

TRAFFIC IMPACT STUDY

For

Sharbell Kepner – Tregoe Tract Proposed Residential Development

Property Located at:

**Georgetown Franklin Turnpike (CR 518) at Research Road
Block 28004 – Lot 7 & Block 28005 – Lot 66
Township of Montgomery, Somerset County, NJ**

Prepared by:



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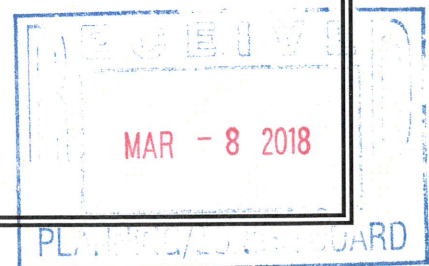
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0043-14-015TE

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INTRODUCTION

It is proposed to construct a residential development on a currently undeveloped parcel of land, located along Research Road just north of Georgetown-Franklin Turnpike (CR 518) in Montgomery Township, Somerset County, New Jersey, see Figure 1 in Appendix A. The site is designated as Block 28004 – Lot 7 & Block 28005 – Lot 66 on the Township of Montgomery Tax Maps. It is proposed to raze the existing site and construct 107 townhomes, 40 condominiums and 86 apartments (The Project). The site is located within the ARH – Age-Restricted Housing and the REO-3 – Research, Engineering and Office Districts. Access to the site will be provided via a new connection to the traffic signal at the intersection of US Route 206 and the Village Shopper driveway, a new right turn in/right turn out roadway along US Route 206 between the Village Shopper driveway and Georgetown-Franklin Turnpike (CR 518), a new right turn in/right turn out driveway along Georgetown-Franklin Turnpike (CR 518) between US Route 206 and Research Road and the existing Research Road intersection with Georgetown-Franklin Turnpike (CR 518).

Dynamic Traffic LLC has been retained to prepare this study to assess the traffic impact associated with the construction of The Project on the adjacent roadway network. This study documents the methodology, analyses, findings and conclusions of our study and includes:

- A detailed field inspection was conducted to obtain an inventory of existing roadway geometry, traffic control, and location and geometry of existing driveways and intersections.
- Existing traffic data was collected via manual turning movement (MTM) counts during the weekday AM, weekday PM and Saturday midday peak periods at the intersection of Georgetown-Franklin Turnpike (CR 518) and Research Road.
- Projections of traffic to be generated by the proposed development were prepared utilizing trip generation data as published by the Institute of Transportation Engineers. Site traffic was then assigned to the adjacent street system based upon the anticipated directional distribution.
- Capacity analyses were conducted for the Existing, No Build, and Build conditions for the study intersections.
- The proposed points of ingress and egress were inspected for adequacy of geometric design, spacing and/or alignment to streets and driveways on the opposite side of the street, relationship to other driveways adjacent to the development, and conformance with accepted design standards.
- The site plan as designed was reviewed for sufficiency in accommodating large wheel base vehicles such as delivery trucks, refuse trucks, and emergency vehicles.
- The parking layout and supply was assessed based on accepted design standards and demand experienced at similar developments.

This Traffic Impact Study is limited to the analysis of the intersection of Research Road with Georgetown-Franklin Turnpike (CR 518) and the proposed right turn in/right turn out driveway along Georgetown-Franklin Turnpike (CR 518). Separately, but running on a parallel path, the Montgomery Walk mixed-use residential/retail development is proposed on an adjacent site, Block 28005 – Lots 65, 68 & 69. A Traffic Impact Analysis, prepared by McDonough & Rea Associates (MRA), details the capacity analysis for the existing and proposed intersections along US Route 206 as part of that project. The traffic volumes associated with this development have been incorporated into the capacity analysis within this study.

It should be noted that the depictions of traffic volumes along US Route 206 in the figures of this report are only representative of the new traffic volumes for The Project and the proposed adjacent developments. These volumes do not represent background traffic volumes on US Route 206.

EXISTING CONDITIONS

A review of the existing roadway conditions near the proposed site was conducted to provide the basis for assessing the traffic impact of the development. This included field investigations of the surrounding roadways and intersections, collection of traffic volume data, and extensive analyses.

Existing Roadway Conditions

The following are descriptions of the roadways in the study area:

Georgetown-Franklin Turnpike (CR 518) is an Urban Minor Arterial roadway under Somerset County jurisdiction. In the vicinity of the site the posted speed limit is 45 MPH and the roadway provides one travel lane in each direction. On-street parking is prohibited along both sides of the roadway. Curb is provided along the both sides of the roadway. Sidewalk is not provided along either side of the roadway. Georgetown-Franklin Turnpike provides a straight horizontal alignment and a relatively flat vertical alignment. The land uses along Georgetown-Franklin Turnpike in the vicinity of The Project are mixed residential and agricultural.

Research Road is a local roadway under Montgomery Township jurisdiction. In the vicinity of the site the posted speed limit is 25 MPH and the roadway provides one travel lane in each direction. On-street parking is permitted along both sides of the roadway. Curb is provided along both sides of the roadway. Sidewalk is not provided along either side of the roadway. Research Road currently provides a straight horizontal alignment and a relatively flat vertical alignment. The land uses along Research Road in the vicinity of The Project are primarily residential.

Existing Traffic Volumes

Manual turning movement (MTM) counts were conducted on Thursday, October 12, 2017 from 7:00 to 9:00 AM and from 4:30 to 6:30 PM and on Saturday, October 14, 2017 from 11:00 AM to 2:00 PM at the intersections of Research Road with Georgetown-Franklin Turnpike (CR 518). Review of the collected traffic data reveals that the weekday morning peak street hour (PSH) occurs between 7:45 - 8:45 AM, the weekday evening PSH occurs between 4:30 - 5:30 PM and the Saturday PSH occurs between 11:30 AM - 12:30 PM. Figure 2, located in Appendix A, shows the existing peak hour traffic volumes at the study intersections. All MTM counts are contained in Appendix B.

Existing Capacity Analysis

The methodology utilized in the capacity analyses is described in the *Highway Capacity Manual*, published by the Transportation Research Board. In general, the term Level of Service (LOS) is used to provide a "qualitative" evaluation of capacity based upon certain "quantitative" calculations related to empirical values, such as traffic volume and intersection control.

At the signalized intersections, factors that affect the various approach capacities include width of approach, number of lanes, signal "green time", turning percentages, truck volumes, etc. However, delays cannot be related to capacity in a simple one-to-one fashion. For example, it is possible to have delays in the Level of Service "F" range without exceeding roadway capacity. Substantial delays can exist without exceeding capacity if one or more of the following conditions exist: long signal cycle lengths; a particular traffic movement experiences a long red time; or progressive movement for a particular lane group is poor. Table I describes the level of service ranges for signalized intersections.

An unsignalized (STOP sign controlled) driveway or side street along a through route is seldom critical from an overall capacity standpoint, however, it may be of great significance to the capacity of the minor cross-route, and it may influence the quality of traffic flow on both. When analyzing an unsignalized intersection, it is assumed that both the major street through and right turn movements are unimpeded and have the right-of-way over all side street traffic and left turns from the major street. All other turning movements in the intersection cross, merge with, or are otherwise impeded by major street movements. Traffic delays at unsignalized intersections are determined by sequentially processing these impeded movements. Table II describes the level of service ranges for unsignalized (stop controlled) intersections.

**Table I
Level of Service Criteria
for Signalized Intersections**

Level of Service	Average Control Delay (seconds per vehicle)
A	0.0 to 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	greater than 80.0

**Table II
Level of Service Criteria
for Unsignalized Intersections**

Level of Service	Average Control Delay (seconds per vehicle)
a	0.0 to 10.0
b	10.1 to 15.0
c	15.1 to 25.0
d	25.1 to 35.0
e	35.1 to 50.0
f	greater than 50.0

It should be noted that the analyses within the *Highway Capacity Manual* assume a random arrival for all the movements, which may not be the case if an adjacent traffic signal is present that platoons vehicles.

All capacity analyses were performed utilizing Synchro 10. Table III summarizes the existing levels of service (LOS) and delays. All capacity analysis calculation worksheets are contained in Appendix C.

**Table III
Existing Levels of Service**

Intersection	Direction/ Movement		AM PSH	PM PSH	SAT PSH
Georgetown-Franklin Turnpike (CR 518) & Research Road	EB	L	A (3)	A (3)	A (3)
		T	A (3)	A (3)	A (3)
	WB	TR	A (3)	A (3)	A (3)
	SB	L	C (32)	C (31)	C (31)
		R	C (21)	C (22)	C (21)
	Overall		A (4)	A (4)	A (3)

A (#) - Signalized Intersection Level of Service (seconds of delay per vehicles)

The following are discussions pertaining to each of the existing intersections analyzed. It should be noted that the existing percentage of trucks and peak hour factors were used in the existing analysis.

Georgetown-Franklin Turnpike (CR 518) and Research Road

Research Road intersects Georgetown-Franklin Turnpike (CR 518) to form a three-leg intersection controlled by a two-phase traffic signal operating on an 80-second background cycle length. Georgetown-Franklin Turnpike provides a shared through/right turn lane in the westbound direction and one dedicated left turn lane and one dedicated through lane in the eastbound direction. Research Road provides one dedicated left turn lane and one dedicated right turn lane in the southbound direction. It should be noted that the intersection has been built in anticipation of a connection with a new northbound leg of Research Road. However, the roadway has not yet been constructed south of the intersection, so there are no vehicular movements associated with this leg of the intersection.

A review of the existing analysis reveals that all movements operate at levels of service "C" or better during the analyzed peak periods. See Table III for the individual movement levels of service and delays.

FUTURE CONDITIONS

Traffic volumes and operational analyses were developed for both the 2019 No Build and Build conditions. The No Build conditions provide a baseline for assessing the impact of site development traffic on the roadway system. The process of developing the No Build and Build traffic volumes and the subsequent analyses is outlined below.

Regardless of whether the subject site is developed or not, traffic volumes on the surrounding roadways are expected to increase as a result of developments throughout the region. A growth rate for roadways within the study area was obtained from the NJDOT Annual Background Growth Rate Table, which indicates a growth rate of 1.00% per year.

Through consultation with the Township of Montgomery Planning Board staff and Somerset County Planning Board staff, there are six proposed developments in the vicinity of the site that are identified as significant traffic generators, shown below. It was assumed that the background growth rate was adequate to account for the traffic associated with all developments not listed hereafter.

- A development consisting of 362,000 square feet of retail and 32 age-restricted residential units known as Madison Marquette, located in the southwest quadrant of the intersection of US Route 206 and Georgetown-Franklin Turnpike (CR 518), has been approved by NJDOT. Traffic projections were taken from the Traffic Impact Analysis, prepared by Atlantic Traffic and Design, dated December 28, 2017. Due to the size of this development and the anticipated large-scale impacts to the traffic in the vicinity of The Project, No Build and Build scenarios have been prepared with and without the traffic generation from this proposed development. The traffic volumes for this development in the vicinity of The Project are shown in Figure 9 and the rerouted traffic volumes associated with the roadway improvements included with the construction of this development are shown separately in Figure 10.
- A development consisting of a 28,719 square foot car dealership, known as Baker Auto, located in the northwest quadrant of the intersection of US Route 206 and Airport Road. Traffic projections were taken from the Traffic Impact Study, prepared by Harlyn Associates, dated June 20, 2016. The traffic volumes for this development in the vicinity of The Project are shown in Figure 3.
- A development consisting of a 8,040 square foot office expansion, known as the Enrollment Management Association office expansion, located along the north side of Georgetown-Franklin Turnpike (CR 518) just east of the intersection with US Route 206. Traffic projections were taken from the Traffic Statement for the Enrollment Management Association, prepared by Langan Engineering and Environmental Services, Inc., dated December 19, 2016. The traffic volumes for this development in the vicinity of The Project are shown in Figure 4.
- A development consisting of a 1,800 square foot Dunkin' Donuts, located in the northwest quadrant of the intersection of US Route 206 and Georgetown-Franklin Turnpike (CR 518). Traffic projections were taken from the NJDOT Major Access Permit application, prepared by Harlyn Associates, dated August 12, 2016. The traffic volumes for this development in the vicinity of The Project are shown in Figure 5.

- A development consisting of 48,240 square feet of retail, known as the King Interest Montgomery Redevelopment, located in the northwest quadrant of the intersection of US Route 206 and Georgetown-Franklin Turnpike (CR 518). Traffic projections were taken from the Scope of Study Report, prepared by Langan Engineering and Environmental Services, Inc., dated June 6, 2017. The traffic volumes for this development in the vicinity of The Project are shown in Figure 6.
- As previously mentioned, a development consisting of 56,000 square feet of retail and 50 apartments, known as Montgomery Walk, located along the west side of US Route 206 just north of the intersection with Georgetown-Franklin Turnpike (CR 518). Traffic projections were provided in an internal memo, prepared by McDonough & Rea Associates, dated January 16, 2018. The traffic volumes for this development in the vicinity of The Project are shown in Figure 7.

The total Adjacent Development Traffic Volumes passing the site without the Madison Marquette Mixed-Use Development are shown on Figure 8 and the total Adjacent Development Traffic Volumes including the Madison Marquette development are shown on Figure 11.

Future 2019 No Build traffic volumes were developed by applying the background growth rate of 1.00% for two (2) years to the study area roadways existing traffic volumes. Figures 12 and 13, in Appendix A, show the 2019 No Build traffic volumes without and with the Madison Marquette Mixed-Use Development, respectively.

Traffic Generation

Trip generation projections for The Project were made utilizing trip generation research data as published under Land Use Code 220 – Multifamily Housing (Low-Rise) and Land Use Code 221 – Multifamily Housing (Mid-Rise) in the Institute of Transportation Engineers' (ITE) publication, *Trip Generation, Tenth Edition*. This publication sets forth trip generation rates based on traffic counts conducted at research sites throughout the country. Table IV below details the traffic volumes associated with The Project.

**Table IV
Trip Generation**

Land Use	AM PSH			PM PSH			SAT PSH		
	In	Out	Total	In	Out	Total	In	Out	Total
107 Townhomes (LUC 220)	12	39	51	40	23	63	41	41	82
40 Condominiums & 86 Apartments (LUC 221)	11	32	43	34	21	55	29	31	60
Total	23	71	94	74	44	118	70	72	142

As shown in the table above, it is anticipated that The Project will generate 23 entering trips and 71 exiting trips during the weekday morning peak hour, 74 entering and 44 exiting trips during the weekday evening peak hour and 70 entering and 72 exiting trips during the Saturday peak hour that are new to the adjacent roadway network.

Once the magnitude of traffic to be generated by the site is known, it is necessary to assign that traffic to the adjacent street system. The distribution of new traffic to the surrounding roadways is based on the location of primary arterial roadways, major signalized intersections and existing traffic patterns. The following table summarizes the anticipated trip distribution for The Project.

**Table V
Trip Distribution**

TO/FROM	PERCENTAGE
Georgetown-Franklin Turnpike (CR 518) – East	20%
Georgetown-Franklin Turnpike (CR 518) – West	20%
US Route 206 – North	30%
US Route 206 – South	30%
Total	100%

Located in Appendix A, Figure 14 illustrates the total site generated volumes assigned to the study area network. Figure 15 illustrates the rerouted traffic volumes from adjacent eastern residential areas due to the proposed new roadways in the vicinity of The Project. The site generated volumes were added to the 2019 No Build traffic volumes to generate the 2019 Build traffic volumes, which are shown in Figure 16 (without Madison Marquette Development) and Figure 17 (with Madison Marquette Development).

Future Capacity Analysis

Operational conditions at the study intersections were analyzed under the No Build and Build conditions and are summarized in Tables VI and VII below.

