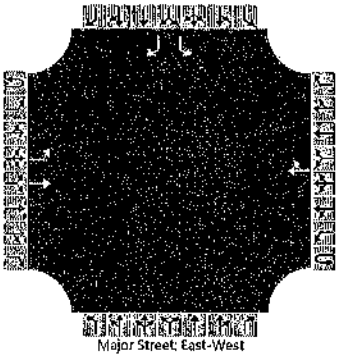
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2024
Time Analyzed	SAT Existing
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Grovers Mill Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Grovers Mill Road
North/South Street	Mall Access Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		146	407				70	46						49		34
Percent Heavy Vehicles (%)		2												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		162												54		38
Capacity, c (veh/h)		1454												284		955
v/c Ratio		0.11												0.19		0.04
95% Queue Length, Q_{95} (veh)		0.4												0.7		0.1
95% Queue Length, Q_{95} (ft)		10.2												17.5		2.5
Control Delay (s/veh)		7.8												20.7		8.9
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)	2.1												15.9			
Approach LOS	A												C			

HCS Two-Way Stop-Control Report

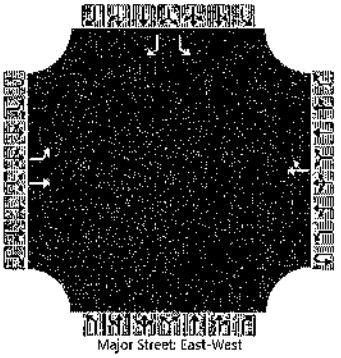
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	SAT No-Build
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Grovers Mill Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Grovers Mill Road
North/South Street	Mall Access Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		152	423				73	48						51		35
Percent Heavy Vehicles (%)		2												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		169												57		39
Capacity, c (veh/h)		1447												269		949
v/c Ratio		0.12												0.21		0.04
95% Queue Length, Q_{95} (veh)		0.4												0.8		0.1
95% Queue Length, Q_{95} (ft)		10.2												20.0		2.5
Control Delay (s/veh)		7.8												22.0		9.0
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)		2.1												16.7		
Approach LOS		A												C		

HCS Two-Way Stop-Control Report

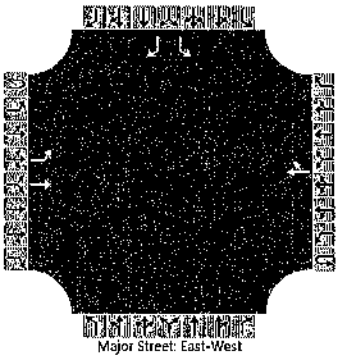
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	SAT Build-Year - W O.R.R.
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Grovers Mill Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Grovers Mill Road
North/South Street	Mall Access Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		160	423				73	55						56		39
Percent Heavy Vehicles (%)		2												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		178												62		43
Capacity, c (veh/h)		1438												259		945
v/c Ratio		0.12												0.24		0.05
95% Queue Length, Q_{95} (veh)		0.4												0.9		0.1
95% Queue Length, Q_{95} (ft)		10.2												22.5		2.5
Control Delay (s/veh)		7.9												23.3		9.0
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)	2.2												17.4			
Approach LOS	A												C			

HCS Two-Way Stop-Control Report

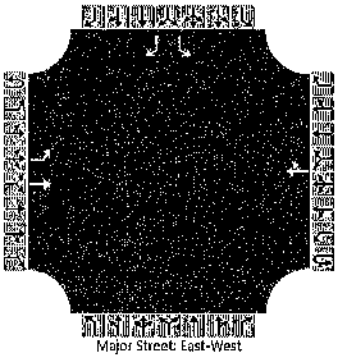
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	SAT Build-Year - WO O,R,R
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Grovers Mill Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Grovers Mill Road
North/South Street	Mall Access Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		162	423				73	58						61		44
Percent Heavy Vehicles (%)		2												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		180												68		49
Capacity, c (veh/h)		1434												256		943
v/c Ratio		0.13												0.26		0.05
95% Queue Length, Q_{95} (veh)		0.4												1.1		0.2
95% Queue Length, Q_{95} (ft)		10.2												27.5		5.0
Control Delay (s/veh)		7.9												24.1		9.0
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)		2.2												17.8		
Approach LOS		A												C		

HCS Two-Way Stop-Control Report

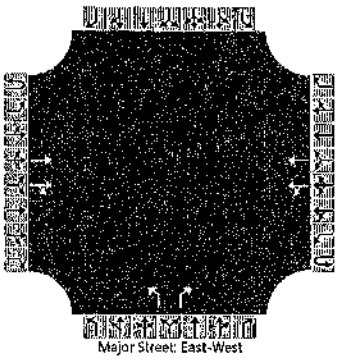
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2024
Time Analyzed	AM Existing
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Outer Ring Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Outer Ring Road
North/South Street	Mall Access Road
Peak Hour Factor	0.94
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		1	0	1		0	0	0
Configuration			T	TR		LT	T			L		R				
Volume (veh/h)			27	32		7	31			74		10				
Percent Heavy Vehicles (%)						30				4		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.70				6.88		6.90				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.50				3.54		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						7				79		11				
Capacity, c (veh/h)						1356				906		1042				
v/c Ratio						0.01				0.09		0.01				
95% Queue Length, Q_{95} (veh)						0.0				0.3		0.0				
95% Queue Length, Q_{95} (ft)						0.0				7.7		0.0				
Control Delay (s/veh)						7.7	0.0			9.4		8.5				
Level of Service (LOS)						A	A			A		A				
Approach Delay (s/veh)						1.4				9.2						
Approach LOS						A				A						

HCS Two-Way Stop-Control Report

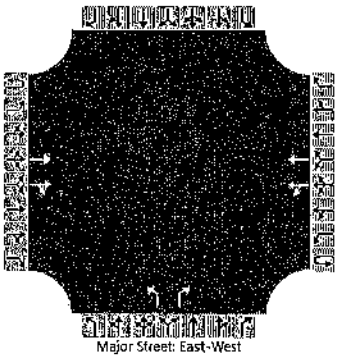
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	AM No-Build
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Outer Ring Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Outer Ring Road
North/South Street	Mall Access Road
Peak Hour Factor	0.94
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		1	0	1		0	0	0
Configuration			T	TR		LT	T			L		R				
Volume (veh/h)			28	33		7	32			77		10				
Percent Heavy Vehicles (%)						30				4		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.70				6.88		6.90				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.50				3.54		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						7				82		11				
Capacity, c (veh/h)						1353				903		1040				
v/c Ratio						0.01				0.09		0.01				
95% Queue Length, Q_{95} (veh)						0.0				0.3		0.0				
95% Queue Length, Q_{95} (ft)						0.0				7.7		0.0				
Control Delay (s/veh)						7.7	0.0			9.4		8.5				
Level of Service (LOS)						A	A			A		A				
Approach Delay (s/veh)					1.4				9.3							
Approach LOS					A				A							

HCS Two-Way Stop-Control Report

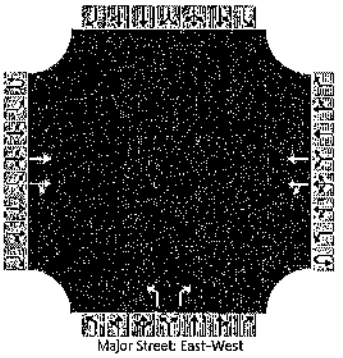
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	AM Build-Year
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Outer Ring Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Outer Ring Road
North/South Street	Mall Access Road
Peak Hour Factor	0.94
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		1	0	1		0	0	0
Configuration			T	TR		LT	T			L		R				
Volume (veh/h)			28	34		7	32			87		12				
Percent Heavy Vehicles (%)						30				4		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.70				6.88		6.90				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.50				3.54		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						7				93		13				
Capacity, c (veh/h)						1352				903		1040				
v/c Ratio						0.01				0.10		0.01				
95% Queue Length, Q_{95} (veh)						0.0				0.3		0.0				
95% Queue Length, Q_{95} (ft)						0.0				7.7		0.0				
Control Delay (s/veh)						7.7	0.0			9.4		8.5				
Level of Service (LOS)						A	A			A		A				
Approach Delay (s/veh)					1.4				9.3							
Approach LOS					A				A							

HCS Two-Way Stop-Control Report

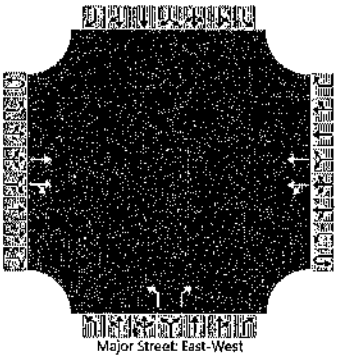
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2024
Time Analyzed	PM Existing
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Outer Ring Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Outer Ring Road
North/South Street	Mall Access Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		1	0	1		0	0	0
Configuration			T	TR		LT	T			L		R				
Volume (veh/h)			68	46		25	196			127		56				
Percent Heavy Vehicles (%)						4				1		9				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.18				6.82		7.08				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.24				3.51		3.39				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						28				141		62				
Capacity, c (veh/h)						1443				689		966				
v/c Ratio						0.02				0.20		0.06				
95% Queue Length, Q_{95} (veh)						0.1				0.8		0.2				
95% Queue Length, Q_{95} (ft)						2.6				20.2		5.4				
Control Delay (s/veh)						7.5	0.1			11.6		9.0				
Level of Service (LOS)						A	A			B		A				
Approach Delay (s/veh)					1.0				10.8							
Approach LOS					A				B							

