TRAFFIC IMPACT STUDY

For

750 Walnut Street - Residential
Township of Cranford
Union County, New Jersey

Prepared For:

Hartz Mountain Industries, Inc.
400 Plaza Drive
Secaucus, NJ 07094

Prepared By:

Langan Engineering & Environmental Services, Inc.
989 Lenox Drive
Suite 124
Lawrenceville, NJ 08648
NJ Certificate of Authorization No: 24GA27996400

Karl A. Pehnke, P.E., PTOE
P.E. License No. 36434

Alan W. Lothian, P.E.
P.E. License No. 46658

LANGAN

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EXECUTIVE SUMMARY

Hartz Mountain Industries, Inc. has retained Langan Engineering and Environmental Services to prepare a traffic impact study for a proposed residential development at 750 Walnut Avenue (The Project). The project, upon completion, will consist of 905 dwelling units (apartments). The project is located in the Township of Cranford, Union County, New Jersey.

It is proposed to construct the development in two phases. Phase 1 will develop the front of the property and consist of 433 apartment units. The remaining 472 units will be developed as part of Phase 2. The property is currently developed with office and warehouse uses. In Phase 1, it is proposed to demolish a vacant portion, 190,497 square feet (sf), of the existing office building and redevelop the area with 433 residential multi-family apartments. During Phase 2, the remaining occupied office building and warehouse are proposed to be demolished and replaced with an additional 472 apartment units.

The property is currently zoned C – 3 (Commercial District) which, among other things, permits office, research and industrial development. The proposed residential is not a permitted use within the zone. To redevelop the property with a residential use a zoning change will be required. A comparison of the estimated residential to the permitted C – 3 uses shows a difference in direction of flow and significantly less generated trips.

Additionally, a comparison of estimated residential entering and exiting volumes to the current office and warehouse uses, fully occupied, also shows a change in the direction of flow. The major direction of flow for the previous use was entering during the weekday morning peak hour and exiting during the weekday evening peak hour. The proposed residential use will experience an opposite more balanced flow of the major entering and exiting movements. However, in general, the proposed residential will generate similar total peak hour traffic demands on the adjacent roadways as compared to the existing use. As a result, the development traffic associated with the proposed redevelopment will not significantly alter surrounding area traffic operations.

The property is located along Walnut Avenue (County Road 632) and is bordered by a railroad line on the north, Walnut Avenue on the east, Raritan Road (County Road 607) to the south and the Hyatt Hills Golf Complex on the west. Access to the development will be provided via three driveway connections along Walnut Avenue. Driveways 1 and 2 will be full-movement intersections with the side street approaches at driveway 1 under stop-control. It is proposed to signalize the central driveway (driveway 2). The southernmost driveway (driveway 3) will be

a right-in/right-out only intersection with the driveway approach under stop-control. The two existing office driveways (north and south) are proposed to be eliminated.

Langan has estimated the number of trips the proposed development would generate based on data compiled for Land Use Code 220 (Apartments) by the Institute of Transportation Engineers (ITE) as contained in the publication Trip Generation, 9th edition. Accordingly, Langan estimated that the development, upon completion, will generate approximately 447 trips (89 enter, 358 exit) during the weekday morning peak hour and 515 trips (335 enter, 180 exit) during the weekday evening peak hour.

We determined the directional distribution of the site-generated trips for the development based on an examination of census data, existing and expected travel patterns in the study area, and a journey-to-work model. We conducted capacity analyses at the following intersections:

- Raritan Road (County Road 607) and Walnut Avenue (County Road 632)
- North Driveway and Walnut Avenue (County Road 632)
- South Driveway and Walnut Avenue (County Road 632)
- Driveway 1/ Lexington Avenue and Walnut Avenue (County Road 632)
- Driveway 2/ Behnert Place and Walnut Avenue (County Road 632)
- Driveway 3/ Mitchell Place and Walnut Avenue (County Road 632)

Based upon a review of the analyses, it is determined that the proposed development will not significantly alter traffic operations in the study area during peak hours. Moreover, with signal timing mitigations the intersection of Walnut Avenue and Raritan Road is expected to improve its level of service (LOS) operations as compared to the No-Build conditions.

INTRODUCTION

Hartz Mountain Industries, Inc. has retained Langan Engineering and Environmental Services to prepare a traffic impact study for a proposed residential development at 750 Walnut Avenue (The Project) in the Township of Cranford, Union County, New Jersey.

Project Description

The proposed development consists of 905 dwelling units (apartments) which will be supported by 1,779 parking spaces. The property is designated as Block 541, Lot 2 according to the Township of Cranford tax maps. The site location is shown in Figure 1.

The property is currently zoned C – 3 (Commercial District) which, among other things, permits office, research and industrial development. The proposed residential is not a permitted use within the zone. To redevelop the property with a residential use a zoning change will be required. A comparison of the proposed residential to the permitted C – 3 uses shows a difference in direction of flow and significantly less generated trips.

It is proposed to construct the development in two phases. Phase 1 will develop the front of the property and consist of 433 apartment units. The remaining 472 units will be developed as part of Phase 2. The property is currently developed with office and warehouse uses. In Phase 1, it is proposed to demolish a vacant portion, 190,497 square feet (sf), of the existing office building and redevelop the area with 436 residential multi-family apartments. During Phase 2, the remaining occupied office building and warehouse are proposed to be demolished and replaced with an additional 472 apartment units.

The property is located along Walnut Avenue (County Road 632) and is bordered by a railroad line on the north, Walnut Avenue on the east, Raritan Road (County Road 607) to the south and the Hyatt Hills Golf Complex on the west. Access to the development will be provided via three driveway connections along Walnut Avenue. Driveways 1 and 2 will be full-movement intersections with the side street approaches at driveway 1 under stop-control. It is proposed to signalize the central driveway (driveway 2). The southernmost driveway (driveway 3) will be a right-in/right-out only intersection with the driveway approach under stop-control. The two existing office driveways (north and south) are proposed to be eliminated.

Study Area

We conducted capacity analyses at the following intersections:

- Raritan Road (County Road 607) and Walnut Avenue (County Road 632)
- North Driveway and Walnut Avenue (County Road 632)
- South Driveway and Walnut Avenue (County Road 632)
- Driveway 1/ Lexington Avenue and Walnut Avenue (County Road 632)
- Driveway 2/ Behnert Place and Walnut Avenue (County Road 632)
- Driveway 3/ Mitchell Place and Walnut Avenue (County Road 632)

An inventory of the physical road conditions is presented in the section "Description of Existing Conditions."