**Table VI
Future Levels of Service without Madison Marquette Development**

Intersections	Direction/ Movement		AM PSH		PM PSH		SAT PSH	
			No Build	Build	No Build	Build	No Build	Build
Georgetown-Franklin Turnpike (CR 518) & Research Road	EB	L	A (3)	A (3)	A (3)	A (3)	A (3)	A (3)
		T	A (4)	A (4)	A (4)	A (4)	A (4)	A (4)
	WB	TR	A (5)	A (5)	A (4)	A (4)	A (4)	A (4)
	SB	L	C (32)	C (33)	C (32)	C (32)	C (31)	C (33)
		R	B (17)	B (15)	B (16)	B (15)	B (15)	B (14)
	Overall		A (5)	A (6)	A (5)	A (5)	A (4)	A (5)
Georgetown-Franklin Turnpike (CR 518) & Inner Loop	SB	R	b (13)	b (13)	b (13)	b (13)	b (12)	b (12)

a (#) - Unsignalized Intersection Level of Service (seconds of delay per vehicle)

A (#) - Signalized Intersection Level of Service (seconds of delay per vehicles)

**Table VII
Future Levels of Service with Madison Marquette Development**

Intersections	Direction/ Movement		AM PSH		PM PSH		SAT PSH	
			No Build	Build	No Build	Build	No Build	Build
Georgetown-Franklin Turnpike (CR 518) & Research Road	EB	L	B (15)	B (16)	B (16)	B (16)	B (17)	B (18)
		T	C (34)	C (33)	D (41)	D (41)	D (35)	D (35)
		R	A (0)	A (0)	A (6)	A (6)	A (8)	A (8)
	WB	L	A (9)	A (9)	C (31)	C (31)	C (22)	C (22)
		TR	B (17)	B (18)	B (13)	B (13)	B (12)	B (12)
	NB	L	C (22)	C (22)	D (46)	D (46)	D (39)	D (39)
		TR	A (9)	A (9)	A (6)	A (6)	A (6)	A (6)
	SB	L	D (36)	D (38)	D (39)	D (40)	D (36)	D (38)
		TR	C (20)	B (17)	B (19)	B (17)	B (17)	B (15)
	Overall		C (24)	C (24)	C (30)	C (29)	C (26)	C (25)
Georgetown-Franklin Turnpike (CR 518) & Inner Loop Road	SB	R	b (12)	b (12)	b (12)	b (13)	b (12)	b (12)

a (#) - Unsignalized Intersection Level of Service (seconds of delay per vehicle)

A (#) - Signalized Intersection Level of Service (seconds of delay per vehicles)

Georgetown-Franklin Turnpike (CR 518) & Research Road

With the addition of site generated traffic and without the proposed Madison Marquette Development, the intersection is anticipated to operate at No Build levels of service "C" or better during the peak hours analyzed with negligible change in delays. See Table VI for the individual movement levels of service and delays.

The Madison Marquette Development is proposed to construct a site driveway/loop road to connect to the existing traffic signal at the intersection of Research Road with Georgetown-Franklin Turnpike (CR 518). The northbound approach of the site driveway/loop road is proposed to provide a dedicated left turn lane and a shared through/right turn lane. The southbound approach of Research Road is proposed to provide a dedicated left turn lane and a shared through/right turn lane. The eastbound approach of Georgetown-Franklin Turnpike (CR 518) is proposed to provide a dedicated left turn lane, a dedicated through lane and a dedicated, channelized right turn lane. The westbound approach of Georgetown-Franklin Turnpike (CR 518) is proposed to provide a dedicated left turn lane and a shared through/right turn lane. The proposed signal timings from the Madison Marquette Development Traffic Impact Analysis have been incorporated into the capacity analysis.

With the addition of site generated traffic and with the proposed Madison Marquette Development, the intersection is anticipated to operate at No Build levels of service "D" or better during the peak hours analyzed with negligible change in delays. See Table VII for the individual movement levels of service and delays.

Georgetown-Franklin Turnpike (CR 518) & Inner Loop Road

The Inner Loop Road is proposed to intersect Georgetown-Franklin Turnpike (CR 518) to form an unsignalized right turn in/right turn out T-intersection with the southbound approach of the Inner Loop Road operating under stop control. The southbound approach of the Inner Loop Road is proposed to provide a dedicated right turn lane. The eastbound approach of Georgetown-Franklin Turnpike (CR 518) is proposed to provide a dedicated through lane. The westbound approach of Georgetown-Franklin Turnpike (CR 518) is proposed to provide a shared through/right turn lane.

As designed, the intersection is anticipated to operate at levels of service "B" or better during the peak hours analyzed both with and without the proposed Madison Marquette Mixed-Use Development. See Tables VI and VII for the individual movement levels of service and delays.

SITE PLAN

Site Access and Circulation

The site plan was reviewed with respect to the site access and on-site circulation design. As noted previously, access to The Project will be provided via a new connection to the traffic signal at the intersection of US Route 206 and the Village Shopper driveway, a new right turn in/right turn out roadway along US Route 206 between the Village Shopper driveway and Georgetown-Franklin Turnpike (CR 518), a new right turn in/right turn out driveway along Georgetown-Franklin Turnpike (CR 518) between US Route 206 and Research Road and the existing Research Road intersection with Georgetown-Franklin Turnpike (CR 518).

The site has been designed to meet the requirements of the Montgomery Township Ordinance and the New Jersey Residential Site Improvement Standards (RSIS).

The proposed townhomes will be serviced by two-way roadways with widths between 28' and 34', one-way roadways of 20', and 12' wide alleys. The Montgomery Township Ordinance requires a minimum width of 18' for two-way aisles providing access to parallel parking, which has been met. RSIS requires a minimum cartway width of 28' for two-way residential access roadways providing access to parallel parking. RSIS also requires a minimum cartway width of 9' for one-way alleys. The site as designed meets these requirements.

The proposed condominiums will be serviced by two-way aisles with widths of 25', which exceed the Montgomery Township Ordinance and RSIS minimum requirements of 24'. These aisles will allow for two-way circulation and 90 degree angle parking.

Review of the site plan design indicates that the site can sufficiently accommodate, within paved areas, an emergency vehicle, along with the automobile traffic anticipated.

Parking

The Montgomery Township Ordinance sets forth a parking requirement of 2.4 parking spaces for each three-bedroom unit and 2.0 parking spaces for each two-bedroom unit in a Planned Mixed Use Development (PMUD). These parking standards match the requirements of the New Jersey Residential Site Improvement Standards (RSIS), which set forth a parking requirement of 2.4 parking spaces for each three-bedroom townhouse and 2.0 spaces for each two-bedroom mid-rise apartment.

For the proposed 107 townhomes, 257 parking spaces are required. The site as proposed provides 102 on-street parking spaces and 292 off-street parking spaces, for a total of 394 parking spaces. The ordinance and RSIS requirements are met.

For the proposed 40 condominiums, 80 parking spaces are required. The site as proposed provides 44 surface parking spaces in the adjacent parking lot and 47 spaces beneath the building, for a total of 91 parking spaces. The ordinance and RSIS requirements are met.

The proposed 86 apartments on the adjacent site (Block 28004 – Lot 7) that are included in this Traffic Impact Study will be permitted separately; therefore, while the traffic generation was included in our analysis, the parking analysis has not been included in this report.

FINDINGS & CONCLUSIONS

Findings

Based upon the detailed analyses as documented herein, the following findings are noted:

- The proposed 107 townhomes, 40 condominiums and 86 apartments will generate 23 entering trips and 71 exiting trips during the weekday morning peak hour, 74 entering trips and 44 exiting trips during the evening peak hour, and 70 entering trips and 72 exiting trips during the Saturday peak hour that are "new" to the adjacent roadway network.
- Access to the site is proposed to be provided via a new connection to the traffic signal at the intersection of US Route 206 and the Village Shopper driveway, a new right turn in/right turn out roadway along US Route 206 between the Village Shopper driveway and Georgetown-Franklin Turnpike (CR 518), a new right turn in/right turn out driveway along Georgetown-Franklin Turnpike (CR 518) between US Route 206 and Research Road and the existing Research Road intersection with Georgetown-Franklin Turnpike (CR 518).
- With the addition of site generated traffic, the intersection of Georgetown-Franklin Turnpike (CR 518) and Research Road is anticipated to operate at No Build levels of service "C" or better without the proposed Madison Marquette development and at No Build levels of service "D" or better with the proposed Madison Marquette development during the peak hours studied with negligible change in delays.
- As designed, the intersection of the Inner Loop Road with Georgetown-Franklin Turnpike (CR 518) is anticipated to operate at levels of service "B" or better during the peak hours analyzed both with and without the proposed Madison Marquette Development.
- As proposed, The Project's site driveways and internal circulation have been designed to provide for safe and efficient movement of automobile and emergency vehicles.
- The proposed parking supply and design is sufficient to support the projected demand and exceeds RSIS and Ordinance requirements.

Conclusions

Based upon our Traffic Impact Study as detailed in the body of this report, it is the professional opinion of Dynamic Traffic LLC that the adjacent street system of the Township of Montgomery and Somerset County will not experience any significant degradation in operating conditions with the construction of The Project. The site driveways are located to provide safe and efficient access to the adjacent roadway system. The site plan as proposed provides for good circulation throughout the site and provides adequate parking to accommodate The Project's needs.

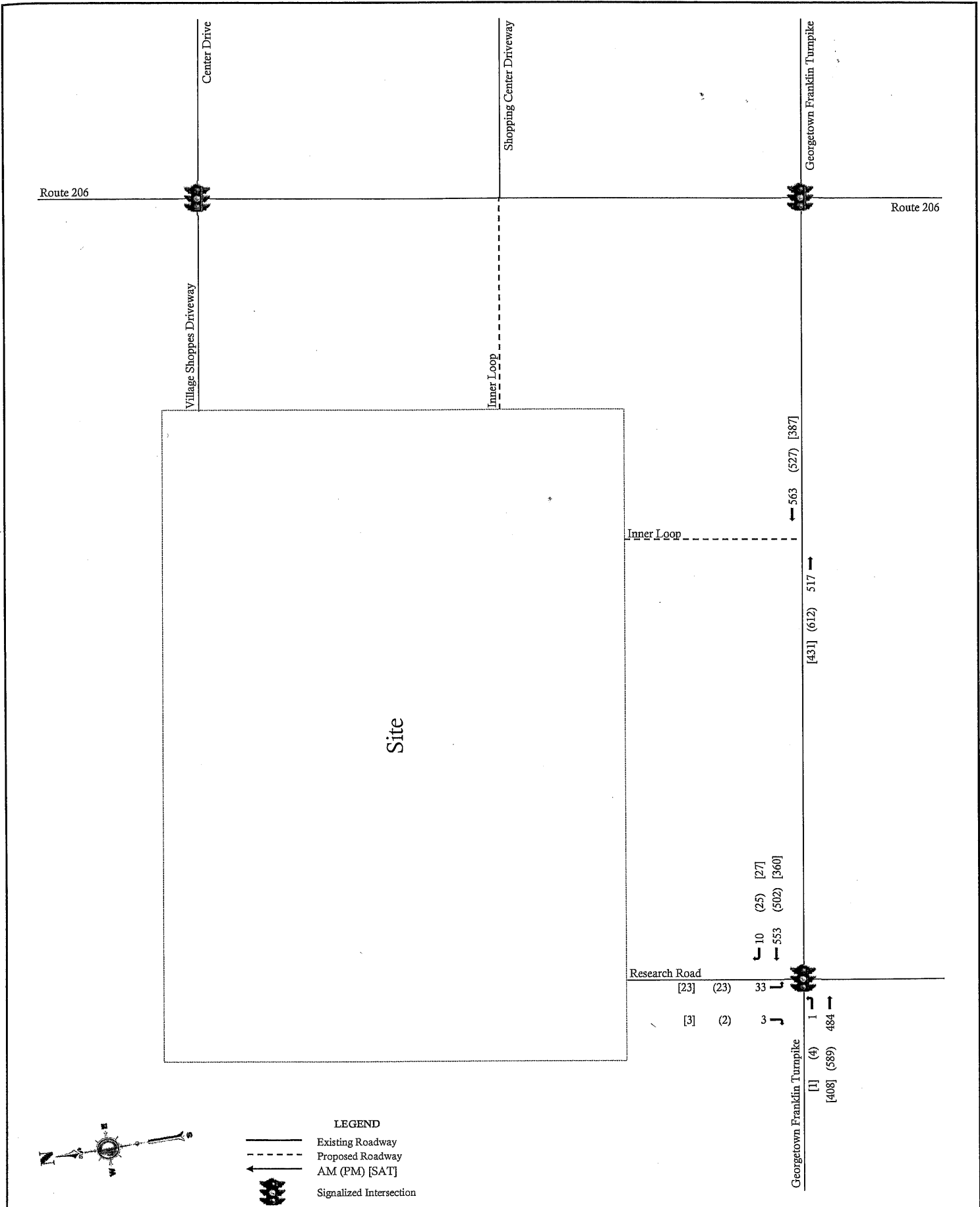
Appendix A
Traffic Volume Figures

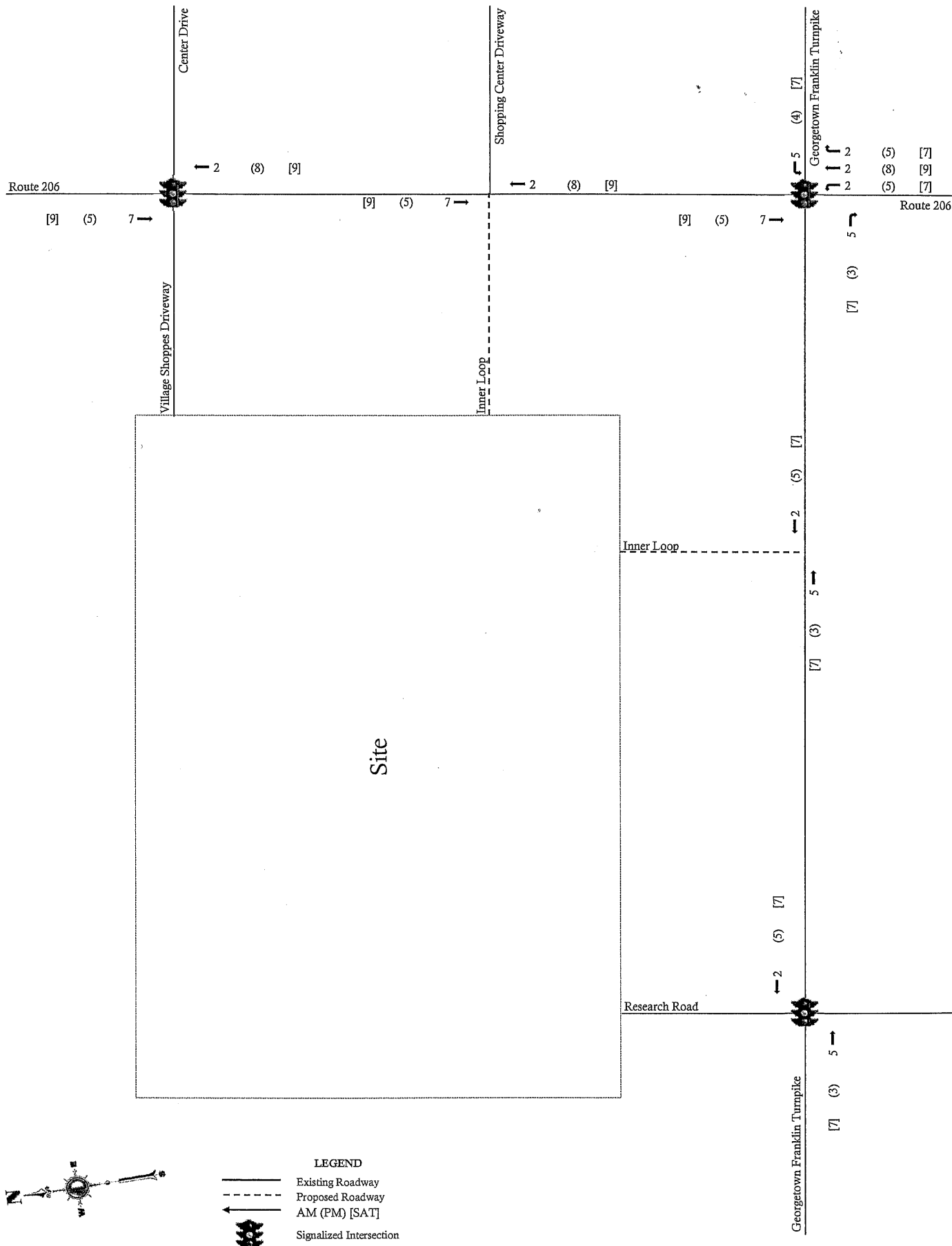


Proposed Residential Development
 Traffic Impact Study
 0043-14-015TE
 3/5/2018

Figure 1

Site Location Map





Proposed Residential Development
 Traffic Impact Study
 0043-14-015TE
 3/5/2018

Figure 3
 Adjacent Development Traffic Volumes
 [Baker Auto]