HCS Two-Way Stop-Control Report

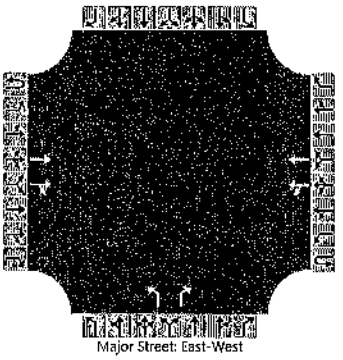
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	PM No-Build
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Outer Ring Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Outer Ring Road
North/South Street	Mall Access Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		1	0	1		0	0	0
Configuration			T	TR		LT	T			L		R				
Volume (veh/h)			71	48		26	204			132		58				
Percent Heavy Vehicles (%)						4				1		9				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.18				6.82		7.08				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.24				3.51		3.39				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						29				147		64				
Capacity, c (veh/h)						1436				678		962				
v/c Ratio						0.02				0.22		0.07				
95% Queue Length, Q_{95} (veh)						0.1				0.8		0.2				
95% Queue Length, Q_{95} (ft)						2.6				20.2		5.4				
Control Delay (s/veh)						7.6	0.1			11.8		9.0				
Level of Service (LOS)						A	A			B		A				
Approach Delay (s/veh)						1.0				10.9						
Approach LOS						A				B						

HCS Two-Way Stop-Control Report

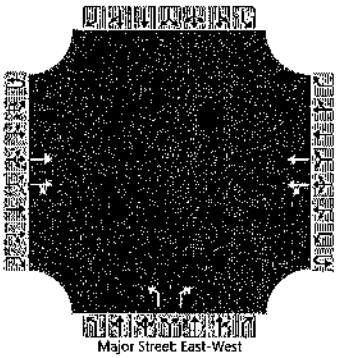
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	PM Build-Year
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Outer Ring Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Outer Ring Road
North/South Street	Mall Access Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		1	0	1		0	0	0
Configuration			T	TR		LT	T			L		R				
Volume (veh/h)			71	51		27	204			136		60				
Percent Heavy Vehicles (%)						4				1		9				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.18				6.82		7.08				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.24				3.51		3.39				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						30				151		67				
Capacity, c (veh/h)						1432				674		959				
v/c Ratio						0.02				0.22		0.07				
95% Queue Length, Q_{95} (veh)						0.1				0.9		0.2				
95% Queue Length, Q_{95} (ft)						2.6				22.7		5.4				
Control Delay (s/veh)						7.6	0.1			11.9		9.0				
Level of Service (LOS)						A	A			B		A				
Approach Delay (s/veh)					1.0				11.0							
Approach LOS					A				B							

HCS Two-Way Stop-Control Report

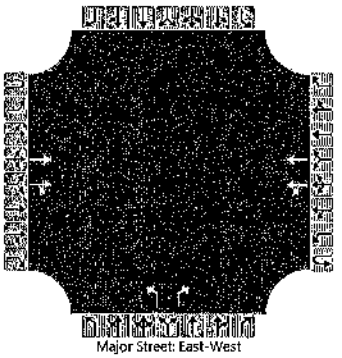
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2024
Time Analyzed	SAT Existing
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Outer Ring Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Outer Ring Road
North/South Street	Mall Access Road
Peak Hour Factor	0.83
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		1	0	1		0	0	0
Configuration			T	TR		LT	T			L		R				
Volume (veh/h)			98	53		28	114			94		108				
Percent Heavy Vehicles (%)						0				0		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.10				6.80		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						34				113		130				
Capacity, c (veh/h)						1405				669		949				
v/c Ratio						0.02				0.17		0.14				
95% Queue Length, Q_{95} (veh)						0.1				0.6		0.5				
95% Queue Length, Q_{95} (ft)						2.5				15.0		12.7				
Control Delay (s/veh)						7.6	0.1			11.5		9.4				
Level of Service (LOS)						A	A			B		A				
Approach Delay (s/veh)					1.6				10.4							
Approach LOS					A				B							

HCS Two-Way Stop-Control Report

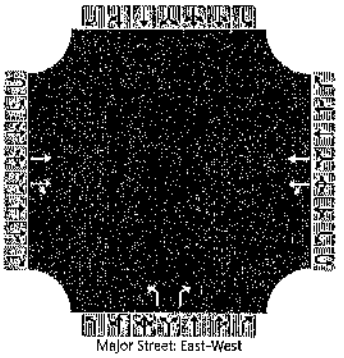
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	SAT No-Build
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Outer Ring Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Outer Ring Road
North/South Street	Mall Access Road
Peak Hour Factor	0.83
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		1	0	1		0	0	0
Configuration			T	TR		LT	T			L		R				
Volume (veh/h)			102	55		29	119			98		112				
Percent Heavy Vehicles (%)						0				0		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.10				6.80		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						35				118		135				
Capacity, c (veh/h)						1397				658		944				
v/c Ratio						0.03				0.18		0.14				
95% Queue Length, Q_{95} (veh)						0.1				0.7		0.5				
95% Queue Length, Q_{95} (ft)						2.5				17.5		12.7				
Control Delay (s/veh)						7.6	0.1			11.7		9.5				
Level of Service (LOS)						A	A			B		A				
Approach Delay (s/veh)					1.6				10.5							
Approach LOS					A				B							

HCS Two-Way Stop-Control Report

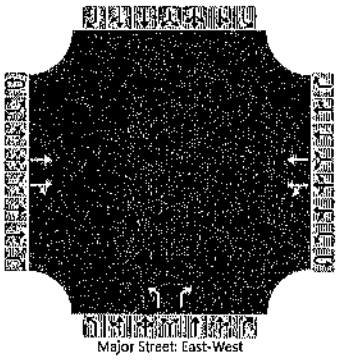
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	SAT Build Year
Intersection Orientation	East-West
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Outer Ring Road - Mall Access Road
Jurisdiction	Lawrence
East/West Street	Outer Ring Road
North/South Street	Mall Access Road
Peak Hour Factor	0.83
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		1	0	1		0	0	0
Configuration			T	TR		LT	T			L		R				
Volume (veh/h)			102	59		30	119			103		117				
Percent Heavy Vehicles (%)						0				0		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.10				6.80		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						36				124		141				
Capacity, c (veh/h)						1391				652		940				
v/c Ratio						0.03				0.19		0.15				
95% Queue Length, Q_{95} (veh)						0.1				0.7		0.5				
95% Queue Length, Q_{95} (ft)						2.5				17.5		12.7				
Control Delay (s/veh)						7.7	0.1			11.8		9.5				
Level of Service (LOS)						A	A			B		A				
Approach Delay (s/veh)					1.7				10.6							
Approach LOS					A				B							

HCS Two-Way Stop-Control Report

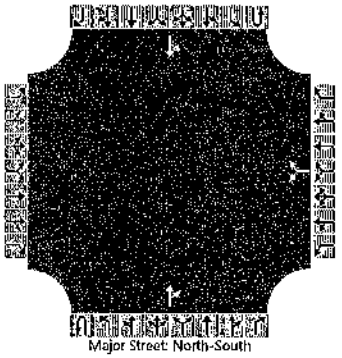
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	AM Build-Year - W O.R.R.
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Northern Site Driveway
Jurisdiction	Lawrence
East/West Street	Northern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.94
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						18		6			93	4		1	40	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							26							1		
Capacity, c (veh/h)							876							1501		
v/c Ratio							0.03							0.00		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
95% Queue Length, Q_{95} (ft)							2.5							0.0		
Control Delay (s/veh)							9.2							7.4	0.0	
Level of Service (LOS)							A							A	A	
Approach Delay (s/veh)					9.2								0.2			
Approach LOS					A								A			

HCS Two-Way Stop-Control Report

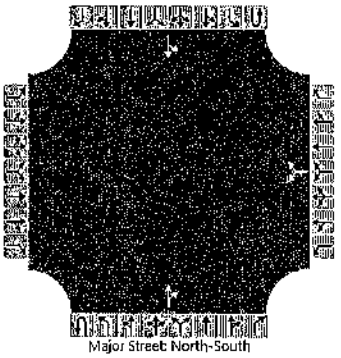
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	AM Build-Year - WO O.R.R.
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Northern Site Driveway
Jurisdiction	Lawrence
East/West Street	Northern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.94
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						30		0			87	4		0	40	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							32							0		
Capacity, c (veh/h)							861							1509		
v/c Ratio							0.04							0.00		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
95% Queue Length, Q_{95} (ft)							2.5							0.0		
Control Delay (s/veh)							9.3							7.4	0.0	
Level of Service (LOS)							A							A	A	
Approach Delay (s/veh)						9.3								0.0		
Approach LOS						A								A		

HCS Two-Way Stop-Control Report

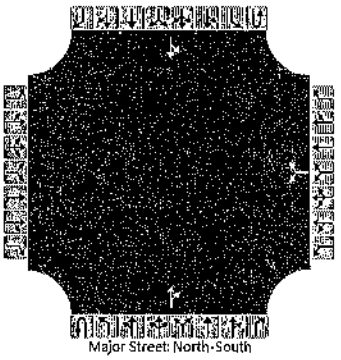
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	11/28/2023
Analysis Year	2028
Time Analyzed	PM Build-Year - W O.R.R.
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Northern Site Driveway
Jurisdiction	Lawrence
East/West Street	Northern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						10		3			193	11		4	74	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							14							4		
Capacity, c (veh/h)							711							1354		
v/c Ratio							0.02							0.00		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
95% Queue Length, Q_{95} (ft)							2.5							0.0		
Control Delay (s/veh)							10.2							7.7	0.0	
Level of Service (LOS)							B							A	A	
Approach Delay (s/veh)					10.2								0.4			
Approach LOS					B								A			