Scope of Study

Langan undertook the following steps to prepare this study in accordance with standard traffic engineering methodologies:

1. Conducted a field examination of the site and surrounding road network to inventory physical and regulatory conditions including the number of lanes, lane assignments, channelization, traffic-control devices, lateral clearances and other factors that limit traffic capacity.

2. Conducted a series of manual turning movement traffic counts at the intersections identified in the previous section. We conducted counts on a typical weekday from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. We then identified the existing weekday morning and evening peak hour traffic volumes based on the manual traffic count data.

3. Established 2016 Existing traffic volumes using the turning movement traffic counts.

4. Established 2019 and 2021 No-Build traffic volumes by applying the New Jersey Department of Transportation (NJDOT) Union County growth factor of 1.5 percent per year to the existing traffic volumes.

5. Prepared trip generation estimates for the proposed development based on accepted trip rates developed by the Institute of Transportation Engineers (ITE).

6. Developed trip distribution for the project based on existing and expected travel patterns and Census journey-to-work data.

7. Assigned site-generated trips to the development's access driveways and surrounding road network based on the likely travel routes motorists will use to travel to and from the site.

8. Established future 2019 and 2021 Build traffic volumes by adding the total site-generated trips to the respective Base traffic volumes.

9. Performed intersection capacity analyses for the weekday morning and evening peak hours using Synchro Software and Highway Capacity Software (HCS) based on Highway Capacity Manual (HCM) methodologies.

10. Reviewed the site plan for parking and on-site circulation conformance with RSIS and township requirements.

DESCRIPTION OF EXISTING CONDITIONS

This section describes the roads, intersections and traffic volumes in the area of the proposed development located in the Township of Cranford, Union County, New Jersey.

Roads

Raritan Road (County Road 607)

Raritan Road is classified as an urban minor arterial and is under Union County jurisdiction. County Road 607 (CR 607) has a general east-west orientation. The roadway provides one travel lane in each direction to the east of Walnut Avenue and two travel lanes in each direction to the west of Walnut Avenue within the vicinity of the development. The posted speed limit in the immediate study area is 35 mph.

Walnut Avenue (County Road 632)

Walnut Avenue is classified as an urban minor arterial and is under Union County jurisdiction. CR 632 has a general north-south orientation. The roadway provides one travel lane in each direction within the vicinity of the development. The posted speed limit in the immediate study area is 35 mph.

Intersections

Raritan Road (CR 607) and Walnut Avenue (CR 632)

Walnut Avenue intersects Raritan Road to form the north and south legs of a four-leg intersection under signal control. The eastbound CR 607 approach provides one left-turn lane, one exclusive thru lane and one shared thru/right-turn lane. The westbound CR 607 approach provides one left-turn lane, one exclusive thru lane and one shared thru/right-turn lane. The northbound CR 632 approach provides one left-turn lane, one thru lane and one right-turn lane. The southbound CR 632 approach provides one left-turn lane, one thru lane and one right-turn lane. The signal operates under four phases with a 100-second background cycle length.

North Driveway and Walnut Avenue (CR 632)

The existing north driveway intersects Walnut Avenue to form the west leg of a T-shaped intersection under stop control. The eastbound driveway approach provides one left-turn lane, one right-turn lane and is "stop" controlled. The northbound CR 632 approach provides one shared left-turn/thru lane. The southbound CR 632 approach provides one shared thru/right-turn lane.

South Driveway and Walnut Avenue (CR 632)

The existing south driveway intersects Walnut Avenue to form the west leg of a T-shaped intersection under stop control. The eastbound driveway approach provides one left-turn lane, one right-turn lane and is "stop" controlled. The northbound CR 632 approach provides one shared left-turn/thru lane. The southbound CR 632 approach provides one shared thru/right-turn lane.

Lexington Avenue and Walnut Avenue (CR 632)

Lexington Avenue intersects Walnut Avenue to form the east leg of a T-shaped intersection under stop control. The westbound Lexington Avenue approach provides one shared left-turn/right-turn lane and is "stop" controlled. The northbound CR 632 approach provides one shared thru/right-turn lane. The southbound CR 632 approach provides one shared left-turn/thru lane.

Traffic Volumes

We arranged for manual turning movement traffic counts to be conducted during the morning and evening peak periods on a typical weekday at the study intersections to examine traffic conditions near the site. Specifically, manual turning movement counts were conducted on Tuesday, 25 October 2016 from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Additionally, ATR (Automatic Traffic Recorder) counts were conducted on Walnut Avenue, north of Mitchell Place, from 11:00 PM on Thursday, 26 January 2017, to 10:00 AM on Sunday, 5 February 2017.

The manual traffic counts identify distinct times during the weekday morning and evening when traffic experienced its highest levels. We determined that the weekday morning peak hour occurred from 7:30 AM to 8:30 AM and the weekday evening peak hour occurred from 4:45 PM to 5:45 PM.

Figure 2 illustrates the existing weekday morning and evening peak hour traffic volumes. Summaries of the manual traffic counts and ATR data are contained in Appendix B.

ESTIMATE OF FUTURE CONDITIONS

This section of the report covers background traffic growth, site-generated trips, trip distribution and future traffic volumes. We anticipate the development will be completed by the end of 2021 with Phase 1 completed by 2019. Accordingly, we projected traffic volumes to include the existing traffic and new traffic created by background growth to derive the 2019 and 2021 Base traffic volumes. We then added the site-generated trips associated with reoccupancy of the currently vacant 190,497 sf office space (portion set for demo in Phase 1) to the 2019 and 2021 Base traffic volumes to derive the respective No-Build traffic volumes. To derive the 2019 Build traffic volumes we added the site-generated trips associated with Phase 1 (433 units) of the residential redevelopment to the 2019 Base traffic volumes. To derive the 2021 Build traffic volumes we added the site-generated trips associated with full buildout (905 units) of the residential redevelopment to the 2021 Base traffic volumes. All traffic volume worksheets are contained in Appendix A.

Background Traffic Growth

We increased the existing peak hour traffic volumes by a compounded annual growth rate of 1.5 percent, established by the New Jersey Department of Transportation (NJDOT) for Union County for short term growth projections, to derive the 2019 and 2021 Base traffic volumes. Figures 3 and 4 illustrate the 2019 and 2021 Base traffic volumes, respectively.

Site-Generated Trips

We prepared trip generation estimates for the proposed development using data compiled for Land Use Code 220 (Apartment) by the Institute of Transportation Engineers (ITE) as contained in the publication Trip Generation, 9th edition. Table 1 summarizes the future trip generation estimates.