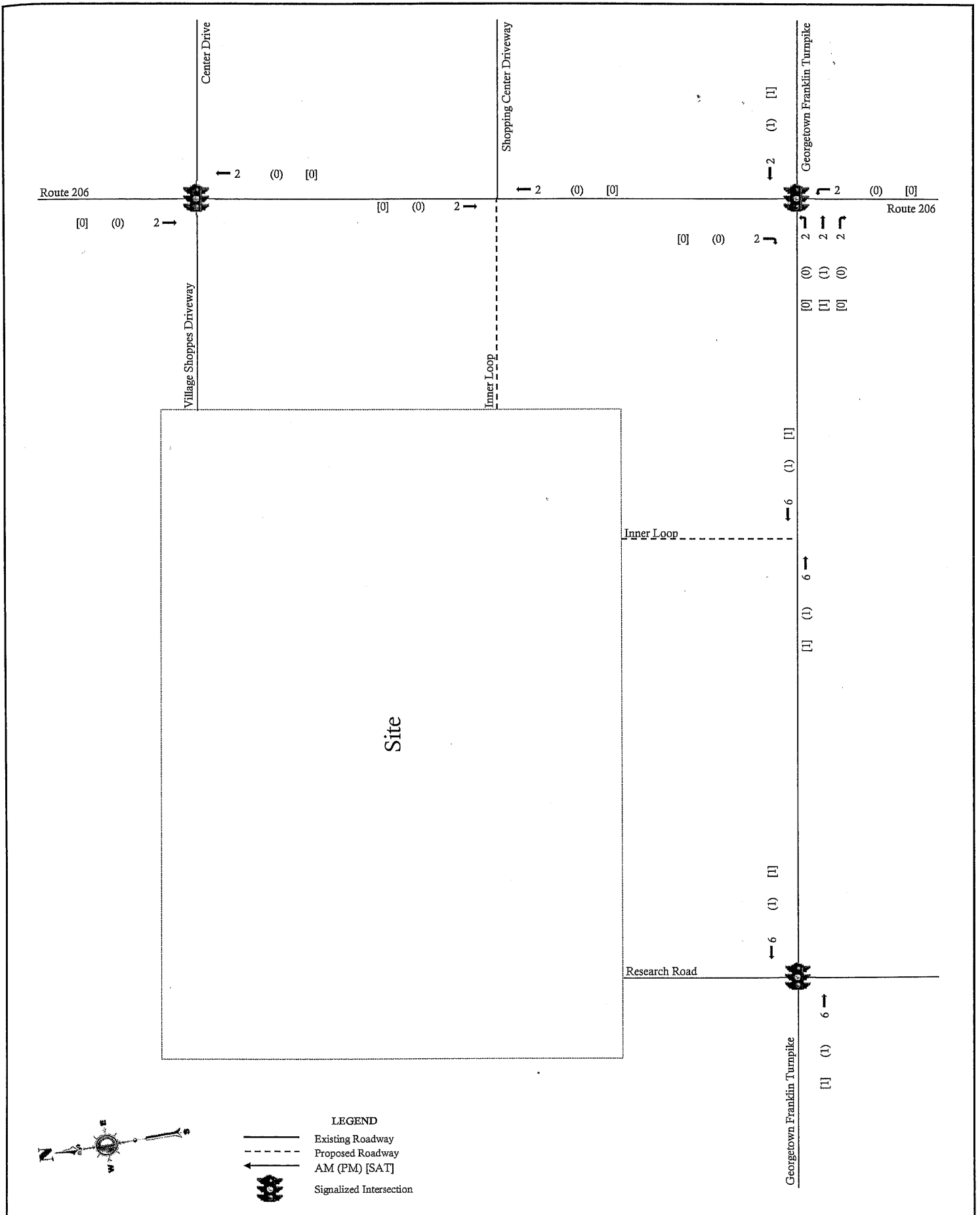
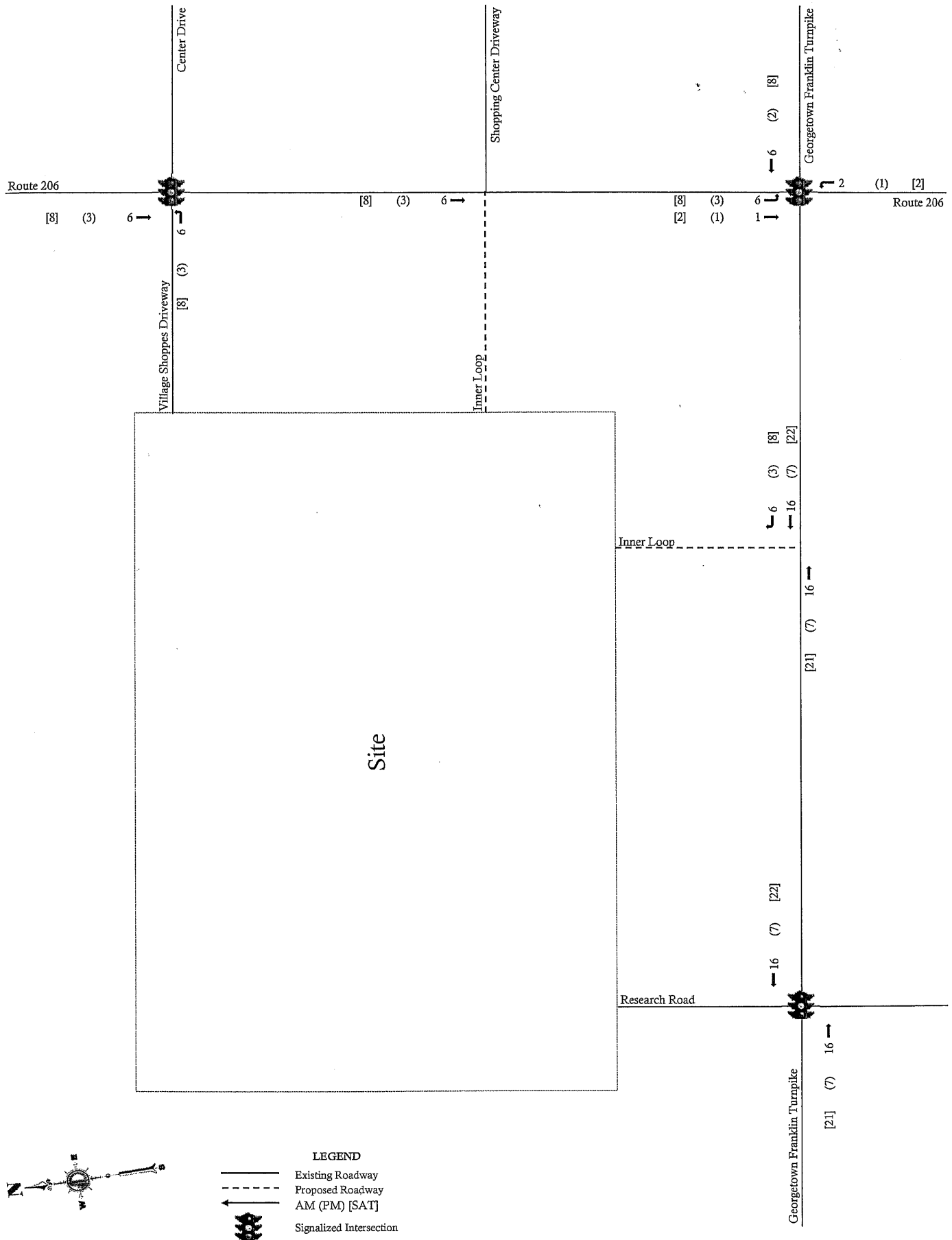
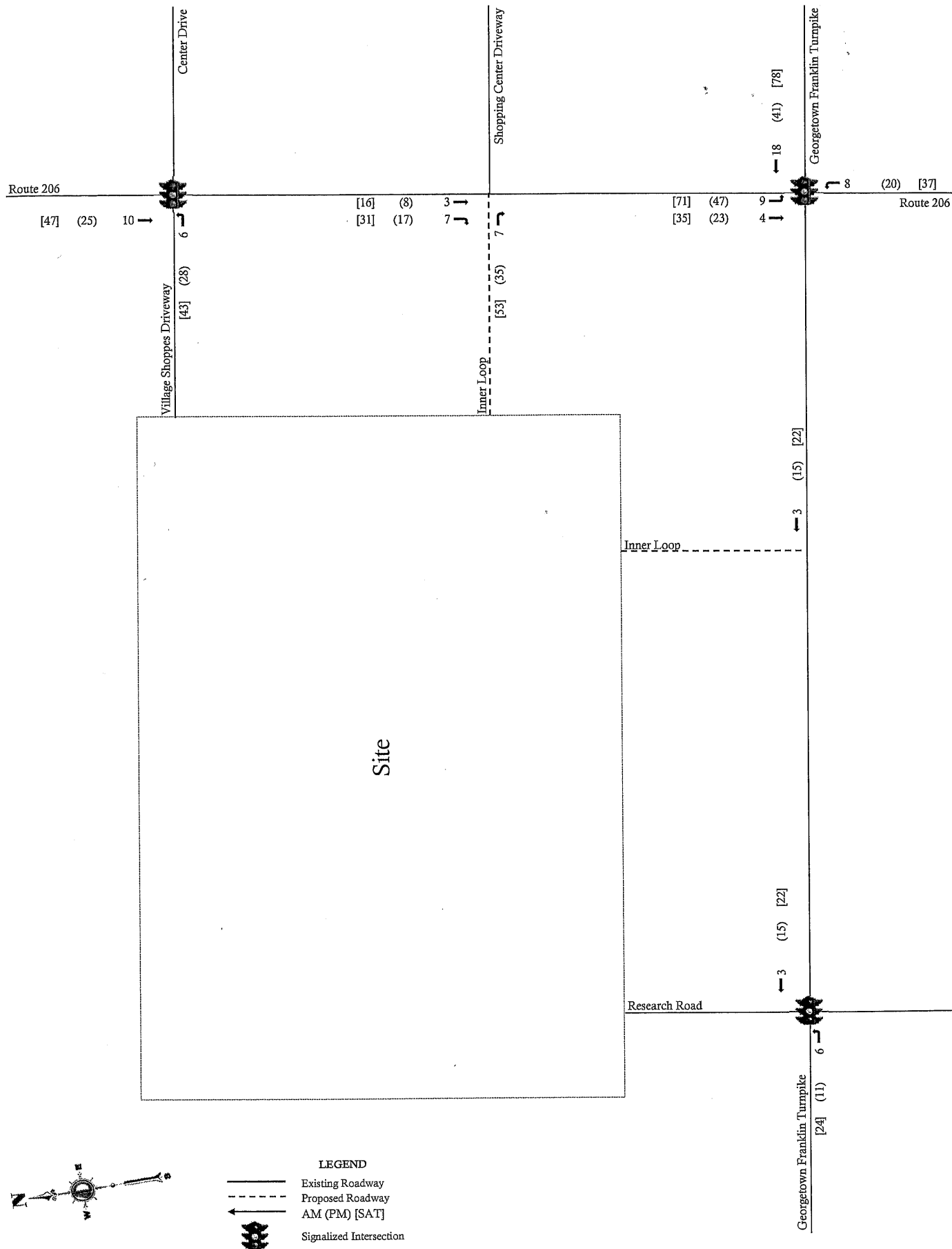
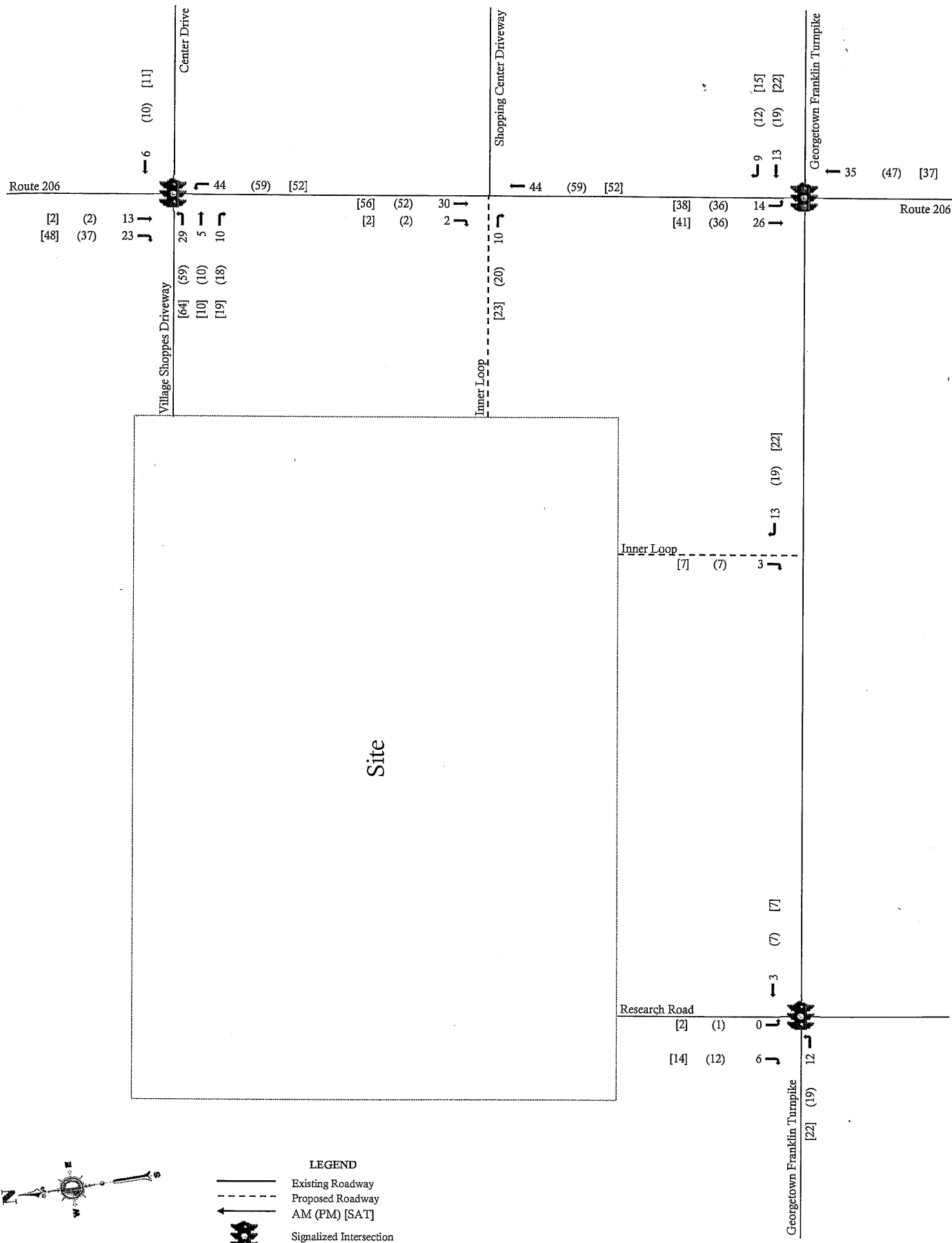
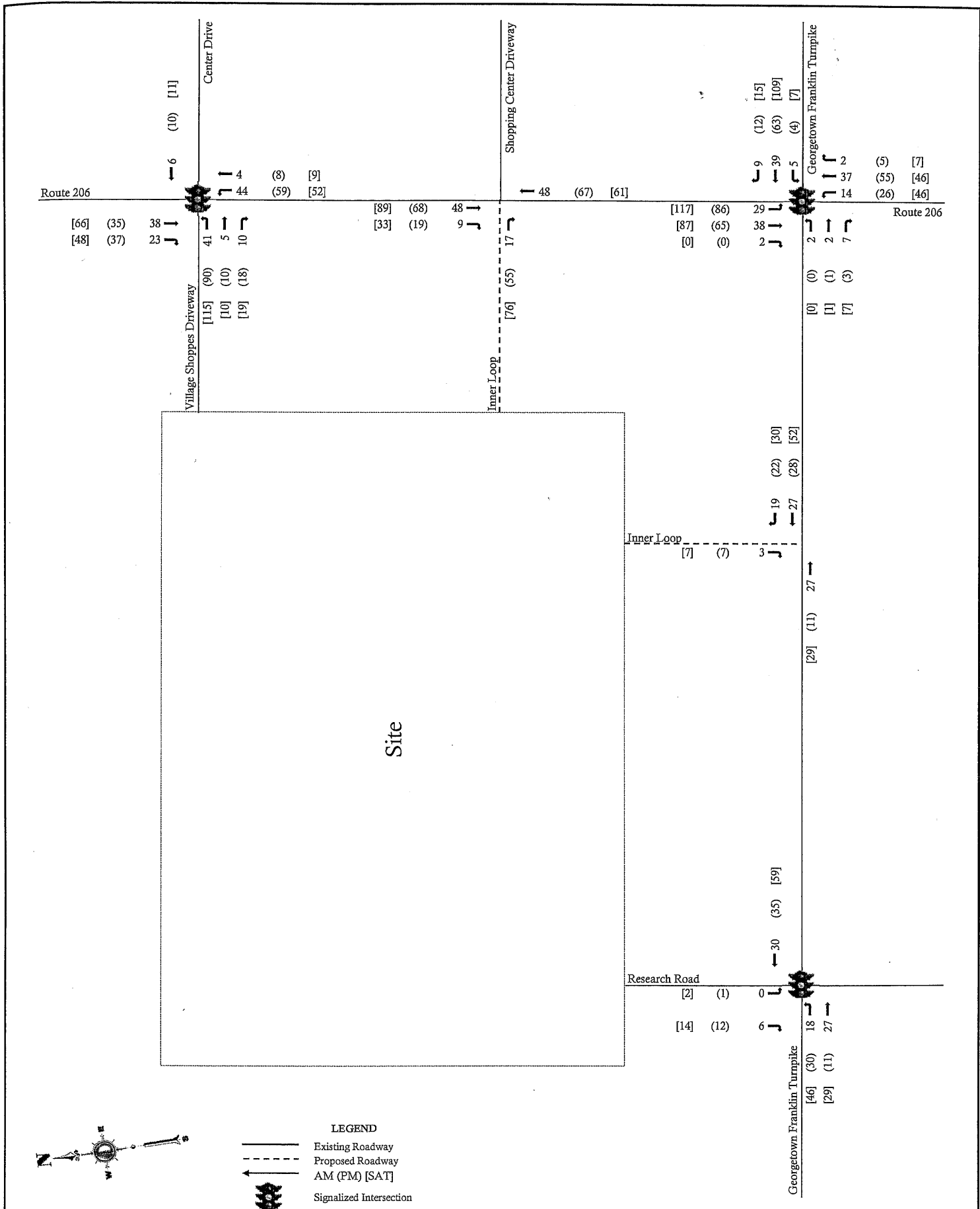


