

TRAFFIC IMPACT STUDY

For

Chase Partners Site

Property Located at:

**King George Road (CR 651) & Mountain Avenue
Block 85.01 – Lots 1, 2, 3 & 4
Township of Warren, Somerset County, NJ**

Prepared by:



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3089-99-001TE

INTRODUCTION

It is proposed to construct a mixed-use development with Phases 1 and 2 consisting of three hundred thirty-five (335) residential units inclusive of two hundred twenty (220) apartment units and one hundred fifteen (115) townhome units. Phase 3 is anticipated to include a 130 room hotel and an 8,000 SF restaurant (The Project). The site is bound by Interstate 78 to the north, King George Road to the west, and Mountain Avenue to the east/south and is currently undeveloped, in the Township of Warren, Somerset County, New Jersey as shown on Figure 1 contained in Appendix A. The site is designated as Block 85.01 – Lots 1, 2, 3 and 4 on the Township Tax Maps. Access to the site is proposed via one (1) signalized full movement driveway along King George Road opposite the Warren Corporate Center driveway, which will provide access to 36 townhomes as well as the 220 apartments, 130 room hotel and 8,000 SF restaurant. Additionally, two (2) unsignalized full movement driveways are proposed along Mountain Avenue which will provide access to 79 townhomes. In conjunction with the signalized driveway location, it is proposed to construct a southbound left turn lane within the existing landscaped median along with accompanying re-striping for the eastbound approach of the intersection, as well as adjust the signal timing in order to accommodate the new driveway approach.

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, 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 and weekday PM peak periods at the following intersections:
 - King George Road and I-78 Westbound Ramps;
 - King George Road and I-78 Eastbound Ramps;
 - King George Road and Warren Corporate Center Driveway;
 - King George Road and Mountain Avenue
- Projections of traffic to be generated by The Project 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 site driveways 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 parking layout and supply was assessed based on accepted design standards and demand experienced at similar developments.

EXISTING CONDITIONS

A review of the existing site and roadway conditions near the proposed site was conducted to provide the basis for assessing the traffic impact of the proposed residential 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:

Interstate 78 is an Urban Interstate under the jurisdiction of the New Jersey Department of Transportation. In the vicinity of the site the posted speed limit is 65 MPH and the roadway provides three travel lanes in each direction with a general east/west orientation, separated by a landscaped median. Interstate 78 provides a curved horizontal alignment and an uphill vertical alignment from west to east.

King George Road (CR 651) is an Urban Minor Arterial roadway under the jurisdiction of Somerset County. In the vicinity of the site the posted speed limit is 40 MPH. The roadway provides one travel lane in each direction to the south of Mountain Avenue, two travel lanes in each direction between Mountain Avenue and the Interstate 78 interchange separated by a curbed/landscaped median, and one travel lane in each direction to the north of the Interstate 78 interchange with a general north/south orientation. Curb is provided along both sides of the roadway while sidewalk is not provided along either side of the roadway. King George Road provides a slightly curved horizontal alignment and an uphill vertical alignment from north to south. The land uses along King George Road in the vicinity of the site are a mix of commercial, office and residential.

Mountain Avenue is an Urban Major Collector roadway under the jurisdiction of the Township of Warren. In the vicinity of the site the posted speed limit is 35 MPH and the roadway provides one travel lane in each direction. Mountain Avenue is designated as east/west roadway, however the roadway bends 90 degrees to the north as it traverses west to east from King George Road, and thus the roadway has a north/south orientation along the eastern property frontage. Neither curb nor sidewalk is provided along either side of the roadway. Mountain Avenue provides a curved horizontal alignment and a rolling vertical alignment. The land uses along Mountain Avenue in the vicinity of the site are primarily undeveloped land.

Existing Traffic Volumes

Manual turning movement (MTM) counts were conducted on Tuesday, June 11, 2019 from 7:00 – 9:00 AM and from 4:30 – 6:30 PM at the intersections of King George Road with the I-78 Westbound Ramps, King George Road with the I-78 Eastbound Ramps, King George Road with the Warren Corporate Center Driveway and King George Road with Mountain Avenue. Review of the collected traffic data reveals that the weekday morning peak street hour (PSH) of the network occurs between 7:45 – 8:45 AM and the weekday evening PSH of the network occurs between 4:45 – 5:45 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 2010*, 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, traffic 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 traffic 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 the Synchro software package (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
King George Road and I-78 Westbound Ramps	WB	L	C (28)	D (39)
		R	C (31)	B (15)
	NB	T	B (15)	A (6)
		R	A (4)	A (2)
	SB	T	A (10)	A (6)
		R	A (2)	A (1)
Overall		B (18)	B (12)	
King George Road and I-78 Eastbound Ramps	EB	L	D (42)	D (46)
		R	C (24)	B (14)
	NB	T	A (7)	A (3)
		R	A (3)	A (1)
	SB	T	A (3)	A (3)
		R	A (0)	A (1)
Overall		A (9)	A (6)	
King George Road and Warren Corporate Center Driveway	EB	L	D (39)	D (42)
		R	C (26)	B (12)
	NB	L	A (1)	A (0)
		T	A (2)	A (1)
	SB	T	A (6)	A (3)
		R	A (3)	A (2)
Overall		A (4)	A (7)	
King George Road and Mountain Avenue	WB	L	D (41)	D (41)
		R	B (16)	B (15)
	NB	TR	A (6)	A (7)
	SB	L	A (3)	A (5)
		T	A (3)	A (4)
Overall		A (5)	A (6)	

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

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 obtained from the MTM counts were used in the analysis.

King George Road and I-78 Westbound Ramps

The I-78 Westbound Ramps intersect King George Road to form a four-leg intersection controlled by a two-phase traffic signal with a 90 second cycle length. The I-78 Westbound On-Ramp provides one lane for one-way travel in the westbound direction away from the intersection. The westbound approach of the I-78 Westbound Off-Ramp provides two dedicated left turn lanes and a channelized right turn lane under yield control. The northbound approach of King George Road provides a dedicated through lane and a channelized free flowing right turn lane. The southbound approach of King George Road provides two dedicated through lanes and a channelized free flowing right turn lane.

A review of the existing analysis reveals that the intersection operates at overall Level of Service “B” during the analyzed peak periods. See Table III for the individual movement Levels of Service and delays.

King George Road and I-78 Eastbound Ramps

The I-78 Eastbound Ramps intersect King George Road to form a four-leg intersection controlled by a two-phase traffic signal with a 90 second cycle length. The I-78 Eastbound On-Ramp provides one lane for one-way travel in the eastbound direction away from the intersection. The eastbound approach of the I-78 Eastbound Off-Ramp provides a dedicated left turn lane and a channelized right turn lane under yield control. The northbound and southbound approaches of King George Road each provide two dedicated through lanes and a channelized free flowing right turn lane.

A review of the existing analysis reveals that the intersection operates at overall Level of Service “A” during the analyzed peak periods. See Table III for the individual movement Levels of Service and delays.

King George Road and the Warren Corporate Center Driveway

The Warren Corporate Center driveway intersects King George Road to form a T-intersection controlled by a three-phase traffic signal with a 90 second cycle length. The eastbound approach of the Warren Corporate Center driveway provides two dedicated left turn lanes and a dedicated right turn lane. The northbound approach of King George Road provides a dedicated left turn lane and two dedicated through lanes. The southbound approach of King George Road provides two dedicated through lanes and a channelized free flowing right turn lane.

A review of the existing analysis reveals that the intersection operates at overall Level of Service “A” during the analyzed peak periods. See Table III for the individual movement Levels of Service and delays.

King George Road and Mountain Avenue

Mountain Avenue intersects King George Road to form a T-intersection controlled by a three-phase traffic signal with a 90 second cycle length. The westbound approach of Mountain Avenue provides a dedicated left turn lane and a dedicated right turn lane. The northbound approach of King George Road provides a dedicated through lane and a shared through/right turn lane. The southbound approach of King George Road provides a dedicated left turn lane and two dedicated through lanes.

A review of the existing analysis reveals that the intersection operates at overall Level of Service “A” 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 No Build and Build conditions. The No Build conditions provide a baseline for assessing the impact of the 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 1.75% per year.

Through consultation with the Warren Township Planning Board staff, there are three developments in the vicinity of the site that have been approved but not yet constructed that are identified as potential 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.

- At the time the traffic counts were conducted, approximately 300,000 SF of the Warren Corporate Center was occupied. In order to account for full occupancy of the development (800,000 SF), the as counted site traffic was divided by 37.5% and then distributed throughout the surrounding roadway network based on the existing travel patterns. The Adjacent Development Traffic Volumes at the study intersections to account for the full occupancy of the Warren Corporate Center are shown on Figure 3.
- A residential development consisting of 105 residential units known as “Heritage at Warren” located at 155 Mount Bethel Road, has been approved. Projections of the associated traffic volumes were gathered from the *Traffic Impact Study*, dated November 27, 2017 prepared by this firm. The Adjacent Development Traffic Volumes at the study intersections from this development are shown on Figure 4.
- A redevelopment involving the removal of 58,844 SF of retail space and the construction of 198 residential units located at 403 King George Road within the Township of Bernards, has been approved. It should be noted that the existing site has a much higher trip generation potential when compared to the approved 198 residential units, therefore as a conservative measure this development was not considered for analysis purposes.

Future No Build traffic volumes were developed by applying the background growth rate of 1.75% per year for two (2) years to the study area roadways existing traffic volumes and by adding the site generated traffic associated with the adjacent developments. Figure 5, in Appendix A of this report, shows the Future No Build traffic volumes.

Traffic Generation

In an effort to provide a comprehensive assessment of the traffic impacts of The Project, the future traffic associated with Phases 1, 2 and 3 were utilized in this analysis. Projections of future traffic volumes were developed utilizing data as published in the Institute of Transportation Engineers (ITE) publication *Trip Generation, 10th Edition* for Land Use Code (LUC) 220 – Multifamily Housing (Low-Rise), LUC 221 – Multifamily Housing (Mid-Rise), LUC 310 – Hotel and LUC 932 – High-Turnover (Sit-Down) Restaurant.

The ITE publication *Trip Generation Handbook, 3rd Edition*, recognizes that when land uses are proximate to each other, individual land uses tend to interact, reducing the overall trip generation for the site. It is anticipated that there will be an overall reduction in site generated trips due to the opportunities for residents and hotel customers to visit the restaurant. These trips can be made without accessing the regional roadway network and are considered “internal” to the overall development. Based on the ITE internal capture methodology, reduction rates of 13.8% and 15.7% were applied to site generated trips during the weekday morning and weekday evening peak hours, respectively, to account for this effect. All internal capture calculation worksheets are contained in Appendix D.

Additionally, according to studies conducted by ITE, traffic associated with LUC 932 is not 100% newly generated. Rather, a portion of the traffic is diverted from the existing traffic stream on the adjacent roadway network. This is because the restaurant component is not exclusively a destination land use, instead patrons stop on their way to/from other locations such as home or work. ITE identifies a 43% passby traffic percentage, which is also accepted by NJDOT, and was used during the evening peak hour. Table IV below details the traffic volumes associated with the subject project taking into account internal capture and the passby credits.

**Table IV
Trip Generation Considering Internal Capture and Passby Traffic**

Trip Type		AM PSH			PM PSH		
		In	Out	Total	In	Out	Total
79 Low-Rise Residential Units (East)	Total	9	29	38	30	18	48
	Internal	0	0	0	0	0	0
	Passby	0	0	0	0	0	0
	New (Primary)	9	29	38	30	18	48
36 Low-Rise Residential Units (West)	Total	4	14	18	15	9	24
	Internal	0	3	3	2	2	4
	Passby	0	0	0	0	0	0
	New (Primary)	4	11	15	13	7	20
220 Mid-Rise Residential Units	Total	19	55	74	57	37	94
	Internal	1	9	10	5	8	13
	Passby	0	0	0	0	0	0
	New (Primary)	18	46	64	52	29	81
130 Room Hotel	Total	35	25	60	36	35	71
	Internal	1	2	3	3	2	5
	Passby	0	0	0	0	0	0
	New (Primary)	34	23	57	33	33	66
8,000 SF High-Turnover (Sit-Down) Restaurant	Total	44	36	80	48	30	78
	Internal	14	2	16	11	9	20
	Passby	0	0	0	16	9	25
	New (Primary)	30	34	64	21	12	33
Total	Total	111	159	270	186	129	315
	Internal	16	16	32	21	21	42
	Passby	0	0	0	16	9	25
	New (Primary)	95	143	238	149	99	248

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. Located in Appendix A, Figure 6 illustrates the primary site generated volumes, Figure 7 illustrates the passby site generated volumes, and Figure 8 illustrates the total site generated volumes assigned to the study area network. The site generated volumes were added to the No Build traffic volumes to generate the Build traffic volumes, which are shown in Figure 9.

Future Capacity Analysis

Operational conditions at the study intersections were analyzed under the No Build and Build conditions and are summarized in Table V below.

**Table V
Future Levels of Service**

Intersection	Direction/ Movement		AM PSH		PM PSH	
			No Build	Build	No Build	Build
King George Road and I-78 Westbound Ramps	WB	L	C (29)	C (28)	D (36)	D (37)
		R	C (32)	C (32)	C (23)	C (23)
	NB	T	B (14)	B (17)	A (6)	A (10)
		R	A (2)	A (2)	A (1)	A (2)
	SB	T	B (11)	B (11)	A (7)	A (7)
		R	A (2)	A (2)	A (2)	A (2)
	Overall		B (18)	B (19)	B (12)	B (13)
King George Road and I-78 Eastbound Ramps	EB	L	C (31)	C (30)	D (46)	D (44)
		R	D (39)	D (41)	B (20)	C (28)
	NB	T	B (10)	B (15)	A (3)	A (8)
		R	A (4)	B (10)	A (1)	A (4)
	SB	T	A (5)	A (6)	A (3)	A (3)
		R	A (1)	A (1)	A (1)	A (1)
	Overall		B (13)	B (15)	A (6)	A (9)
King George Road and Warren Corporate Center Driveway	EB	L	D (40)	D (40)	D (49)	D (53)
		TR	C (21)	C (24)	B (19)	B (14)
	WB	LTR	-	C (27)	-	C (25)
	NB	L	A (3)	B (13)	A (1)	A (7)
		TR	A (2)	B (18)	A (3)	B (19)
	SB	L	-	A (7)	-	A (8)
		T	A (9)	B (17)	A (5)	B (12)
		R	A (3)	A (6)	A (1)	A (0)
Overall		A (5)	B (16)	B (15)	C (22)	
King George Road and Mountain Avenue	WB	L	D (41)	D (41)	D (41)	D (41)
		R	B (15)	B (14)	B (15)	B (14)
	NB	TR	A (8)	A (8)	A (8)	A (8)
	SB	L	A (4)	A (9)	A (5)	A (9)
		T	A (3)	A (10)	A (4)	A (6)
Overall		A (6)	A (10)	A (6)	A (8)	
Mountain Avenue and North Site Driveway	EB	LR	-	a (9)	-	a (10)
	NB	LT	-	a (7)	-	a (8)
Mountain Avenue and South Site Driveway	EB	LR	-	a (9)	-	a (10)
	NB	LT	-	a (7)	-	a (8)

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

King George Road and I-78 Westbound Ramps

With the addition of the site traffic the intersection will continue to operate at overall Level of Service “B” during the studied peak hours, maintaining the No Build Levels of Service. See Table V for the individual movement Levels of Service and delays.

King George Road and I-78 Eastbound Ramps

With the addition of the site traffic the intersection will operate at overall Level of Service “B” or better during the studied peak hours. See Table V for the individual movement Levels of Service and delays.

King George Road and the Warren Corporate Center Driveway/Site Driveway

As mentioned previously, the site driveway is proposed to intersect King George Road opposite the Warren Corporate Center Driveway, thus becoming the fourth leg of the intersection. Accordingly, it is proposed to construct a southbound left turn lane within the existing landscaped median as well as accompanying re-striping for the eastbound approach of the intersection. Additionally, it is proposed adjust the signal timing to accommodate the new site driveway approach.

The proposed signal timing will continue to operate with a 90 second cycle length. The signal will provide a northbound/southbound left turn phase, a northbound/southbound ROW phase, an eastbound ROW phase and a westbound ROW phase. The eastbound approach of the Warren Corporate Center driveway is proposed to provide two dedicated left turn lanes and a shared through/right turn lane. The westbound approach of the site driveway is proposed to provide a shared left turn/through/right turn lane. The northbound approach of King George Road is proposed to provide a dedicated left turn lane, a dedicated through lane and a shared through/right turn lane. The southbound approach of King George Road is proposed to provide a dedicated left turn lane, two dedicated through lanes and a channelized free flowing right turn lane. The southbound left turn lane is proposed to provide a 75-foot storage length, which will be more than sufficient to accommodate the maximum anticipated queue length of 35-feet. A copy of the Preliminary Traffic Signal Plan and Preliminary Horizontal Alignment Plan is contained in Appendix E.

With the addition of the site traffic and the proposed changes as outlined above, the intersection will operate at overall Level of Service “C” or better during the studied peak hours. See Table V for the individual movement Levels of Service and delays.

King George Road and Mountain Avenue

With the addition of the site traffic the intersection will continue to operate at overall Level of Service “A” during the studied peak hours, maintaining the No Build Levels of Service. See Table V for the individual movement Levels of Service and delays.

Mountain Avenue and the North Site Driveway

The north site driveway is proposed to intersect Mountain Avenue to form an unsignalized T-intersection with the site driveway under stop control. The northbound and southbound approaches of Mountain Avenue will provide a shared left turn/through lane and a shared through/right turn lane, respectively. The eastbound approach of the site driveway will provide a shared left/right turn lane.

As designed, the individual intersection movements will operate at Level of Service “A” during the studied peak hours. See Table V for the individual movement Levels of Service and delays.

Mountain Avenue and the South Site Driveway

The south site driveway is proposed to intersect Mountain Avenue to form an unsignalized T-intersection with the site driveway under stop control. The northbound and southbound approaches of Mountain Avenue will provide a shared left turn/through lane and a shared through/right turn lane, respectively. The eastbound approach of the site driveway will provide a shared left/right turn lane.

As designed, the individual intersection movements will operate at Level of Service “A” during the studied peak hours. See Table V 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 site will be provided via one (1) signalized full movement driveway along King George Road opposite the Warren Corporate Center driveway, and two (2) unsignalized full movement driveways along Mountain Avenue. A dedicated southbound left turn lane will be constructed to serve the signalized full movement driveway. An emergency access will be provided along King George Road to the north of the signalized intersection to provide a second means of ingress/egress for emergency vehicles.