Table 1 – Future Trip Generation Estimates

Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Phase 1 – 433 Apt Units	43	173	216	166	90	256
Full Buildout – 905 Apt Units*	89	358	447	335	180	515

*Includes both Phase 1 (433 units) and Phase 2 (472 units).

Trip Generation Comparison

The property is currently developed with office and warehouse uses. In Phase 1, it is proposed to demolish a vacant portion, 190,497 sf, of the existing office building and redevelop the area with 433 apartment units. During Phase 2, the remaining occupied office building and

warehouse are proposed to be demolished and replaced with an additional 472 apartment units. Accordingly, we have prepared the following table to compare trip generation associated with the proposed Phase 1 use (433 units) to the ITE estimated peak hour trips generated by the current vacant office space (190,497 sf) and additionally compare the proposed development, Phase 1 and 2, (905 units) to the entire office/warehouse use. Note that the trip generation for the existing vacant office use is based on ITE data and the traffic for the existing occupied office use is based on the manual traffic counts at the north and south driveways.

Table 2 – Trip Generation Comparison (Existing Use vs. Proposed Use)

Use		Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Existing Vacant Use*	190,497sf	282	38	320	50	242	292
Proposed	433 Apt Units	43	173	216	166	90	256
Difference		**- 239**	**+ 135**	**- 104**	**+ 116**	**- 152**	**- 36**
Existing Occupied Use**		106	28	134	26	100	126
Existing Vacant Use		282	38	320	50	242	292
Total Existing Use		***388***	***66***	***454***	***76***	***342***	***418***
Proposed	905 Apt Units	89	358	447	335	180	515
Difference		**- 299**	**+ 292**	**- 7**	**+ 259**	**- 162**	**+ 97**

*The existing vacant volumes are based on the square footage of the current unoccupied office space and data for Land Use Code 710 in the ITE publication Trip Generation, 9th edition.

**The existing occupied volumes are based on the total entering and exiting traffic that was manually counted at the existing north and south driveways. It is the development traffic that currently existing on the roadway network.

Based upon a review of the entering and exiting volumes there will be a change in the direction of flow for the residential development compared to the previous office use. The major direction of flow for the previous use was entering during the weekday morning peak hour and exiting during the weekday evening peak hour. The proposed residential use will experience an opposite more balanced flow of the major entering and exiting movements. However, in general, the proposed residential, at full buildout, will generate similar total peak hour traffic demands on the adjacent roadways as compared to the existing use. As a result, the development traffic associated with the proposed redevelopment will not significantly alter surrounding area traffic operations.

Additionally, the property is currently zoned C – 3 (Commercial District) which, among other things, permits office, research and industrial development. The proposed residential is not a permitted use within the zone.

According to section §136-38.1 (C-3 Commercial District) the "maximum floor area ratio (FAR) for planned developments in the C-3 Zone shall be 0.60, and a maximum of 65% of the gross floor area of the entire development may be developed as office." Therefore the property can

be developed with up to 523,264 sf of office space and 281,758 sf of medical office space for a total of 805,022 sf. Moreover, section §136-53 (Traffic Reduction Plan) states "any proposed new development in the C – 3 Zone which is proposed to be developed in accordance with FAR maximums specified in in this Article shall be required to submit a Transportation Reduction Plan". The section indicates that transportation management strategies should reduce the C – 3 zone to 70% the maximum allowable square footage trip generation. Reduction strategies include mass transit use, carpooling and walking.

Accordingly, we have prepared the following table to compare trip generation associated with the proposed full buildout use (905 units) to the ITE estimated peak hour trips generated by the C – 3 zones permitted uses with the 30% traffic reduction.

Table 3 – Trip Generation Comparison (Permitted Use vs. Proposed Use)

Use		Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Permitted Use (FAR = 0.6; up to 65% office)							
523,264sf Office		633	86	719	113	552	665
281,758sf Medical Office		532	141	673	282	724	1,006
Total Permitted Use		***1,165***	***227***	***1,392***	***395***	***1,276***	***1,671***
30% Reduction		- 350	- 68	- 418	- 118	- 383	- 501
Total Permitted Use w/ Reduction		**815**	**159**	**974**	**277**	**893**	**1,170**
Proposed Use							
Proposed	905 Apt Units	89	358	447	335	180	515
Difference		**- 726**	**+ 199**	**- 527**	**+ 58**	**- 713**	**- 655**

The proposed residential use will experience an opposite more balanced flow of the major entering and exiting movements and will generate significantly less total peak hour traffic demands on the adjacent roadways as compared to the permitted C – 3 zone uses.

Transit

The development is located within 1.25 miles of the NJ Transit Cranford Train Station (Raritan Valley Line) which would provide alternative commuting opportunities for residence of the proposed development. It is proposed to provide a shuttle service that will travel between the residential development and the Cranford Train Station. Additional mass transit opportunities include the bus. The nearest bus stop (Bus Route 112) is within 0.3 miles of the development and is located at the corner of the Raritan Road and Colin Kelly Court intersection. Additional bus routes (59 and 113) have stops at the Cranford Train Station and can be accessed via the proposed shuttle service. The aforementioned mass transit opportunities would be a part of a transportation reduction management strategy to reduce commuting trips to/from the proposed residential development during peak traffic hours. However, it should be noted that without a

transit reduction of the proposed full buildout trips the residential development is expected to generate significantly fewer trips as compared to the maximum allowable developable square footage of the property under its C – 3 zone.

No-Build Traffic Volumes

The 190,497 sf portion of the existing office building, that is proposed to be demolished for redevelopment, has been vacated and does not currently generate any traffic. Therefore, the traffic count data only reflects entering and exiting traffic associated with the to-remain portion of the office/warehouse building (approx. 200,000 sf). To provide a comparative analysis between the No-Build and Build conditions we included trips associated with reoccupancy of the 190,497 sf in both the 2019 and 2021 No-Build conditions. We derived the 2019 and 2021 No-Build traffic volumes by adding the site-generated trips (from Table 2) associated with reoccupancy of the 190,497 sf to the respective Base traffic volumes. The reoccupancy trips were applied to the adjacent roadway system using the existing arrival and departure distributions (Figure 5) of the office building, which were calculated based on the traffic counts. Figure 6 illustrates the reoccupancy site-generated trips. The 2019 and 2021 No-Build traffic volumes are shown in Figures 7 and 8, respectively.