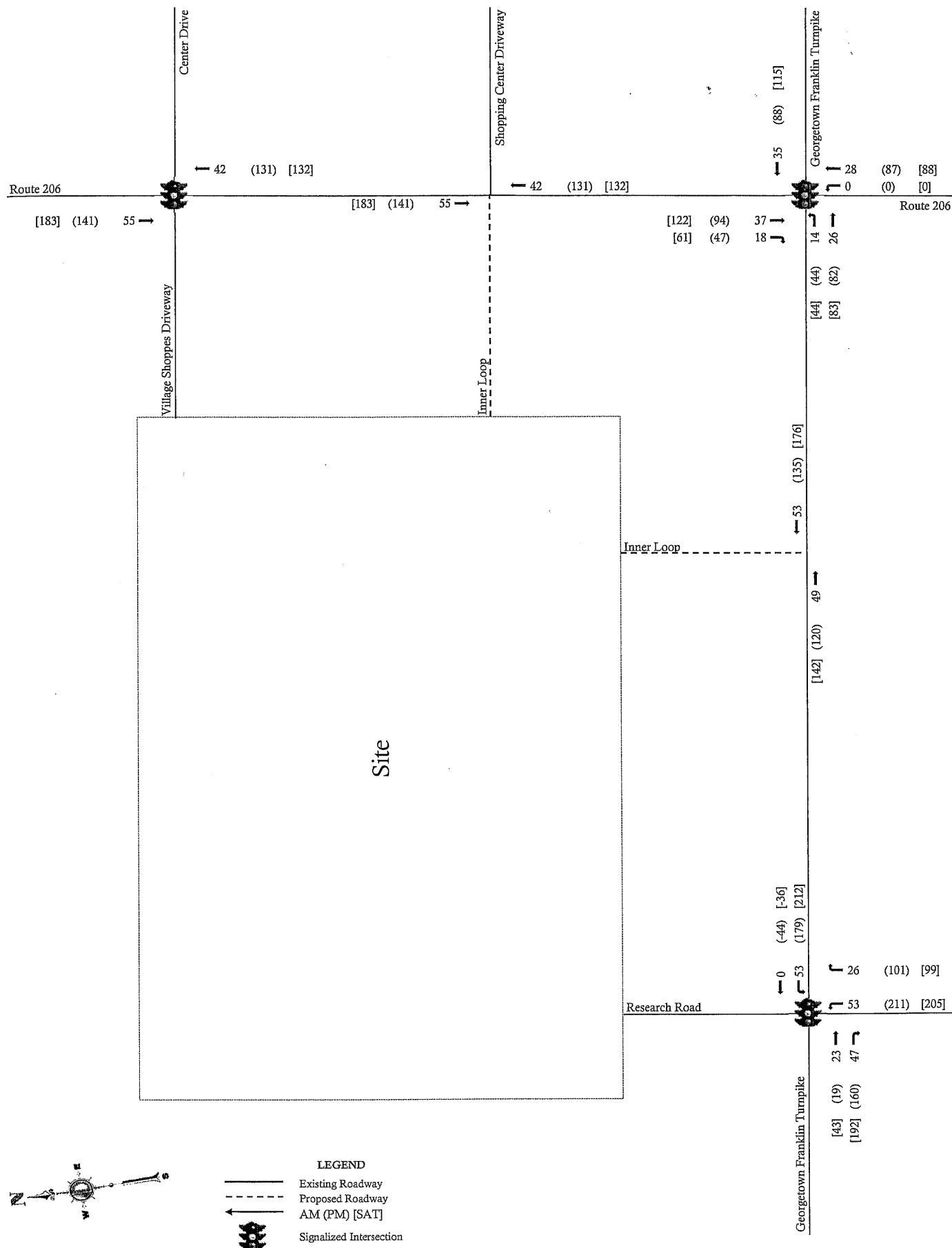
Figure 4
Adjacent Development Traffic Volumes
[Enrollment Management Expansion]