The parking area will be serviced by parking aisles with a width of 24', which meets the RSIS requirement and is in compliance with accepted engineering design standards. These aisles will allow for two-way circulation and 90-degree parking. This access configuration is sufficient to accommodate the minimal, low-turnover traffic volumes anticipated for The Project.

Parking

For the multifamily portion of The Project, the Residential Site Improvement Standards (RSIS) sets forth a parking requirement of 1.8 parking spaces per one-bedroom garden apartment, 2.0 parking spaces per two-bedroom garden apartment, 2.1 parking spaces per three-bedroom garden apartment. For the townhome portion of The Project, the RSIS sets forth a parking requirement of 1.8 parking spaces per two-bedroom affordable townhome, 2.0 parking spaces per two-bedroom affordable townhome, 2.1 parking spaces per three-bedroom affordable townhome and 2.4 parking spaces per four-bedroom townhome. With 1 one-bedroom affordable townhome, 5 two-bedroom affordable townhomes, 2 three-bedroom affordable townhomes, 107 four-bedroom townhomes, 66 one-bedroom apartments, 110 two-bedroom apartments and 44 three-bedroom apartments, this equates to a parking requirement of 704 spaces for The Project. It is proposed to provide 828 spaces and as such the RSIS requirements are exceeded.

It is proposed to provide parking stalls with dimensions of 9'x18', which meet the minimum RSIS requirement of 9'x18' and are in compliance with accepted engineering design standards. Therefore, it is expected that the proposed parking stall dimensions will adequately accommodate site.

FINDINGS & CONCLUSIONS

Findings

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

- The proposed 115 low-rise residential units, 220 mid-rise residential units, 130 room hotel and 8,000 SF restaurant will generate 95 entering trips and 143 exiting trips during the morning peak hour and 149 entering trips and 99 exiting trips during the evening peak hour that are “new” to the adjacent roadway network.
- Access to the site will be provided via one (1) signalized full movement driveway along King George Road opposite the Warren Corporate Center driveway, and two (2) unsignalized full movement driveways along Mountain Avenue.
- With the addition of the site generated traffic, the intersection of King George Road with the I-78 Westbound Ramps will operate at overall Level of Service “B” during the studied peak hours.
- With the addition of the site generated traffic, the intersection of King George Road with the I-78 Eastbound Ramps will operate at overall Level of Service “B” or better during the studied peak hours.
- With the addition of the site generated traffic and the proposed changes, the intersection of King George Road with the Warren Corporate Center driveway/site driveway will operate at overall Level of Service “C” or better during the studied peak hours.
- With the addition of the site generated traffic, the intersection of King George Road with Mountain Avenue will operate at overall Level of Service “A” during the studied peak hours.
- As designed, the individual intersection movements of Mountain Avenue and the north site driveway are anticipated to operate at Levels of Service “A” during the peak hours studied.
- As designed, the individual intersection movements of Mountain Avenue and the north site driveway are anticipated to operate at Levels of Service “A” during the peak hours studied.
- As proposed, The Project’s site driveways and internal circulation have been designed to provide for safe and efficient movement of vehicles on-site.
- The proposed parking supply and design is sufficient to support the maximum anticipated demand and is consistent with past experience at similar developments, and meets the regulatory standards associated with the design and layout of the parking.

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 Warren 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 Mixed-Use Development
 Traffic Impact Study
 3089-99-001TE
 6/30/2020

Figure 1

Site Location Map

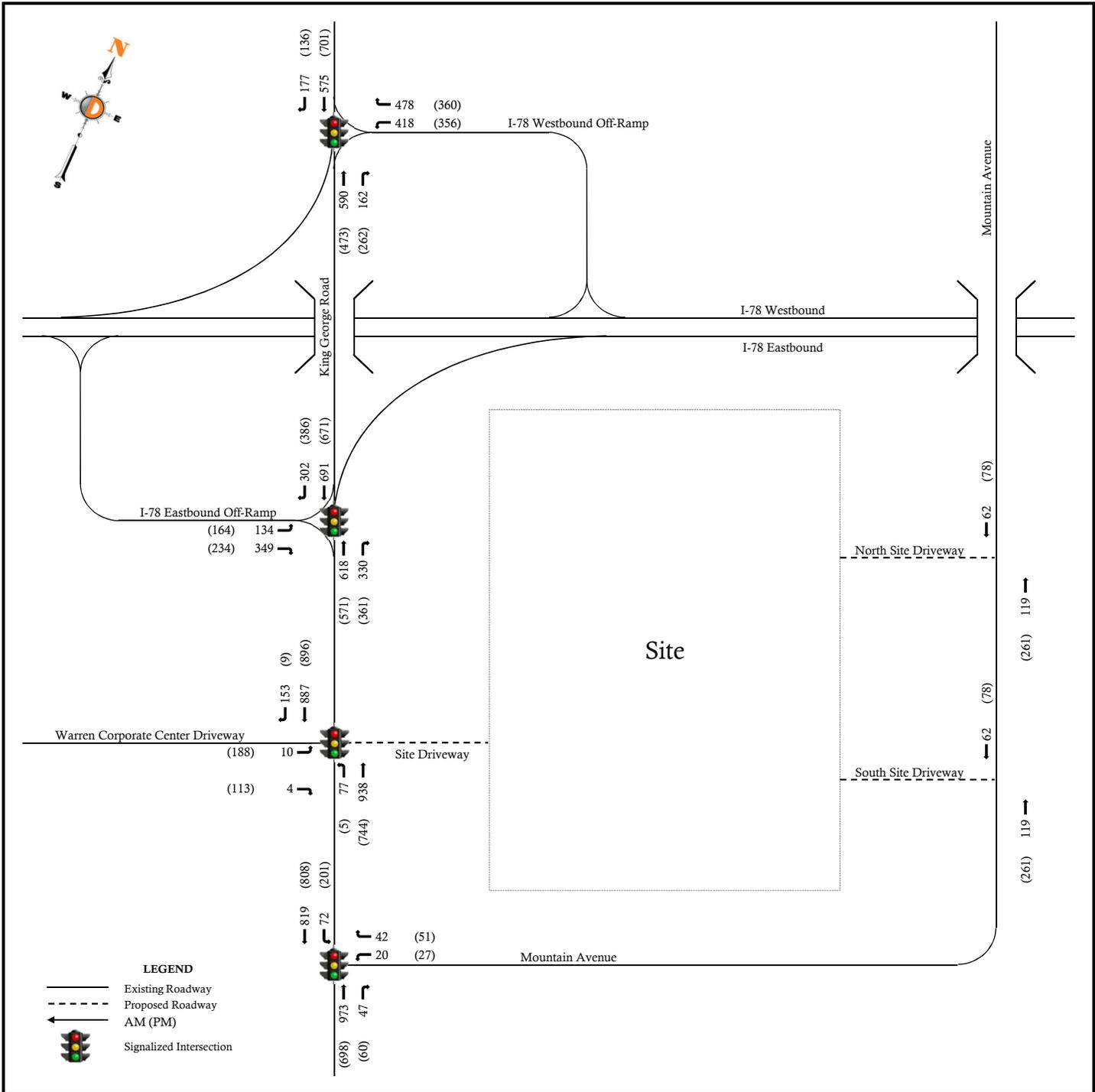
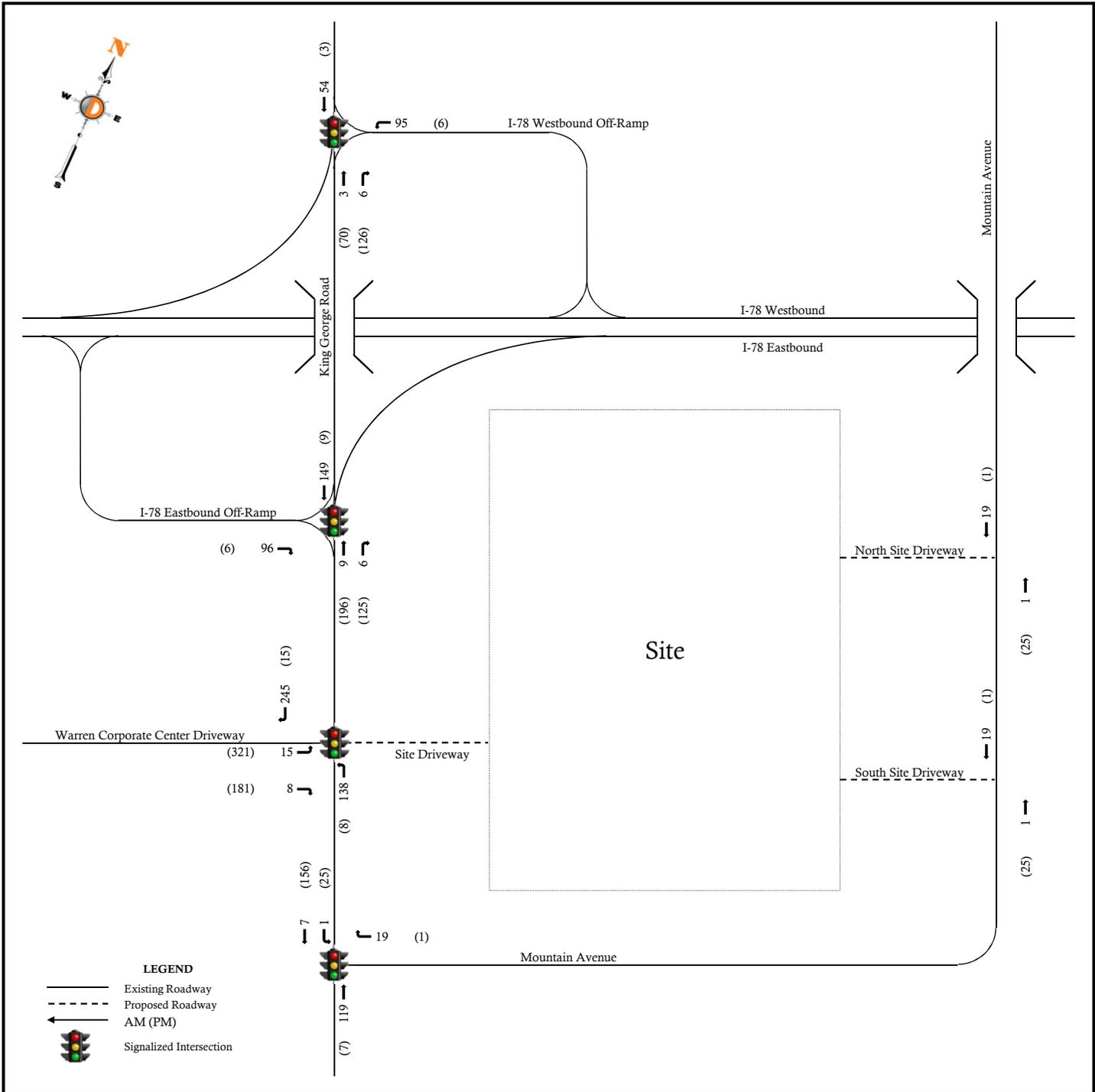
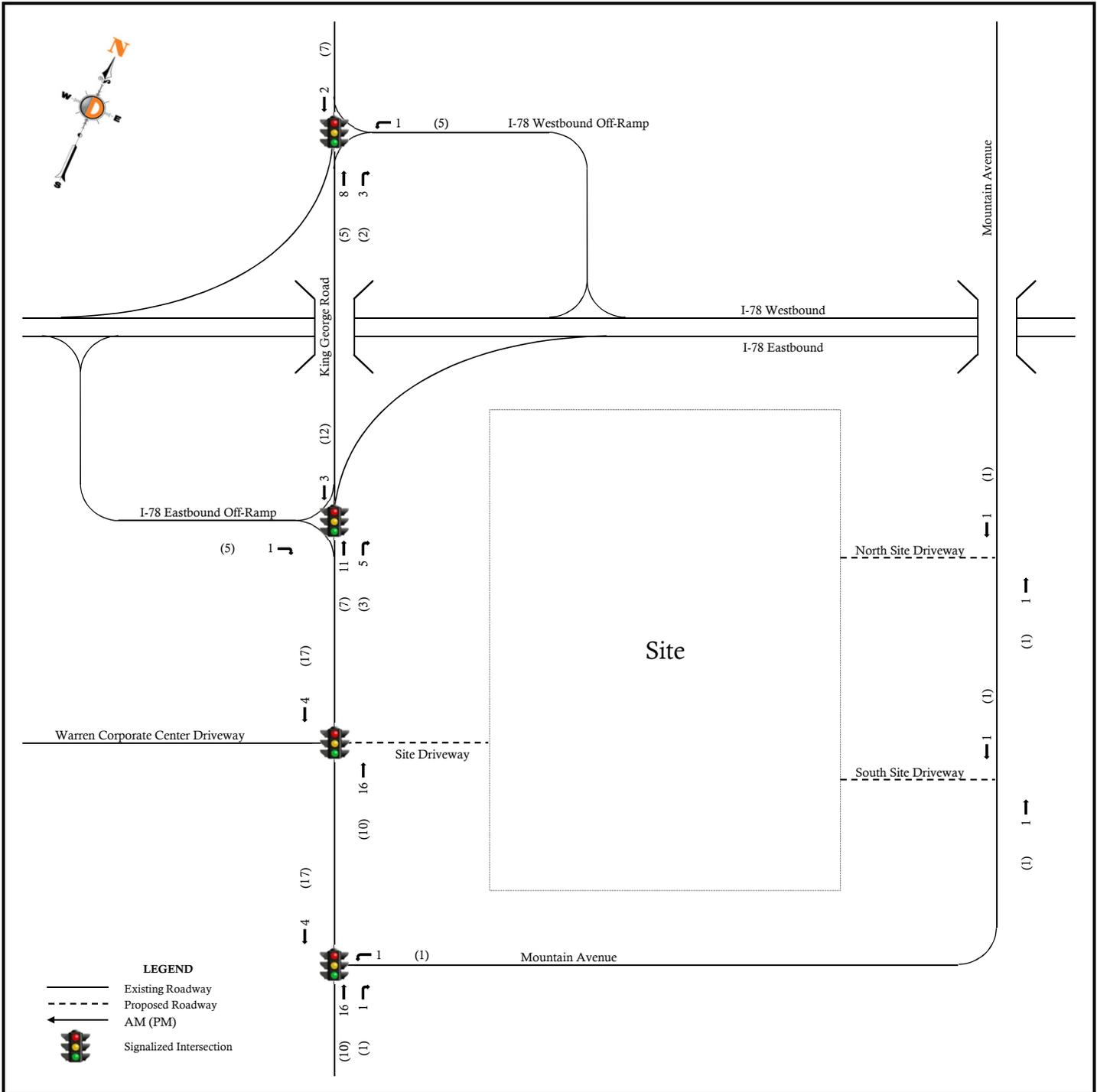