Trip Distribution

We determined the directional distributions of the site-generated trips based on existing travel patterns in the study area, the location of area highways and major intersections, demographic data, and surrounding population locations. The distributions were determined by using Census journey-to-work data to develop a model for residents of the Township of Cranford. From the demographic data we were able to determine the routes residents of Cranford would likely utilize to travel to and from the site. These findings allowed us to create arrival and departure distributions for the residential development. The directional distribution of site traffic is summarized in Table 4.

Table 4 – Trip Distribution

Direction (To/From)	Arrival Distributions	Departure Distributions
Raritan Road – CR 607 (East)	3%	36%
Raritan Road – CR 607 (West)	51%	18%
Walnut Avenue – CR 632 (North)	33%	33%
Walnut Avenue – CR 632 (South)	13%	13%
Total	**100%**	**100%**

The arrival and departure distributions associated with Phase 1 and full buildout of the residential development are shown on Figures 9 and 10, respectively. The site-generated trips

were then applied to the adjacent roadway system as per the above distributions. Figures 11 and 12 show the total site-generated trips assigned to the roadway network for Phase 1 and full buildout, respectively, of the residential development.

Build Traffic Volumes

With completion of the development both the north and south driveways are proposed to be eliminated. Therefore, in Phase 1 we reassigned the traffic associated with the remaining office/warehouse space to the proposed driveways. The redistributed existing development traffic volumes are shown in Figure 13. With full buildout of the residential development the existing office/warehouse building will be completely removed, therefore we removed the traffic associated with the existing use from the roadway network. Figure 14 shows the removed traffic volumes of the existing office. We derived the 2019 Build traffic volumes by adding both the total Phase 1 site-generated trips and reassigned traffic to the 2019 Base traffic volumes. We derived the 2021 Build traffic volumes by adding both the total buildout site-generated trips and the removed office/warehouse traffic to the 2021 Base traffic volumes. Figures 15 and 16 illustrate the 2019 and 2021 Build weekday morning and evening peak hour traffic volumes, respectively.

ANALYSIS OF TRAFFIC OPERATIONS

This section describes the capacity analysis we conducted to assess traffic operations for the No-Build and Build conditions. Capacity analysis provides an indication of the adequacy of road facilities to serve traffic demand.

Level of Service Criteria

Level of Service (LOS) is the term used to denote different operating conditions that occur on a given road segment under various traffic volume demands. LOS is a qualitative measure that considers a number of factors including road geometry, speed, travel delay and freedom to maneuver. LOS designations range from A to F and provide an index of operational qualities of a road segment or an intersection. LOS A represents the best operating conditions; LOS F represents the worst.

LOS designations are reported differently for signalized and unsignalized intersections. For signalized intersections, the analysis considers the operation of all traffic entering the intersection. For unsignalized intersections, the analysis considers the operation of all movements that conflict with other movements, such as main-line left turns and traffic exiting a side street. The evaluation criteria used to analyze the study area intersections are based on the 2010 Highway Capacity Manual (HCM), published by the Transportation Research Board and the latest version of the Highway Capacity Software (HCS) and Synchro Software.

The HCM defines LOS for signalized intersections as follows:

LOS	Control Delay per Vehicle
A	≤10 sec
B	>10 and ≤20 sec
C	>20 and ≤35 sec
D	>35 and ≤55 sec
E	>55 and ≤80 sec
F	>80 sec

The HCM defines LOS for unsignalized intersections as follows:

LOS	Delay Range (sec/veh)
A	≤10 sec
B	>10 and ≤15 sec
C	>15 and ≤25 sec
D	>25 and ≤35 sec
E	>35 and ≤50 sec
F	>50 sec

Capacity Analysis

We conducted capacity analyses for the intersections in the study area and found that the proposed development will not significantly alter traffic operations in the study area. Table 5 summarizes the 2019 and 2021 No-Build and Build levels of service (LOS) at each relevant study intersection during the weekday morning and evening peak hours. The following are discussions pertaining to each of the intersections analyzed for the development. Note that all capacity analyses worksheets are contained in Appendix D.