HCS Two-Way Stop-Control Report

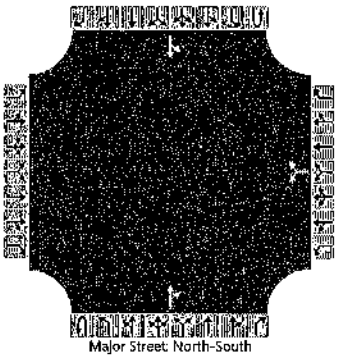
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	11/28/2023
Analysis Year	2028
Time Analyzed	PM Build-Year - WO O.R.R.
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Northern Site Driveway
Jurisdiction	Lawrence
East/West Street	Northern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						16		0			190	12		0	74	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							18							0		
Capacity, c (veh/h)							696							1356		
v/c Ratio							0.03							0.00		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
95% Queue Length, Q_{95} (ft)							2.5							0.0		
Control Delay (s/veh)							10.3							7.7	0.0	
Level of Service (LOS)							B							A	A	
Approach Delay (s/veh)						10.3								0.0		
Approach LOS						B								A		

HCS Two-Way Stop-Control Report

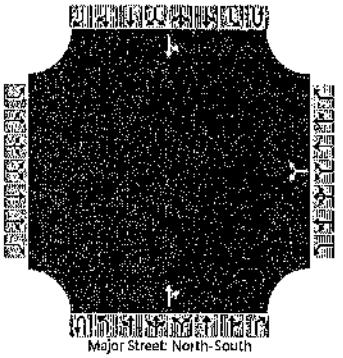
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	11/28/2023
Analysis Year	2028
Time Analyzed	SAT Build-Year - W O.R.R.
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Northern Site Driveway
Jurisdiction	Lawrence
East/West Street	Northern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.83
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						9		5			215	6		5	84	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							17							6		
Capacity, c (veh/h)							674							1309		
v/c Ratio							0.03							0.00		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
95% Queue Length, Q_{95} (ft)							2.5							0.0		
Control Delay (s/veh)							10.5							7.8	0.0	
Level of Service (LOS)							B							A	A	
Approach Delay (s/veh)						10.5								0.5		
Approach LOS						B								A		

HCS Two-Way Stop-Control Report

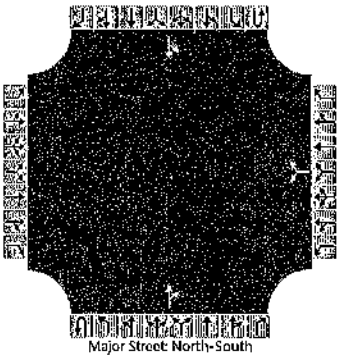
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	11/28/2023
Analysis Year	2028
Time Analyzed	SAT Build-Year-WO O.R.R.
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Northern Site Driveway
Jurisdiction	Lawrence
East/West Street	Northern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.83
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						19		0			210	4		0	84	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							23							0		
Capacity, c (veh/h)							646							1319		
v/c Ratio							0.04							0.00		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
95% Queue Length, Q_{95} (ft)							2.5							0.0		
Control Delay (s/veh)							10.8							7.7	0.0	
Level of Service (LOS)							B							A	A	
Approach Delay (s/veh)						10.8								0.0		
Approach LOS						B								A		

HCS Two-Way Stop-Control Report

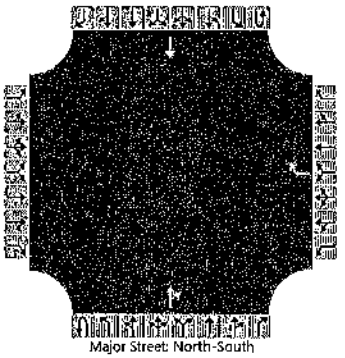
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	AM Build-Year - W O.R.R.
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Southern Site Driveway
Jurisdiction	Lawrence
East/West Street	Southern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	1	0	0	0	1	0
Configuration								R				TR			T	
Volume (veh/h)								6			82	4			52	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)								6.2								
Critical Headway (sec)								6.20								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.30								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								6								
Capacity, c (veh/h)								976								
v/c Ratio								0.01								
95% Queue Length, Q_{95} (veh)								0.0								
95% Queue Length, Q_{95} (ft)								0.0								
Control Delay (s/veh)								8.7								
Level of Service (LOS)								A								
Approach Delay (s/veh)						8.7										
Approach LOS						A										

HCS Two-Way Stop-Control Report

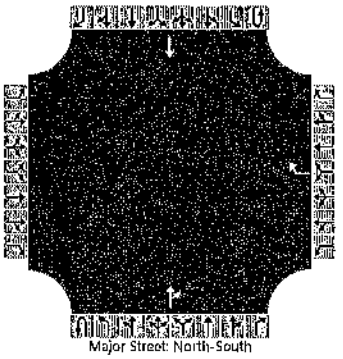
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	4-30-25
Analysis Year	2028
Time Analyzed	AM Build-Year - WO O.R.R.
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Southern Site Driveway
Jurisdiction	Lawrence
East/West Street	Southern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	1	0	0	0	1	0
Configuration								R				TR			T	
Volume (veh/h)								0			82	5			64	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)								6.2								
Critical Headway (sec)								6.20								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.30								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								0								
Capacity, c (veh/h)								976								
v/c Ratio								0.00								
95% Queue Length, Q_{95} (veh)								0.0								
95% Queue Length, Q_{95} (ft)								0.0								
Control Delay (s/veh)								8.7								
Level of Service (LOS)								A								
Approach Delay (s/veh)																
Approach LOS																

HCS Two-Way Stop-Control Report

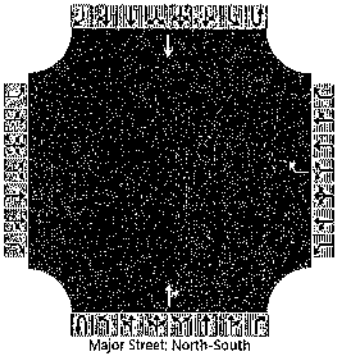
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	11/28/2023
Analysis Year	2028
Time Analyzed	PM Build-Year - W O.R.R
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Southern Site Driveway
Jurisdiction	Lawrence
East/West Street	Southern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	1	0	0	0	1	0
Configuration								R				TR			T	
Volume (veh/h)								3			182	13			99	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)								6.2								
Critical Headway (sec)								6.20								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.30								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								3								
Capacity, c (veh/h)								852								
v/c Ratio								0.00								
95% Queue Length, Q_{95} (veh)								0.0								
95% Queue Length, Q_{95} (ft)								0.0								
Control Delay (s/veh)								9.2								
Level of Service (LOS)								A								
Approach Delay (s/veh)						9.2										
Approach LOS						A										

HCS Two-Way Stop-Control Report

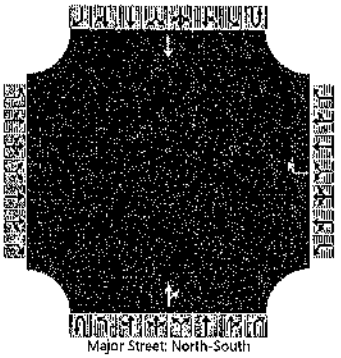
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	11/28/2023
Analysis Year	2028
Time Analyzed	PM Build-Year - WO O.R.R
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Southern Site Driveway
Jurisdiction	Lawrence
East/West Street	Southern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	1	0	0	0	1	0
Configuration								R				TR			T	
Volume (veh/h)								0			183	16			105	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)								6.2								
Critical Headway (sec)								6.20								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.30								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								0								
Capacity, c (veh/h)								849								
v/c Ratio								0.00								
95% Queue Length, Q_{95} (veh)								0.0								
95% Queue Length, Q_{95} (ft)								0.0								
Control Delay (s/veh)								9.2								
Level of Service (LOS)								A								
Approach Delay (s/veh)																
Approach LOS																

HCS Two-Way Stop-Control Report

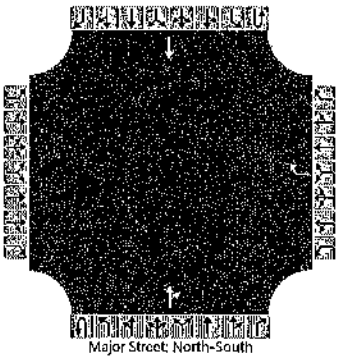
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	11/28/2023
Analysis Year	2028
Time Analyzed	SAT Build-Year - W O,R,R
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Southern Site Driveway
Jurisdiction	Lawrence
East/West Street	Southern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	1	0	0	0	1	0
Configuration								R				TR			T	
Volume (veh/h)								5			206	9			95	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)								6.2								
Critical Headway (sec)								6.20								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.30								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								6								
Capacity, c (veh/h)								810								
v/c Ratio								0.01								
95% Queue Length, Q_{95} (veh)								0.0								
95% Queue Length, Q_{95} (ft)								0.0								
Control Delay (s/veh)								9.5								
Level of Service (LOS)								A								
Approach Delay (s/veh)						9.5										
Approach LOS						A										

HCS Two-Way Stop-Control Report

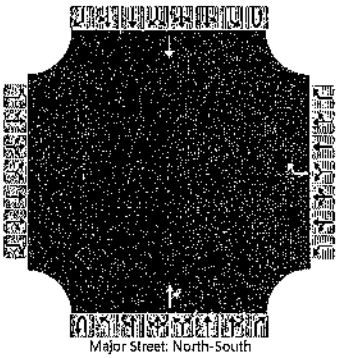
General Information

Analyst	Eric M. Hough
Agency/Co.	Bertin Engineering
Date Performed	11/28/2023
Analysis Year	2028
Time Analyzed	SAT Build-Year - WO O.R.R
Intersection Orientation	North-South
Project Description	Proposed Residential - 21-210