Figure 2

Existing Traffic Volumes





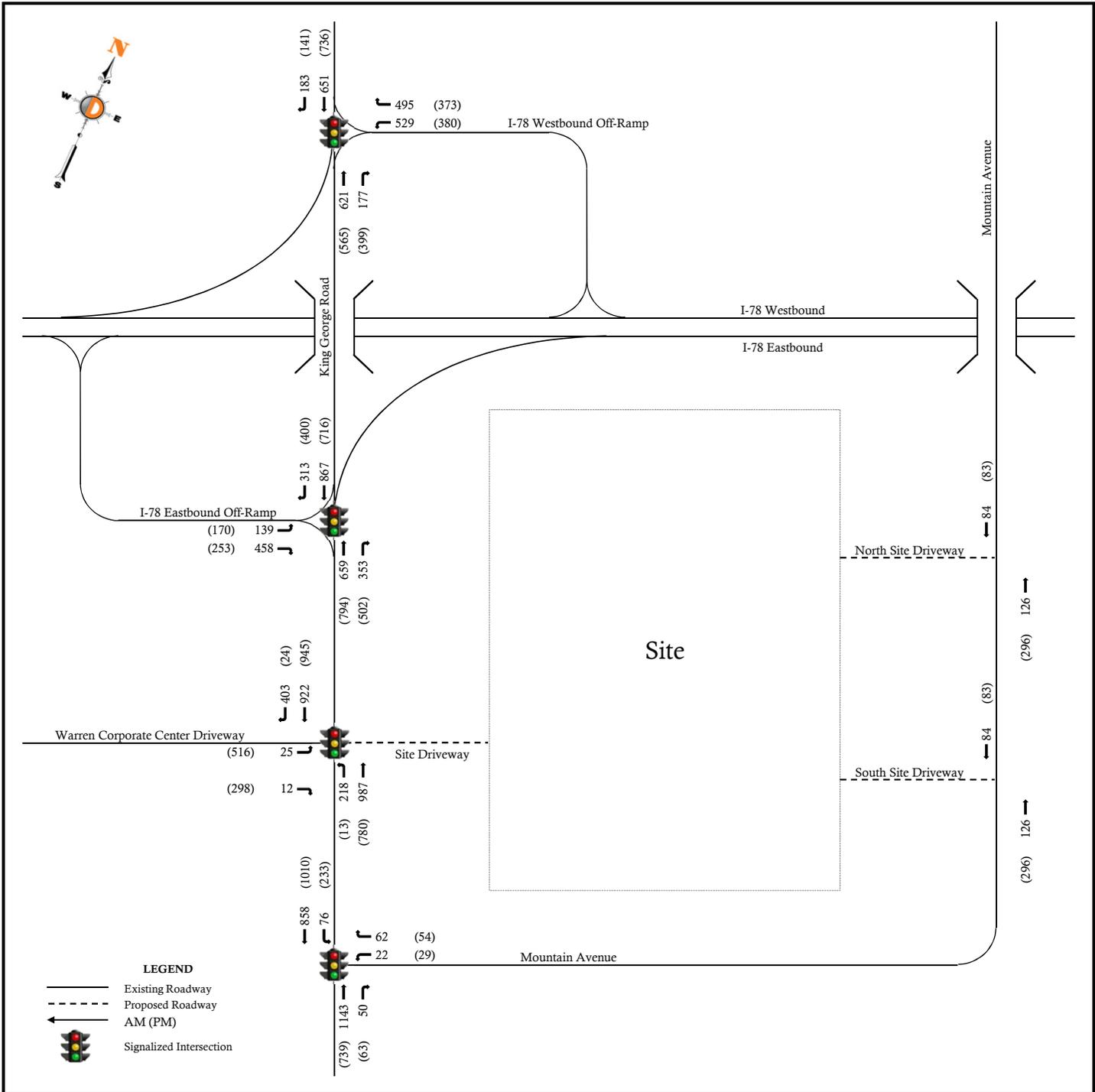


Figure 5

No Build Traffic Volumes

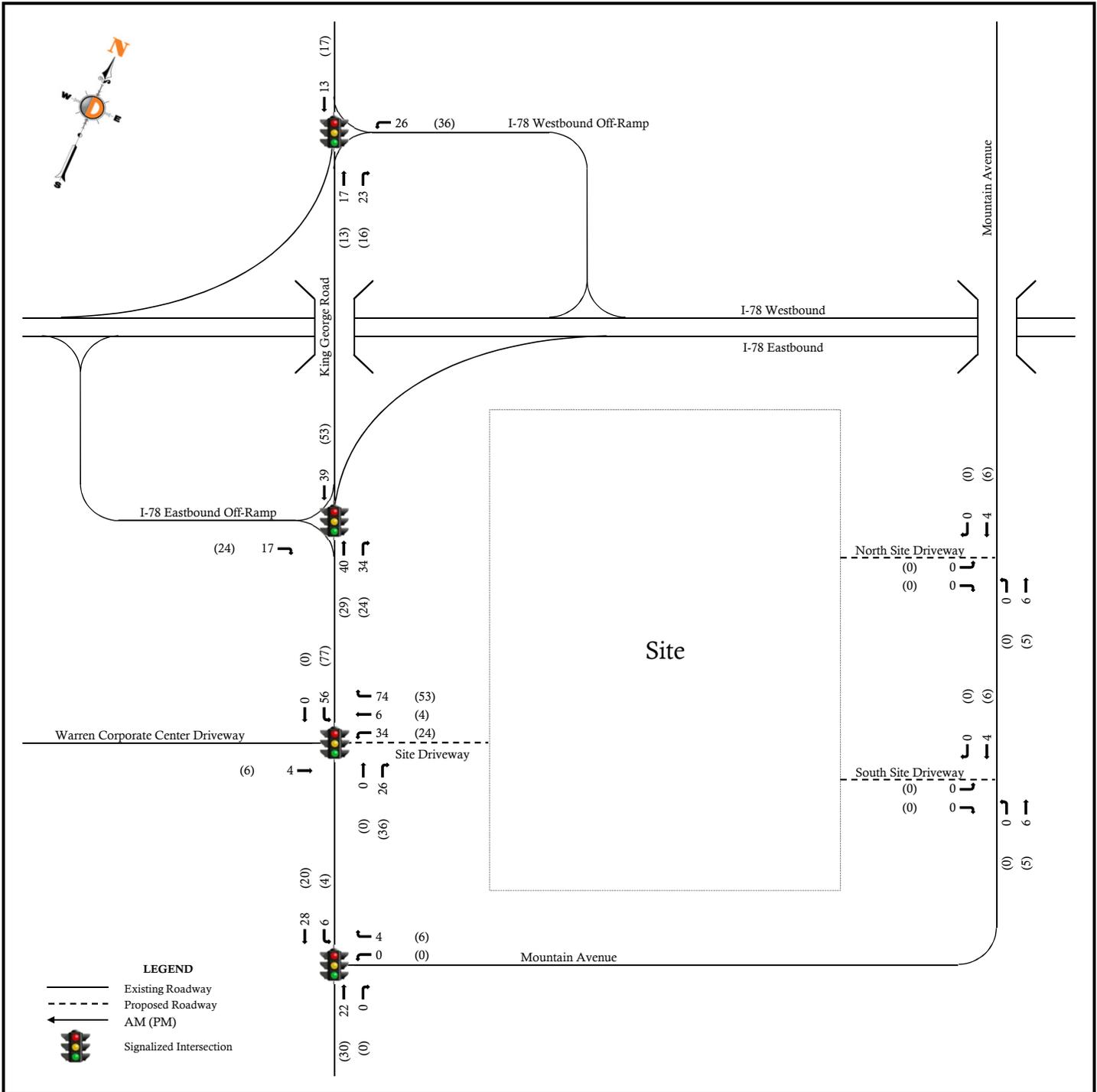


Figure 6

Primary Site Generated Trips

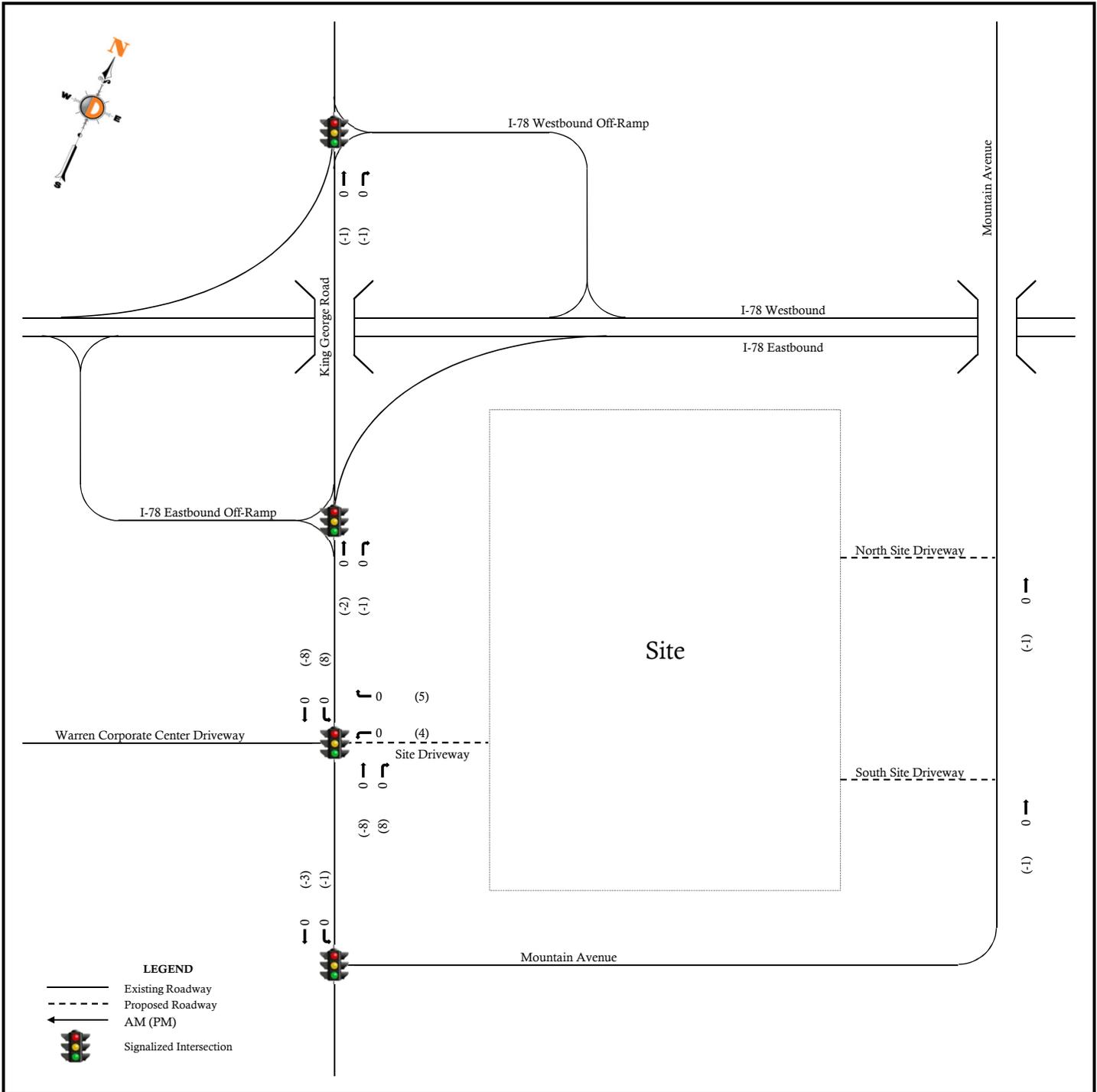


Figure 7

Passby Site Generated Trips

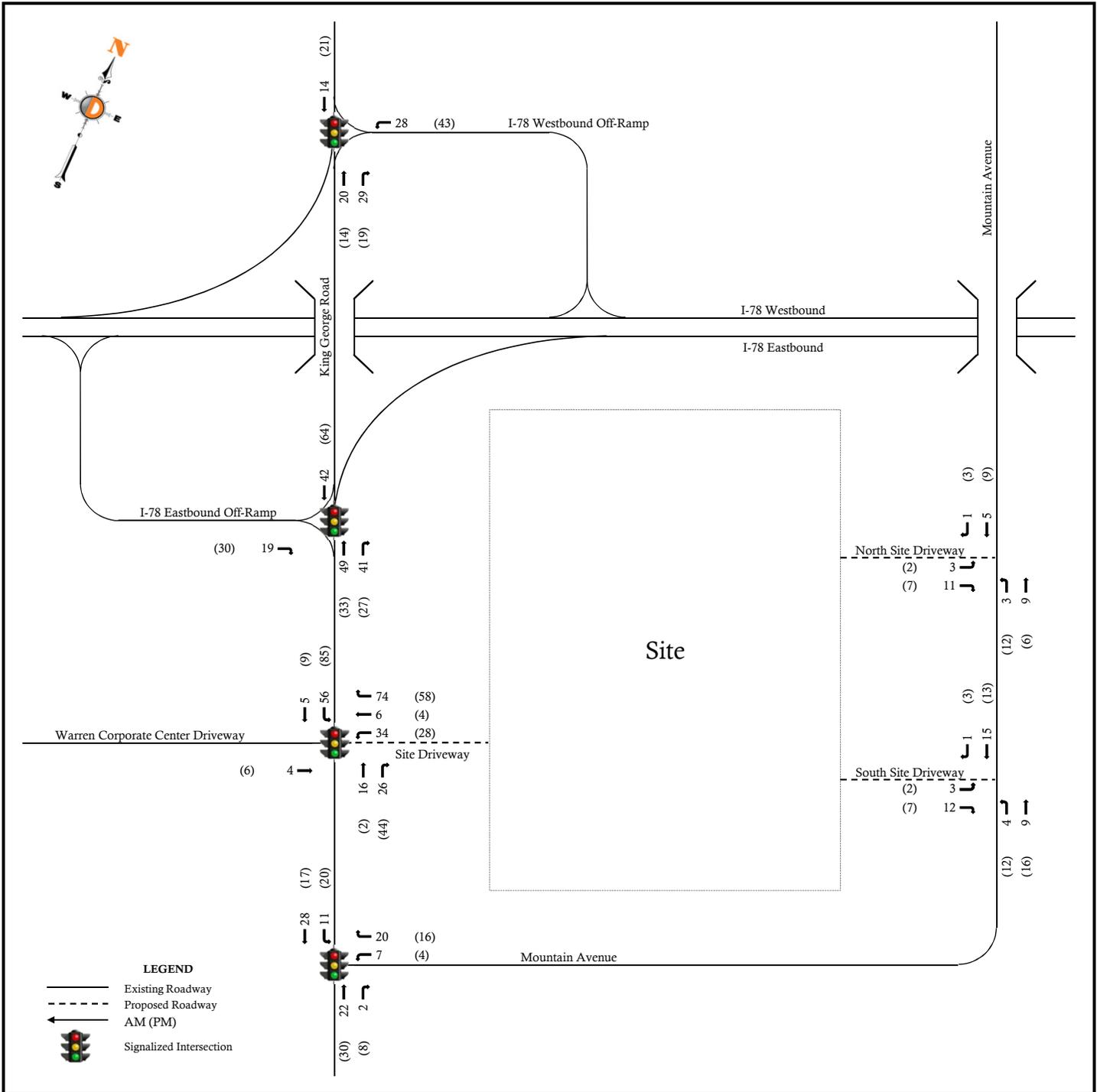
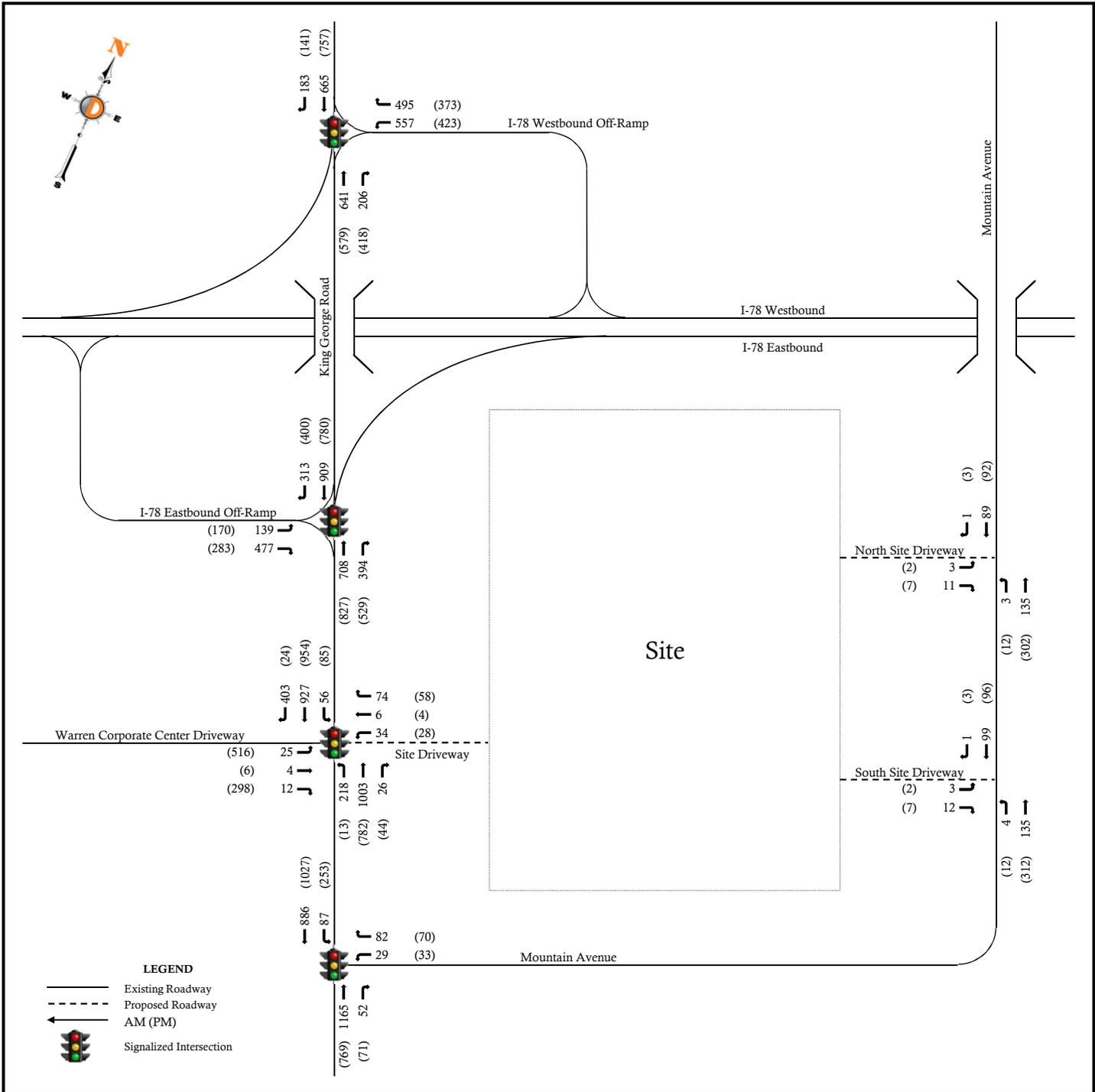


Figure 8

Total Site Generated Trips



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: I-78 On & Off Ramps
 N/S: King George Rd (CR 651)
 Town/County: Warren/Somerset
 Job #: 3089-99-001TE

File Name : King George Rd & I-78 Ramps - AMPM
 Site Code : 00000000
 Start Date : 6/11/2019
 Page No : 1

Groups Printed- Cars - Trucks (SU) - Trucks (TT)

Start Time	I-78 On Ramp Eastbound					I-78 Off Ramp Westbound					King George Rd (CR 651) Northbound					King George Rd (CR 651) Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	0	0	0	0	0	38	0	80	0	118	0	76	0	0	76	0	113	35	0	148	342
07:15 AM	0	0	0	0	0	43	0	94	0	137	0	88	0	0	88	0	159	35	0	194	419
07:30 AM	0	0	0	0	0	66	0	113	0	179	0	111	0	0	111	0	164	29	0	193	483
07:45 AM	0	0	0	0	0	96	0	122	0	218	0	140	0	0	140	0	130	47	0	177	535
Total	0	0	0	0	0	243	0	409	0	652	0	415	0	0	415	0	566	146	0	712	1779
08:00 AM	0	0	0	0	0	112	0	114	0	226	0	151	0	0	151	0	130	49	0	179	556
08:15 AM	0	0	0	0	0	113	0	116	0	229	0	160	0	0	160	0	162	44	0	206	595
08:30 AM	0	0	0	0	0	95	0	126	0	221	0	139	0	0	139	0	149	37	0	186	546
08:45 AM	0	0	0	0	0	77	0	98	0	175	0	127	0	0	127	0	137	30	0	167	469
Total	0	0	0	0	0	397	0	454	0	851	0	577	0	0	577	0	578	160	0	738	2166
*** BREAK ***																					
04:30 PM	0	0	0	0	0	85	0	77	0	162	0	103	0	0	103	0	198	37	0	235	500
04:45 PM	0	0	0	0	0	109	0	76	0	185	0	114	0	0	114	0	160	39	0	199	498
Total	0	0	0	0	0	194	0	153	0	347	0	217	0	0	217	0	358	76	0	434	998
05:00 PM	0	0	0	0	0	81	0	78	0	159	0	101	0	0	101	0	159	24	0	183	443
05:15 PM	0	0	0	0	0	83	0	100	0	183	0	125	0	0	125	0	191	40	0	231	539
05:30 PM	0	0	0	0	0	83	0	106	0	189	0	129	0	0	129	0	191	33	0	224	542
05:45 PM	0	0	0	0	0	87	0	111	0	198	0	128	0	0	128	0	120	37	0	157	483
Total	0	0	0	0	0	334	0	395	0	729	0	483	0	0	483	0	661	134	0	795	2007
06:00 PM	0	0	0	0	0	94	0	92	0	186	0	105	0	0	105	0	133	26	0	159	450
06:15 PM	0	0	0	0	0	89	0	107	0	196	0	80	0	0	80	0	130	33	0	163	439
Grand Total	0	0	0	0	0	1351	0	1610	0	2961	0	1877	0	0	1877	0	2426	575	0	3001	7839
Apprch %	0	0	0	0	0	45.6	0	54.4	0		0	100	0	0		0	80.8	19.2	0		
Total %	0	0	0	0	0	17.2	0	20.5	0	37.8	0	23.9	0	0	23.9	0	30.9	7.3	0	38.3	
Cars	0	0	0	0	0	1342	0	1596	0	2938	0	1863	0	0	1863	0	2403	567	0	2970	7771
% Cars	0	0	0	0	0	99.3	0	99.1	0	99.2	0	99.3	0	0	99.3	0	99.1	98.6	0	99	99.1
Trucks (SU)	0	0	0	0	0	8	0	13	0	21	0	11	0	0	11	0	21	6	0	27	59
% Trucks (SU)	0	0	0	0	0	0.6	0	0.8	0	0.7	0	0.6	0	0	0.6	0	0.9	1	0	0.9	0.8
Trucks (TT)	0	0	0	0	0	1	0	1	0	2	0	3	0	0	3	0	2	2	0	4	9
% Trucks (TT)	0	0	0	0	0	0.1	0	0.1	0	0.1	0	0.2	0	0	0.2	0	0.1	0.3	0	0.1	0.1