Table 5 – Intersection Capacity Analysis Summary

Location	Movement		2019 No-Build Condition With Reoccupancy		2019 Build Condition		2021 No-Build Condition With Reoccupancy		2021 Build Condition	
			AM	PM	AM	PM	AM	PM	AM	PM
Signalized Intersection										
Raritan Road and Walnut Ave	EB	L	C (24.6)	C (29.8)	C (24.0)	D (53.3)	C (26.6)	C (33.7)	C (26.8)	E (76.0)
		T,R	B (15.2)	B (17.0)	B (18.2)	B (18.2)	B (15.4)	B (17.3)	C (25.1)	C (26.5)
	WB	L	C (28.2)	D (41.4)	C (33.6)	D (54.5)	C (28.9)	D (44.5)	B (18.8)	C (31.3)
		T,R	C (22.9)	C (26.1)	C (26.9)	C (30.9)	C (23.2)	C (26.4)	C (27.2)	D (47.0)
	NB	L	C (34.4)	F (80.1)	C (29.7)	D (40.6)	C (34.7)	F (99.5)	C (32.2)	D (42.4)
		T	F (220.1)	F (94.4)	E (61.5)	E (67.7)	F (233.6)	F (103.9)	E (62.7)	E (75.5)
		R	A (7.3)	A (7.2)	A (6.3)	A (6.5)	A (7.3)	A (7.1)	A (5.3)	A (6.6)
	SB	L	D (35.6)	D (46.0)	D (48.6)	D (47.0)	D (36.9)	D (47.5)	E (58.0)	E (78.1)
		T	C (25.5)	D (39.3)	C (21.7)	C (29.8)	C (25.7)	D (40.9)	C (21.5)	C (31.0)
		R	A (4.3)	A (5.7)	A (3.6)	A (4.0)	A (4.3)	A (6.4)	A (3.5)	A (4.1)
	Overall		**E (60.3)**	**D (35.3)**	**C (28.9)**	**C (33.6)**	**E (63.2)**	**D (38.1)**	**C (30.9)**	**D (43.7)**
Driveway 2 / Behnert Pl And Walnut Ave	EB	L,T	-	-	C (21.0)	C (30.1)	-	-	C (25.1)	C (30.8)
		R	-	-	A (7.1)	B (11.7)	-	-	A (6.7)	B (10.5)
	WB	L,T,R	-	-	B (10.2)	A (9.3)	-	-	B (10.4)	A (9.2)
	NB	L	-	-	A (5.5)	A (6.4)	-	-	A (5.5)	B (10.5)
		T,R	-	-	A (8.5)	A (7.3)	-	-	B (10.8)	A (8.4)
	SB	L,T,R	-	-	A (7.8)	B (10.8)	-	-	B (10.4)	B (11.6)
	Overall		**-**	**-**	**A (8.5)**	**A (9.6)**	**-**	**-**	**B (11.1)**	**B (10.7)**
Unsignalized Intersections										
North Drwy and Walnut Ave	EB	L	F (61.2)	F (101.2)	-	-	F (65.9)	F (118.6)	-	-
		R	B (13.5)	C (23.6)	-	-	B (13.7)	C (24.7)	-	-
	NB	L	A (9.6)	B (10.0)	-	-	A (9.7)	B (10.1)	-	-
South Drwy and Walnut Ave	EB	L	F (156.3)	F (64.2)	-	-	F (178.0)	F (68.3)	-	-
		R	B (14.0)	D (29.1)	-	-	B (14.3)	D (30.8)	-	-
	NB	L	B (10.7)	B (10.7)	-	-	B (10.8)	B (10.8)	-	-
Driveway 1 / Lexington Ave and Walnut Ave	EB	L,T,R	-	-	B (14.0)	C (21.0)	-	-	B (14.5)	C (18.1)
	WB	L,T,R	C (24.5)	C (19.3)	D (29.3)	C (19.0)	D (26.3)	C (20.1)	E (36.4)	C (20.2)
	NB	L	-	-	A (9.3)	A (10.0)	-	-	A (9.2)	B (10.5)
	SB	L	B (10.1)	B (10.6)	B (10.4)	B (10.6)	B (10.2)	B (10.8)	B (10.8)	B (10.8)
Driveway 2 / Behnert Pl and Walnut Ave	EB	L,T,R	-	-	-	-	-	-	-	-
		L,T	-	-	F (243.6)	F (720.0)	-	-	F (467.0)	F (NA)
		R	-	-	B (14.7)	C (19.4)	-	-	C (17.4)	C (20.8)
	WB	L,T,R	C (19.5)	E (38.3)	D (26.1)	F (111.8)	C (20.3)	E (40.9)	D (27.5)	F (218.6)
	NB	L	-	-	A (9.3)	B (11.5)	-	-	A (9.3)	B (12.5)
	SB	L	A (9.5)	A (9.8)	A (9.3)	A (9.7)	A (9.6)	A (9.9)	A (9.3)	A (9.9)
Driveway 3 / Mitchell Pl and Walnut Ave	EB	R	-	-	B (14.5)	C (17.7)	-	-	C (17.1)	C (18.1)
	WB	L,R	C (19.0)	E (37.4)	C (23.7)	F (64.7)	C (19.7)	E (39.9)	D (25.7)	F (82.5)
	NB	L	-	-	-	-	-	-	-	-
	SB	L	A (9.5)	A (9.8)	A (9.5)	B (10.3)	A (9.5)	A (9.9)	A (9.4)	B (11.0)

Based on HCS (Highway Capacity Software) & Synchro Software:

*Level of Service (Average vehicle delay [seconds per vehicle])

Raritan Road (CR 607) and Walnut Avenue (CR 632)

2019

The signalized intersection is expected to operate at an overall LOS E during the weekday morning peak hour and overall LOS D during the weekday evening peak hour under the No-Build condition. Under the Build condition, the intersection is expected to operate at an overall LOS C during both the weekday morning and evening peak hours with signal timing mitigation. Mitigation to the signal, during the weekday morning peak hour, includes allocating 5 seconds of green time from the eastbound/westbound (Raritan Road) R.O.W phase to the northbound/southbound (Walnut Avenue) R.O.W phase. During the weekday evening peak hour signal mitigation includes taking 1 second of green time from the southbound advance phase and 5 seconds of green time from the eastbound/westbound R.O.W phase and allocating 3 seconds to the eastbound advance phase and 3 seconds to the northbound/southbound R.O.W phase.

2021

The signalized intersection is expected to operate at an overall LOS E during the weekday morning peak hour and overall LSO D during the weekday evening peak hour under the No-Build condition. Under the Build condition, the intersection is expected to operate at an overall LOS C during the weekday morning peak hour and an overall LOS D during the weekday evening peak hour with signal timing mitigation. Mitigation to the signal includes the addition of a left-turn arrow signal head on the westbound approach to change the existing eastbound advance phase to an eastbound/westbound lead left phase. Additional mitigation, during the weekday morning peak hour, includes taking 1 second of green time from the eastbound lead left phase (westbound lead left max set to 8 seconds) and 5 seconds of green time from the eastbound/westbound R.O.W phase and allocating 3 seconds to the southbound advance phase and 3 seconds to the northbound/southbound R.O.W phase. During the weekday evening peak hour signal mitigation includes increasing the cycle length from 100 seconds to 110 seconds, taking 9 seconds of green time from the eastbound/westbound R.O.W phase, allocating 13 seconds to the eastbound lead left phase (westbound lead left max set to 8 seconds) and allocating 6 seconds to the northbound/southbound R.O.W phase.

North Driveway and Walnut Avenue (CR 632)

2019

All movements at this stop-controlled intersection are expected to operate at an LOS C or better during both the weekday morning and evening peak hours with the exception of the eastbound left movement, which operates at LOS F under the No-Build condition. The

intersection is proposed to be eliminated as part of Phase 1 and was therefore not analyzed under the Build condition.

2021

All movements at this stop-controlled intersection are expected to operate at an LOS C or better during both the weekday morning and evening peak hours with the exception of the eastbound left movement, which operates at LOS F under the No-Build condition. The intersection is proposed to be eliminated as part of Phase 1 and was therefore not analyzed under the Build condition.

South Driveway and Walnut Avenue (CR 632)

2019

All movements at this stop-controlled intersection are expected to operate at an LOS D or better during both the weekday morning and evening peak hours with the exception of the eastbound left movement, which operates at LOS F under the No-Build condition. The intersection is proposed to be eliminated as part of Phase 1 and was therefore not analyzed under the Build condition.

2021

All movements at this stop-controlled intersection are expected to operate at an LOS D or better during both the weekday morning and evening peak hours with the exception of the eastbound left movement, which operates at LOS F under the No-Build condition. The intersection is proposed to be eliminated as part of Phase 1 and was therefore not analyzed under the Build condition.