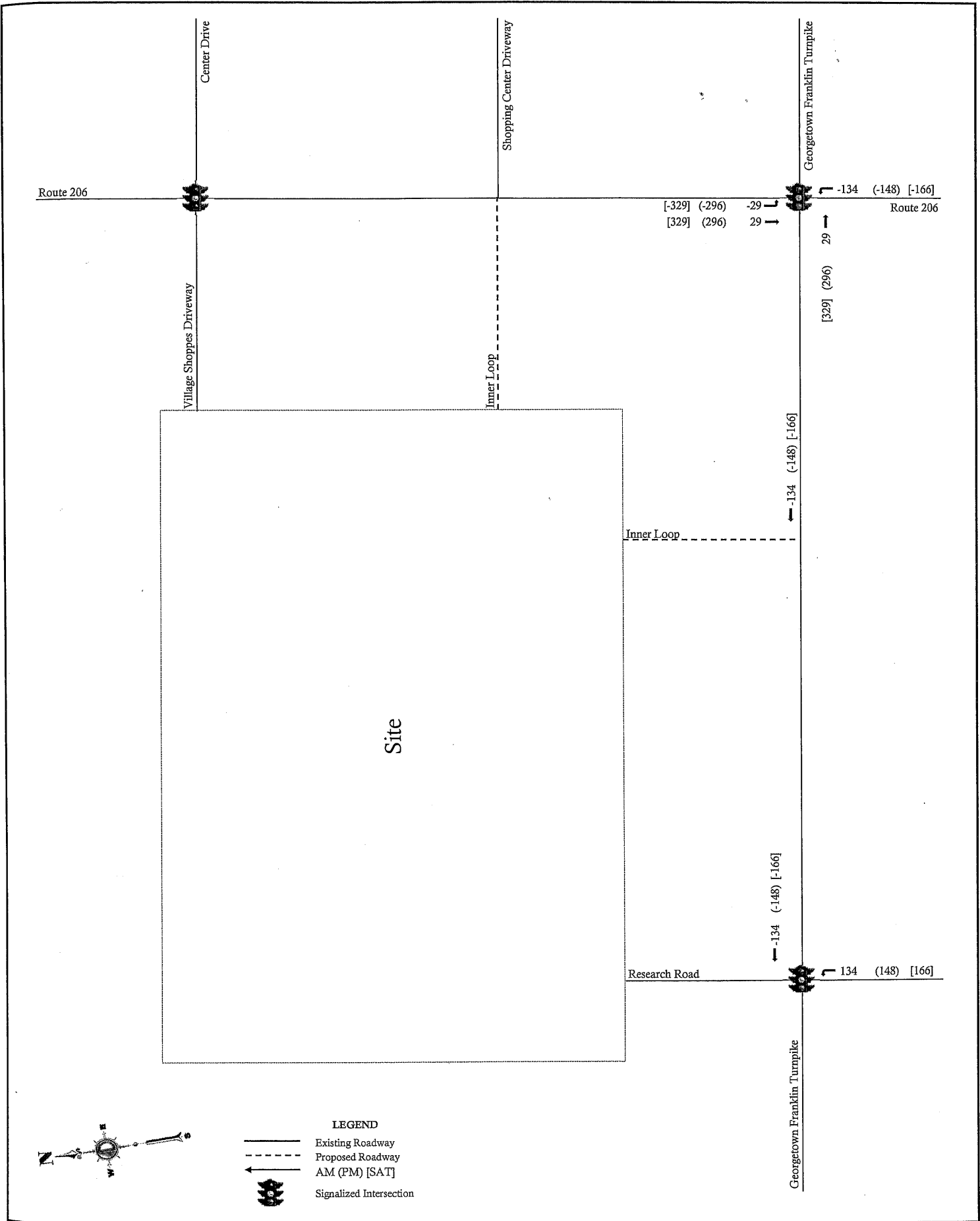


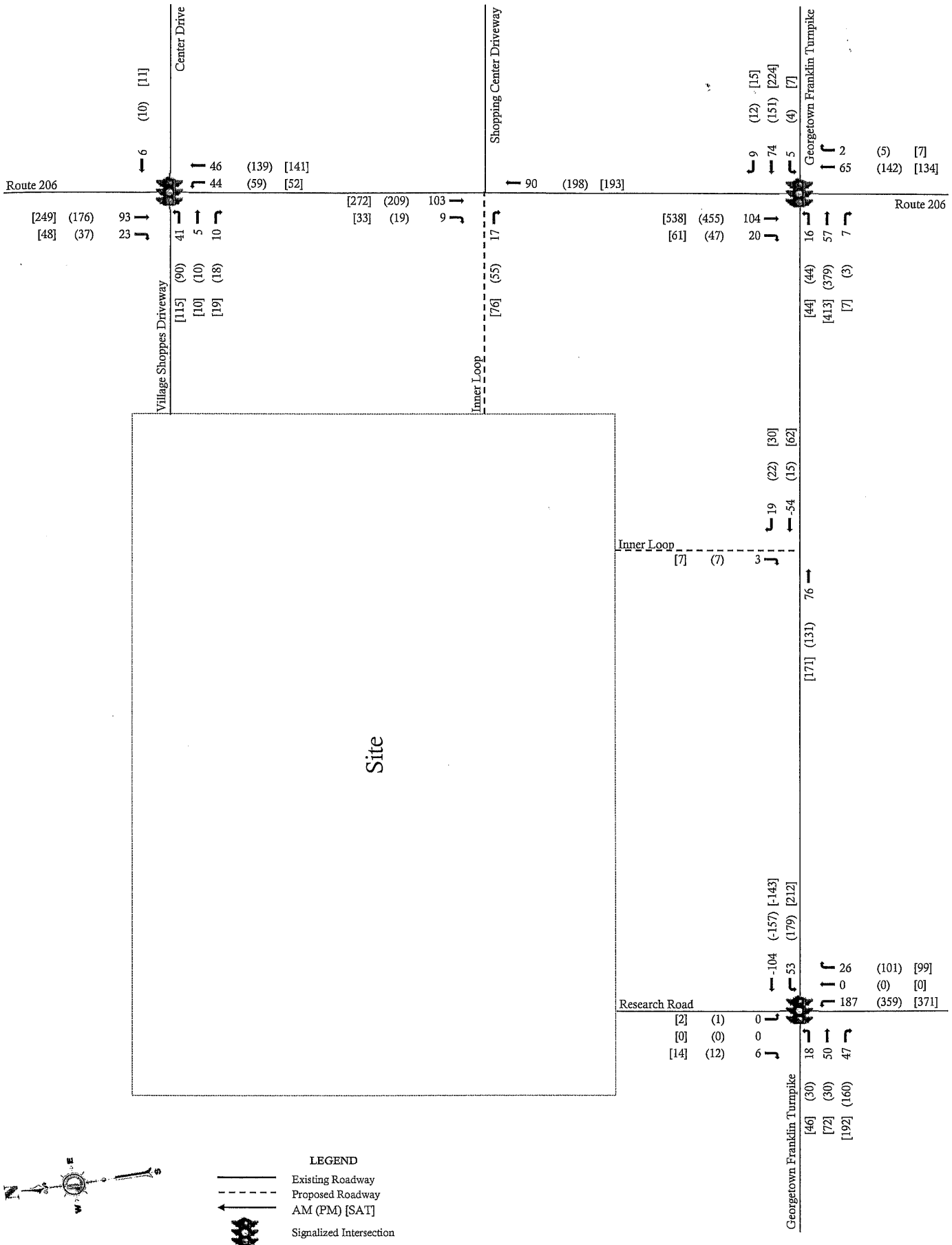


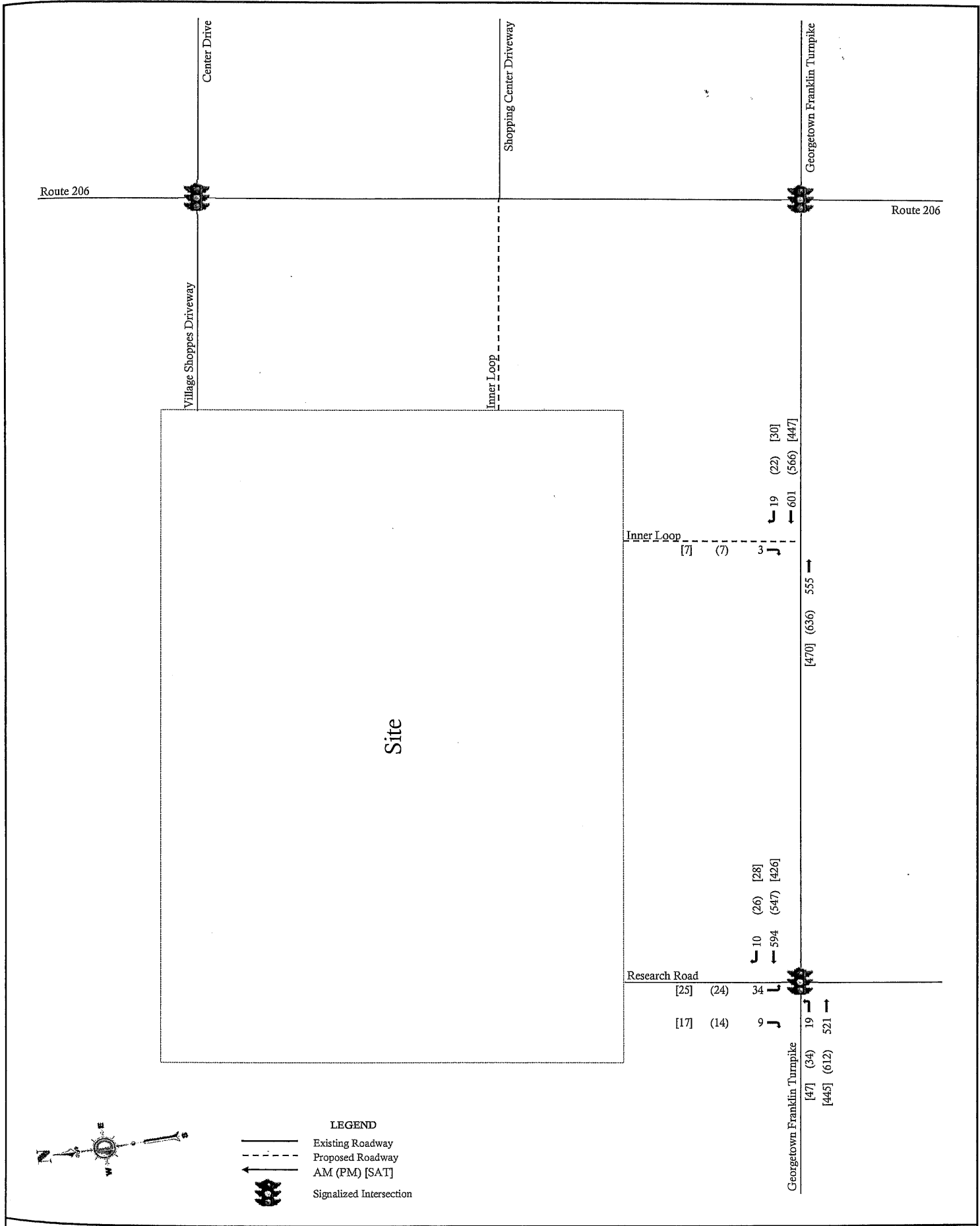


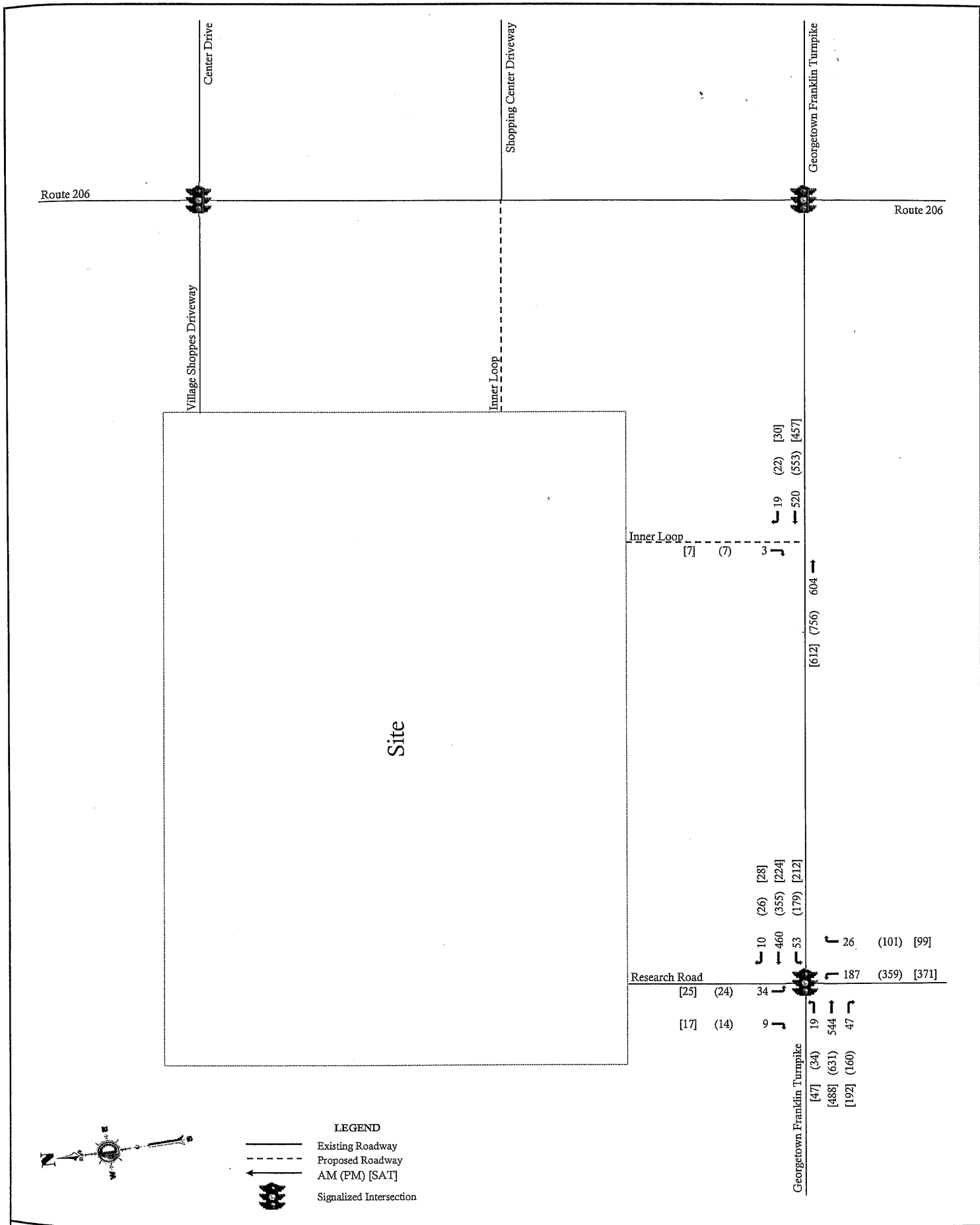


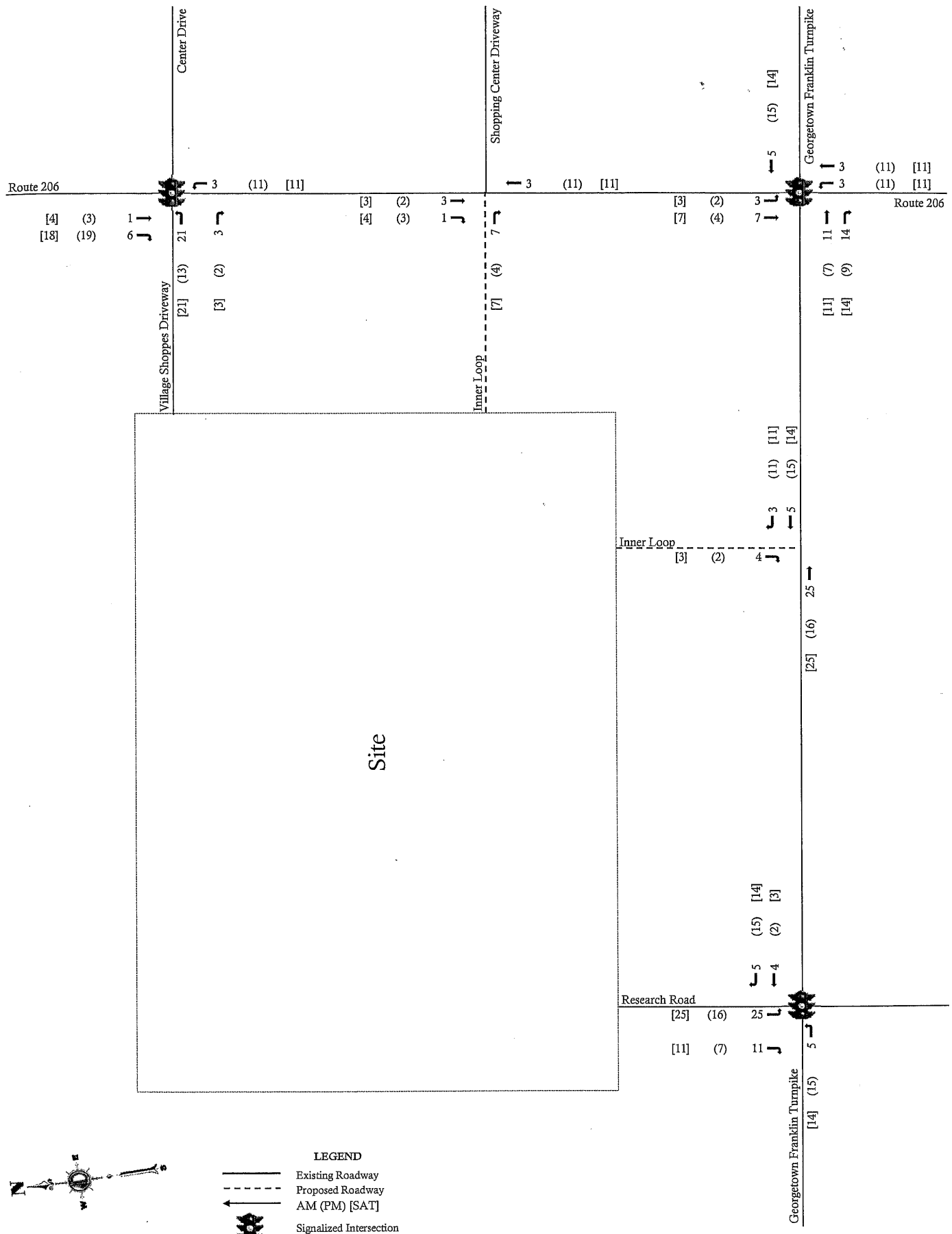












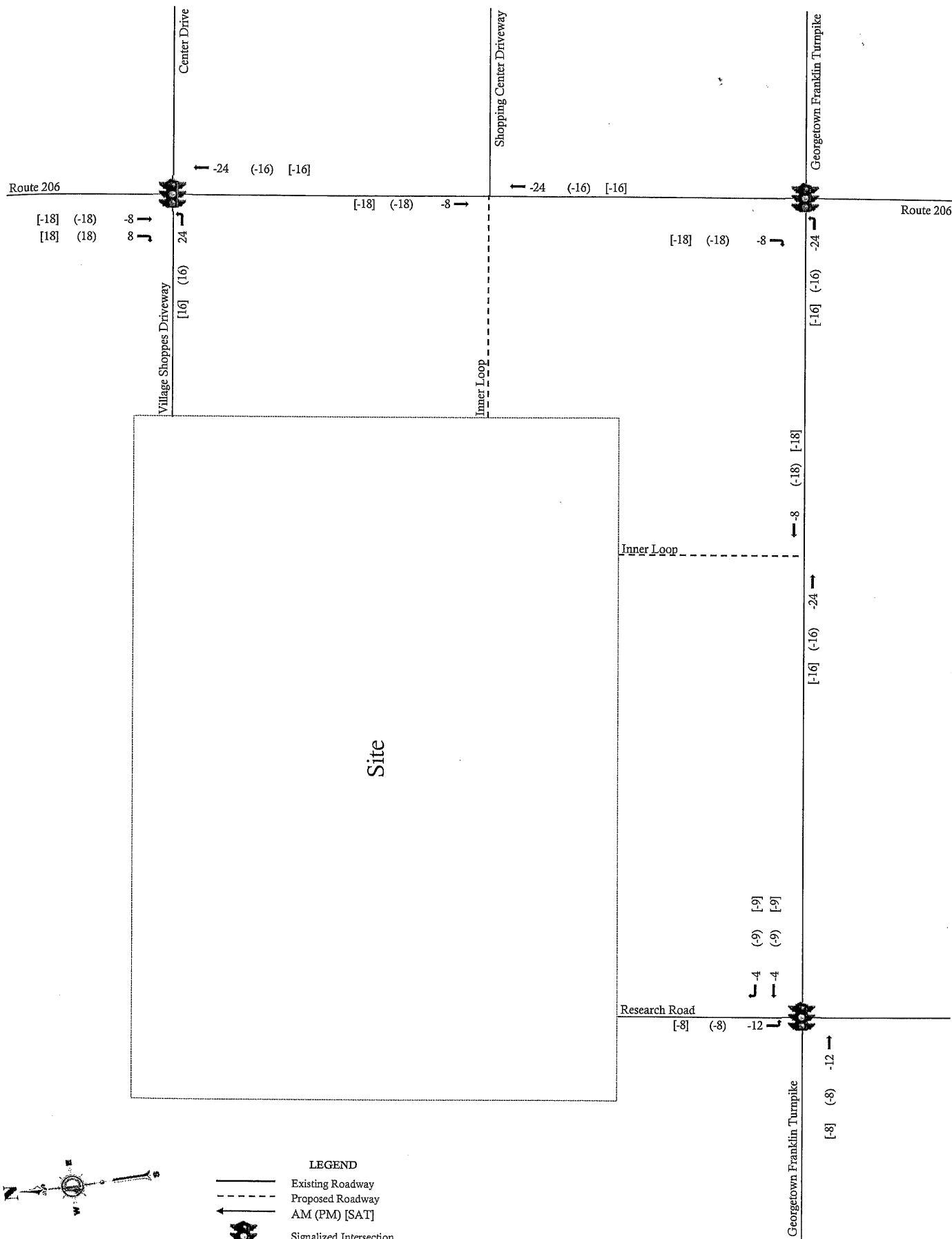


Figure 15

Rerouted Traffic Volumes



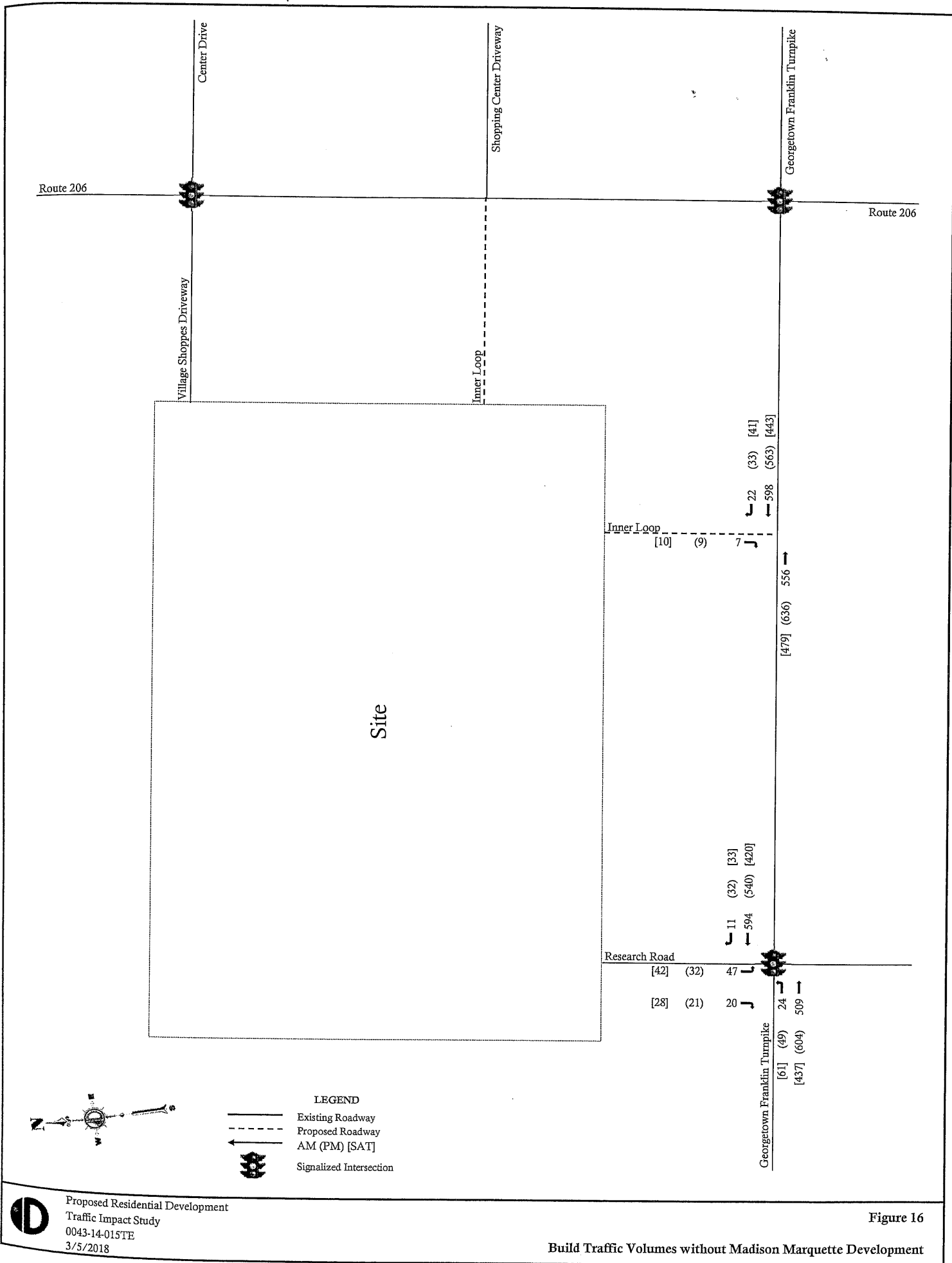
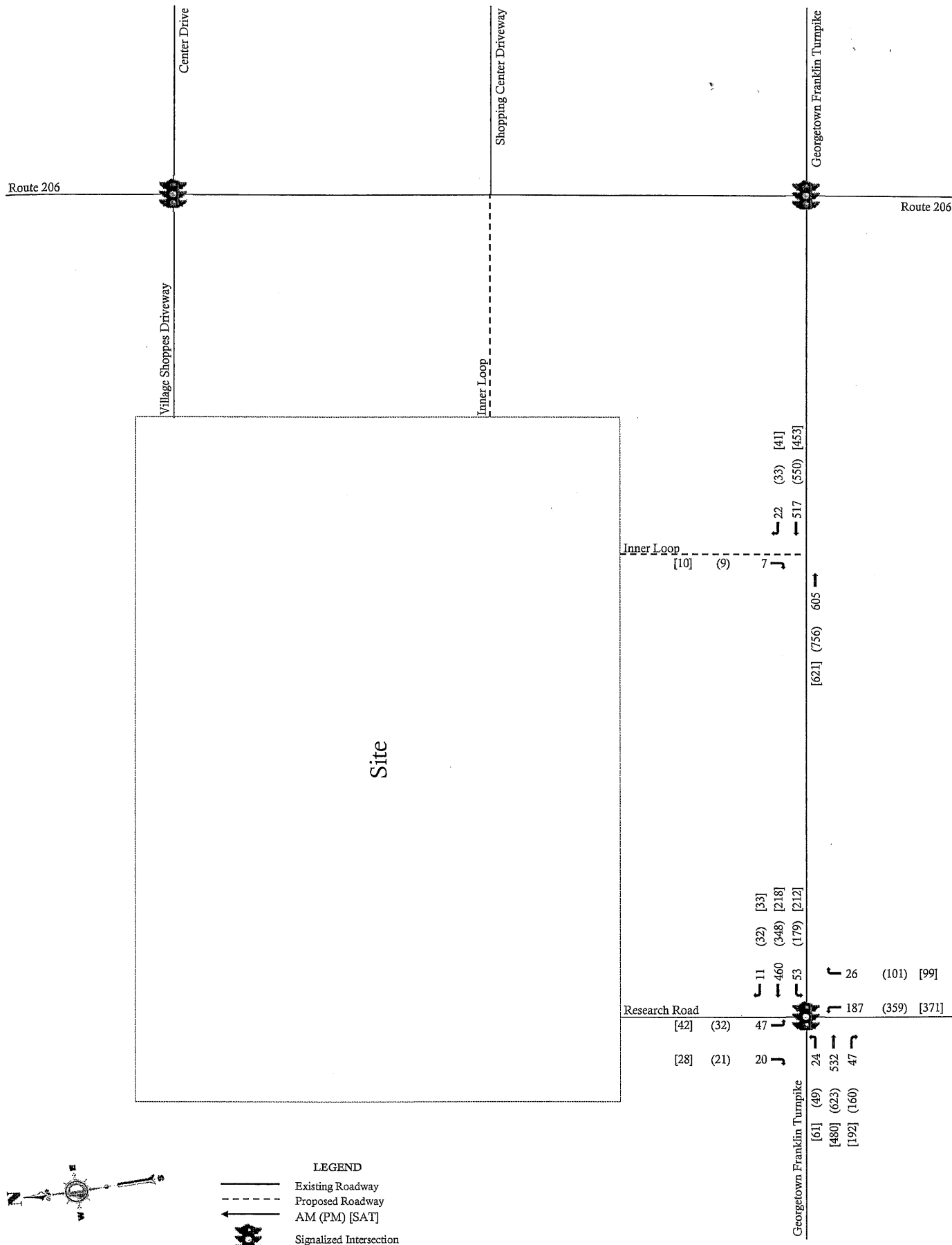