Dynamic Traffic, LLC

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

E/W: I-78 EB Off Ramp
 N/S: King George Rd (CR 651)
 Town/County: Warren/Somerset
 Job #:

File Name : King George Rd & I-78 EB Off Ramp - AMPM
 Site Code : 00000000
 Start Date : 6/11/2019
 Page No : 1

Groups Printed- Cars - Trucks (SU) - Trucks (TT)

Start Time	I-78 EB Off Ramp Eastbound					King George Rd (CR 651) Northbound					King George Rd (CR 651) Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	32	0	0	0	32	0	76	0	0	76	0	68	0	0	68	176
07:15 AM	21	0	0	0	21	0	105	0	0	105	0	81	0	0	81	207
07:30 AM	21	0	0	0	21	0	147	0	0	147	0	134	0	0	134	302
07:45 AM	44	0	0	0	44	0	133	0	0	133	0	164	0	0	164	341
Total	118	0	0	0	118	0	461	0	0	461	0	447	0	0	447	1026
08:00 AM	42	0	0	0	42	0	156	0	0	156	0	171	0	0	171	369
08:15 AM	27	0	0	0	27	0	161	0	0	161	0	176	0	0	176	364
08:30 AM	21	0	0	0	21	0	168	0	0	168	0	174	0	0	174	363
08:45 AM	36	0	0	0	36	0	141	0	0	141	0	146	0	0	146	323
Total	126	0	0	0	126	0	626	0	0	626	0	667	0	0	667	1419
*** BREAK ***																
04:30 PM	36	0	0	0	36	0	120	0	0	120	0	180	0	0	180	336
04:45 PM	43	0	0	0	43	0	137	0	0	137	0	191	0	0	191	371
Total	79	0	0	0	79	0	257	0	0	257	0	371	0	0	371	707
05:00 PM	31	0	0	0	31	0	148	0	0	148	0	161	0	0	161	340
05:15 PM	44	0	0	0	44	0	140	0	0	140	0	158	0	0	158	342
05:30 PM	46	0	0	0	46	0	141	0	0	141	0	161	0	0	161	348
05:45 PM	35	0	0	0	35	0	153	0	0	153	0	143	0	0	143	331
Total	156	0	0	0	156	0	582	0	0	582	0	623	0	0	623	1361
06:00 PM	31	0	0	0	31	0	140	0	0	140	0	166	0	0	166	337
06:15 PM	26	0	0	0	26	0	120	0	0	120	0	145	0	0	145	291
Grand Total	536	0	0	0	536	0	2186	0	0	2186	0	2419	0	0	2419	5141
Apprch %	100	0	0	0		0	100	0	0		0	100	0	0		
Total %	10.4	0	0	0	10.4	0	42.5	0	0	42.5	0	47.1	0	0	47.1	
Cars	525	0	0	0	525	0	2171	0	0	2171	0	2405	0	0	2405	5101
% Cars	97.9	0	0	0	97.9	0	99.3	0	0	99.3	0	99.4	0	0	99.4	99.2
Trucks (SU)	8	0	0	0	8	0	11	0	0	11	0	13	0	0	13	32
% Trucks (SU)	1.5	0	0	0	1.5	0	0.5	0	0	0.5	0	0.5	0	0	0.5	0.6
Trucks (TT)	3	0	0	0	3	0	4	0	0	4	0	1	0	0	1	8
% Trucks (TT)	0.6	0	0	0	0.6	0	0.2	0	0	0.2	0	0	0	0	0	0.2

Dynamic Traffic, LLC

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

E/W: Warren Corp Center Dr
 N/S: King George Rd (CR 651)
 Town/County: Warren/Somerset
 Job #: 3089-99-001TE

File Name : King George Rd & Warren Corp Cen Dr - AMPM
 Site Code : 00000000
 Start Date : 6/11/2019
 Page No : 1

Groups Printed- Cars - Trucks (SU) - Trucks (TT)

Start Time	Warren Corp Center Dr Eastbound					King George Rd (CR 651) Northbound					King George Rd (CR 651) Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	3	0	1	0	4	1	131	0	0	132	0	107	11	1	119	255
07:15 AM	2	0	1	0	3	5	168	0	0	173	0	131	9	0	140	316
07:30 AM	1	0	1	0	2	11	226	0	0	237	0	177	18	0	195	434
07:45 AM	1	0	1	0	2	17	233	0	0	250	0	214	40	0	254	506
Total	7	0	4	0	11	34	758	0	0	792	0	629	78	1	708	1511
08:00 AM	6	0	1	0	7	22	224	0	0	246	0	207	31	0	238	491
08:15 AM	0	0	0	0	0	17	230	0	0	247	0	235	47	0	282	529
08:30 AM	3	0	2	0	5	21	251	0	0	272	0	222	35	0	257	534
08:45 AM	1	0	0	0	1	37	199	0	0	236	0	219	67	0	286	523
Total	10	0	3	0	13	97	904	0	0	1001	0	883	180	0	1063	2077
*** BREAK ***																
04:30 PM	23	0	19	0	42	4	163	0	0	167	0	187	8	1	196	405
04:45 PM	36	0	16	0	52	1	174	0	0	175	0	241	3	0	244	471
Total	59	0	35	0	94	5	337	0	0	342	0	428	11	1	440	876
05:00 PM	42	0	29	0	71	1	192	0	0	193	0	212	1	0	213	477
05:15 PM	50	0	40	0	90	0	185	0	0	185	0	217	1	0	218	493
05:30 PM	60	0	28	0	88	3	186	0	0	189	0	226	4	0	230	507
05:45 PM	33	0	33	0	66	1	188	0	0	189	0	188	5	0	193	448
Total	185	0	130	0	315	5	751	0	0	756	0	843	11	0	854	1925
06:00 PM	25	0	26	0	51	2	161	0	0	163	0	172	1	0	173	387
06:15 PM	21	0	21	0	42	2	165	0	0	167	0	182	2	0	184	393
Grand Total	307	0	219	0	526	145	3076	0	0	3221	0	3137	283	2	3422	7169
Apprch %	58.4	0	41.6	0		4.5	95.5	0	0		0	91.7	8.3	0.1		
Total %	4.3	0	3.1	0	7.3	2	42.9	0	0	44.9	0	43.8	3.9	0	47.7	
Cars	302	0	217	0	519	142	3030	0	0	3172	0	3103	279	2	3384	7075
% Cars	98.4	0	99.1	0	98.7	97.9	98.5	0	0	98.5	0	98.9	98.6	100	98.9	98.7
Trucks (SU)	2	0	2	0	4	3	34	0	0	37	0	26	0	0	26	67
% Trucks (SU)	0.7	0	0.9	0	0.8	2.1	1.1	0	0	1.1	0	0.8	0	0	0.8	0.9
Trucks (TT)	3	0	0	0	3	0	12	0	0	12	0	8	4	0	12	27
% Trucks (TT)	1	0	0	0	0.6	0	0.4	0	0	0.4	0	0.3	1.4	0	0.4	0.4

Dynamic Traffic, LLC

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

E/W: Mountain Ave
 N/S: King George Rd (CR 651)
 Town/County: Warren/Somerset
 Job #: 3089-99-001TE

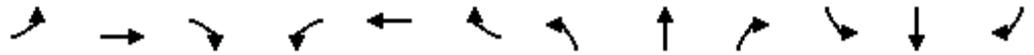
File Name : King George Rd & Mountain Ave - AM and PM
 Site Code : 00000000
 Start Date : 6/11/2019
 Page No : 1

Groups Printed- Cars - Trucks (SU) - Trucks (TT)

Start Time	Mountain Ave Westbound					King George Rd (CR 651) Northbound					King George Rd (CR 651) Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	4	0	7	0	11	0	145	26	0	171	27	94	0	0	121	303
07:15 AM	7	0	10	0	17	0	185	47	0	232	35	106	0	0	141	390
07:30 AM	26	0	26	0	52	0	201	14	0	215	26	165	0	0	191	458
07:45 AM	9	0	13	0	22	0	240	11	0	251	18	189	0	0	207	480
Total	46	0	56	0	102	0	771	98	0	869	106	554	0	0	660	1631
08:00 AM	7	0	10	0	17	0	242	12	0	254	18	216	0	0	234	505
08:15 AM	2	0	7	0	9	0	252	13	0	265	10	212	0	0	222	496
08:30 AM	2	0	12	0	14	0	235	11	0	246	26	202	0	0	228	488
08:45 AM	15	0	12	0	27	0	233	8	0	241	10	189	0	0	199	467
Total	26	0	41	0	67	0	962	44	0	1006	64	819	0	0	883	1956
*** BREAK ***																
04:30 PM	12	0	18	0	30	0	187	7	0	194	30	193	0	0	223	447
04:45 PM	4	0	16	0	20	0	166	13	0	179	33	207	0	0	240	439
Total	16	0	34	0	50	0	353	20	0	373	63	400	0	0	463	886
05:00 PM	8	0	11	1	20	0	174	14	0	188	48	207	0	0	255	463
05:15 PM	9	0	12	0	21	0	170	13	0	183	63	184	0	0	247	451
05:30 PM	6	0	12	0	18	0	188	20	0	208	51	178	0	0	229	455
05:45 PM	9	0	4	0	13	0	198	15	0	213	56	155	0	0	211	437
Total	32	0	39	1	72	0	730	62	0	792	218	724	0	0	942	1806
06:00 PM	8	0	21	0	29	0	179	9	0	188	40	204	0	0	244	461
06:15 PM	4	0	10	0	14	0	132	14	0	146	23	153	0	0	176	336
Grand Total	132	0	201	1	334	0	3127	247	0	3374	514	2854	0	0	3368	7076
Apprch %	39.5	0	60.2	0.3		0	92.7	7.3	0		15.3	84.7	0	0		
Total %	1.9	0	2.8	0	4.7	0	44.2	3.5	0	47.7	7.3	40.3	0	0	47.6	
Cars	127	0	198	1	326	0	3076	243	0	3319	510	2820	0	0	3330	6975
% Cars	96.2	0	98.5	100	97.6	0	98.4	98.4	0	98.4	99.2	98.8	0	0	98.9	98.6
Trucks (SU)	5	0	3	0	8	0	43	4	0	47	4	32	0	0	36	91
% Trucks (SU)	3.8	0	1.5	0	2.4	0	1.4	1.6	0	1.4	0.8	1.1	0	0	1.1	1.3
Trucks (TT)	0	0	0	0	0	0	8	0	0	8	0	2	0	0	2	10
% Trucks (TT)	0	0	0	0	0	0	0.3	0	0	0.2	0	0.1	0	0	0.1	0.1

Appendix C
Capacity Analysis

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 							 	
Traffic Volume (vph)	0	0	0	418	0	478	0	590	162	0	575	177
Future Volume (vph)	0	0	0	418	0	478	0	590	162	0	575	177
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	12	12	12	12	12	12	12	12	15	12	12	16
Grade (%)		0%			1%			2%			3%	
Storage Length (ft)	0		0	350		0	0		0	0		100
Storage Lanes	0		0	2		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		735			745			726			197	
Travel Time (s)		20.0			20.3			12.4			3.4	
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 (%)	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	445	0	509	0	628	172	0	612	188
Turn Type				Perm		Perm		NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases				8		8			2			6
Detector Phase				8		8		2	2		6	6
Switch Phase												
Minimum Initial (s)				7.0		7.0		44.0	44.0		44.0	44.0
Minimum Split (s)				12.0		12.0		51.0	51.0		51.0	51.0
Total Split (s)				39.0		39.0		51.0	51.0		51.0	51.0
Total Split (%)				43.3%		43.3%		56.7%	56.7%		56.7%	56.7%
Yellow Time (s)				3.0		3.0		5.0	5.0		5.0	5.0
All-Red Time (s)				2.0		2.0		2.0	2.0		2.0	2.0
Lost Time Adjust (s)				0.0		0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)				5.0		5.0		7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None		None		C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				23.4		23.4		54.6	54.6		54.6	54.6
Actuated g/C Ratio				0.26		0.26		0.61	0.61		0.61	0.61
v/c Ratio				0.45		0.84		0.50	0.14		0.26	0.15
Control Delay				28.1		30.6		15.1	3.8		9.9	2.2
Queue Delay				0.0		0.0		0.0	0.0		0.0	0.0
Total Delay				28.1		30.6		15.1	3.8		9.9	2.2
LOS				C		C		B	A		A	A
Approach Delay					29.4			12.7			8.1	
Approach LOS					C			B			A	
Queue Length 50th (ft)				109		169		215	0		78	0
Queue Length 95th (ft)				127		249		357	56		143	32
Internal Link Dist (ft)		655			665			646			117	
Turn Bay Length (ft)				350								100
Base Capacity (vph)				1440		790		1249	1247		2361	1259
Starvation Cap Reductn				0		0		0	0		0	0
Spillback Cap Reductn				0		0		0	0		0	0

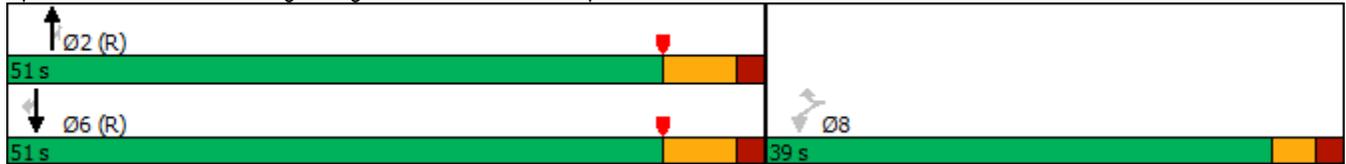


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn				0		0		0	0		0	0
Reduced v/c Ratio				0.31		0.64		0.50	0.14		0.26	0.15

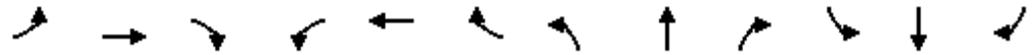
Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow, Master Intersection
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	17.5
Intersection LOS:	B
Intersection Capacity Utilization	73.4%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 10: King George Road & I-78 WB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	0	349	0	0	0	0	618	330	0	691	302
Future Volume (vph)	134	0	349	0	0	0	0	618	330	0	691	302
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	13	13	16	12	12	12	12	12	12	12	12	12
Grade (%)		2%			0%			-2%			3%	
Storage Length (ft)	265		265	0		0	0		200	0		150
Storage Lanes	1		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		766			644			1151			726	
Travel Time (s)		20.9			17.6			19.6			12.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	0	360	0	0	0	0	637	340	0	712	311
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Detector Phase	4		4					2	2		6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					54.0	54.0		54.0	54.0
Minimum Split (s)	12.0		12.0					61.0	61.0		61.0	61.0
Total Split (s)	29.0		29.0					61.0	61.0		61.0	61.0
Total Split (%)	32.2%		32.2%					67.8%	67.8%		67.8%	67.8%
Yellow Time (s)	3.0		3.0					5.0	5.0		5.0	5.0
All-Red Time (s)	2.0		2.0					2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0					0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0					7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None		None					C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)	12.3		12.3					65.7	65.7		65.7	65.7
Actuated g/C Ratio	0.14		0.14					0.73	0.73		0.73	0.73
v/c Ratio	0.51		0.76					0.22	0.24		0.25	0.23
Control Delay	41.5		23.8					6.5	2.9		2.7	0.4
Queue Delay	0.0		0.0					0.0	0.0		0.0	0.0
Total Delay	41.5		23.8					6.5	2.9		2.7	0.4
LOS	D		C					A	A		A	A
Approach Delay		28.7						5.3			2.0	
Approach LOS		C						A			A	
Queue Length 50th (ft)	75		69					47	0		28	0
Queue Length 95th (ft)	119		147					137	69		43	0
Internal Link Dist (ft)		686			564			1071			646	
Turn Bay Length (ft)	265		265						200			150
Base Capacity (vph)	528		704					2912	1407		2840	1367
Starvation Cap Reductn	0		0					0	0		0	0
Spillback Cap Reductn	0		0					0	0		0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0		0					0	0		0	0
Reduced v/c Ratio	0.26		0.51					0.22	0.24		0.25	0.23

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	79.4 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.76
Intersection Signal Delay:	8.6
Intersection LOS:	A
Intersection Capacity Utilization	74.6%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 20: King George Road & I-78 EB Ramps





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	4	77	938	887	153
Future Volume (vph)	10	4	77	938	887	153
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Lane Width (ft)	12	12	12	11	12	12
Grade (%)	2%			0%	2%	
Storage Length (ft)	0	240	230			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	25			40	40	
Link Distance (ft)	853			634	1151	
Travel Time (s)	23.3			10.8	19.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	10%	0%	1%	2%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	4	80	977	924	159
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	69.0	44.0	44.0
Minimum Split (s)	14.0	14.0	11.0	76.0	51.0	51.0
Total Split (s)	14.0	14.0	25.0	76.0	51.0	51.0
Total Split (%)	15.6%	15.6%	27.8%	84.4%	56.7%	56.7%
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	4.0
All-Red Time (s)	4.0	4.0	1.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.0	7.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	7.0	7.0	80.4	81.6	70.0	70.0
Actuated g/C Ratio	0.08	0.08	0.89	0.91	0.78	0.78
v/c Ratio	0.04	0.03	0.13	0.29	0.31	0.11
Control Delay	38.8	25.8	1.1	1.8	6.1	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	25.8	1.1	1.8	6.1	2.7
LOS	D	C	A	A	A	A
Approach Delay	35.1			1.8	5.6	
Approach LOS	D			A	A	
Queue Length 50th (ft)	2	0	0	0	104	0
Queue Length 95th (ft)	10	10	1	3	168	25
Internal Link Dist (ft)	773			554	1071	
Turn Bay Length (ft)		240	230			
Base Capacity (vph)	270	141	842	3428	3010	1395
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.03	0.10	0.29	0.31	0.11