Driveway 1/ Lexington Avenue and Walnut Avenue (CR 632)

Geometry

Driveway 1 is proposed to intersect Walnut Avenue directly across from Lexington Avenue to form the west leg and create a four-leg intersection under stop control. The eastbound driveway approach will provide one shared left-turn/thru/right-turn lane and will be "stop" controlled. The westbound Lexington Avenue approach will provide one shared left-turn/thru/right-turn lane and will be "stop" controlled. The northbound and southbound CR 632 approaches will both provide one shared left-turn/thru/right-turn lane.

Analysis

2019

All movements at this stop-controlled intersection are expected to operate at an LOS C or better during both the weekday morning and evening peak hours under the No-Build condition. Under the Build condition, all movements are expected to operate at LOS D or better during the weekday morning peak hour and LOS C or better during the weekday evening peak hour.

2021

All movements at this stop-controlled intersection are expected to operate at an LOS D or better during both the weekday morning and evening peak hours under the No-Build condition. Under the Build condition, all movements are expected to operate at LOS E or better during the weekday morning peak hour and LOS C or better during the weekday evening peak hour.

Driveway 2/ Behnert Place and Walnut Avenue (CR 632)

Geometry

Driveway 2 is proposed to intersect Walnut Avenue directly across from Behnert Place to form the west leg and create a four-leg intersection under stop control. The eastbound driveway approach will provide one shared left-turn/thru lane and one right-turn lane and will be "stop" controlled. The westbound Behnert Place approach will provide one shared left-turn/thru/right-turn lane and will be "stop" controlled. The northbound CR 632 approach will provide one left-turn lane and one shared thru/right-turn lane. The southbound CR 632 approach will provide one shared left-turn/thru/right-turn lane. Based on the operations of this future intersection it is proposed to signalize the intersection.

Analysis

2019

All movements at this stop-controlled intersection are expected to operate at an LOS C or better during the weekday morning peak hour and LOS E or better during the evening peak hour under the No-Build condition. Under the Build condition, all movements are expected to operate at LOS D or better during the weekday morning peak hour with the exception of the eastbound left/thru movement, which is expected to operate at LOS F. Under the Build condition, all movements are expected to operate at LOS C or better during the weekday evening peak hour with the exception of the eastbound left/thru movement and westbound approach, which are expected to operate at LOS F.

With signalization of the intersection in Phase 1, the intersection is expected to operate at an overall LOS A during both the weekday morning and evening peak hours under the Build condition.

2021

All movements at this stop-controlled intersection are expected to operate at an LOS C or better during the weekday morning peak hour and LOS E or better during the evening peak hour under the No-Build condition. Under the Build condition, all movements are expected to operate at LOS D or better during the weekday morning peak hour with the exception of the eastbound left/thru movement, which is expected to operate at LOS F. Under the Build condition, all movements are expected to operate at LOS C or better during the weekday evening peak hour with the exception of the eastbound left/thru movement and westbound approach, which are expected to operate at LOS F.

With signalization of the intersection at full buildout, the intersection is expected to operate at an overall LOS B during both the weekday morning and evening peak hours under the Build condition.

Driveway 3/ Mitchell Place and Walnut Avenue (CR 632)

Geometry

Driveway 3 is proposed to intersect Walnut Avenue directly across from Mitchell Place to form the west leg and create a four-leg intersection under stop control. The eastbound driveway approach will provide one right-turn lane and will be "stop" controlled. The westbound Mitchell Place approach will provide one shared left-turn/right-turn lane and will be "stop" controlled. The northbound CR 632 approach will provide one shared thru/right-turn lane and will restrict left-turns. The southbound CR 632 approach will provide one shared left-turn/thru/right-turn lane.

Analysis

2019

All movements at this stop-controlled intersection are expected to operate at an LOS C or better during the weekday morning peak hour and LOS E or better during the weekday evening peak hour under the No-Build condition. Under the Build condition, all movements are expected to operate at LOS C or better during both peak hours with the exception of the westbound approach during the weekday evening peak hour, which is expected to operate at LOS F. It should be noted that while the projected delay exceeds the 50 second threshold for the level of service E operations, the volume to capacity ratio on the westbound approach for

the evening peak hour is 0.166 or less than capacity, and a maximum queue of one vehicle is projected.

2021

All movements at this stop-controlled intersection are expected to operate at an LOS C or better during the weekday morning peak hour and LOS E or better during the weekday evening peak hour under the No-Build condition. Under the Build condition, all movements are expected to operate at LOS D or better during the weekday morning peak hour and LOS C or better during the weekday evening peak hour with the exception of the westbound approach during the evening peak hour, which is expected to operate at LOS F. It should be noted that while the projected delay exceeds the 50 second threshold for the level of service E operations, the volume to capacity ratio on the westbound approach for the evening peak hour is 0.206 or less than capacity, and a maximum queue of one vehicle is projected.

WARRANT ANALYSIS

We performed a traffic signal warrant analysis for the intersection of Walnut Avenue and driveway 2/ Behnert Place in accordance with the 2009 Manual on Uniform Traffic Control Devices (MUTCD) standards. There are nine warrants described in the MUTCD. The installation of a traffic signal should only be considered if one or more of the signal warrants are met. We analyzed the intersection under three scenarios. Scenario A looks at the 2019 Build year and includes traffic for Phase 1 of the residential development (433 units) and the daily trip variation of the current occupied office use. Scenario B also looks at the 2019 Build year and includes traffic for Phase 1 of the residential development. However, since the existing office use generates modest traffic as compared to ITE's typical office use, scenario B alternatively includes traffic for an office use based on Trip Generation, 9th edition, weekday daily trip data. Scenario C looks at the 2021 Build year and includes traffic for full buildout of the residential development (905 units). The warrant volume tables and summary reports for each scenario are contained in Appendix E. The analyses of the applicable warrants are as follows:

Warrant 1 – Eight Hour Vehicular Volume

There are two conditions for warrant 1; the satisfaction of both conditions A and B are not required for this warrant to be met.

Condition A (Minimum Vehicular Volume) is for considering the installation of a traffic signal when the main reason is for the high volume of intersecting traffic. Condition B (Interruption of Continuous Traffic) is for consideration when Condition A is not met and the high traffic volumes on the major street are causing the side street to experience excessive delay.

In Scenario A warrant 1 is not met when analyzed as one major lane and one minor lane. The eastbound approach (higher minor street approach volume) is proposed to provide one shared left-turn/thru lane and one right-turn lane. With the inclusion of the right-turn lane and volume (two minor lanes, one major lane) warrant 1 is met with 11 hours (8 required).