Figure 16

Build Traffic Volumes without Madison Marquette Development



Appendix B
Traffic Counts

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ, 07719
245 Main Street - Suite 110, Chester, NJ, 07930
(732) 681-0760

E/W: Georgetown Franklin Turnpike
N/S: Research Road
Town/County: Montgomery/Somerset
Job #: 0043-14-015T

File Name : Georgetown Franklin Tpke & Research Rd AM & PM
Site Code : 00000000
Start Date : 10/12/2017
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Georgetown Franklin Turnpike Eastbound				Georgetown Franklin Turnpike Westbound				Research Road Southbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	71	0	71	0	115	0	115	9	0	2	11	197
07:15 AM	0	107	0	107	0	95	2	97	11	0	1	12	216
07:30 AM	1	114	0	115	0	113	4	117	13	0	0	13	245
07:45 AM	0	118	0	118	0	137	1	138	12	0	2	14	270
Total	1	410	0	411	0	460	7	467	45	0	5	50	928
08:00 AM	0	121	0	121	0	153	5	158	7	0	1	8	287
08:15 AM	1	130	0	131	0	131	3	134	5	0	0	5	270
08:30 AM	0	115	0	115	0	132	1	133	9	0	0	9	257
08:45 AM	0	129	0	129	0	113	2	115	6	0	0	6	250
Total	1	495	0	496	0	529	11	540	27	0	1	28	1064
*** BREAK ***													
04:30 PM	2	173	0	175	0	127	3	130	4	0	2	6	311
04:45 PM	0	129	0	129	0	126	4	130	3	0	0	3	262
Total	2	302	0	304	0	253	7	260	7	0	2	9	573
05:00 PM	2	146	0	148	0	130	9	139	4	0	0	4	291
05:15 PM	0	141	0	141	0	119	9	128	12	0	0	12	281
05:30 PM	0	143	0	143	0	125	5	130	7	0	0	7	280
05:45 PM	0	135	0	135	0	115	12	127	9	0	0	9	271
Total	2	565	0	567	0	489	35	524	32	0	0	32	1123
06:00 PM	2	174	0	176	0	115	7	122	11	0	1	12	310
06:15 PM	1	117	0	118	0	124	11	135	8	0	0	8	261
Grand Total	9	2063	0	2072	0	1970	78	2048	130	0	9	139	4259
Apprch %	0.4	99.6	0		0	96.2	3.8		93.5	0	6.5		
Total %	0.2	48.4	0	48.6	0	46.3	1.8	48.1	3.1	0	0.2	3.3	
Cars	9	1996	0	2005	0	1911	74	1985	125	0	8	133	4123
% Cars	100	96.8	0	96.8	0	97	94.9	96.9	96.2	0	88.9	95.7	96.8
Trucks	0	67	0	67	0	59	4	63	5	0	1	6	136
% Trucks	0	3.2	0	3.2	0	3	5.1	3.1	3.8	0	11.1	4.3	3.2

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ, 07719
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(732) 681-0760

E/W: Georgetown Franklin Turnpike
W/S: Research Road
Town/County: Montgomery/Somerset
Job #: 0043-14-015T

File Name : Georgetown Franklin Tpke & Research Rd SAT
Site Code : 00000000
Start Date : 10/14/2017
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Georgetown Franklin Turnpike Eastbound				Georgetown Franklin Turnpike Westbound				Research Road Southbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
11:00 AM	0	90	0	90	0	66	5	71	9	0	0	9	170
11:15 AM	0	80	0	80	0	93	1	94	10	0	0	10	184
11:30 AM	1	71	0	72	0	85	5	90	5	0	0	5	167
11:45 AM	0	103	0	103	0	99	5	104	4	0	3	7	214
Total	1	344	0	345	0	343	16	359	28	0	3	31	735
12:00 PM	0	132	0	132	0	81	7	88	7	0	0	7	227
12:15 PM	0	102	0	102	0	95	10	105	7	0	0	7	214
12:30 PM	0	80	0	80	0	74	3	77	5	0	0	5	162
12:45 PM	0	69	0	69	0	81	8	89	9	0	0	9	167
Total	0	383	0	383	0	331	28	359	28	0	0	28	770
01:00 PM	0	78	0	78	0	90	9	99	8	0	0	8	185
01:15 PM	0	60	0	60	0	91	10	101	1	0	2	3	164
01:30 PM	0	69	0	69	0	79	4	83	8	0	0	8	160
01:45 PM	0	79	0	79	0	95	3	98	3	0	0	3	180
Total	0	286	0	286	0	355	26	381	20	0	2	22	689
Grand Total	1	1013	0	1014	0	1029	70	1099	76	0	5	81	2194
Apprch %	0.1	99.9	0		0	93.6	6.4		93.8	0	6.2		
Total %	0	46.2	0	46.2	0	46.9	3.2	50.1	3.5	0	0.2	3.7	
Cars	1	995	0	996	0	1012	67	1079	75	0	5	80	2155
% Cars	100	98.2	0	98.2	0	98.3	95.7	98.2	98.7	0	100	98.8	98.2
Trucks	0	18	0	18	0	17	3	20	1	0	0	1	39
% Trucks	0	1.8	0	1.8	0	1.7	4.3	1.8	1.3	0	0	1.2	1.8

Appendix C
Capacity Analysis



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	484	553	10	33	3
Future Volume (vph)	1	484	553	10	33	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	200	0
Storage Lanes	1			0	0	1
Taper Length (ft)	50				100	
Right Turn on Red				Yes		Yes
Link Speed (mph)		45	45		25	
Link Distance (ft)		975	1425		568	
Travel Time (s)		14.8	21.6		15.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	6%	4%	10%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	515	599	0	35	3
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	50.0	50.0	50.0		7.0	7.0
Minimum Split (s)	57.0	57.0	57.0		13.0	13.0
Total Split (s)	57.0	57.0	57.0		23.0	23.0
Total Split (%)	71.3%	71.3%	71.3%		28.8%	28.8%
Yellow Time (s)	5.0	5.0	5.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min		None	None
Act Effct Green (s)	63.0	63.0	63.0		7.2	7.2
Actuated g/C Ratio	0.88	0.88	0.88		0.10	0.10
v/c Ratio	0.00	0.33	0.37		0.20	0.02
Control Delay	3.0	3.0	3.2		32.2	20.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.0	3.0	3.2		32.2	20.7
LOS	A	A	A		C	C
Approach Delay		3.0	3.2		31.3	
Approach LOS		A	A		C	
Queue Length 50th (ft)	0	0	0		15	0
Queue Length 95th (ft)	1	120	147		39	7
Internal Link Dist (ft)		895	1345		488	
Turn Bay Length (ft)	200				200	
Base Capacity (vph)	724	1584	1610		406	387
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.00	0.33	0.37		0.09	0.01

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 71.3

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 4.1

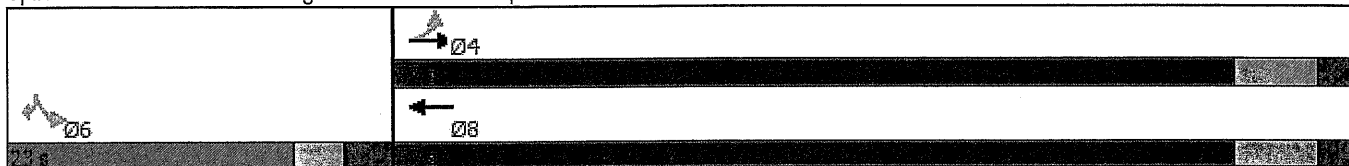
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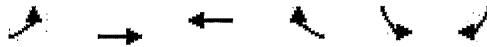
Intersection Capacity Utilization 58.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Georgetown-Franklin Turnpike & Research Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	589	502	25	23	2
Future Volume (vph)	4	589	502	25	23	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	200	0
Storage Lanes	1			0	0	1
Taper Length (ft)	50				100	
Right Turn on Red				Yes		Yes
Link Speed (mph)		45	45		25	
Link Distance (ft)		975	1425		568	
Travel Time (s)		14.8	21.6		15.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	4%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	640	573	0	25	2
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	50.0	50.0	50.0		7.0	7.0
Minimum Split (s)	57.0	57.0	57.0		13.0	13.0
Total Split (s)	57.0	57.0	57.0		23.0	23.0
Total Split (%)	71.3%	71.3%	71.3%		28.8%	28.8%
Yellow Time (s)	5.0	5.0	5.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min		None	None
Act Effct Green (s)	63.0	63.0	63.0		7.0	7.0
Actuated g/C Ratio	0.88	0.88	0.88		0.10	0.10
v/c Ratio	0.01	0.39	0.35		0.15	0.01
Control Delay	2.8	3.2	3.0		31.2	21.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	2.8	3.2	3.0		31.2	21.5
LOS	A	A	A		C	C
Approach Delay		3.2	3.0		30.5	
Approach LOS		A	A		C	
Queue Length 50th (ft)	0	0	0		10	0
Queue Length 95th (ft)	3	152	128		31	6
Internal Link Dist (ft)		895	1345		488	
Turn Bay Length (ft)	200				200	
Base Capacity (vph)	750	1649	1641		414	386
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.01	0.39	0.35		0.06	0.01

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 71.2

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 3.7

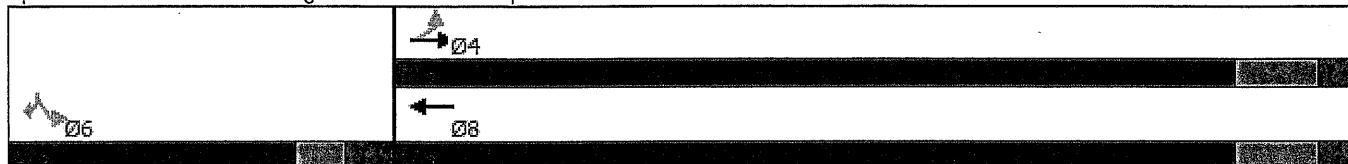
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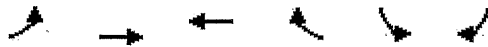
Intersection Capacity Utilization 58.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Georgetown-Franklin Turnpike & Research Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	←	→	→		←	←
Traffic Volume (vph)	1	408	360	27	23	3
Future Volume (vph)	1	408	360	27	23	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	200	0
Storage Lanes	1			0	0	1
Taper Length (ft)	50				100	
Right Turn on Red				Yes		Yes
Link Speed (mph)		45	45		25	
Link Distance (ft)		975	1425		568	
Travel Time (s)		14.8	21.6		15.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	3%	1%	4%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	448	426	0	25	3
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	50.0	50.0	50.0		7.0	7.0
Minimum Split (s)	57.0	57.0	57.0		13.0	13.0
Total Split (s)	57.0	57.0	57.0		23.0	23.0
Total Split (%)	71.3%	71.3%	71.3%		28.8%	28.8%
Yellow Time (s)	5.0	5.0	5.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min		None	None
Act Effct Green (s)	63.1	63.1	63.1		7.0	7.0
Actuated g/C Ratio	0.89	0.89	0.89		0.10	0.10
v/c Ratio	0.00	0.27	0.26		0.14	0.02
Control Delay	3.0	2.6	2.5		31.0	20.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.0	2.6	2.5		31.0	20.7
LOS	A	A	A		C	C
Approach Delay		2.6	2.5		29.9	
Approach LOS		A	A		C	
Queue Length 50th (ft)	0	0	0		10	0
Queue Length 95th (ft)	1	93	85		31	7
Internal Link Dist (ft)		895	1345		488	
Turn Bay Length (ft)	200				200	
Base Capacity (vph)	865	1634	1646		431	387
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.00	0.27	0.26		0.06	0.01

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 71.2

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.27

Intersection Signal Delay: 3.4

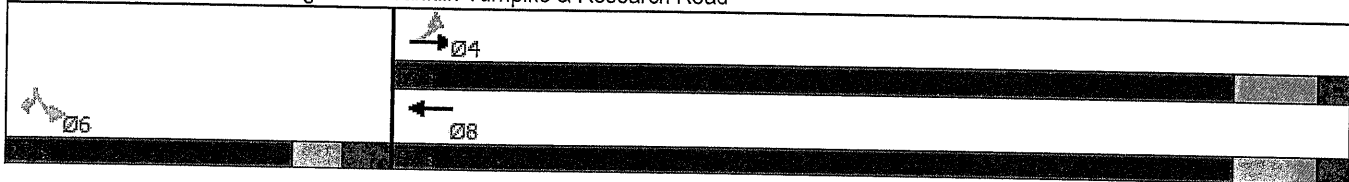
Intersection LOS: A

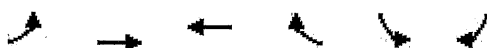
Intersection Capacity Utilization 58.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Georgetown-Franklin Turnpike & Research Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	521	594	10	34	9
Future Volume (vph)	19	521	594	10	34	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	200	0
Storage Lanes	1			0	1	1
Taper Length (ft)	50				100	
Right Turn on Red				Yes		Yes
Link Speed (mph)		45	45		25	
Link Distance (ft)		975	1425		568	
Travel Time (s)		14.8	21.6		15.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	6%	4%	10%	6%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	554	643	0	36	10
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	50.0	50.0	50.0		7.0	7.0
Minimum Split (s)	57.0	57.0	57.0		13.0	13.0
Total Split (s)	57.0	57.0	57.0		23.0	23.0
Total Split (%)	71.3%	71.3%	71.3%		28.8%	28.8%
Yellow Time (s)	5.0	5.0	5.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min		None	None
Act Effct Green (s)	58.7	58.7	58.7		7.2	7.2
Actuated g/C Ratio	0.83	0.83	0.83		0.10	0.10
v/c Ratio	0.03	0.37	0.43		0.21	0.06
Control Delay	3.2	4.1	4.5		32.1	17.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.2	4.1	4.5		32.1	17.1
LOS	A	A	A		C	B
Approach Delay		4.1	4.5		28.8	
Approach LOS		A	A		C	
Queue Length 50th (ft)	2	78	96		15	0
Queue Length 95th (ft)	7	134	164		40	13
Internal Link Dist (ft)		895	1345		488	
Turn Bay Length (ft)	200				200	
Base Capacity (vph)	617	1481	1505		407	386
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.03	0.37	0.43		0.09	0.03