Site Information

Intersection	Mall Access Road - Southern Site Driveway
Jurisdiction	Lawrence
East/West Street	Southern Site Driveway
North/South Street	Mall Access Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	1	0	0	0	1	0
Configuration								R				TR			T	
Volume (veh/h)								0			214	6			105	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)								6.2								
Critical Headway (sec)								6.20								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.30								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								0								
Capacity, c (veh/h)								803								
v/c Ratio								0.00								
95% Queue Length, Q_{95} (veh)								0.0								
95% Queue Length, Q_{95} (ft)								0.0								
Control Delay (s/veh)								9.5								
Level of Service (LOS)								A								
Approach Delay (s/veh)																
Approach LOS																

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

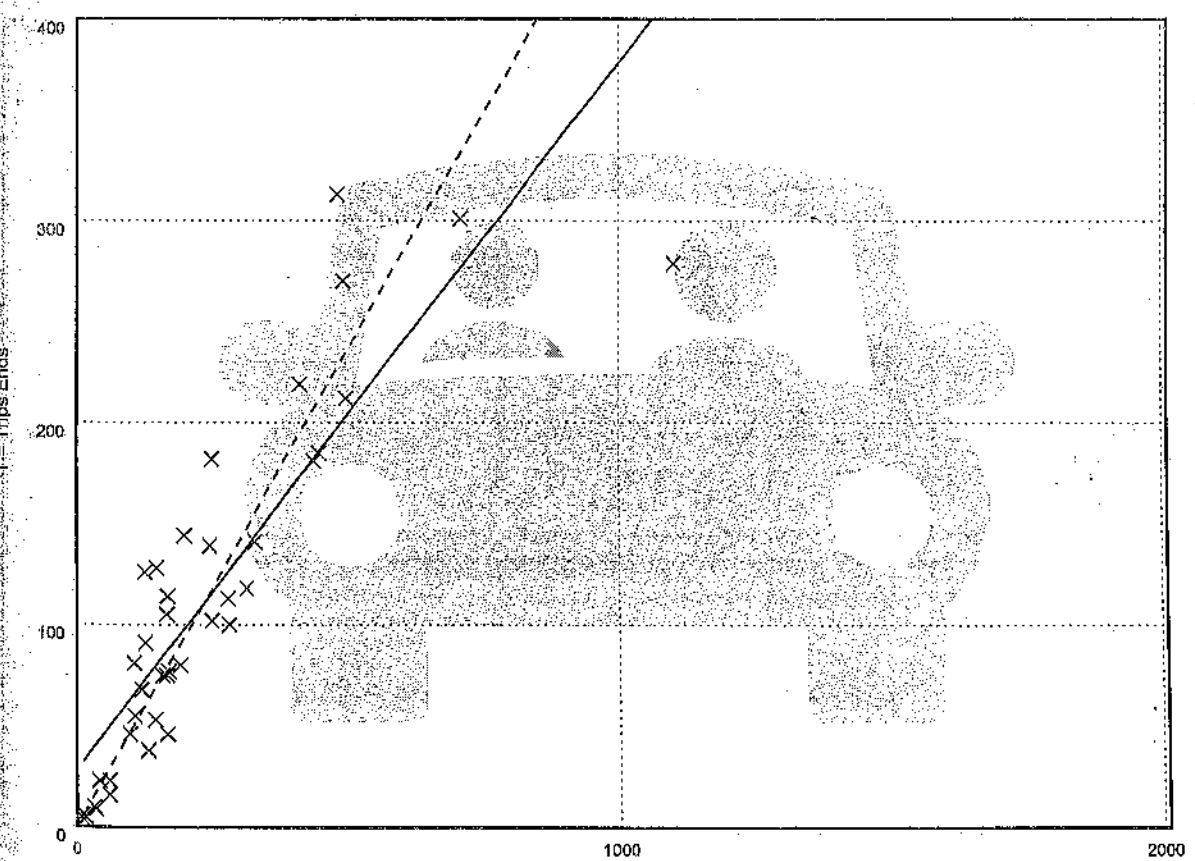
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 40
Avg. Num. of Dwelling Units: 234
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.47	0.25 - 0.98	0.16

Data Plot and Equation



Fitted Curve Equation: T = 0.35(X) + 28.13

R^2= 0.76

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

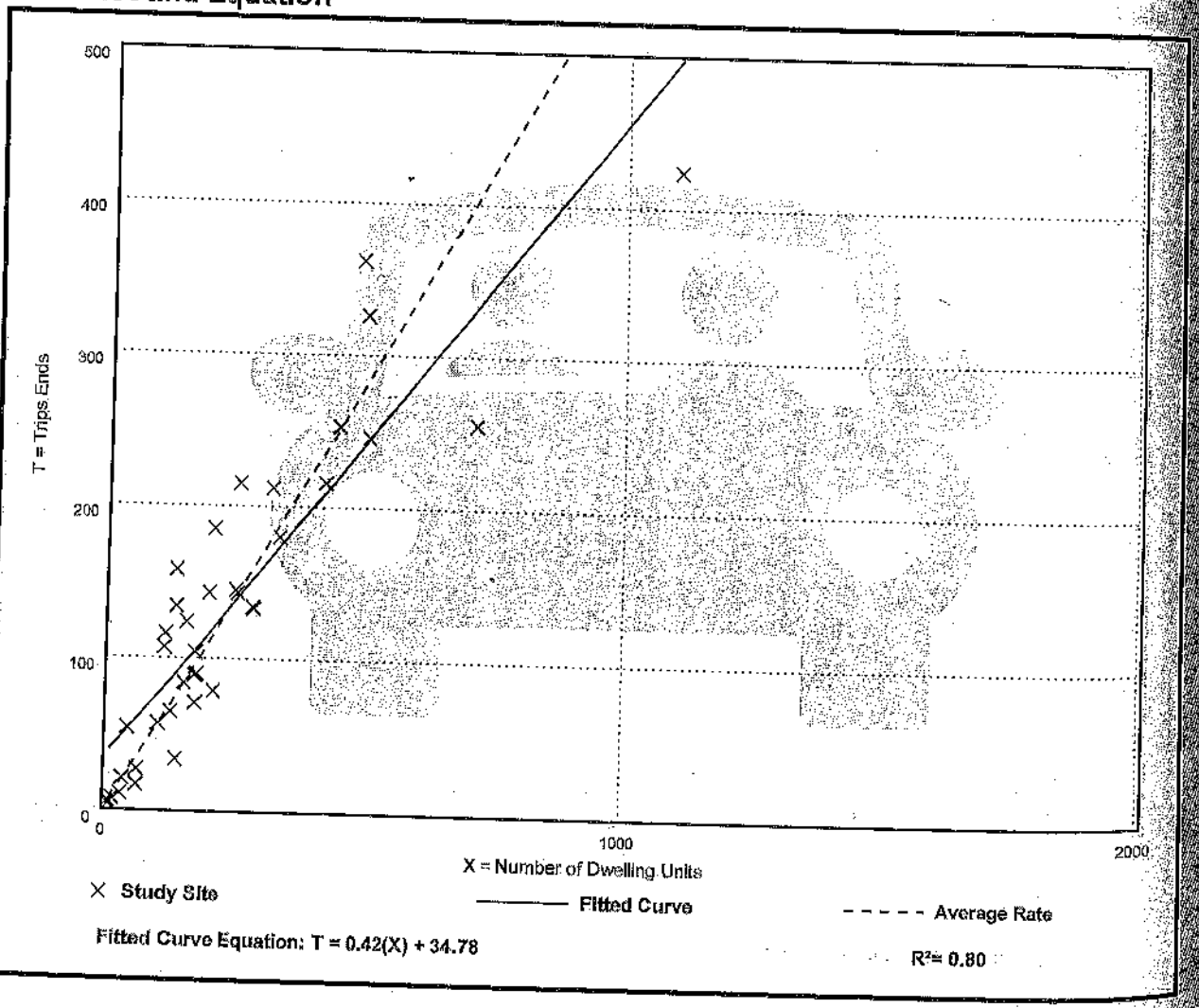
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 38
Avg. Num. of Dwelling Units: 231
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.25 - 1.26	0.20