In Scenario B warrant 1 is not met when analyzed as one major lane and one minor lane. The eastbound approach (higher minor street approach volume) is proposed to provide one shared left-turn/thru lane and one right-turn lane. With the inclusion of the right-turn lane and volume (two minor lanes, one major lane) warrant 1 is met with 11 hours (8 required).

In Scenario C warrant 1 is not met (2 hours met, 8 required) when analyzed as one major lane and one minor lane. The eastbound approach (higher minor street approach volume) is proposed to provide one shared left-turn/thru lane and one right-turn lane. With the inclusion of

the right-turn lane and volume (two minor lanes, one major lane) warrant 1 is met with 13 hours (8 required).

Warrant 2 – Four Hour Vehicular Volume

The four-hour vehicular volume warrant is for considering the installation of a traffic signal when the main reason is for the high volume of intersecting traffic.

In Scenario A warrant 2 is not met when analyzed as one major lane and one minor lane. The eastbound approach (higher minor street approach volume) is proposed to provide one shared left-turn/thru lane and one right-turn lane. With the inclusion of the right-turn lane and volume (two minor lanes, one major lane) warrant 2 is met with 9 hours (4 required).

In Scenario B warrant 2 is not met when analyzed as one major lane and one minor lane. The eastbound approach (higher minor street approach volume) is proposed to provide one shared left-turn/thru lane and one right-turn lane. With the inclusion of the right-turn lane and volume (two minor lanes, one major lane) warrant 2 is met with 9 hours (4 required).

In Scenario C warrant 2 is not met (2 hours met, 4 required) when analyzed as one major lane and one minor lane. The eastbound approach (higher minor street approach volume) is proposed to provide one shared left-turn/thru lane and one right-turn lane. With the inclusion of the right-turn lane and volume (two minor lanes, one major lane) warrant 2 is met with 10 hours (4 required).

Warrant 3 – Peak Hour

The peak hour warrant is for considering the installation of a traffic signal when, for a minimum of 1 hour in a day, the side street experiences excessive delays when entering the intersection.

In Scenario A warrant 3 is not met when analyzed as one major lane and one minor lane. The eastbound approach (higher minor street approach volume) is proposed to provide one shared left-turn/thru lane and one right-turn lane. With the inclusion of the right-turn lane and volume (two minor lanes, one major lane) warrant 3 is met with 4 hours (1 required).

In Scenario B warrant 3 is not met when analyzed as one major lane and one minor lane. The eastbound approach (higher minor street approach volume) is proposed to provide one shared left-turn/thru lane and one right-turn lane. With the inclusion of the right-turn lane and volume (two minor lanes, one major lane) warrant 3 is met with 5 hours (1 required).

In Scenario C warrant 3 is met (2 hours met, 1 required) when analyzed as one major lane and one minor lane. The eastbound approach (higher minor street approach volume) is proposed to provide one shared left-turn/thru lane and one right-turn lane. With the inclusion of the right-turn lane and volume (two minor lanes, one major lane) warrant 3 continues to be met with 2 hours (1 required).

Accident Data

We requested, from the Cranford Police department, and reviewed all motor vehicle crashes (MVC) that occurred along Walnut Avenue between Raritan Road and Lexington Avenue. We requested all accident reports from the last 3 years including 2014, 2015, 2016 and 2017. Most accidents occurred at the intersection of Raritan Road and Walnut Avenue and at the immediate adjacent driveways, to the north and east, which provide access to 1230 Raritan Road (Dunkin Donuts). Other accidents along Walnut Avenue involved mostly rear-end and sideswipe incidents as a result of left turns at the 750 Walnut Avenue north and south driveways and Mitchell Place. These specific incidents could possibly be reduced by providing signalization and an exclusive northbound left-turn lane at driveway 2 and Behnert Place. Summaries of the accident data reports are shown on the figures contained in Appendix F.