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 71

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 5.2

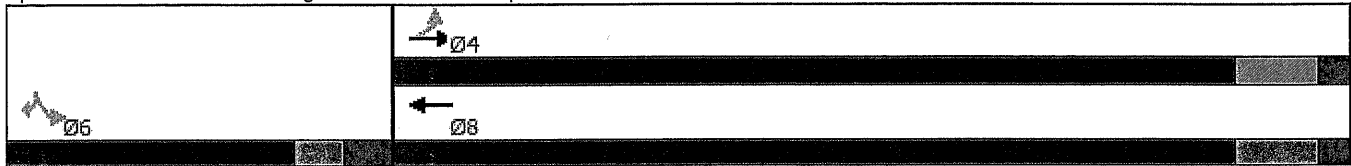
Intersection LOS: A

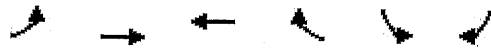
Intersection Capacity Utilization 58.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Georgetown-Franklin Turnpike & Research Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	34	612	547	26	24	14
Future Volume (vph)	34	612	547	26	24	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	200	0
Storage Lanes	1			0	0	1
Taper Length (ft)	50				100	
Right Turn on Red				Yes		Yes
Link Speed (mph)		45	45		25	
Link Distance (ft)		975	1425		568	
Travel Time (s)		14.8	21.6		15.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	37	665	623	0	26	15
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	50.0	50.0	50.0		7.0	7.0
Minimum Split (s)	57.0	57.0	57.0		13.0	13.0
Total Split (s)	57.0	57.0	57.0		23.0	23.0
Total Split (%)	71.3%	71.3%	71.3%		28.8%	28.8%
Yellow Time (s)	5.0	5.0	5.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min		None	None
Act Effct Green (s)	59.5	59.5	59.5		7.0	7.0
Actuated g/C Ratio	0.83	0.83	0.83		0.10	0.10
v/c Ratio	0.06	0.43	0.40		0.15	0.09
Control Delay	3.1	4.3	4.1		31.5	16.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.1	4.3	4.1		31.5	16.2
LOS	A	A	A		C	B
Approach Delay		4.3	4.1		25.9	
Approach LOS		A	A		C	
Queue Length 50th (ft)	4	101	90		11	0
Queue Length 95th (ft)	11	162	146		32	16
Internal Link Dist (ft)		895	1345		488	
Turn Bay Length (ft)	200				200	
Base Capacity (vph)	637	1548	1540		411	387
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.06	0.43	0.40		0.06	0.04

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 71.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 4.8

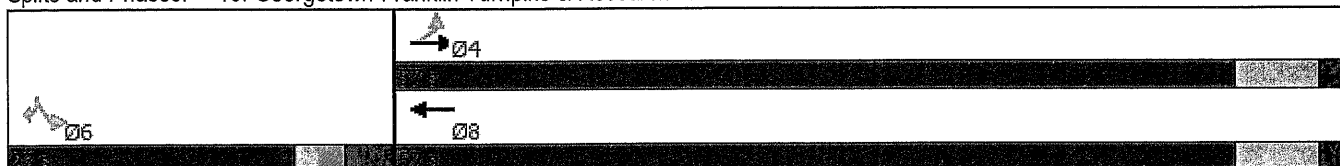
Intersection LOS: A

Intersection Capacity Utilization 58.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Georgetown-Franklin Turnpike & Research Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	47	445	426	28	25	17
Future Volume (vph)	47	445	426	28	25	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	200	0
Storage Lanes	1			0	0	1
Taper Length (ft)	50				100	
Right Turn on Red				Yes		Yes
Link Speed (mph)		45	45		25	
Link Distance (ft)		975	1425		568	
Travel Time (s)		14.8	21.6		15.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	3%	1%	4%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	489	499	0	27	19
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	50.0	50.0	50.0		7.0	7.0
Minimum Split (s)	57.0	57.0	57.0		13.0	13.0
Total Split (s)	57.0	57.0	57.0		23.0	23.0
Total Split (%)	71.3%	71.3%	71.3%		28.8%	28.8%
Yellow Time (s)	5.0	5.0	5.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	None	
Act Effct Green (s)	58.6	58.6	58.6	7.0	7.0	
Actuated g/C Ratio	0.83	0.83	0.83	0.10	0.10	
v/c Ratio	0.07	0.32	0.32	0.15	0.11	
Control Delay	3.1	3.6	3.6	31.1	15.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	3.1	3.6	3.6	31.1	15.2	
LOS	A	A	A	C	B	
Approach Delay		3.6	3.6	24.5		
Approach LOS		A	A	C		
Queue Length 50th (ft)	5	65	65	11	0	
Queue Length 95th (ft)	14	105	105	33	18	
Internal Link Dist (ft)		895	1345	488		
Turn Bay Length (ft)	200			200		
Base Capacity (vph)	742	1528	1544	424	394	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.07	0.32	0.32	0.06	0.05	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 70.8

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 4.4

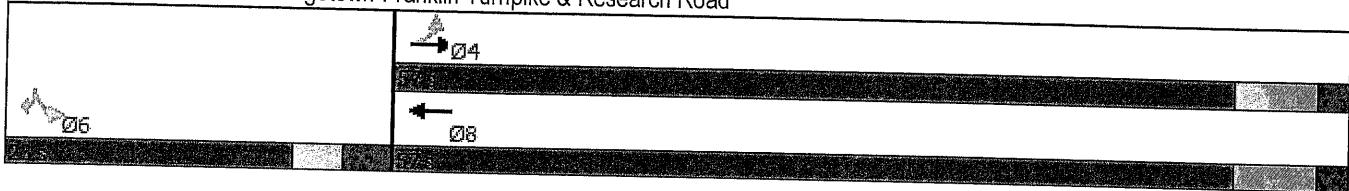
Intersection LOS: A

Intersection Capacity Utilization 58.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Georgetown-Franklin Turnpike & Research Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	544	47	53	460	10	187	1	26	34	1	9
Future Volume (vph)	19	544	47	53	460	10	187	1	26	34	1	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		100	300		0	0		100	200		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	50			50			25			100		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		975			1425			511			568	
Travel Time (s)		14.8			21.6			13.9			15.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	6%	2%	2%	4%	10%	2%	2%	2%	6%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	579	50	56	500	0	199	29	0	36	11	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	4.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	15.0	15.0	15.0	7.0	15.0		15.0	15.0		15.0	15.0	
Total Split (s)	47.0	47.0	47.0	11.0	58.0		15.0	32.0		17.0	17.0	
Total Split (%)	52.2%	52.2%	52.2%	12.2%	64.4%		16.7%	35.6%		18.9%	18.9%	
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0		3.5	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0		4.5	6.0		6.0	6.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	
Recall Mode	Min	Min	Min	None	Min		None	Max		None	None	
Act Effct Green (s)	28.2	28.2	28.2	37.7	33.6		28.4	26.9		9.9	9.9	
Actuated g/C Ratio	0.38	0.38	0.38	0.51	0.45		0.38	0.36		0.13	0.13	
v/c Ratio	0.06	0.85	0.07	0.19	0.60		0.35	0.05		0.20	0.05	
Control Delay	15.4	33.8	0.2	9.2	17.3		22.1	9.4		36.3	20.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	15.4	33.8	0.2	9.2	17.3		22.1	9.4		36.3	20.2	
LOS	B	C	A	A	B		C	A		D	C	
Approach Delay		30.7			16.5			20.5			32.5	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	6	253	0	12	157		68	0		16	0	
Queue Length 95th (ft)	20	390	0	26	237		148	20		48	16	
Internal Link Dist (ft)		895			1345			431			488	
Turn Bay Length (ft)	200		100	300						200		
Base Capacity (vph)	454	1003	942	322	1299		561	597		203	256	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.58	0.05	0.17	0.38		0.35	0.05		0.18	0.04	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 73.9

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 23.8

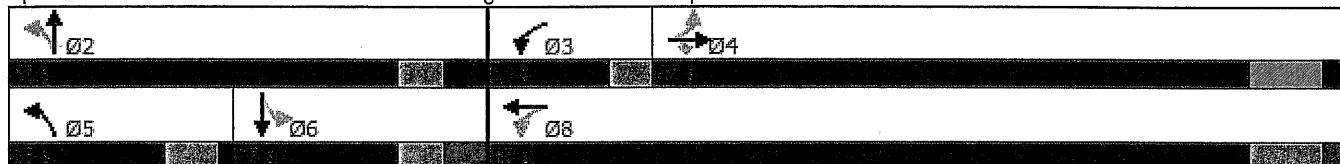
Intersection LOS: C

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Research Road & Georgetown-Franklin Turnpike





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	631	160	179	355	26	359	1	101	24	1	14
Future Volume (vph)	34	631	160	179	355	26	359	1	101	24	1	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		100	300		0	0		100	200		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	50			50			25			100		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		975			1425			511			568	
Travel Time (s)		14.8			21.6			13.9			15.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	686	174	195	414	0	390	111	0	26	16	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	4.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	15.0	15.0	15.0	7.0	15.0		15.0	15.0		15.0	15.0	
Total Split (s)	47.0	47.0	47.0	11.0	58.0		15.0	32.0		17.0	17.0	
Total Split (%)	52.2%	52.2%	52.2%	12.2%	64.4%		16.7%	35.6%		18.9%	18.9%	
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0		3.5	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0		4.5	6.0		6.0	6.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	
Recall Mode	Min	Min	Min	None	Min		None	Max		None	None	
Act Effct Green (s)	34.1	34.1	34.1	49.1	45.0		27.7	26.2		9.8	9.8	
Actuated g/C Ratio	0.40	0.40	0.40	0.58	0.53		0.33	0.31		0.12	0.12	
v/c Ratio	0.09	0.91	0.24	0.74	0.42		0.83	0.20		0.18	0.08	
Control Delay	15.5	41.1	6.0	31.2	12.8		46.3	6.2		38.5	18.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	15.5	41.1	6.0	31.2	12.8		46.3	6.2		38.5	18.6	
LOS	B	D	A	C	B		D	A		D	B	
Approach Delay		33.2			18.7			37.4			30.9	
Approach LOS		C			B			D			C	
Queue Length 50th (ft)	12	332	15	44	120		~202	0		13	1	
Queue Length 95th (ft)	30	#535	52	#145	183		#426	38		38	19	
Internal Link Dist (ft)		895			1345			431			488	
Turn Bay Length (ft)	200		100	300						200		
Base Capacity (vph)	463	890	822	267	1126		471	568		164	223	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.08	0.77	0.21	0.73	0.37		0.83	0.20		0.16	0.07	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 84.3

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 29.9

Intersection LOS: C

Intersection Capacity Utilization 83.8%

ICU Level of Service E

Analysis Period (min) 15

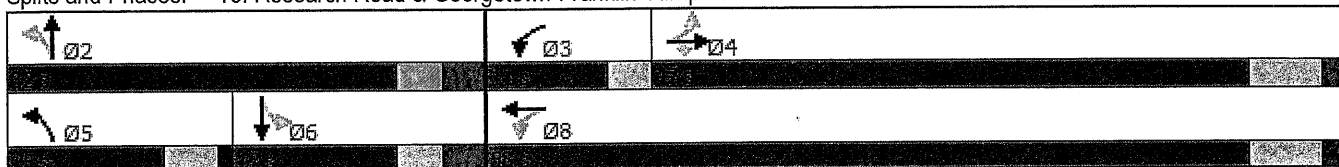
~ Volume exceeds capacity, queue is theoretically infinite.























Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Research Road & Georgetown-Franklin Turnpike



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	488	192	212	224	28	371	1	99	25	1	17
Future Volume (vph)	47	488	192	212	224	28	371	1	99	25	1	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		100	300		0	0		100	200		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	50			50			25			100		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		975			1425			511			568	
Travel Time (s)		14.8			21.6			13.9			15.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	3%	2%	2%	1%	4%	2%	2%	2%	2%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	536	211	233	277	0	408	110	0	27	20	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	4.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	15.0	15.0	15.0	7.0	15.0		15.0	15.0		15.0	15.0	
Total Split (s)	47.0	47.0	47.0	11.0	58.0		15.0	32.0		17.0	17.0	
Total Split (%)	52.2%	52.2%	52.2%	12.2%	64.4%		16.7%	35.6%		18.9%	18.9%	
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0		3.5	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0		4.5	6.0		6.0	6.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	
Recall Mode	Min	Min	Min	None	Min		None	Max		None	None	
Act Effect Green (s)	26.8	26.8	26.8	41.9	37.9		27.8	26.3		9.8	9.8	
Actuated g/C Ratio	0.35	0.35	0.35	0.54	0.49		0.36	0.34		0.13	0.13	
v/c Ratio	0.14	0.84	0.33	0.71	0.30		0.79	0.18		0.17	0.09	
Control Delay	17.0	35.3	7.6	22.4	11.7		39.0	6.0		35.5	17.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.0	35.3	7.6	22.4	11.7		39.0	6.0		35.5	17.1	
LOS	B	D	A	C	B		D	A		D	B	
Approach Delay		26.8			16.6			32.0			27.7	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	17	231	22	54	71		160	0		12	0	
Queue Length 95th (ft)	39	344	64	#103	115		#451	38		39	21	
Internal Link Dist (ft)		895			1345			431			488	
Turn Bay Length (ft)	200		100	300						200		
Base Capacity (vph)	573	965	895	330	1233		517	610		183	245	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.09	0.56	0.24	0.71	0.22		0.79	0.18		0.15	0.08	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 77.3

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 25.5

Intersection LOS: C

Intersection Capacity Utilization 78.8%

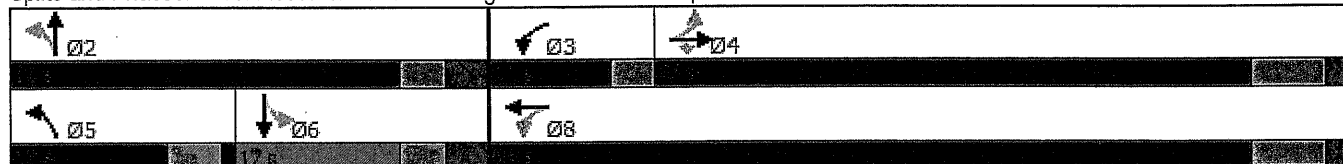
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Research Road & Georgetown-Franklin Turnpike





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	509	594	11	47	20
Future Volume (vph)	24	509	594	11	47	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	200	0
Storage Lanes	1			0	0	1
Taper Length (ft)	50				100	
Right Turn on Red				Yes		Yes
Link Speed (mph)		45	45		25	
Link Distance (ft)		975	1425		568	
Travel Time (s)		14.8	21.6		15.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	6%	4%	10%	6%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	541	644	0	50	21
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	50.0	50.0	50.0		7.0	7.0
Minimum Split (s)	57.0	57.0	57.0		13.0	13.0
Total Split (s)	57.0	57.0	57.0		23.0	23.0
Total Split (%)	71.3%	71.3%	71.3%		28.8%	28.8%
Yellow Time (s)	5.0	5.0	5.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min		None	None
Act Effect Green (s)	58.7	58.7	58.7		7.5	7.5
Actuated g/C Ratio	0.82	0.82	0.82		0.11	0.11
v/c Ratio	0.04	0.37	0.43		0.28	0.11
Control Delay	3.4	4.2	4.7		33.3	14.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.4	4.2	4.7		33.3	14.5
LOS	A	A	A		C	B
Approach Delay		4.2	4.7		27.8	
Approach LOS		A	A		C	
Queue Length 50th (ft)	3	75	97		20	0
Queue Length 95th (ft)	10	137	175		51	19
Internal Link Dist (ft)		895	1345		488	
Turn Bay Length (ft)	200				200	
Base Capacity (vph)	611	1476	1498		406	393
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.04	0.37	0.43		0.12	0.05

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 71.3

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 5.7

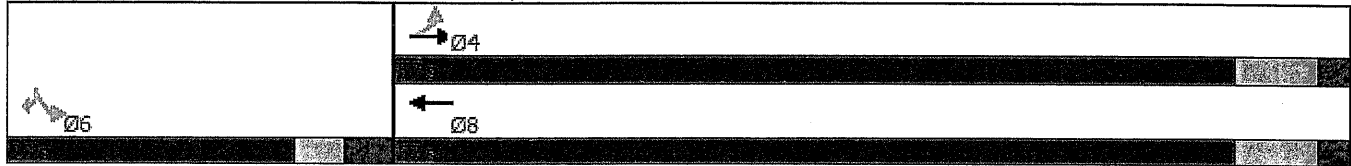
Intersection LOS: A

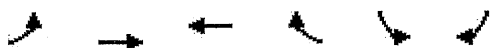
Intersection Capacity Utilization 58.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Georgetown-Franklin Turnpike & Research Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	49	604	540	32	32	21
Future Volume (vph)	49	604	540	32	32	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	200	0
Storage Lanes	1			0	0	1
Taper Length (ft)	50				100	
Right Turn on Red				Yes		Yes
Link Speed (mph)		45	45		25	
Link Distance (ft)		975	1425		568	
Travel Time (s)		14.8	21.6		15.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	657	622	0	35	23
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	50.0	50.0	50.0		7.0	7.0
Minimum Split (s)	57.0	57.0	57.0		13.0	13.0
Total Split (s)	57.0	57.0	57.0		23.0	23.0
Total Split (%)	71.3%	71.3%	71.3%		28.8%	28.8%
Yellow Time (s)	5.0	5.0	5.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min		None	None
Act Effct Green (s)	58.7	58.7	58.7		7.2	7.2
Actuated g/C Ratio	0.83	0.83	0.83		0.10	0.10
v/c Ratio	0.08	0.43	0.41		0.20	0.13
Control Delay	3.3	4.4	4.2		31.9	14.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.3	4.4	4.2		31.9	14.6
LOS	A	A	A		C	B
Approach Delay		4.4	4.2		25.0	
Approach LOS		A	A		C	
Queue Length 50th (ft)	6	99	90		14	0
Queue Length 95th (ft)	15	166	152		39	20
Internal Link Dist (ft)		895	1345		488	
Turn Bay Length (ft)	200				200	
Base Capacity (vph)	634	1540	1529		415	396
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.08	0.43	0.41		0.08	0.06