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

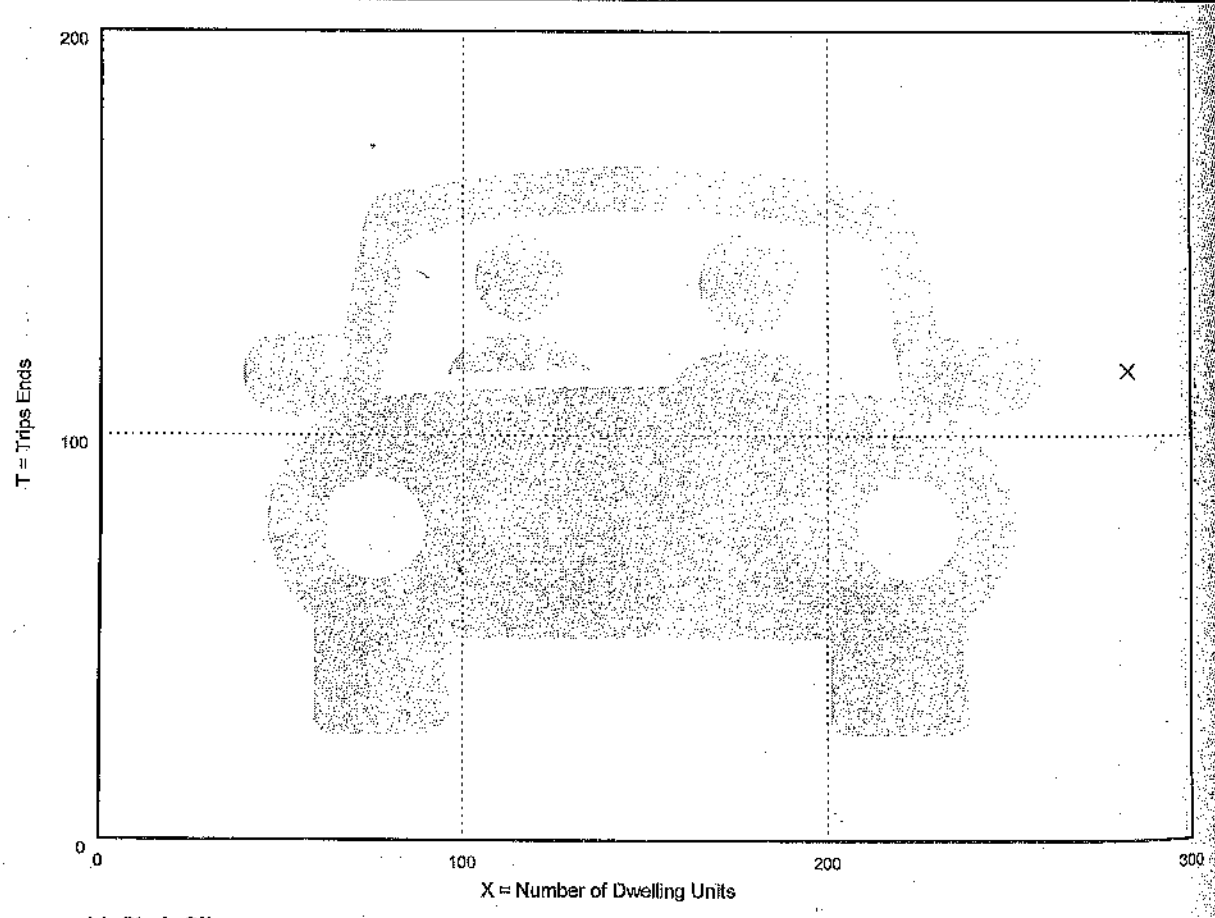
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Dwelling Units: 282
Directional Distribution: Not Available

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



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

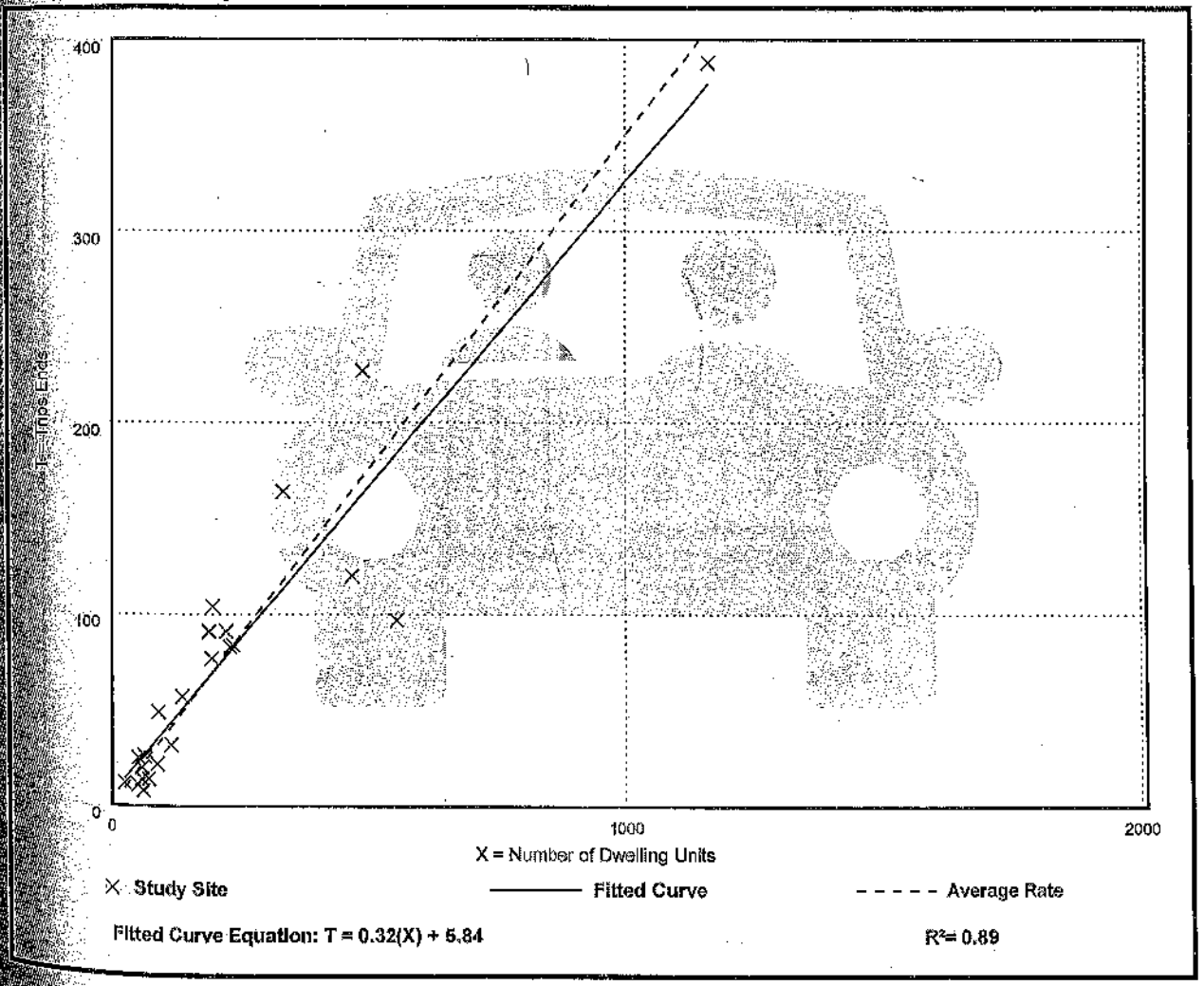
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 23
Avg. Num. of Dwelling Units: 226
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.35	0.13 - 0.53	0.11

Data Plot and Equation



Fitted Curve Equation: T = 0.32(X) + 5.84

R^2= 0.89

Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

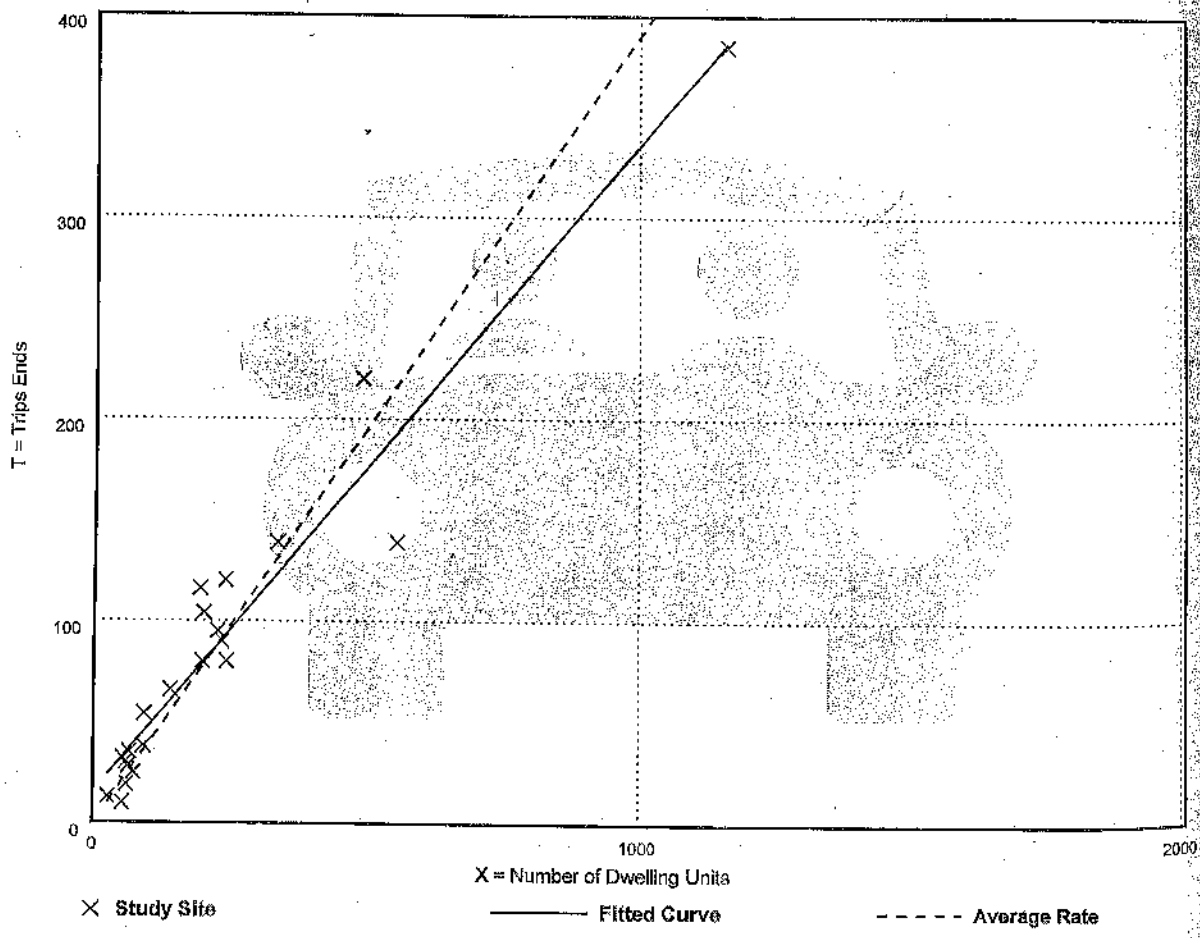
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. Num. of Dwelling Units: 221
Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.60	0.10