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	27 (30%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.31
Intersection Signal Delay:	3.9
Intersection LOS:	A
Intersection Capacity Utilization	75.0%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 30: King George Road & Warren Corporate Center Driveway



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	42	973	47	72	819
Future Volume (vph)	20	42	973	47	72	819
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Grade (%)	3%		-5%			-1%
Storage Length (ft)	130	130		120	185	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	35		40			40
Link Distance (ft)	1342		274			634
Travel Time (s)	26.1		4.7			10.8
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	15%	2%	1%	2%	3%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	43	1041	0	73	836
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	50.0		7.0	63.0
Minimum Split (s)	14.0	14.0	57.0		11.0	70.0
Total Split (s)	20.0	20.0	57.0		13.0	70.0
Total Split (%)	22.2%	22.2%	63.3%		14.4%	77.8%
Yellow Time (s)	4.0	4.0	5.0		3.0	5.0
All-Red Time (s)	3.0	3.0	2.0		1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		4.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.4	7.4	66.8		77.2	77.0
Actuated g/C Ratio	0.08	0.08	0.74		0.86	0.86
v/c Ratio	0.14	0.24	0.35		0.14	0.25
Control Delay	40.5	15.8	6.3		2.6	2.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	40.5	15.8	6.3		2.6	2.8
LOS	D	B	A		A	A
Approach Delay	23.7		6.3			2.8
Approach LOS	C		A			A
Queue Length 50th (ft)	11	0	132		4	32
Queue Length 95th (ft)	33	31	178		23	110
Internal Link Dist (ft)	1262		194			554
Turn Bay Length (ft)	130	130			185	
Base Capacity (vph)	246	285	2986		561	3364
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0

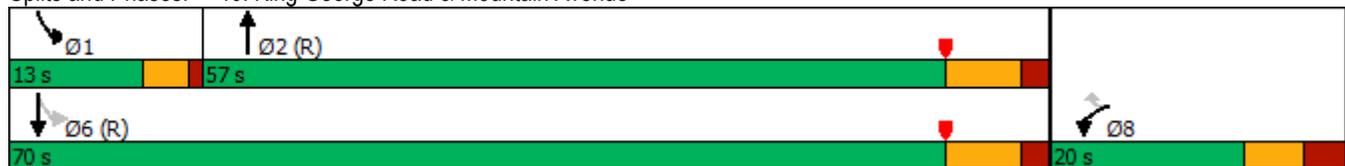


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.08	0.15	0.35		0.13	0.25

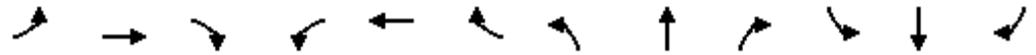
Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	88 (98%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle:	85
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.35
Intersection Signal Delay:	5.3
Intersection LOS:	A
Intersection Capacity Utilization	70.0%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 40: King George Road & Mountain Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	356	0	360	0	473	262	0	701	136
Future Volume (vph)	0	0	0	356	0	360	0	473	262	0	701	136
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	12	12	12	12	12	12	12	12	15	12	12	16
Grade (%)		0%			1%			2%			3%	
Storage Length (ft)	0		0	350		0	0		0	0		100
Storage Lanes	0		0	2		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40				40
Link Distance (ft)		735			745			726				197
Travel Time (s)		20.0			20.3			12.4				3.4
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	383	0	387	0	509	282	0	754	146
Turn Type				Perm		Perm		NA	Perm		NA	Perm
Protected Phases								2				6
Permitted Phases				8		8			2			6
Detector Phase				8		8		2	2			6
Switch Phase												
Minimum Initial (s)				7.0		7.0		48.0	48.0		48.0	48.0
Minimum Split (s)				12.0		12.0		55.0	55.0		55.0	55.0
Total Split (s)				35.0		35.0		55.0	55.0		55.0	55.0
Total Split (%)				38.9%		38.9%		61.1%	61.1%		61.1%	61.1%
Yellow Time (s)				3.0		3.0		5.0	5.0		5.0	5.0
All-Red Time (s)				2.0		2.0		2.0	2.0		2.0	2.0
Lost Time Adjust (s)				0.0		0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)				5.0		5.0		7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None		None		C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				14.7		14.7		63.3	63.3		63.3	63.3
Actuated g/C Ratio				0.16		0.16		0.70	0.70		0.70	0.70
v/c Ratio				0.61		0.70		0.35	0.19		0.28	0.10
Control Delay				38.7		14.8		6.1	1.8		5.7	1.2
Queue Delay				0.0		0.0		0.0	0.0		0.0	0.0
Total Delay				38.7		14.8		6.1	1.8		5.7	1.2
LOS				D		B		A	A		A	A
Approach Delay					26.7			4.6			4.9	
Approach LOS					C			A			A	
Queue Length 50th (ft)				105		36		119	5		70	0
Queue Length 95th (ft)				138		118		194	18		120	19
Internal Link Dist (ft)		655			665			646			117	
Turn Bay Length (ft)				350								100
Base Capacity (vph)				1283		796		1447	1450		2736	1417
Starvation Cap Reductn				0		0		0	0		0	0
Spillback Cap Reductn				0		0		0	0		0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn				0		0		0	0		0	0
Reduced v/c Ratio				0.30		0.49		0.35	0.19		0.28	0.10

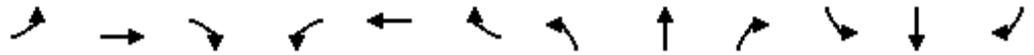
Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow, Master Intersection
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	11.6
Intersection LOS:	B
Intersection Capacity Utilization	70.2%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 10: King George Road & I-78 WB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	0	234	0	0	0	0	571	361	0	671	386
Future Volume (vph)	164	0	234	0	0	0	0	571	361	0	671	386
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	13	13	16	12	12	12	12	12	12	12	12	12
Grade (%)		2%			0%			-2%				3%
Storage Length (ft)	265		265	0		0	0		200	0		150
Storage Lanes	1		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40				40
Link Distance (ft)		766			644			1151				726
Travel Time (s)		20.9			17.6			19.6				12.4
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 (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	0	249	0	0	0	0	607	384	0	714	411
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2				6
Permitted Phases	4		4						2			6
Detector Phase	4		4					2	2			6
Switch Phase												
Minimum Initial (s)	7.0		7.0					49.0	49.0		49.0	49.0
Minimum Split (s)	12.0		12.0					56.0	56.0		56.0	56.0
Total Split (s)	34.0		34.0					56.0	56.0		56.0	56.0
Total Split (%)	37.8%		37.8%					62.2%	62.2%		62.2%	62.2%
Yellow Time (s)	3.0		3.0					5.0	5.0		5.0	5.0
All-Red Time (s)	2.0		2.0					2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0					0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0					7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None		None					C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)	12.5		12.5					65.5	65.5		65.5	65.5
Actuated g/C Ratio	0.14		0.14					0.73	0.73		0.73	0.73
v/c Ratio	0.62		0.56					0.21	0.27		0.25	0.30
Control Delay	45.8		14.0					3.1	0.5		2.8	0.5
Queue Delay	0.0		0.0					0.0	0.0		0.0	0.0
Total Delay	45.8		14.0					3.1	0.5		2.8	0.5
LOS	D		B					A	A		A	A
Approach Delay		27.1						2.1			2.0	
Approach LOS		C						A			A	
Queue Length 50th (ft)	95		27					34	0		36	0
Queue Length 95th (ft)	151		90					44	3		50	0
Internal Link Dist (ft)		686			564			1071			646	
Turn Bay Length (ft)	265		265						200			150
Base Capacity (vph)	651		778					2933	1417		2861	1391
Starvation Cap Reductn	0		0					0	0		0	0
Spillback Cap Reductn	0		0					0	0		0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0		0					0	0		0	0
Reduced v/c Ratio	0.27		0.32					0.21	0.27		0.25	0.30

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	79.4 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.62
Intersection Signal Delay:	6.2
Intersection LOS:	A
Intersection Capacity Utilization	63.9%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 20: King George Road & I-78 EB Ramps





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	188	113	5	744	896	9
Future Volume (vph)	188	113	5	744	896	9
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Lane Width (ft)	16	12	12	11	12	12
Grade (%)	2%			0%	2%	
Storage Length (ft)	0	240	230			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	25			40	40	
Link Distance (ft)	853			634	1151	
Travel Time (s)	23.3			10.8	19.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	20%	1%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	196	118	5	775	933	9
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	62.0	51.0	51.0
Minimum Split (s)	14.0	14.0	11.0	69.0	58.0	58.0
Total Split (s)	21.0	21.0	11.0	69.0	58.0	58.0
Total Split (%)	23.3%	23.3%	12.2%	76.7%	64.4%	64.4%
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	4.0
All-Red Time (s)	4.0	4.0	1.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.0	7.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	8.9	8.9	70.1	67.1	64.9	64.9
Actuated g/C Ratio	0.10	0.10	0.78	0.75	0.72	0.72
v/c Ratio	0.46	0.42	0.01	0.27	0.33	0.01
Control Delay	41.6	12.4	0.2	1.1	3.4	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	12.4	0.2	1.1	3.4	1.6
LOS	D	B	A	A	A	A
Approach Delay	30.6			1.1	3.3	
Approach LOS	C			A	A	
Queue Length 50th (ft)	55	0	0	5	45	0
Queue Length 95th (ft)	86	48	m0	7	88	m3
Internal Link Dist (ft)	773			554	1071	
Turn Bay Length (ft)		240	230			
Base Capacity (vph)	668	371	461	2847	2821	1277
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0



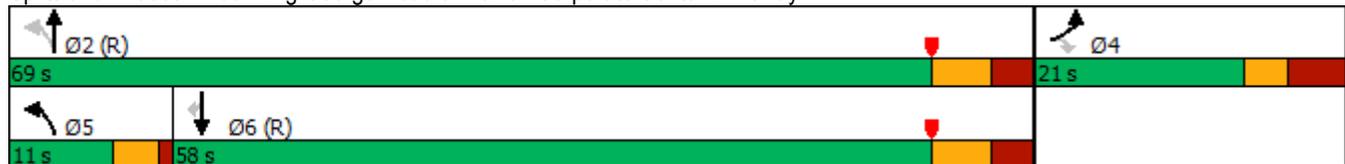
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.32	0.01	0.27	0.33	0.01

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	88 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle:	85
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.46
Intersection Signal Delay:	6.7
Intersection LOS:	A
Intersection Capacity Utilization	69.2%
ICU Level of Service	C
Analysis Period (min)	15

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

Splits and Phases: 30: King George Road & Warren Corporate Center Driveway



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	27	51	698	60	201	808
Future Volume (vph)	27	51	698	60	201	808
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Grade (%)	3%		-5%			-1%
Storage Length (ft)	130	130		120	185	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	35		40			40
Link Distance (ft)	1342		274			634
Travel Time (s)	26.1		4.7			10.8
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	1%	2%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	52	773	0	205	824
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	43.0		7.0	67.0
Minimum Split (s)	14.0	14.0	50.0		11.0	74.0
Total Split (s)	16.0	16.0	50.0		24.0	74.0
Total Split (%)	17.8%	17.8%	55.6%		26.7%	82.2%
Yellow Time (s)	4.0	4.0	5.0		3.0	5.0
All-Red Time (s)	3.0	3.0	2.0		1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		4.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.5	7.5	59.9		74.3	72.7
Actuated g/C Ratio	0.08	0.08	0.67		0.83	0.81
v/c Ratio	0.17	0.27	0.29		0.31	0.26
Control Delay	40.6	15.1	7.2		4.7	3.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	40.6	15.1	7.2		4.7	3.9
LOS	D	B	A		A	A
Approach Delay	24.0		7.2			4.1
Approach LOS	C		A			A
Queue Length 50th (ft)	15	0	88		27	78
Queue Length 95th (ft)	41	34	132		52	96
Internal Link Dist (ft)	1262		194			554
Turn Bay Length (ft)	130	130			185	
Base Capacity (vph)	196	222	2666		848	3206
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0

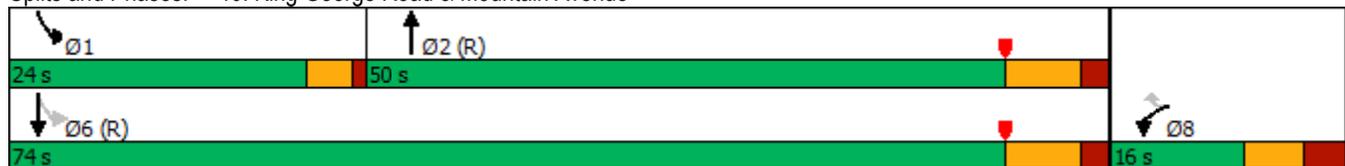


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.14	0.23	0.29		0.24	0.26

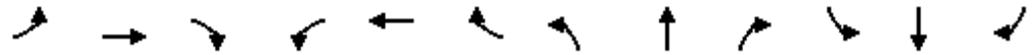
Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	68 (76%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.31
Intersection Signal Delay:	6.2
Intersection LOS:	A
Intersection Capacity Utilization	73.3%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 40: King George Road & Mountain Avenue



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 							 	
Traffic Volume (vph)	0	0	0	529	0	495	0	621	177	0	651	183
Future Volume (vph)	0	0	0	529	0	495	0	621	177	0	651	183
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	12	12	12	12	12	12	12	12	15	12	12	16
Grade (%)		0%			1%			2%			3%	
Storage Length (ft)	0		0	350		0	0		0	0		100
Storage Lanes	0		0	2		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40				40
Link Distance (ft)		735			745			726				197
Travel Time (s)		20.0			20.3			12.4				3.4
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 (%)	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	563	0	527	0	661	188	0	693	195
Turn Type				Perm		Perm		NA	Perm		NA	Perm
Protected Phases								2				6
Permitted Phases				8		8			2			6
Detector Phase				8		8		2	2			6
Switch Phase												
Minimum Initial (s)				7.0		7.0		44.0	44.0		44.0	44.0
Minimum Split (s)				12.0		12.0		51.0	51.0		51.0	51.0
Total Split (s)				39.0		39.0		51.0	51.0		51.0	51.0
Total Split (%)				43.3%		43.3%		56.7%	56.7%		56.7%	56.7%
Yellow Time (s)				3.0		3.0		5.0	5.0		5.0	5.0
All-Red Time (s)				2.0		2.0		2.0	2.0		2.0	2.0
Lost Time Adjust (s)				0.0		0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)				5.0		5.0		7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None		None		C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				25.0		25.0		53.0	53.0		53.0	53.0
Actuated g/C Ratio				0.28		0.28		0.59	0.59		0.59	0.59
v/c Ratio				0.53		0.85		0.55	0.15		0.30	0.16
Control Delay				28.5		32.2		14.4	2.1		10.9	2.2
Queue Delay				0.0		0.0		0.0	0.0		0.0	0.0
Total Delay				28.5		32.2		14.4	2.1		10.9	2.2
LOS				C		C		B	A		B	A
Approach Delay					30.2			11.7			9.0	
Approach LOS					C			B			A	
Queue Length 50th (ft)				137		185		264	0		98	0
Queue Length 95th (ft)				161		276		377	26		163	33
Internal Link Dist (ft)		655			665			646			117	
Turn Bay Length (ft)				350								100
Base Capacity (vph)				1440		779		1212	1222		2292	1231
Starvation Cap Reductn				0		0		0	0		0	0
Spillback Cap Reductn				0		0		0	0		0	0

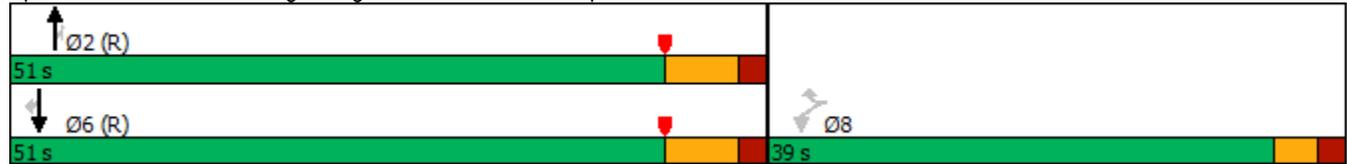


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn				0		0		0	0		0	0
Reduced v/c Ratio				0.39		0.68		0.55	0.15		0.30	0.16

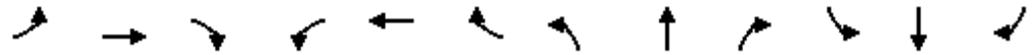
Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow, Master Intersection
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.85
Intersection Signal Delay:	18.0
Intersection LOS:	B
Intersection Capacity Utilization	74.4%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 10: King George Road & I-78 WB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	0	458	0	0	0	0	659	353	0	867	313
Future Volume (vph)	139	0	458	0	0	0	0	659	353	0	867	313
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	13	13	16	12	12	12	12	12	12	12	12	12
Grade (%)		2%			0%			-2%			3%	
Storage Length (ft)	265		265	0		0	0		200	0		150
Storage Lanes	1		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		766			644			1151			726	
Travel Time (s)		20.9			17.6			19.6			12.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	143	0	472	0	0	0	0	679	364	0	894	323
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Detector Phase	4		4					2	2		6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					54.0	54.0		54.0	54.0
Minimum Split (s)	12.0		12.0					61.0	61.0		61.0	61.0
Total Split (s)	29.0		29.0					61.0	61.0		61.0	61.0
Total Split (%)	32.2%		32.2%					67.8%	67.8%		67.8%	67.8%
Yellow Time (s)	3.0		3.0					5.0	5.0		5.0	5.0
All-Red Time (s)	2.0		2.0					2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0					0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0					7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None		None					C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)	19.1		19.1					58.9	58.9		58.9	58.9
Actuated g/C Ratio	0.21		0.21					0.65	0.65		0.65	0.65
v/c Ratio	0.34		0.86					0.26	0.28		0.35	0.26
Control Delay	31.0		38.9					10.2	4.2		4.9	0.8
Queue Delay	0.0		0.0					0.0	0.0		0.0	0.0
Total Delay	31.0		38.9					10.2	4.2		4.9	0.8
LOS	C		D					B	A		A	A
Approach Delay		37.1						8.1			3.8	
Approach LOS		D						A			A	
Queue Length 50th (ft)	68		177					93	0		41	0
Queue Length 95th (ft)	114		279					159	79		138	0
Internal Link Dist (ft)		686			564			1071			646	
Turn Bay Length (ft)	265		265						200			150
Base Capacity (vph)	528		647					2611	1305		2546	1262
Starvation Cap Reductn	0		0					0	0		0	0
Spillback Cap Reductn	0		0					0	0		0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0		0					0	0		0	0
Reduced v/c Ratio	0.27		0.73					0.26	0.28		0.35	0.26