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 71

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 5.2

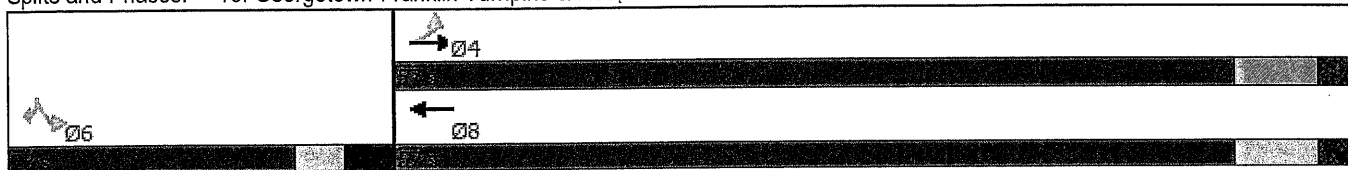
Intersection LOS: A

Intersection Capacity Utilization 58.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Georgetown-Franklin Turnpike & Research Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↑		↰	↑
Traffic Volume (vph)	61	437	420	32	42	28
Future Volume (vph)	61	437	420	32	42	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	200	0
Storage Lanes	1			0	0	1
Taper Length (ft)	50				100	
Right Turn on Red				Yes		Yes
Link Speed (mph)		45	45		25	
Link Distance (ft)		975	1425		568	
Travel Time (s)		14.8	21.6		15.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	3%	1%	4%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	480	497	0	46	31
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	50.0	50.0	50.0		7.0	7.0
Minimum Split (s)	57.0	57.0	57.0		13.0	13.0
Total Split (s)	57.0	57.0	57.0		23.0	23.0
Total Split (%)	71.3%	71.3%	71.3%		28.8%	28.8%
Yellow Time (s)	5.0	5.0	5.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min		None	None
Act Effct Green (s)	58.7	58.7	58.7		7.3	7.3
Actuated g/C Ratio	0.83	0.83	0.83		0.10	0.10
v/c Ratio	0.09	0.32	0.32		0.25	0.16
Control Delay	3.3	3.7	3.7		32.7	13.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.3	3.7	3.7		32.7	13.6
LOS	A	A	A		C	B
Approach Delay		3.7	3.7		25.1	
Approach LOS		A	A		C	
Queue Length 50th (ft)	7	63	65		19	0
Queue Length 95th (ft)	19	112	114		48	23
Internal Link Dist (ft)		895	1345		488	
Turn Bay Length (ft)	200				200	
Base Capacity (vph)	739	1522	1535		422	402
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.09	0.32	0.32		0.11	0.08

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 71.1

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 5.2

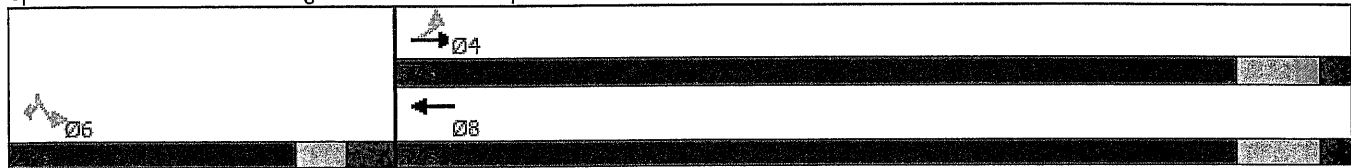
Intersection LOS: A






















Intersection Capacity Utilization 67.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Georgetown-Franklin Turnpike & Research Road



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	532	47	53	460	11	187	1	26	47	1	20
Future Volume (vph)	24	532	47	53	460	11	187	1	26	47	1	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		100	300		0	0		100	200		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	50			50			25			100		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		975			1425			511			568	
Travel Time (s)		14.8			21.6			13.9			15.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	6%	2%	2%	4%	10%	2%	2%	2%	6%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	566	50	56	501	0	199	29	0	50	22	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	4.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	15.0	15.0	15.0	7.0	15.0		15.0	15.0		15.0	15.0	
Total Split (s)	47.0	47.0	47.0	11.0	58.0		15.0	32.0		17.0	17.0	
Total Split (%)	52.2%	52.2%	52.2%	12.2%	64.4%		16.7%	35.6%		18.9%	18.9%	
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0		3.5	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0		4.5	6.0		6.0	6.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	
Recall Mode	Min	Min	Min	None	Min		None	Max		None	None	
Act Effct Green (s)	27.6	27.6	27.6	37.1	33.0		28.5	26.9		9.9	9.9	
Actuated g/C Ratio	0.38	0.38	0.38	0.51	0.45		0.39	0.37		0.13	0.13	
v/c Ratio	0.09	0.84	0.07	0.19	0.61		0.35	0.05		0.28	0.09	
Control Delay	15.8	33.3	0.2	9.2	17.6		21.8	9.4		37.5	16.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	15.8	33.3	0.2	9.2	17.6		21.8	9.4		37.5	16.7	
LOS	B	C	A	A	B		C	A		D	B	
Approach Delay		30.0			16.7			20.2			31.1	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	8	245	0	12	158		67	0		22	0	
Queue Length 95th (ft)	24	378	0	26	237		148	20		62	22	
Internal Link Dist (ft)		895			1345			431			488	
Turn Bay Length (ft)	200		100	300						200		
Base Capacity (vph)	455	1011	948	327	1308		565	602		205	265	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.56	0.05	0.17	0.38		0.35	0.05		0.24	0.08	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 73.4

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 23.7

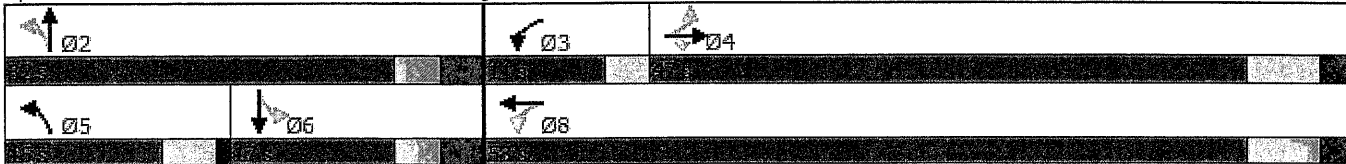
Intersection LOS: C

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Research Road & Georgetown-Franklin Turnpike





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	623	160	179	348	32	359	1	101	32	1	21
Future Volume (vph)	49	623	160	179	348	32	359	1	101	32	1	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		100	300		0	0		100	200		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	50			50			25			100		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		975			1425			511			568	
Travel Time (s)		14.8			21.6			13.9			15.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	677	174	195	413	0	390	111	0	35	24	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	4.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	15.0	15.0	15.0	7.0	15.0		15.0	15.0		15.0	15.0	
Total Split (s)	47.0	47.0	47.0	11.0	58.0		15.0	32.0		17.0	17.0	
Total Split (%)	52.2%	52.2%	52.2%	12.2%	64.4%		16.7%	35.6%		18.9%	18.9%	
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0		3.5	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0		4.5	6.0		6.0	6.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	
Recall Mode	Min	Min	Min	None	Min		None	Max		None	None	
Act Effct Green (s)	33.7	33.7	33.7	48.6	44.6		27.7	26.2		9.8	9.8	
Actuated g/C Ratio	0.40	0.40	0.40	0.58	0.53		0.33	0.31		0.12	0.12	
v/c Ratio	0.14	0.91	0.24	0.74	0.42		0.83	0.19		0.24	0.12	
Control Delay	16.2	40.5	6.0	30.7	12.8		45.8	6.2		39.9	16.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	16.2	40.5	6.0	30.7	12.8		45.8	6.2		39.9	16.6	
LOS	B	D	A	C	B		D	A		D	B	
Approach Delay		32.4			18.5			37.0			30.4	
Approach LOS		C			B			D			C	
Queue Length 50th (ft)	17	325	15	44	119		~197	0		17	1	
Queue Length 95th (ft)	40	#525	52	#143	182		#427	38		47	24	
Internal Link Dist (ft)		895			1345			431			488	
Turn Bay Length (ft)	200		100	300						200		
Base Capacity (vph)	465	895	826	268	1129		472	570		165	230	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.76	0.21	0.73	0.37		0.83	0.19		0.21	0.10	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 83.9

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 29.4

Intersection LOS: C

Intersection Capacity Utilization 83.4%

ICU Level of Service E

Analysis Period (min) 15

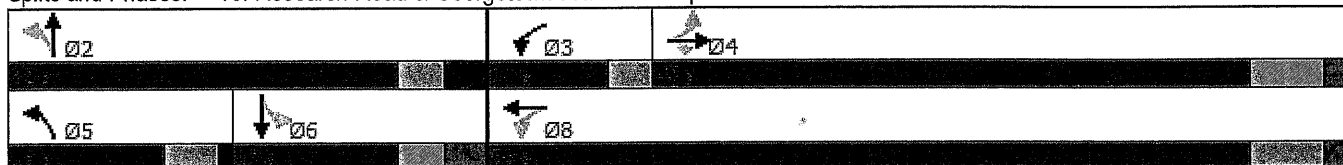
~ Volume exceeds capacity, queue is theoretically infinite.























Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Research Road & Georgetown-Franklin Turnpike



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	480	192	212	218	33	371	1	99	42	1	28
Future Volume (vph)	61	480	192	212	218	33	371	1	99	42	1	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		100	300		0	0		100	200		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	50			50			25			100		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		975			1425			511			568	
Travel Time (s)		14.8			21.6			13.9			15.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	3%	2%	2%	1%	4%	2%	2%	2%	2%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	527	211	233	276	0	408	110	0	46	32	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	4.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	15.0	15.0	15.0	7.0	15.0		15.0	15.0		15.0	15.0	
Total Split (s)	47.0	47.0	47.0	11.0	58.0		15.0	32.0		17.0	17.0	
Total Split (%)	52.2%	52.2%	52.2%	12.2%	64.4%		16.7%	35.6%		18.9%	18.9%	
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0		3.5	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0		4.5	6.0		6.0	6.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	
Recall Mode	Min	Min	Min	None	Min		None	Max		None	None	
Act Effct Green (s)	26.4	26.4	26.4	41.4	37.4		27.8	26.3		9.8	9.8	
Actuated g/C Ratio	0.34	0.34	0.34	0.54	0.49		0.36	0.34		0.13	0.13	
v/c Ratio	0.18	0.83	0.33	0.70	0.31		0.79	0.18		0.28	0.14	
Control Delay	17.8	35.1	7.5	21.7	11.7		38.5	5.9		37.7	14.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.8	35.1	7.5	21.7	11.7		38.5	5.9		37.7	14.8	
LOS	B	D	A	C	B		D	A		D	B	
Approach Delay		26.4			16.3			31.6			28.3	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	22	225	21	54	70		158	0		20	0	
Queue Length 95th (ft)	48	337	63	#100	114		#449	37		58	27	
Internal Link Dist (ft)		895			1345			431			488	
Turn Bay Length (ft)	200		100	300						200		
Base Capacity (vph)	578	970	901	334	1236		518	613		185	257	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.54	0.23	0.70	0.22		0.79	0.18		0.25	0.12	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 76.8

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 25.2

Intersection LOS: C

Intersection Capacity Utilization 78.4%

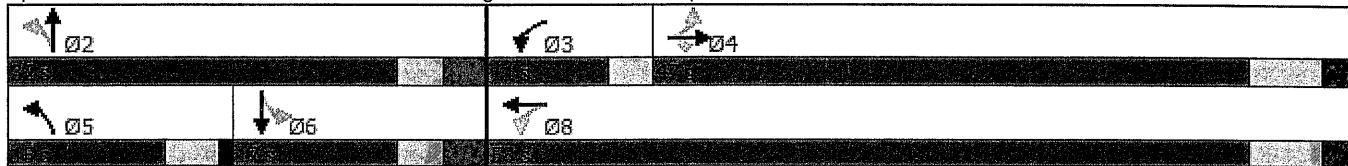
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Research Road & Georgetown-Franklin Turnpike



Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	555	601	19	0	3
Future Vol, veh/h	0	555	601	19	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	6	4	2	0	2
Mvmt Flow	0	590	639	20	0	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 649
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.318
Pot Cap-1 Maneuver	0	-	- 0 470
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 470
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	470
HCM Lane V/C Ratio	-	-	-	0.007
HCM Control Delay (s)	-	-	-	12.7
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	636	566	22	0	7
Future Vol, veh/h	0	636	566	22	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	2	0	2
Mvmt Flow	0	691	615	24	0	8

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 627
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.318
Pot Cap-1 Maneuver	0	-	- 0 484
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - 484
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	484
HCM Lane V/C Ratio	-	-	-	0.016
HCM Control Delay (s)	-	-	-	12.6
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	470	447	30	0	7
Future Vol, veh/h	0	470	447	30	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	3	1	2	0	2
Mvmt Flow	0	516	491	33	0	8

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 508
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.318
Pot Cap-1 Maneuver	0	-	- - 0 565
Stage 1	0	-	- - 0 -
Stage 2	0	-	- - 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 565
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.5
HCM LOS	B		

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	565
HCM Lane V/C Ratio	-	-	-	0.014
HCM Control Delay (s)	-	-	-	11.5
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	604	520	19	0	3
Future Vol, veh/h	0	604	520	19	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	6	4	2	0	2
Mvmt Flow	0	643	553	20	0	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	- 563
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	- 6.22
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	- 3.318
Pot Cap-1 Maneuver	0	-	-	-	0 526
Stage 1	0	-	-	-	0 -
Stage 2	0	-	-	-	0 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	- 526
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBL+1
Capacity (veh/h)	-	-	-	526
HCM Lane V/C Ratio	-	-	-	0.006
HCM Control Delay (s)	-	-	-	11.9
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	756	553	22	0	7
Future Vol, veh/h	0	756	553	22	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	2	0	2
Mvmt Flow	0	822	601	24	0	8

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBL
Capacity (veh/h)	-	-	-	492
HCM Lane V/C Ratio	-	-	-	0.015
HCM Control Delay (s)	-	-	-	12.4
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	612	457	30	0	7
Future Vol, veh/h	0	612	457	30	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	3	1	0	0	0
Mvmt Flow	0	673	502	33	0	8

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	- 6.2
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	- 3.3
Pot Cap-1 Maneuver	0	-	- 0 561
Stage 1	0	-	- 0
Stage 2	0	-	- 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 561
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	561
HCM Lane V/C Ratio	-	-	-	0.014
HCM Control Delay (s)	-	-	-	11.5
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	556	598	22	0	7
Future Vol, veh/h	0	556	598	22	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	6	4	2	0	2
Mvmt Flow	0	591	636	23	0	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 648
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.318
Pot Cap-1 Maneuver	0	-	- 0 470
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 470
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	470
HCM Lane V/C Ratio	-	-	-	0.016
HCM Control Delay (s)	-	-	-	12.8
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	636	563	33	0	9
Future Vol, veh/h	0	636	563	33	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	2	0	2
Mvmt Flow	0	691	612	36	0	10

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	482
HCM Lane V/C Ratio	-	-	-	0.02
HCM Control Delay (s)	-	-	-	12.6
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	479	443	41	0	10
Future Vol, veh/h	0	479	443	41	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	3	1	2	0	2
Mvmt Flow	0	526	487	45	0	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	563
HCM Lane V/C Ratio	-	-	-	0.02
HCM Control Delay (s)	-	-	-	11.5
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	605	517	22	0	7
Future Vol, veh/h	0	605	517	22	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	6	4	2	0	2
Mvmt Flow	0	644	550	23	0	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 562
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.318
Pot Cap-1 Maneuver	0	-	- 0 526
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 526
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	526
HCM Lane V/C Ratio	-	-	-	0.014
HCM Control Delay (s)	-	-	-	11.9
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	756	550	33	0	9
Future Vol, veh/h	0	756	550	33	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	2	0	2
Mvmt Flow	0	822	598	36	0	10

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	491
HCM Lane V/C Ratio	-	-	-	0.02
HCM Control Delay (s)	-	-	-	12.5
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	621	453	41	0	10
Future Vol, veh/h	0	621	453	41	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	3	1	0	0	0
Mvmt Flow	0	682	498	45	0	11

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	0	-	521
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	0	559
Stage 1	0	-	-	0	-
Stage 2	0	-	-	0	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	559
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	559
HCM Lane V/C Ratio	-	-	-	0.02
HCM Control Delay (s)	-	-	-	11.6
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1