Data Plot and Equation



Fitted Curve Equation: T = 0.32(X) + 15.57

R^2= 0.93

Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

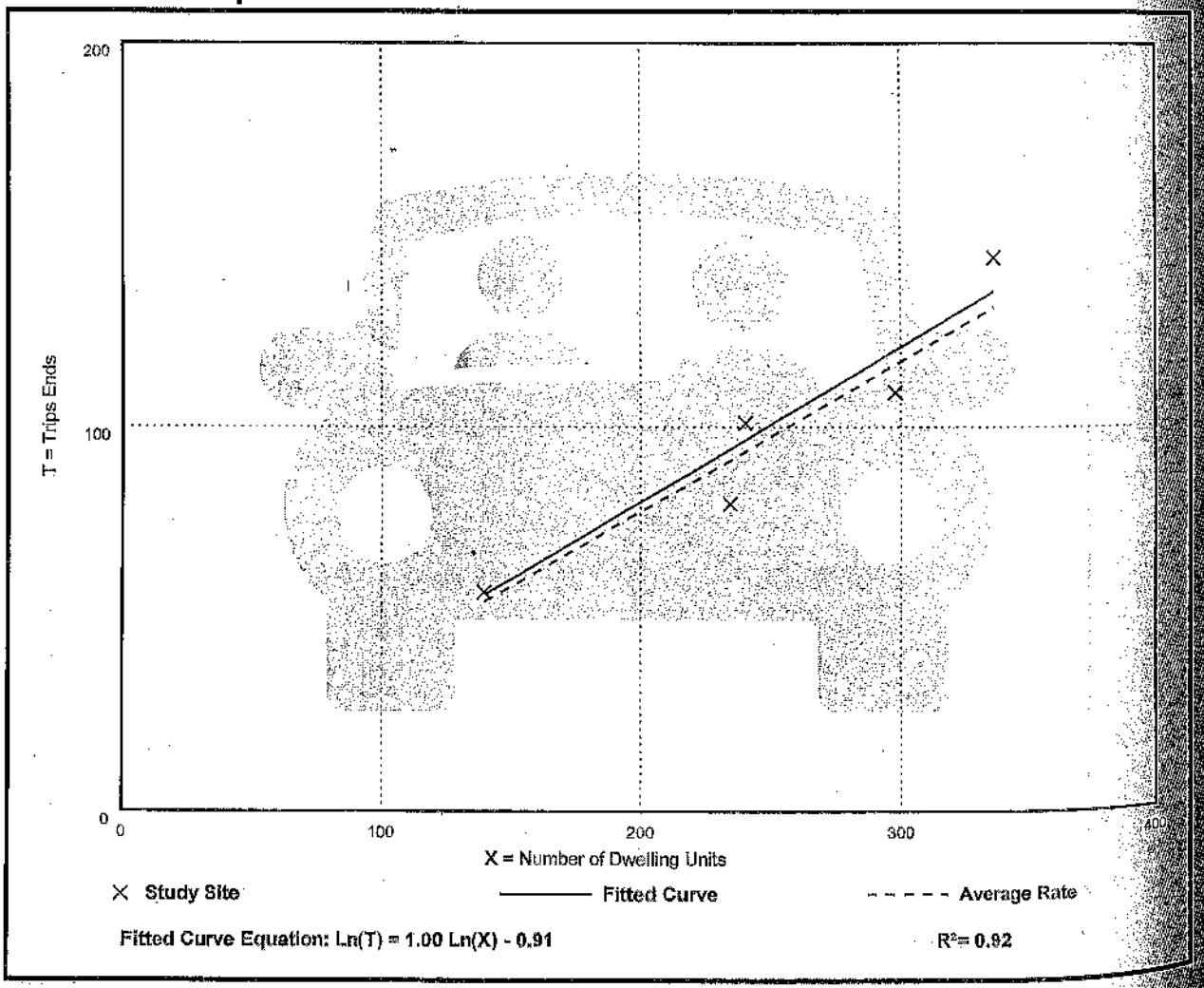
Vehicle Trip Ends vs: Dwelling Units
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. Num. of Dwelling Units: 250
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.34 - 0.43	0.04

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 1.00 Ln(X) - 0.91

R^2= 0.92

Prepared by National Data & Surveying Services

Mall Access Rd/WPRB-FM Princeton Dwy & Grovers Mill Rd

Peak Hour Turning Movement Count

ID: 24-340173-002
City: Lawrence Township

Day: Thursday
Date: 12/12/2024

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	4:00 PM - 06:00 PM

SOUTHBOUND — Mall Access Rd/WPRB-FM Princeton Dwy

	Right	Thru	Left	U-Turn	Exiting
AM	26	0	7	0	75
NOON	0	0	0	0	0
PM	31	0	55	0	165
Lanes	1	0	1	0	

WESTBOUND — Grovers Mill Rd

	Lanes	PM	NOON	AM
Right	0.5	81	0	48
Thru	0.5	36	0	54
Left	0	0	0	0
U-Turn	0	0	0	0
Exiting		676	0	512

EASTBOUND — Grovers Mill Rd

	AM	NOON	PM	Lanes
Exiting	80	0	67	
U-Turn	0	0	0	0
Left	27	0	84	1
Thru	505	0	621	1
Right	0	0	0	0

NORTHBOUND — Mall Access Rd/WPRB-FM Princeton Dwy

	Exiting	U-Turn	Left	Thru	Right
Lanes		0	0	1	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

1-Way Stop(SB)

	AM	NOON	PM
TEV	667	0	908
PHF	0.96		0.97

Cars and Heavy Trucks (HT)

Movement	Cars (AM)	Cars (NOON)	Cars (PM)	HT (AM)	HT (NOON)	HT (PM)
SB Right	24	0	30	2	0	1
SB Thru	0	0	0	0	0	0
SB Left	5	0	55	2	0	0
EB Left	25	0	82	2	0	2
EB Thru	468	0	611	37	0	10
EB Right	0	0	0	0	0	0
WB Right	47	0	81	1	0	0
WB Thru	53	0	36	1	0	0
WB Left	0	0	0	0	0	0
NB Left	0	0	0	0	0	0
NB Thru	0	0	0	0	0	0
NB Right	0	0	0	0	0	0

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg (eastbound direction)	0	0	0
North leg (westbound direction)	1	0	0
West leg (southbound direction)	0	0	0
West leg (northbound direction)	0	0	0
East leg (southbound direction)	0	0	0
East leg (northbound direction)	0	0	0
South leg (eastbound direction)	0	0	0
South leg (westbound direction)	0	0	0
Northwest corner (diagonal)	0	0	0
Northeast corner (diagonal)	0	0	0
Southwest corner (diagonal)	0	0	0
Southeast corner (diagonal)	0	0	0

Prepared by National Data & Surveying Services

Mall Access Rd/WPRB-FM Princeton Dwy & Grovers Mill Rd

Peak Hour Turning Movement Count

ID: 24-340173-002
City: Lawrence Township

Day: Saturday
Date: 12/14/2024

PEAK HOURS	COUNT PERIODS
NONE	NONE
11:15 AM - 12:15 PM	11:00 AM - 01:00 PM
NONE	NONE

SOUTHBOUND — Mall Access Rd/WPRB-FM Princeton Dwy

AM	0	0	0	0	0	AM
NOON	34	0	49	0	192	NOON
PM	0	0	0	0	0	PM

1 0 1 0

EASTBOUND — Grovers Mill Rd

AM	NOON	PM	
0	104	0	
0	0	0	0
0	146	0	1
0	407	0	1
0	0	0	0
AM	NOON	PM	

CONTROL

1-Way Stop(SB)

TEV	0 AM	752 NOON	0 PM
PHF		0.90	

WESTBOUND — Grovers Mill Rd

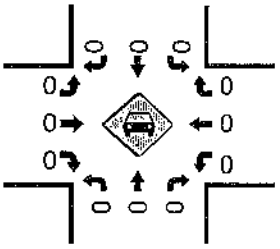
	PM	NOON	AM
0.5	0	46	0
0.5	0	70	0
0	0	0	0
0	0	0	0
	0	456	0
	PM	NOON	AM

0 0 1 0

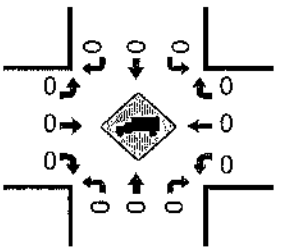
NORTHBOUND — Mall Access Rd/WPRB-FM Princeton Dwy

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

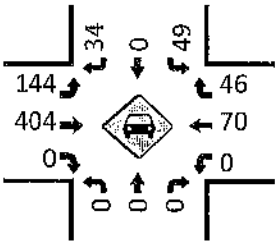
Cars (AM)