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	79.4 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.86
Intersection Signal Delay:	12.5
Intersection LOS:	B
Intersection Capacity Utilization	80.7%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 20: King George Road & I-78 EB Ramps





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	12	218	987	922	403
Future Volume (vph)	25	12	218	987	922	403
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Lane Width (ft)	12	12	12	11	12	12
Grade (%)	2%			0%	2%	
Storage Length (ft)	0	240	230			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	25			40	40	
Link Distance (ft)	853			634	1151	
Travel Time (s)	23.3			10.8	19.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	10%	0%	1%	2%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	13	227	1028	960	420
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	69.0	44.0	44.0
Minimum Split (s)	14.0	14.0	11.0	76.0	51.0	51.0
Total Split (s)	14.0	14.0	25.0	76.0	51.0	51.0
Total Split (%)	15.6%	15.6%	27.8%	84.4%	56.7%	56.7%
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	4.0
All-Red Time (s)	4.0	4.0	1.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.0	7.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	7.0	7.0	77.6	77.4	62.6	62.6
Actuated g/C Ratio	0.08	0.08	0.86	0.86	0.70	0.70
v/c Ratio	0.10	0.09	0.39	0.32	0.36	0.31
Control Delay	39.5	20.8	2.9	2.3	8.8	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	20.8	2.9	2.3	8.8	3.4
LOS	D	C	A	A	A	A
Approach Delay	33.3			2.4	7.1	
Approach LOS	C			A	A	
Queue Length 50th (ft)	7	0	11	128	157	51
Queue Length 95th (ft)	20	18	2	3	212	91
Internal Link Dist (ft)	773			554	1071	
Turn Bay Length (ft)		240	230			
Base Capacity (vph)	270	149	796	3251	2693	1345
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.09	0.29	0.32	0.36	0.31

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	27 (30%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.39
Intersection Signal Delay:	5.3
Intersection LOS:	A
Intersection Capacity Utilization	75.0%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 30: King George Road & Warren Corporate Center Driveway



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	22	62	1143	50	76	858
Future Volume (vph)	22	62	1143	50	76	858
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Grade (%)	3%		-5%			-1%
Storage Length (ft)	130	130		120	185	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	35		40			40
Link Distance (ft)	1342		274			634
Travel Time (s)	26.1		4.7			10.8
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	15%	2%	1%	2%	3%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	63	1217	0	78	876
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	50.0		7.0	63.0
Minimum Split (s)	14.0	14.0	57.0		11.0	70.0
Total Split (s)	20.0	20.0	57.0		13.0	70.0
Total Split (%)	22.2%	22.2%	63.3%		14.4%	77.8%
Yellow Time (s)	4.0	4.0	5.0		3.0	5.0
All-Red Time (s)	3.0	3.0	2.0		1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		4.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.5	7.5	63.9		74.3	72.7
Actuated g/C Ratio	0.08	0.08	0.71		0.83	0.81
v/c Ratio	0.15	0.31	0.43		0.18	0.28
Control Delay	40.5	14.8	7.9		4.3	3.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	40.5	14.8	7.9		4.3	3.1
LOS	D	B	A		A	A
Approach Delay	21.5		7.9			3.2
Approach LOS	C		A			A
Queue Length 50th (ft)	12	0	164		3	33
Queue Length 95th (ft)	35	37	223		32	106
Internal Link Dist (ft)	1262		194			554
Turn Bay Length (ft)	130	130			185	
Base Capacity (vph)	246	302	2857		466	3174
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0

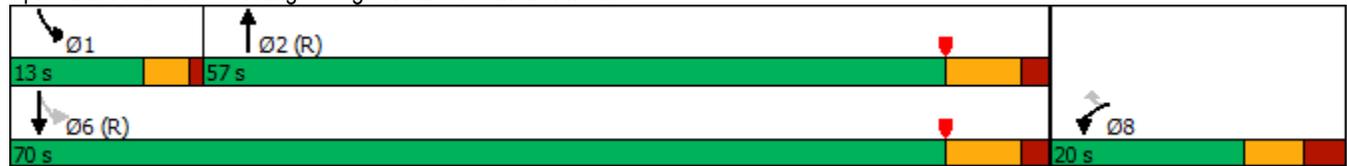


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.09	0.21	0.43		0.17	0.28

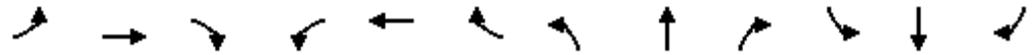
Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	88 (98%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle:	85
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.43
Intersection Signal Delay:	6.4
Intersection LOS:	A
Intersection Capacity Utilization	70.0%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 40: King George Road & Mountain Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	380	0	373	0	565	399	0	736	141
Future Volume (vph)	0	0	0	380	0	373	0	565	399	0	736	141
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	12	12	12	12	12	12	12	12	15	12	12	16
Grade (%)		0%			1%			2%			3%	
Storage Length (ft)	0		0	350		0	0		0	0		100
Storage Lanes	0		0	2		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40				40
Link Distance (ft)		735			745			726				197
Travel Time (s)		20.0			20.3			12.4				3.4
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	409	0	401	0	608	429	0	791	152
Turn Type				Perm		Perm		NA	Perm		NA	Perm
Protected Phases								2				6
Permitted Phases				8		8			2			6
Detector Phase				8		8		2	2			6
Switch Phase												
Minimum Initial (s)				7.0		7.0		48.0	48.0		48.0	48.0
Minimum Split (s)				12.0		12.0		55.0	55.0		55.0	55.0
Total Split (s)				35.0		35.0		55.0	55.0		55.0	55.0
Total Split (%)				38.9%		38.9%		61.1%	61.1%		61.1%	61.1%
Yellow Time (s)				3.0		3.0		5.0	5.0		5.0	5.0
All-Red Time (s)				2.0		2.0		2.0	2.0		2.0	2.0
Lost Time Adjust (s)				0.0		0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)				5.0		5.0		7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None		None		C-Max	C-Max		C-Max	C-Max
Act Effect Green (s)				16.4		16.4		61.6	61.6		61.6	61.6
Actuated g/C Ratio				0.18		0.18		0.68	0.68		0.68	0.68
v/c Ratio				0.58		0.77		0.43	0.29		0.30	0.11
Control Delay				36.3		22.9		6.4	1.4		6.7	1.5
Queue Delay				0.0		0.0		0.0	0.0		0.0	0.0
Total Delay				36.3		22.9		6.4	1.4		6.7	1.5
LOS				D		C		A	A		A	A
Approach Delay					29.7			4.3			5.8	
Approach LOS					C			A			A	
Queue Length 50th (ft)				112		82		71	6		76	0
Queue Length 95th (ft)				137		164		307	14		147	23
Internal Link Dist (ft)		655			665			646			117	
Turn Bay Length (ft)				350								100
Base Capacity (vph)				1283		750		1408	1466		2663	1385
Starvation Cap Reductn				0		0		0	0		0	0
Spillback Cap Reductn				0		0		0	0		0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn				0		0		0	0		0	0
Reduced v/c Ratio				0.32		0.53		0.43	0.29		0.30	0.11

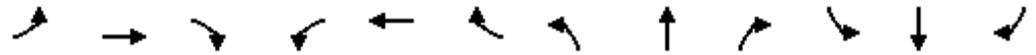
Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow, Master Intersection
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.77
Intersection Signal Delay:	12.2
Intersection LOS:	B
Intersection Capacity Utilization	70.9%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 10: King George Road & I-78 WB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	0	253	0	0	0	0	794	502	0	716	400
Future Volume (vph)	170	0	253	0	0	0	0	794	502	0	716	400
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	13	13	16	12	12	12	12	12	12	12	12	12
Grade (%)		2%			0%			-2%				3%
Storage Length (ft)	265		265	0		0	0		200	0		150
Storage Lanes	1		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40				40
Link Distance (ft)		766			644			1151				726
Travel Time (s)		20.9			17.6			19.6				12.4
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 (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	181	0	269	0	0	0	0	845	534	0	762	426
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Detector Phase	4		4					2	2		6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					49.0	49.0		49.0	49.0
Minimum Split (s)	12.0		12.0					56.0	56.0		56.0	56.0
Total Split (s)	34.0		34.0					56.0	56.0		56.0	56.0
Total Split (%)	37.8%		37.8%					62.2%	62.2%		62.2%	62.2%
Yellow Time (s)	3.0		3.0					5.0	5.0		5.0	5.0
All-Red Time (s)	2.0		2.0					2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0					0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0					7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None		None					C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)	12.8		12.8					65.2	65.2		65.2	65.2
Actuated g/C Ratio	0.14		0.14					0.72	0.72		0.72	0.72
v/c Ratio	0.63		0.62					0.29	0.37		0.27	0.31
Control Delay	45.8		19.5					2.5	0.6		2.9	0.6
Queue Delay	0.0		0.0					0.0	0.0		0.0	0.0
Total Delay	45.8		19.5					2.5	0.6		2.9	0.6
LOS	D		B					A	A		A	A
Approach Delay		30.1						1.8			2.1	
Approach LOS		C						A			A	
Queue Length 50th (ft)	98		49					36	0		39	0
Queue Length 95th (ft)	155		118					45	m0		52	0
Internal Link Dist (ft)		686			564			1071			646	
Turn Bay Length (ft)	265		265						200			150
Base Capacity (vph)	651		763					2919	1453		2847	1390
Starvation Cap Reductn	0		0					0	0		0	0
Spillback Cap Reductn	0		0					0	0		0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0		0					0	0		0	0
Reduced v/c Ratio	0.28		0.35					0.29	0.37		0.27	0.31

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 79.4 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 6.1 Intersection LOS: A
 Intersection Capacity Utilization 65.0% ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: King George Road & I-78 EB Ramps





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	516	298	13	780	945	24
Future Volume (vph)	516	298	13	780	945	24
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Lane Width (ft)	16	12	12	11	12	12
Grade (%)	2%		0%		2%	
Storage Length (ft)	0	240	230			0
Storage Lanes	2	1	1			1
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	25			40	40	
Link Distance (ft)	853			634	1151	
Travel Time (s)	23.3			10.8	19.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	20%	1%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	538	310	14	813	984	25
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	62.0	51.0	51.0
Minimum Split (s)	14.0	14.0	11.0	69.0	58.0	58.0
Total Split (s)	21.0	21.0	11.0	69.0	58.0	58.0
Total Split (%)	23.3%	23.3%	12.2%	76.7%	64.4%	64.4%
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	4.0
All-Red Time (s)	4.0	4.0	1.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.0	7.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	13.6	13.6	65.4	62.4	60.2	60.2
Actuated g/C Ratio	0.15	0.15	0.73	0.69	0.67	0.67
v/c Ratio	0.83	0.68	0.03	0.31	0.38	0.02
Control Delay	49.0	18.8	0.6	3.1	4.7	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	18.8	0.6	3.1	4.7	1.2
LOS	D	B	A	A	A	A
Approach Delay	38.0			3.0	4.6	
Approach LOS	D			A	A	
Queue Length 50th (ft)	154	42	0	6	63	1
Queue Length 95th (ft)	#225	128	m1	8	100	2
Internal Link Dist (ft)	773			554	1071	
Turn Bay Length (ft)		240	230			
Base Capacity (vph)	668	464	404	2645	2614	1189
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.67	0.03	0.31	0.38	0.02

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 14.7
 Intersection LOS: B
 Intersection Capacity Utilization 76.7%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: King George Road & Warren Corporate Center Driveway



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	29	54	739	63	233	1010
Future Volume (vph)	29	54	739	63	233	1010
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Grade (%)	3%		-5%			-1%
Storage Length (ft)	130	130		120	185	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	35		40			40
Link Distance (ft)	1342		274			634
Travel Time (s)	26.1		4.7			10.8
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	1%	2%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	55	818	0	238	1031
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	43.0		7.0	67.0
Minimum Split (s)	14.0	14.0	50.0		11.0	74.0
Total Split (s)	16.0	16.0	50.0		24.0	74.0
Total Split (%)	17.8%	17.8%	55.6%		26.7%	82.2%
Yellow Time (s)	4.0	4.0	5.0		3.0	5.0
All-Red Time (s)	3.0	3.0	2.0		1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		4.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.5	7.5	59.6		74.3	72.7
Actuated g/C Ratio	0.08	0.08	0.66		0.83	0.81
v/c Ratio	0.18	0.28	0.31		0.37	0.32
Control Delay	40.7	15.0	7.5		5.1	3.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	40.7	15.0	7.5		5.1	3.5
LOS	D	B	A		A	A
Approach Delay	24.1		7.5			3.8
Approach LOS	C		A			A
Queue Length 50th (ft)	16	0	96		30	89
Queue Length 95th (ft)	42	35	144		m60	108
Internal Link Dist (ft)	1262		194			554
Turn Bay Length (ft)	130	130			185	
Base Capacity (vph)	196	225	2653		825	3205
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0



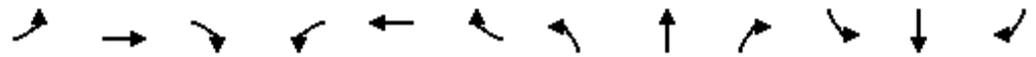
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.15	0.24	0.31		0.29	0.32

Intersection Summary

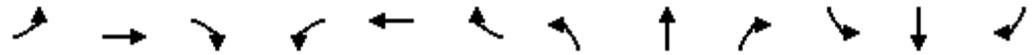
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	68 (76%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.37
Intersection Signal Delay:	6.0
Intersection LOS:	A
Intersection Capacity Utilization	73.3%
ICU Level of Service	D
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 40: King George Road & Mountain Avenue





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖↗		↖		↖	↖		↖↗	↖
Traffic Volume (vph)	0	0	0	557	0	495	0	641	206	0	665	183
Future Volume (vph)	0	0	0	557	0	495	0	641	206	0	665	183
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	12	12	12	12	12	12	12	12	15	12	12	16
Grade (%)		0%			1%			2%			3%	
Storage Length (ft)	0		0	350		0	0		0	0		100
Storage Lanes	0		0	2		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40				40
Link Distance (ft)		735			745			726				197
Travel Time (s)		20.0			20.3			12.4				3.4
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 (%)	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	593	0	527	0	682	219	0	707	195
Turn Type				Perm		Perm		NA	Perm		NA	Perm
Protected Phases								2				6
Permitted Phases				8		8			2			6
Detector Phase				8		8		2	2			6
Switch Phase												
Minimum Initial (s)				7.0		7.0		44.0	44.0		44.0	44.0
Minimum Split (s)				12.0		12.0		51.0	51.0		51.0	51.0
Total Split (s)				39.0		39.0		51.0	51.0		51.0	51.0
Total Split (%)				43.3%		43.3%		56.7%	56.7%		56.7%	56.7%
Yellow Time (s)				3.0		3.0		5.0	5.0		5.0	5.0
All-Red Time (s)				2.0		2.0		2.0	2.0		2.0	2.0
Lost Time Adjust (s)				0.0		0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)				5.0		5.0		7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None		None		C-Max	C-Max		C-Max	C-Max
Act Effect Green (s)				25.6		25.6		52.4	52.4		52.4	52.4
Actuated g/C Ratio				0.28		0.28		0.58	0.58		0.58	0.58
v/c Ratio				0.55		0.84		0.57	0.18		0.31	0.16
Control Delay				28.3		32.0		16.9	1.9		11.3	2.2
Queue Delay				0.0		0.0		0.0	0.0		0.0	0.0
Total Delay				28.3		32.0		16.9	1.9		11.3	2.2
LOS				C		C		B	A		B	A
Approach Delay					30.0			13.3			9.3	
Approach LOS					C			B			A	
Queue Length 50th (ft)				144		190		401	0		102	0
Queue Length 95th (ft)				170		282		514	28		167	33
Internal Link Dist (ft)		655			665			646			117	
Turn Bay Length (ft)				350								100
Base Capacity (vph)				1440		773		1197	1222		2263	1218
Starvation Cap Reductn				0		0		0	0		0	0
Spillback Cap Reductn				0		0		0	0		0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn				0		0		0	0		0	0
Reduced v/c Ratio				0.41		0.68		0.57	0.18		0.31	0.16

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow, Master Intersection
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	18.5
Intersection LOS:	B
Intersection Capacity Utilization	74.4%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 10: King George Road & I-78 WB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	0	477	0	0	0	0	708	394	0	909	313
Future Volume (vph)	139	0	477	0	0	0	0	708	394	0	909	313
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	13	13	16	12	12	12	12	12	12	12	12	12
Grade (%)		2%			0%			-2%			3%	
Storage Length (ft)	265		265	0		0	0		200	0		150
Storage Lanes	1		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		766			644			1151			726	
Travel Time (s)		20.9			17.6			19.6			12.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	143	0	492	0	0	0	0	730	406	0	937	323
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Detector Phase	4		4					2	2		6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					54.0	54.0		54.0	54.0
Minimum Split (s)	12.0		12.0					61.0	61.0		61.0	61.0
Total Split (s)	29.0		29.0					61.0	61.0		61.0	61.0
Total Split (%)	32.2%		32.2%					67.8%	67.8%		67.8%	67.8%
Yellow Time (s)	3.0		3.0					5.0	5.0		5.0	5.0
All-Red Time (s)	2.0		2.0					2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0					0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0					7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None		None					C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)	20.4		20.4					57.6	57.6		57.6	57.6
Actuated g/C Ratio	0.23		0.23					0.64	0.64		0.64	0.64
v/c Ratio	0.32		0.88					0.29	0.31		0.38	0.26
Control Delay	29.9		41.4					15.0	10.3		5.5	0.9
Queue Delay	0.0		0.0					0.0	0.0		0.0	0.0
Total Delay	29.9		41.4					15.0	10.3		5.5	0.9
LOS	C		D					B	B		A	A
Approach Delay		38.8						13.3			4.3	
Approach LOS		D						B			A	
Queue Length 50th (ft)	66		194					220	172		76	0
Queue Length 95th (ft)	114		#335					272	252		144	0
Internal Link Dist (ft)		686			564			1071			646	
Turn Bay Length (ft)	265		265						200			150
Base Capacity (vph)	528		636					2555	1300		2491	1242
Starvation Cap Reductn	0		0					0	0		0	0
Spillback Cap Reductn	0		0					0	0		0	0