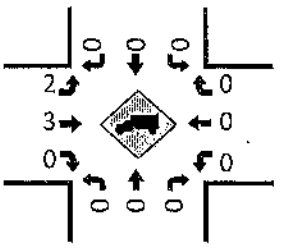
HT (AM)



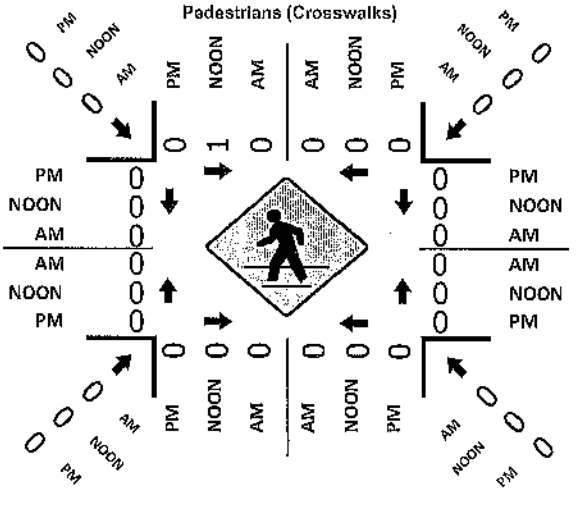
Cars (NOON)



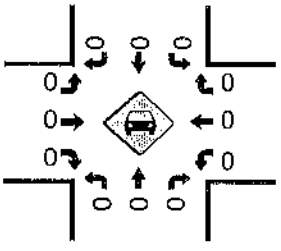
HT (NOON)



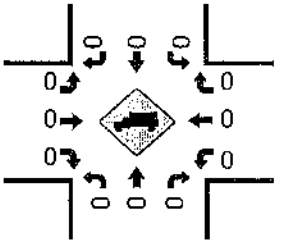
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Mall Access Rd & Outer Ring Rd

Peak Hour Turning Movement Count

ID: 24-340173-001
City: Lawrence Township

Day: Thursday
Date: 12/12/2024

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	7:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Mall Access Rd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND (Outer Ring Rd)

AM	NOON	PM	
105	0	323	
0	0	0	0
0	0	0	0
27	0	68	1.5
32	0	46	0.5
AM	NOON	PM	

WESTBOUND (Outer Ring Rd)

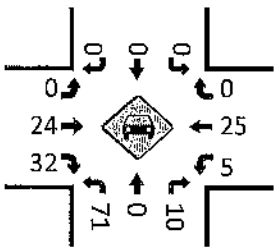
PM	NOON	AM	
0	0	0	0
196	0	31	2
25	0	7	0
0	0	0	0
124	0	37	
PM	NOON	AM	

NORTHBOUND (Mall Access Rd)

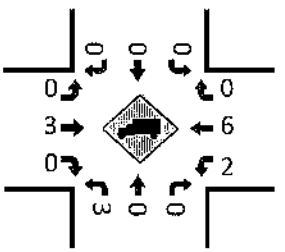
PM	71	0	127	0	56	PM
NOON	0	0	0	0	0	NOON
AM	39	0	74	0	10	AM

CONTROL			
1-Way Stop(NB)			
TEV	181	0	518
	AM	NOON	PM
PHF	0.94		0.90

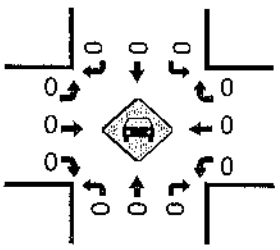
Cars (AM)



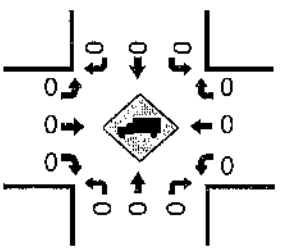
HT (AM)



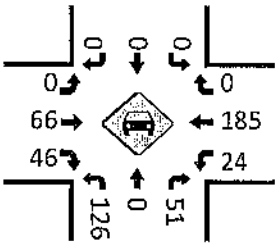
Cars (NOON)



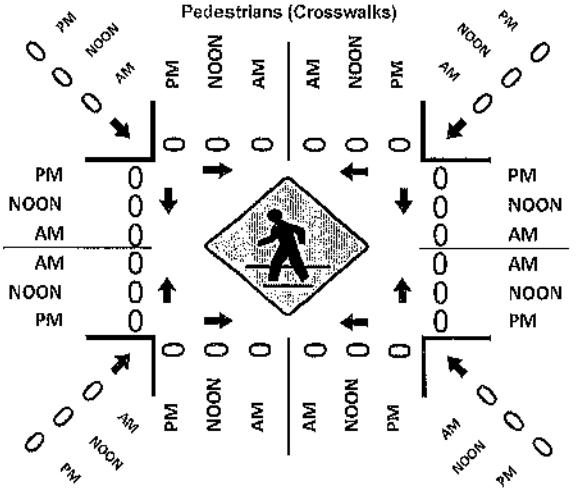
HT (NOON)



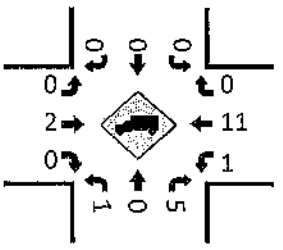
Cars (PM)



Pedestrians (Crosswalks)



HT (PM)



Prepared by National Data & Surveying Services

Mall Access Rd & Outer Ring Rd

Peak Hour Turning Movement Count

ID: 24-340173-001
City: Lawrence Township

Day: Saturday
Date: 12/14/2024

	Peak Hours	Count Periods
AM	NONE	NONE
NOON	12:00 PM - 01:00 PM	11:00 AM - 01:00 PM
PM	NONE	NONE

SOUTHBOUND — Mall Access Rd

	Right	Thru	Left	U-Turn	Departing
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0
HT %	0	0	0	0	

EASTBOUND — Outer Ring Rd

	AM	NOON	PM	HT %
Departing	0	208	0	
U-Turn	0	0	0	0
Left	0	0	0	0
Thru	0	98	0	1.5
Right	0	53	0	0.5

WESTBOUND — Outer Ring Rd

	PM	NOON	AM	HT %
U-Turn	0	0	0	0
Thru	0	114	0	2
Left	0	28	0	0
U-Turn	0	0	0	0
Departing	0	206	0	

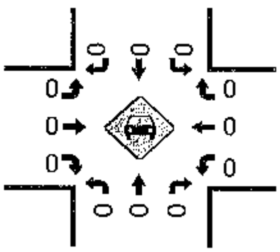
NORTHBOUND — Mall Access Rd

	Departing	U-Turn	Left	Thru	Right
HT %		0	1	0	1
PM	0	0	0	0	0
NOON	81	0	94	0	108
AM	0	0	0	0	0

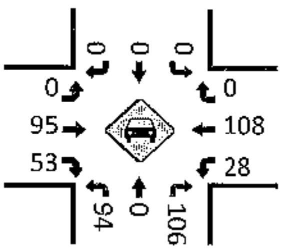
CONTROL: 1-Way Stop(NB)

	AM	NOON	PM
TEV	0	495	0
PHF		0.83	

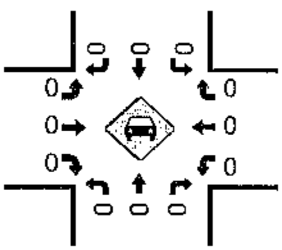
Cars (AM)



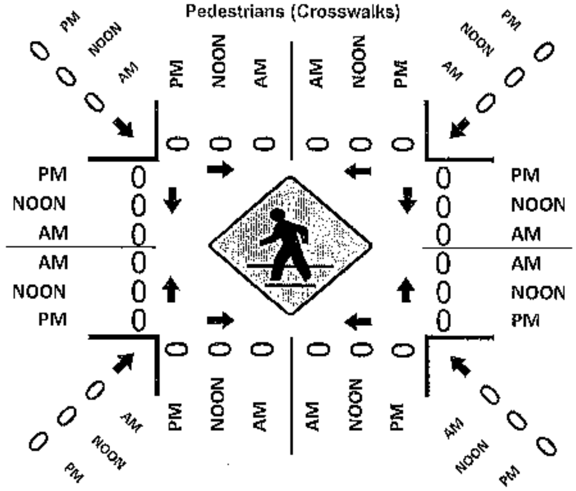
Cars (NOON)



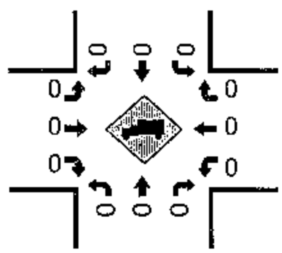
Cars (PM)



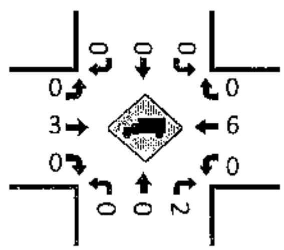
Pedestrians (Crosswalks)



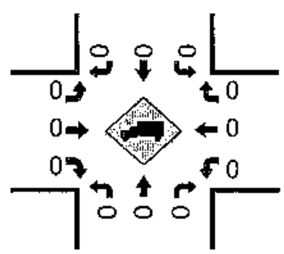
HT (AM)



HT (NOON)