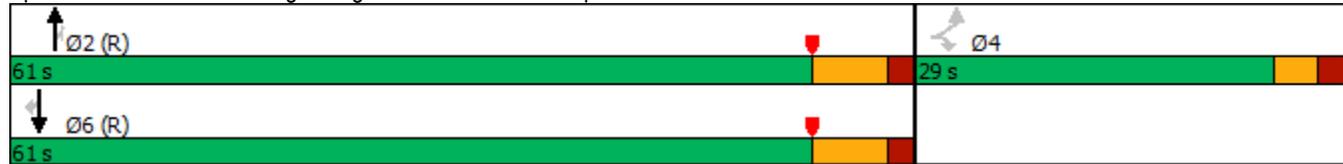


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0		0					0	0		0	0
Reduced v/c Ratio	0.27		0.77					0.29	0.31		0.38	0.26

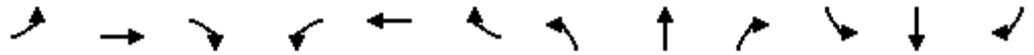
Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	79.4 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.88
Intersection Signal Delay:	14.9
Intersection LOS:	B
Intersection Capacity Utilization	81.7%
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: 20: King George Road & I-78 EB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	4	12	34	6	74	218	1003	26	56	927	403
Future Volume (vph)	25	4	12	34	6	74	218	1003	26	56	927	403
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	12	12
Grade (%)		2%			-2%			0%			2%	
Storage Length (ft)	0		240	0		0	230		0	75		0
Storage Lanes	2		1	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		853			420			634			1151	
Travel Time (s)		23.3			11.5			10.8			19.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	10%	0%	0%	0%	0%	0%	1%	2%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	17	0	0	118	0	227	1072	0	58	966	420
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases							2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	44.0		7.0	44.0	44.0
Minimum Split (s)	14.0	14.0		14.0	14.0		11.0	51.0		11.0	51.0	51.0
Total Split (s)	14.0	14.0		14.0	14.0		11.0	51.0		11.0	51.0	51.0
Total Split (%)	15.6%	15.6%		15.6%	15.6%		12.2%	56.7%		12.2%	56.7%	56.7%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	4.0	4.0		4.0	4.0		1.0	3.0		1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0			7.0		4.0	7.0		4.0	7.0	7.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	7.0	7.0			7.0		60.4	51.8		59.6	49.6	49.6
Actuated g/C Ratio	0.08	0.08			0.08		0.67	0.58		0.66	0.55	0.55
v/c Ratio	0.10	0.11			0.54		0.53	0.49		0.14	0.45	0.36
Control Delay	39.5	24.1			26.5		13.2	18.4		7.3	17.4	5.5
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	39.5	24.1			26.5		13.2	18.4		7.3	17.4	5.5
LOS	D	C			C		B	B		A	B	A
Approach Delay		33.4			26.5			17.5			13.5	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	7	2			22		81	308		16	235	53
Queue Length 95th (ft)	20	22			75		129	381		m30	280	m88
Internal Link Dist (ft)		773			340			554			1071	
Turn Bay Length (ft)							230			75		
Base Capacity (vph)	270	155			219		432	2170		403	2134	1153
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.10	0.11			0.54		0.53	0.49		0.14	0.45	0.36

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	27 (30%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.54
Intersection Signal Delay:	16.1
Intersection LOS:	B
Intersection Capacity Utilization	75.4%
ICU Level of Service	D
Analysis Period (min)	15

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

Splits and Phases: 30: King George Road & Warren Corporate Center Driveway/Site Driveway

Ø1 11 s	Ø2 (R) 51 s	Ø4 14 s	Ø8 14 s
Ø5 11 s	Ø6 (R) 51 s		

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	29	82	1165	52	87	886
Future Volume (vph)	29	82	1165	52	87	886
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Grade (%)	3%		-5%			-1%
Storage Length (ft)	130	130		120	185	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	35		40			40
Link Distance (ft)	1342		274			634
Travel Time (s)	26.1		4.7			10.8
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	15%	2%	1%	2%	3%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	84	1242	0	89	904
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	50.0		7.0	63.0
Minimum Split (s)	14.0	14.0	57.0		11.0	70.0
Total Split (s)	20.0	20.0	57.0		13.0	70.0
Total Split (%)	22.2%	22.2%	63.3%		14.4%	77.8%
Yellow Time (s)	4.0	4.0	5.0		3.0	5.0
All-Red Time (s)	3.0	3.0	2.0		1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		4.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.8	7.8	63.6		74.0	72.4
Actuated g/C Ratio	0.09	0.09	0.71		0.82	0.80
v/c Ratio	0.20	0.37	0.44		0.21	0.29
Control Delay	41.2	14.0	8.2		8.5	10.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	41.2	14.0	8.2		8.5	10.4
LOS	D	B	A		A	B
Approach Delay	21.2		8.2			10.2
Approach LOS	C		A			B
Queue Length 50th (ft)	16	0	171		26	184
Queue Length 95th (ft)	42	42	235		m69	285
Internal Link Dist (ft)	1262		194			554
Turn Bay Length (ft)	130	130			185	
Base Capacity (vph)	246	320	2846		454	3163
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0

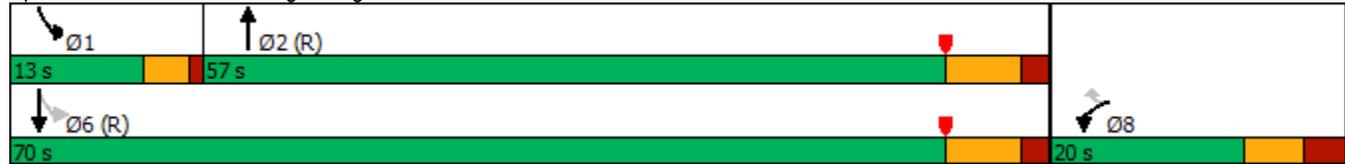


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.12	0.26	0.44		0.20	0.29

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	88 (98%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle:	85
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.44
Intersection Signal Delay:	9.7
Intersection LOS:	A
Intersection Capacity Utilization	70.0%
ICU Level of Service	C
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 40: King George Road & Mountain Avenue



Intersection

Int Delay, s/veh 0.6

Movement EBL EBR NBL NBT SBT SBRLane Configurations 

Traffic Vol, veh/h 3 11 3 135 89 1

Future Vol, veh/h 3 11 3 135 89 1

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 4 - - -1 -1 -

Peak Hour Factor 89 89 89 89 89 89

Heavy Vehicles, % 2 2 2 3 7 2

Mvmt Flow 3 12 3 152 100 1

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 259 101 101 0 - 0

Stage 1 101 - - - - -

Stage 2 158 - - - - -

Critical Hdwy 7.22 6.62 4.12 - - -

Critical Hdwy Stg 1 6.22 - - - - -

Critical Hdwy Stg 2 6.22 - - - - -

Follow-up Hdwy 3.518 3.318 2.218 - - -

Pot Cap-1 Maneuver 689 944 1491 - - -

Stage 1 903 - - - - -

Stage 2 841 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 688 944 1491 - - -

Mov Cap-2 Maneuver 688 - - - - -

Stage 1 901 - - - - -

Stage 2 841 - - - - -

Approach EB NB SB

HCM Control Delay, s 9.2 0.2 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1491 - 874 - -

HCM Lane V/C Ratio 0.002 - 0.018 - -

HCM Control Delay (s) 7.4 0 9.2 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0 - 0.1 - -

Intersection

Int Delay, s/veh 0.7

Movement EBL EBR NBL NBT SBT SBRLane Configurations 

Traffic Vol, veh/h 3 12 4 135 99 1

Future Vol, veh/h 3 12 4 135 99 1

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 1 - - 2 1 -

Peak Hour Factor 89 89 89 89 89 89

Heavy Vehicles, % 2 2 2 3 7 2

Mvmt Flow 3 13 4 152 111 1

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 272 112 112 0 - 0

Stage 1 112 - - - - -

Stage 2 160 - - - - -

Critical Hdwy 6.62 6.32 4.12 - - -

Critical Hdwy Stg 1 5.62 - - - - -

Critical Hdwy Stg 2 5.62 - - - - -

Follow-up Hdwy 3.518 3.318 2.218 - - -

Pot Cap-1 Maneuver 707 938 1478 - - -

Stage 1 907 - - - - -

Stage 2 861 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 705 938 1478 - - -

Mov Cap-2 Maneuver 705 - - - - -

Stage 1 904 - - - - -

Stage 2 861 - - - - -

Approach EB NB SB

HCM Control Delay, s 9.2 0.2 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1478 - 880 - -

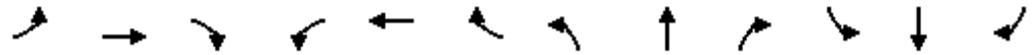
HCM Lane V/C Ratio 0.003 - 0.019 - -

HCM Control Delay (s) 7.4 0 9.2 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0 - 0.1 - -

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	423	0	373	0	579	418	0	757	141
Future Volume (vph)	0	0	0	423	0	373	0	579	418	0	757	141
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	12	12	12	12	12	12	12	12	15	12	12	16
Grade (%)		0%			1%			2%			3%	
Storage Length (ft)	0		0	350		0	0		0	0		100
Storage Lanes	0		0	2		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40				40
Link Distance (ft)		735			745			726				197
Travel Time (s)		20.0			20.3			12.4				3.4
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	455	0	401	0	623	449	0	814	152
Turn Type				Perm		Perm		NA	Perm		NA	Perm
Protected Phases								2				6
Permitted Phases				8		8			2			6
Detector Phase				8		8		2	2			6
Switch Phase												
Minimum Initial (s)				7.0		7.0		48.0	48.0		48.0	48.0
Minimum Split (s)				12.0		12.0		55.0	55.0		55.0	55.0
Total Split (s)				35.0		35.0		55.0	55.0		55.0	55.0
Total Split (%)				38.9%		38.9%		61.1%	61.1%		61.1%	61.1%
Yellow Time (s)				3.0		3.0		5.0	5.0		5.0	5.0
All-Red Time (s)				2.0		2.0		2.0	2.0		2.0	2.0
Lost Time Adjust (s)				0.0		0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)				5.0		5.0		7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None		None		C-Max	C-Max		C-Max	C-Max
Act Effect Green (s)				17.2		17.2		60.8	60.8		60.8	60.8
Actuated g/C Ratio				0.19		0.19		0.68	0.68		0.68	0.68
v/c Ratio				0.62		0.76		0.45	0.31		0.31	0.11
Control Delay				36.5		23.0		9.9	1.8		7.0	1.6
Queue Delay				0.0		0.0		0.0	0.0		0.0	0.0
Total Delay				36.5		23.0		9.9	1.8		7.0	1.6
LOS				D		C		A	A		A	A
Approach Delay					30.1			6.5			6.2	
Approach LOS					C			A			A	
Queue Length 50th (ft)				125		87		190	6		83	0
Queue Length 95th (ft)				151		169		421	12		155	23
Internal Link Dist (ft)		655			665			646			117	
Turn Bay Length (ft)				350								100
Base Capacity (vph)				1283		744		1390	1458		2628	1369
Starvation Cap Reductn				0		0		0	0		0	0
Spillback Cap Reductn				0		0		0	0		0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn				0		0		0	0		0	0
Reduced v/c Ratio				0.35		0.54		0.45	0.31		0.31	0.11

Intersection Summary

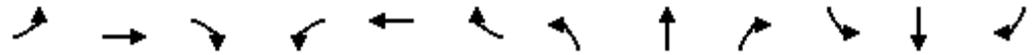
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow, Master Intersection
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.76
Intersection Signal Delay:	13.4
Intersection LOS:	B
Intersection Capacity Utilization	70.9%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 10: King George Road & I-78 WB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	0	283	0	0	0	0	827	529	0	780	400
Future Volume (vph)	170	0	283	0	0	0	0	827	529	0	780	400
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	13	13	16	12	12	12	12	12	12	12	12	12
Grade (%)		2%			0%			-2%			3%	
Storage Length (ft)	265		265	0		0	0		200	0		150
Storage Lanes	1		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		766			644			1151			726	
Travel Time (s)		20.9			17.6			19.6			12.4	
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 (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	181	0	301	0	0	0	0	880	563	0	830	426
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Detector Phase	4		4					2	2		6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					49.0	49.0		49.0	49.0
Minimum Split (s)	12.0		12.0					56.0	56.0		56.0	56.0
Total Split (s)	34.0		34.0					56.0	56.0		56.0	56.0
Total Split (%)	37.8%		37.8%					62.2%	62.2%		62.2%	62.2%
Yellow Time (s)	3.0		3.0					5.0	5.0		5.0	5.0
All-Red Time (s)	2.0		2.0					2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0					0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0					7.0	7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None		None					C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)	13.3		13.3					64.7	64.7		64.7	64.7
Actuated g/C Ratio	0.15		0.15					0.72	0.72		0.72	0.72
v/c Ratio	0.61		0.72					0.30	0.39		0.29	0.31
Control Delay	43.9		27.7					7.7	3.5		3.2	0.6
Queue Delay	0.0		0.0					0.0	0.0		0.0	0.0
Total Delay	43.9		27.7					7.7	3.5		3.2	0.6
LOS	D		C					A	A		A	A
Approach Delay		33.8						6.1			2.3	
Approach LOS		C						A			A	
Queue Length 50th (ft)	98		83					95	35		42	0
Queue Length 95th (ft)	150		156					m134	m93		54	0
Internal Link Dist (ft)		686			564			1071			646	
Turn Bay Length (ft)	265		265						200			150
Base Capacity (vph)	651		745					2898	1454		2826	1383
Starvation Cap Reductn	0		0					0	0		0	0
Spillback Cap Reductn	0		0					0	0		0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	516	6	298	28	4	58	13	782	44	85	954	24
Future Volume (vph)	516	6	298	28	4	58	13	782	44	85	954	24
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	12	12
Grade (%)		2%			-2%			0%			2%	
Storage Length (ft)	0		240	0		0	230		0	75		0
Storage Lanes	2		1	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		853			420			634			1151	
Travel Time (s)		23.3			11.5			10.8			19.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	20%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	538	316	0	0	93	0	14	861	0	89	994	25
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases							2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		6.0	36.0		6.0	36.0	36.0
Minimum Split (s)	14.0	14.0		14.0	14.0		10.0	43.0		10.0	43.0	43.0
Total Split (s)	22.0	22.0		14.0	14.0		10.0	44.0		10.0	44.0	44.0
Total Split (%)	24.4%	24.4%		15.6%	15.6%		11.1%	48.9%		11.1%	48.9%	48.9%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	4.0	4.0		4.0	4.0		1.0	3.0		1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0			7.0		4.0	7.0		4.0	7.0	7.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	14.7	14.7			7.0		49.9	42.1		52.3	48.1	48.1
Actuated g/C Ratio	0.16	0.16			0.08		0.55	0.47		0.58	0.53	0.53
v/c Ratio	0.87	0.63			0.46		0.05	0.48		0.24	0.48	0.02
Control Delay	52.7	14.3			25.4		6.9	18.8		7.8	12.0	0.0
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	52.7	14.3			25.4		6.9	18.8		7.8	12.0	0.0
LOS	D	B			C		A	B		A	B	A
Approach Delay		38.5			25.4			18.6			11.4	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)	154	29			18		4	222		18	207	0
Queue Length 95th (ft)	#237	111			65		m12	283		27	266	m0
Internal Link Dist (ft)		773			340			554			1071	
Turn Bay Length (ft)							230			75		
Base Capacity (vph)	632	506			203		304	1776		374	2090	1028
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.85	0.62			0.46		0.05	0.48		0.24	0.48	0.02

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 88 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 21.9 Intersection LOS: C
 Intersection Capacity Utilization 78.0% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: King George Road & Warren Corporate Center Driveway/Site Driveway

Ø1 10 s	Ø2 (R) 44 s	Ø4 22 s	Ø8 14 s
Ø5 10 s	Ø6 (R) 44 s		

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	33	70	769	71	253	1027
Future Volume (vph)	33	70	769	71	253	1027
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Grade (%)	3%		-5%			-1%
Storage Length (ft)	130	130		120	185	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	35		40			40
Link Distance (ft)	1342		274			634
Travel Time (s)	26.1		4.7			10.8
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	1%	2%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	71	857	0	258	1048
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	43.0		7.0	67.0
Minimum Split (s)	14.0	14.0	50.0		11.0	74.0
Total Split (s)	16.0	16.0	50.0		24.0	74.0
Total Split (%)	17.8%	17.8%	55.6%		26.7%	82.2%
Yellow Time (s)	4.0	4.0	5.0		3.0	5.0
All-Red Time (s)	3.0	3.0	2.0		1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		4.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.6	7.6	59.3		74.2	72.6
Actuated g/C Ratio	0.08	0.08	0.66		0.82	0.81
v/c Ratio	0.20	0.33	0.32		0.42	0.33
Control Delay	41.0	14.4	7.7		8.6	5.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	41.0	14.4	7.7		8.6	5.9
LOS	D	B	A		A	A
Approach Delay	23.0		7.7			6.5
Approach LOS	C		A			A
Queue Length 50th (ft)	18	0	104		42	86
Queue Length 95th (ft)	47	39	155		149	262
Internal Link Dist (ft)	1262		194			554
Turn Bay Length (ft)	130	130			185	
Base Capacity (vph)	196	239	2637		804	3200
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0

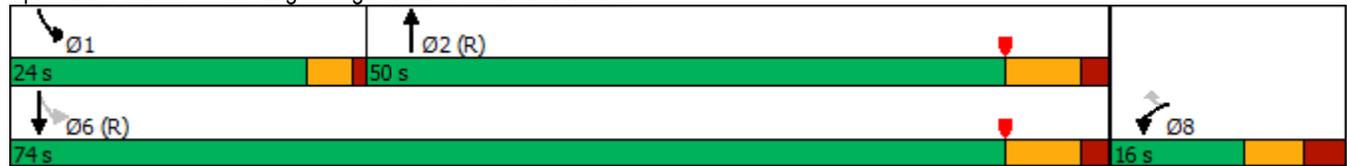


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.17	0.30	0.32		0.32	0.33

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	68 (76%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.42
Intersection Signal Delay:	7.7
Intersection LOS:	A
Intersection Capacity Utilization	73.3%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 40: King George Road & Mountain Avenue



Intersection

Int Delay, s/veh 0.4

Movement EBL EBR NBL NBT SBT SBRLane Configurations 

Traffic Vol, veh/h 2 7 12 302 92 3

Future Vol, veh/h 2 7 12 302 92 3

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 4 - - -1 -1 -

Peak Hour Factor 86 86 86 86 86 86

Heavy Vehicles, % 2 2 2 1 0 2

Mvmt Flow 2 8 14 351 107 3

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 488 109 110 0 - 0

Stage 1 109 - - - - -

Stage 2 379 - - - - -

Critical Hdwy 7.22 6.62 4.12 - - -

Critical Hdwy Stg 1 6.22 - - - - -

Critical Hdwy Stg 2 6.22 - - - - -

Follow-up Hdwy 3.518 3.318 2.218 - - -

Pot Cap-1 Maneuver 484 933 1480 - - -

Stage 1 894 - - - - -

Stage 2 636 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 478 933 1480 - - -

Mov Cap-2 Maneuver 478 - - - - -

Stage 1 883 - - - - -

Stage 2 636 - - - - -

Approach EB NB SB

HCM Control Delay, s 9.7 0.3 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1480 - 770 - -

HCM Lane V/C Ratio 0.009 - 0.014 - -

HCM Control Delay (s) 7.5 0 9.7 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0 - 0 - -

Intersection

Int Delay, s/veh 0.4

Movement EBL EBR NBL NBT SBT SBRLane Configurations 

Traffic Vol, veh/h 2 7 12 312 96 3

Future Vol, veh/h 2 7 12 312 96 3

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 1 - - 2 1 -

Peak Hour Factor 86 86 86 86 86 86

Heavy Vehicles, % 2 2 2 1 0 2

Mvmt Flow 2 8 14 363 112 3

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 505 114 115 0 - 0

Stage 1 114 - - - - -

Stage 2 391 - - - - -

Critical Hdwy 6.62 6.32 4.12 - - -

Critical Hdwy Stg 1 5.62 - - - - -

Critical Hdwy Stg 2 5.62 - - - - -

Follow-up Hdwy 3.518 3.318 2.218 - - -

Pot Cap-1 Maneuver 512 936 1474 - - -

Stage 1 905 - - - - -

Stage 2 669 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 506 936 1474 - - -

Mov Cap-2 Maneuver 506 - - - - -

Stage 1 894 - - - - -

Stage 2 669 - - - - -

Approach EB NB SB

HCM Control Delay, s 9.6 0.3 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1474 - 787 - -

HCM Lane V/C Ratio 0.009 - 0.013 - -

HCM Control Delay (s) 7.5 0 9.6 - -

HCM Lane LOS A A A - -

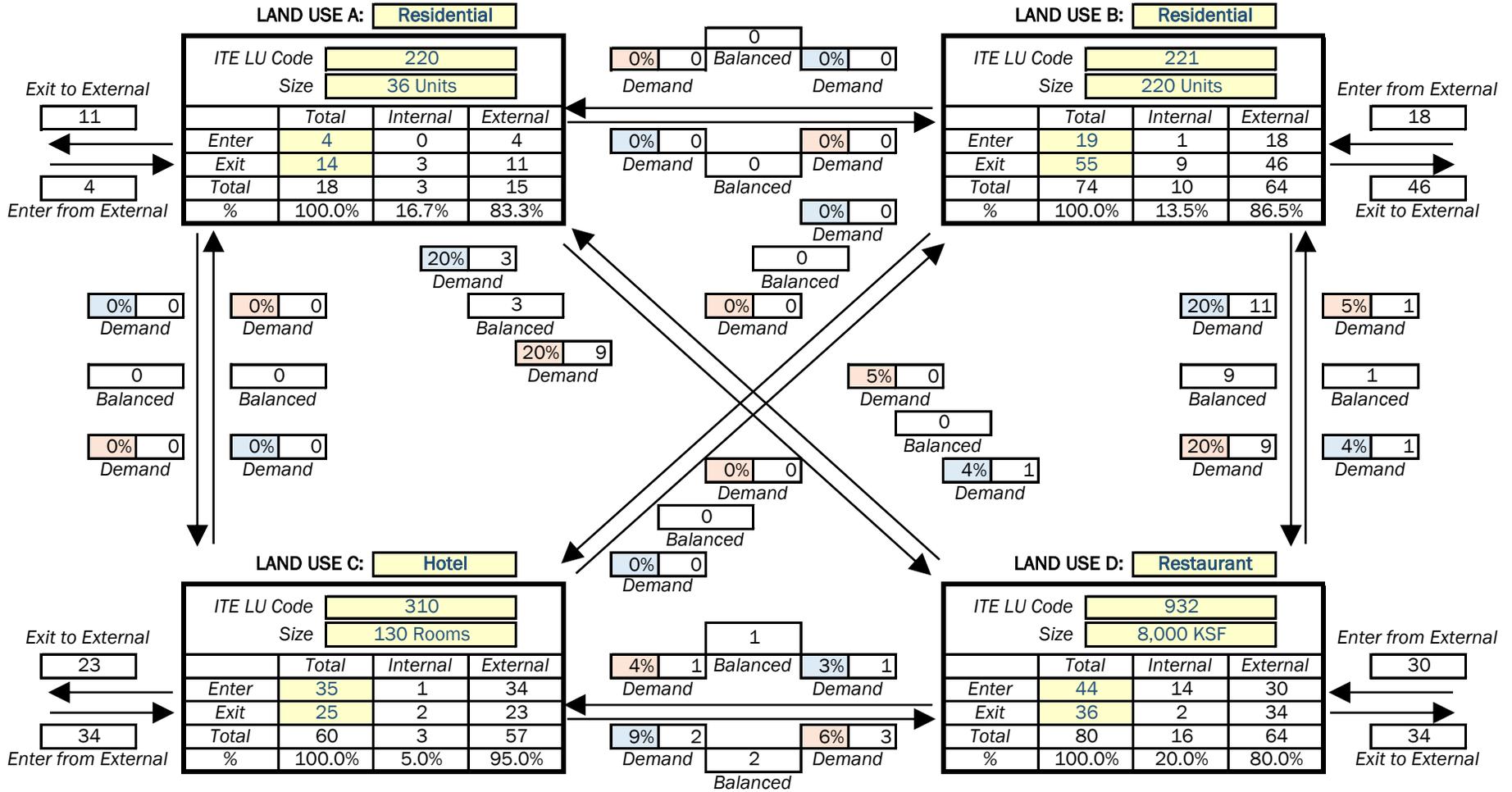
HCM 95th %tile Q(veh) 0 - 0 - -

Appendix D
Internal Capture Worksheets

Analyst: **CGH**
 Date: **7/16/2019**

**MULTI-USE DEVELOPMENT TRIP
 GENERATION AND INTERNAL CAPTURE
 SUMMARY**

Name of Development: **3089-99-001TE**
 Time Period: **Weekday AM Peak Hour**



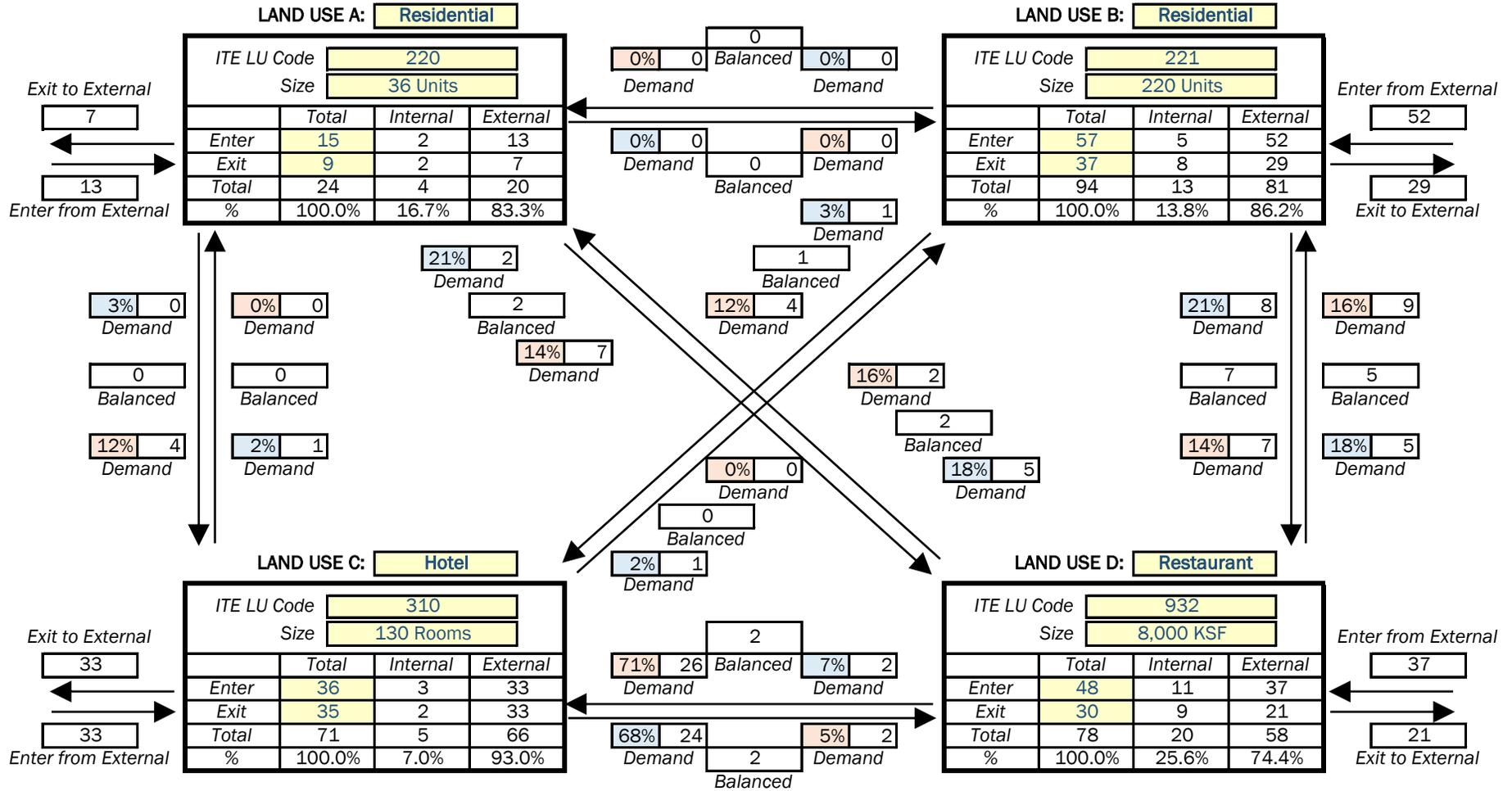
Net External Trips for Mult-Use Development						
	Land Use A	Land Use B	Land Use C	Land Use D	Total	
Enter	4	18	34	30	86	
Exit	11	46	23	34	114	
Total	15	64	57	64	200	
Single Use Trip Gen Est.	18	74	60	80	232	
						Internal Capture 13.8%

Note: Internal capture rates obtained from ITE publications *Trip Generation Handbook, 3rd Edition* and *Trip Generation Handbook, 2nd Edition*

**MULTI-USE DEVELOPMENT TRIP
GENERATION AND INTERNAL CAPTURE
SUMMARY**

Analyst: **CGH**
Date: **7/16/2019**

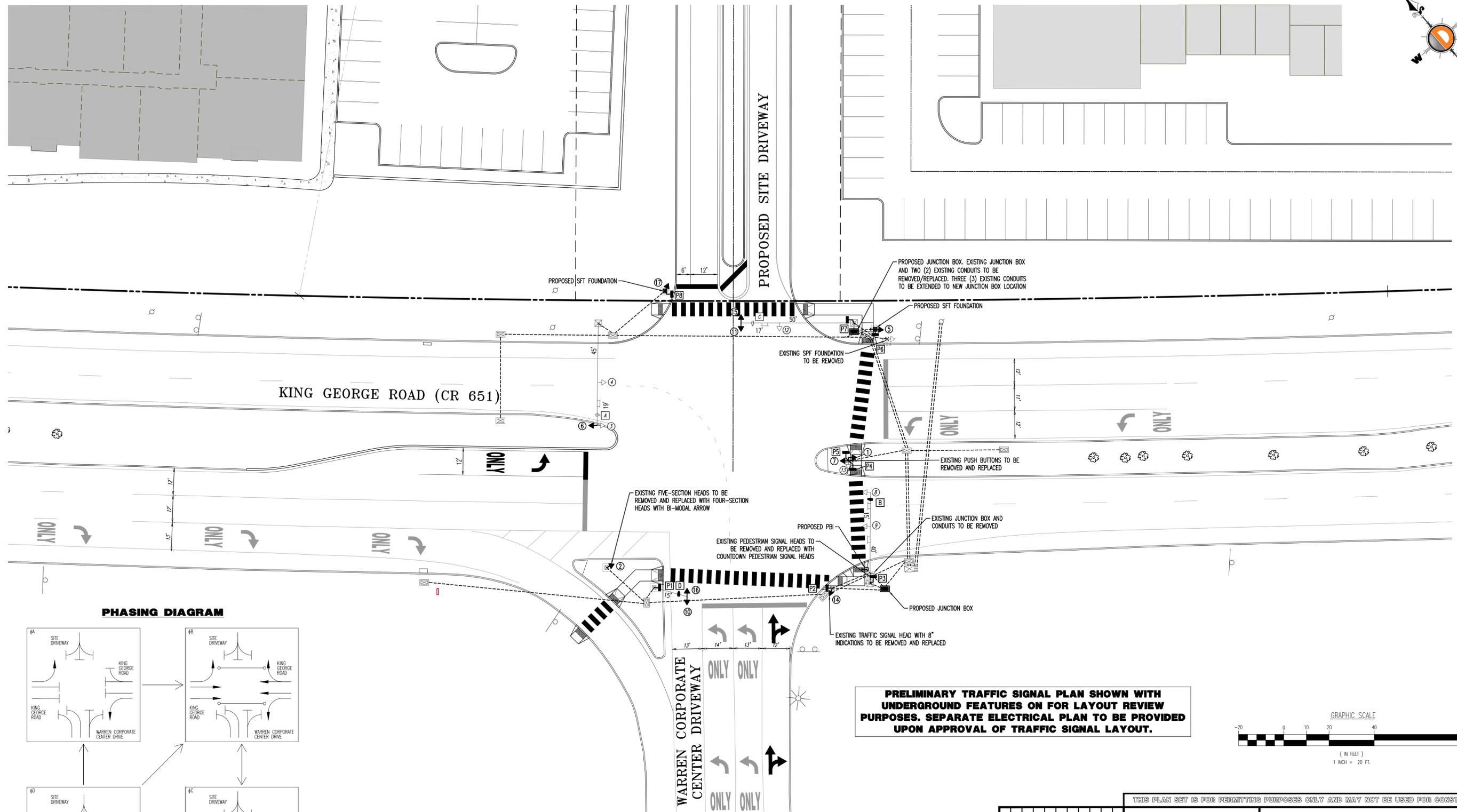
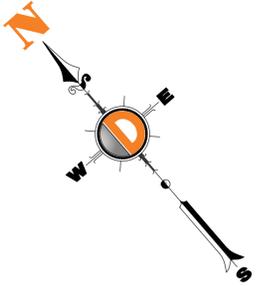
Name of Development: **3089-99-001TE**
Time Period: **Weekday PM Peak Hour**



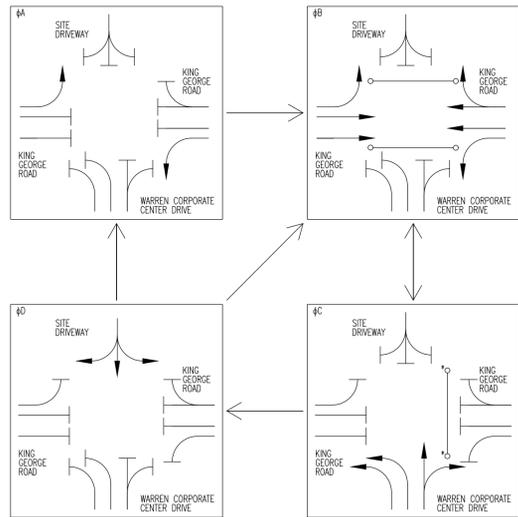
Net External Trips for Mult-Use Development						
	Land Use A	Land Use B	Land Use C	Land Use D	Total	
Enter	13	52	33	37	135	
Exit	7	29	33	21	90	
Total	20	81	66	58	225	
Single Use Trip Gen Est.	24	94	71	78	267	Internal Capture 15.7%

Note: Internal capture rates obtained from ITE publications *Trip Generation Handbook, 3rd Edition* and *Trip Generation Handbook, 2nd Edition*

Appendix E
Intersection Improvement Plans

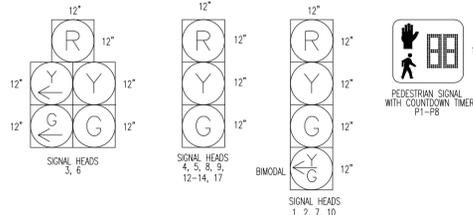


PHASING DIAGRAM



* OCCURS WITH PEDESTRIAN ACTUATION ONLY

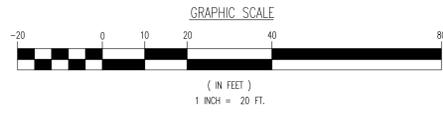
SIGNAL LEGEND



SIGNAL EQUIPMENT LEGEND

- Proposed signal head, Proposed image detector, Proposed radar detector, Proposed mast arm sign, Proposed pole mounted luminaire, Proposed ped head, Proposed push button, Proposed controller, Proposed junction box, Proposed signal foundation, Existing signal head, Existing image detector, Existing radar detector, Existing mast arm sign, Existing pole mounted luminaire, Existing ped head, Existing push button, Existing controller, Existing junction box, Existing signal foundation.

PRELIMINARY TRAFFIC SIGNAL PLAN SHOWN WITH UNDERGROUND FEATURES ON FOR LAYOUT REVIEW PURPOSES. SEPARATE ELECTRICAL PLAN TO BE PROVIDED UPON APPROVAL OF TRAFFIC SIGNAL LAYOUT.



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TOWNSHIP OF WARREN, SOMERSET COUNTY, NEW JERSEY

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PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 50094

PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 47470
SCALE: 1"=20'
PROJECT NUMBER: 3089-99-0011E
DATE: 08/23/2019
SHEET NUMBER: 2 OF 2

Product Ver: 23.0a (LMS Tech)
File: T:\TRAFFIC PROJECTS\3089 Canoe Brook Development\99-0011E Warren\Draw\Roadway Improvement Plans\308999001TS0.dwg, --> 02 PRELIMINARY TRAFFIC SIGNAL PLAN
Plotted: 08/28/19 1:28 PM, By: kscavage

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