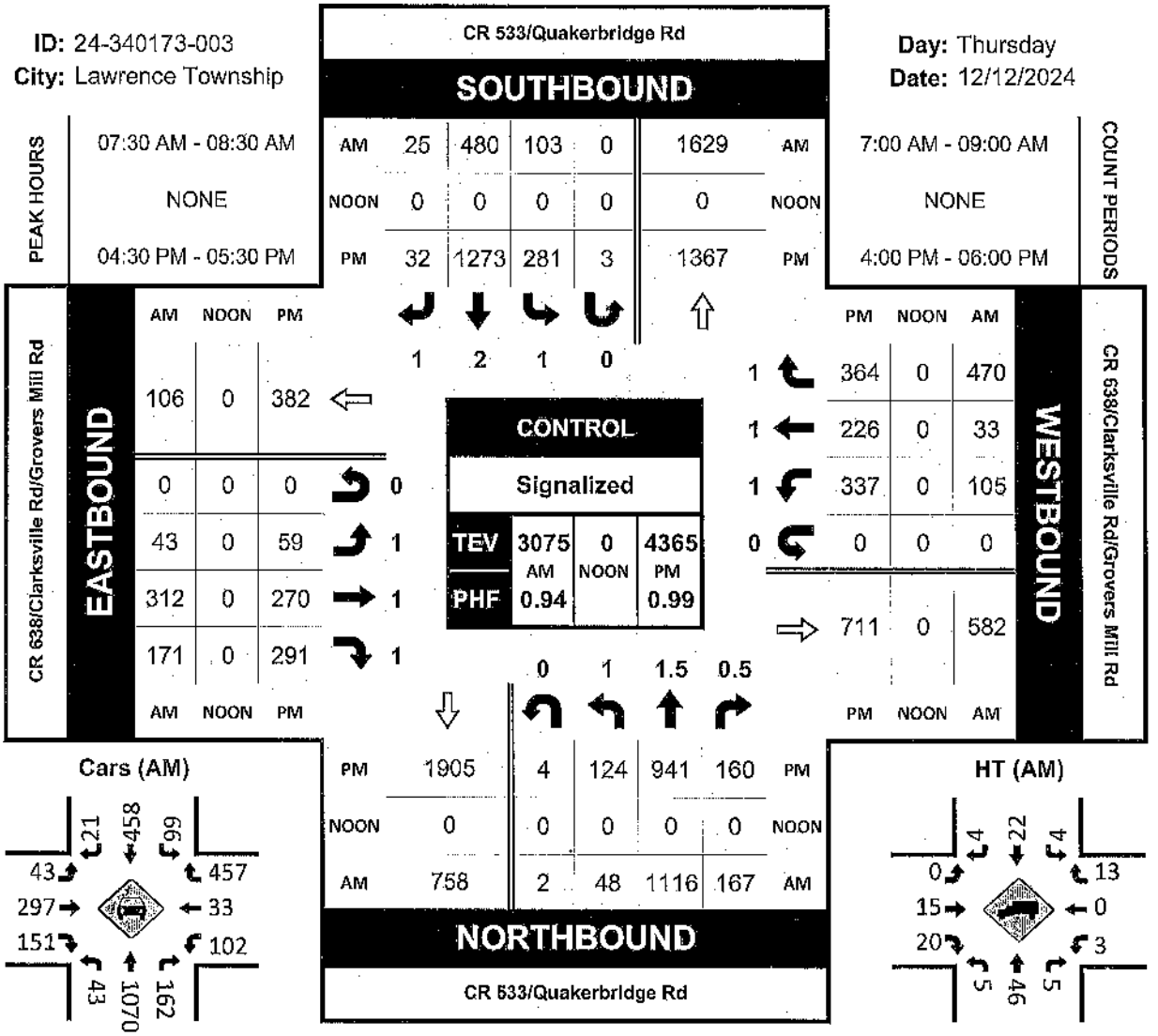
HT (PM)

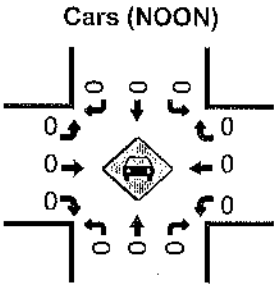


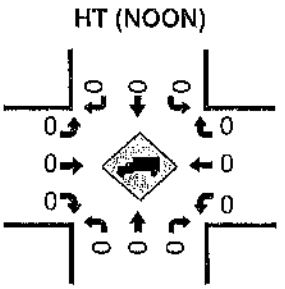
Prepared by National Data & Surveying Services

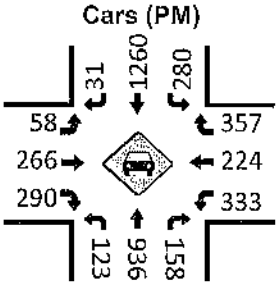
CR 533/Quakerbridge Rd & CR 638/Clarksville Rd/Grovers Mill Rd

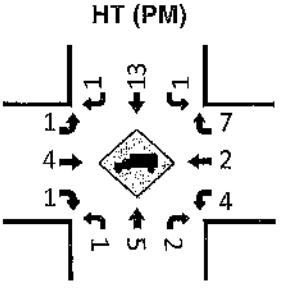
Peak Hour Turning Movement Count

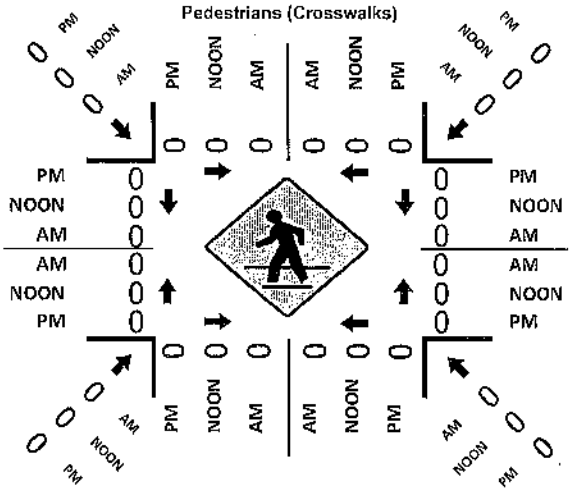












Prepared by National Data & Surveying Services

CR 533/Quakerbridge Rd & CR 638/Clarksville Rd/Grovers Mill Rd

Peak Hour Turning Movement Count

ID: 24-340173-003
City: Lawrence Township

Day: Saturday
Date: 12/14/2024

PEAK HOURS	COUNT PERIODS
NONE	NONE
11:30 AM - 12:30 PM	11:00 AM - 01:00 PM
NONE	NONE

SOUTHBOUND — CR 533/Quakerbridge Rd

AM	0	0	0	0	0	AM
NOON	34	1094	237	1	1622	NOON
PM	0	0	0	0	0	PM
	1	2	1	0		

EASTBOUND — CR 638/Clarksville Rd/Grovers Mill Rd

AM	NOON	PM	
0	305	0	
0	4	0	0
0	77	0	1
0	161	0	1
0	217	0	1
AM	NOON	PM	

WESTBOUND — CR 638/Clarksville Rd/Grovers Mill Rd

PM	NOON	AM	
0	349	0	1
0	76	0	1
0	204	0	1
0	0	0	0
0	578	0	
PM	NOON	AM	

CONTROL

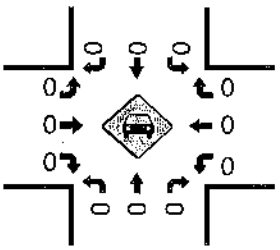
Signalized

TEV	0 AM	4020 NOON	0 PM
PHF		0.96	

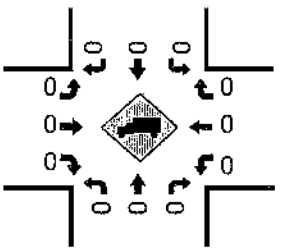
NORTHBOUND — CR 533/Quakerbridge Rd

PM	0	0	0	0	0	PM
NOON	1515	0	191	1195	180	NOON
AM	0	0	0	0	0	AM
		0	1	1.5	0.5	

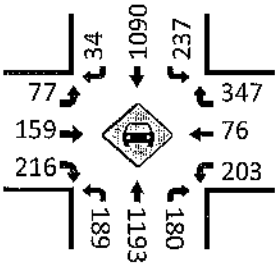
Cars (AM)



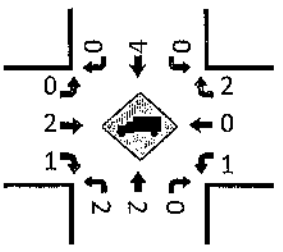
HT (AM)



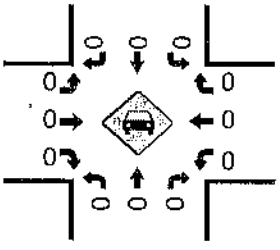
Cars (NOON)



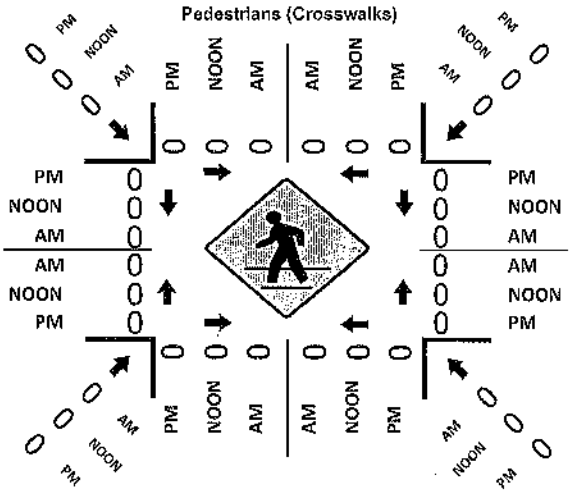
HT (NOON)



Cars (PM)



Pedestrians (Crosswalks)



HT (PM)