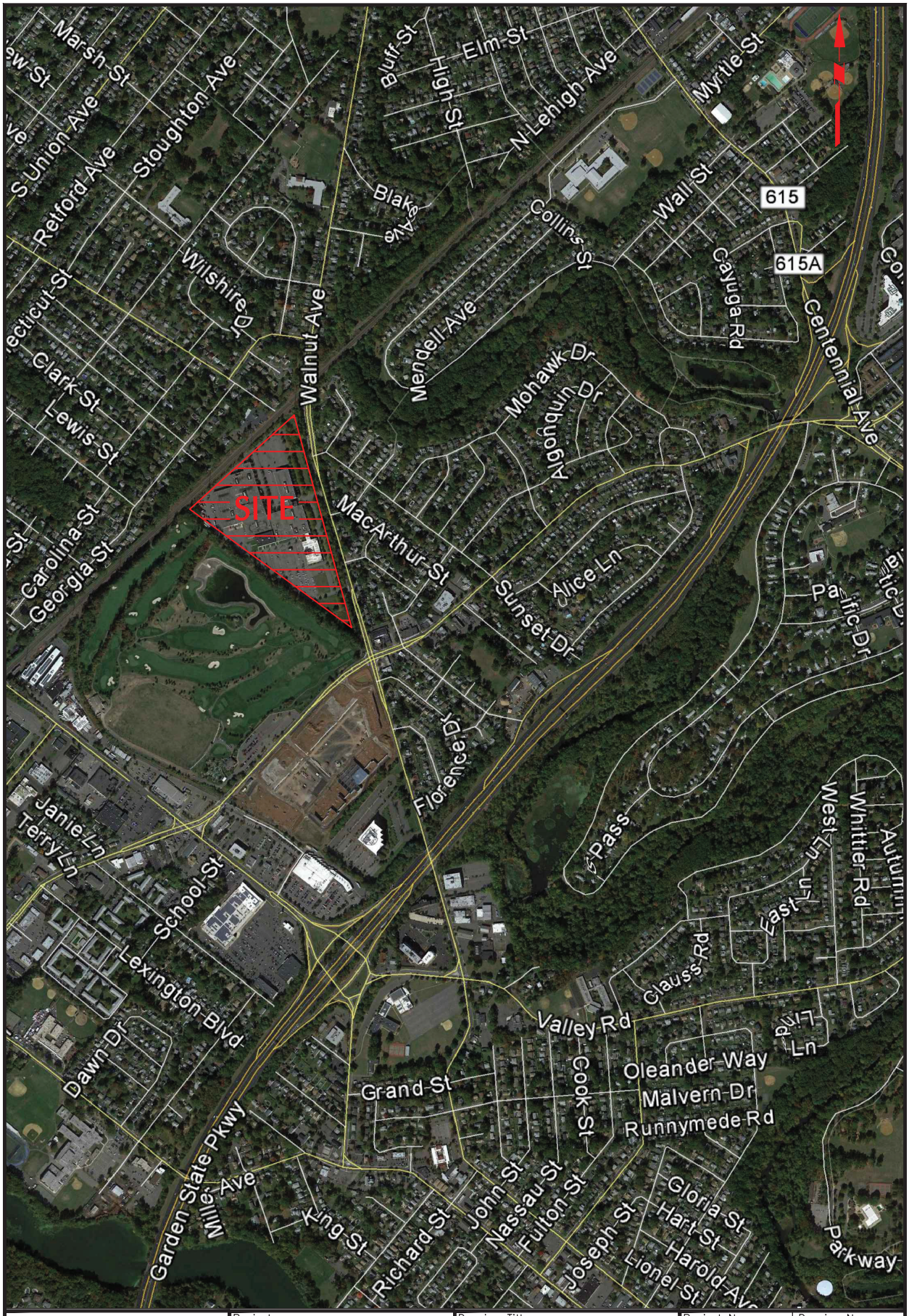
CONCLUSIONS

Langan finds that the proposed development will not significantly alter traffic operations in the study area during peak traffic hours. Moreover, with signal timing mitigations the intersection of Walnut Avenue and Raritan Road is expected to improve its level of service (LOS) operations as compared to the No-Build conditions.

Additionally, the proposed use will generate similar peak hour traffic as compared to existing use and significantly less peak hour trips as compared to the permitted use. The major direction of flow for the previous use was entering during the weekday morning peak hour and exiting during the weekday evening peak hour. The proposed residential use will experience an opposite more balanced flow of the major entering and exiting movements.

The development access and proposed parking and internal circulation layout will provide efficient access and on-site circulation. The site plan has been designed to accommodate passenger vehicles, service vehicles and emergency vehicles. We expect that the proposed parking supply will adequately accommodate anticipated parking demands and satisfy both Residential Site Improvement Standards (RSIS) and township parking requirements.

APPENDIX A
FIGURES



LANGAN
989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
Langan International LLC
Collectively known as Langan
NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

750 WALNUT AVENUE

BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY NEW JERSEY

Drawing Title

SITE LOCATION MAP

Project No. 130102501	Drawing No. FIGURE 1
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 1 of 16

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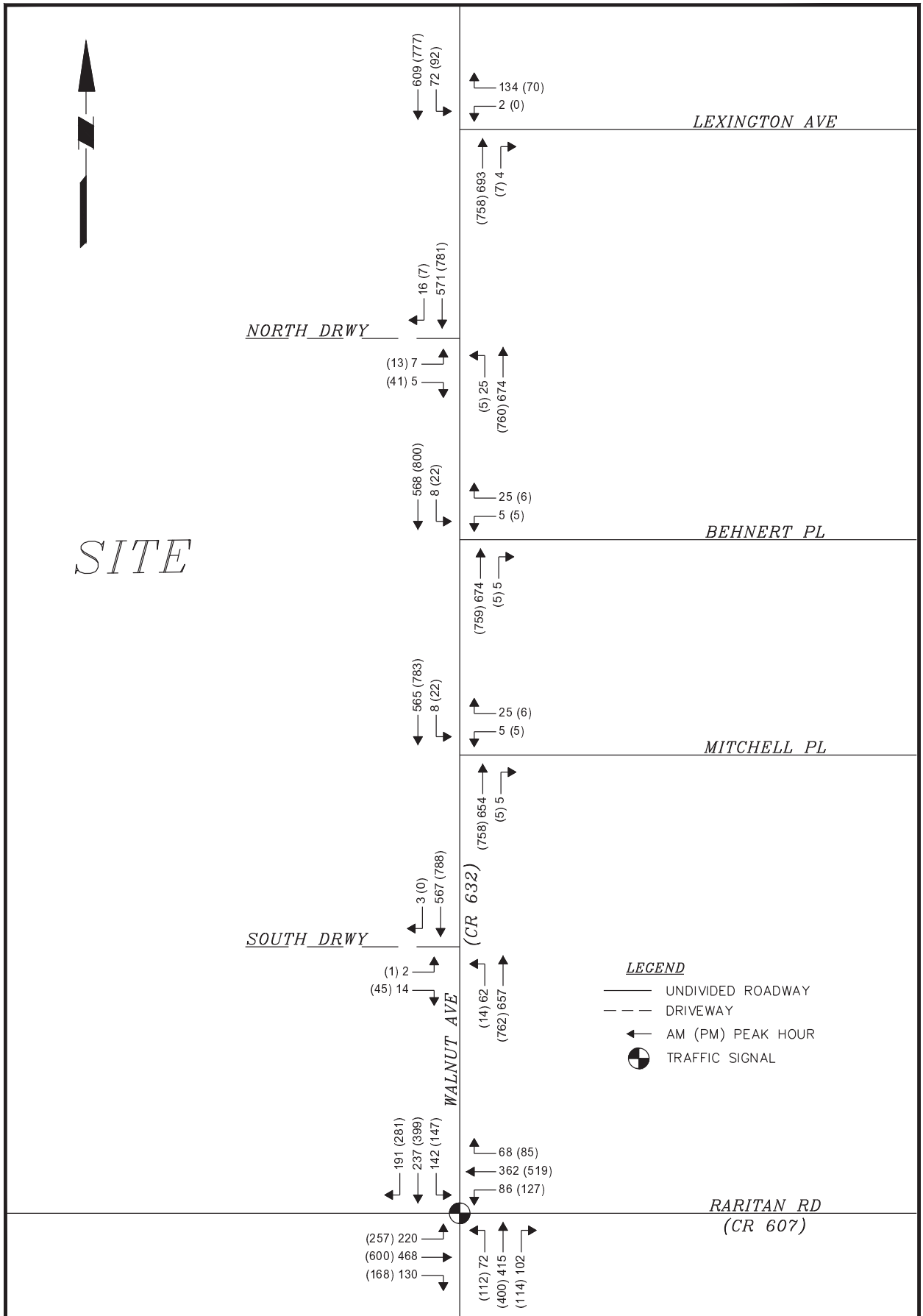

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989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
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Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
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UNION COUNTY **NEW JERSEY**

Drawing Title

2016 EXISTING TRAFFIC VOLUMES

Project No. 130102501	Drawing No. FIGURE 2
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 2 of 16

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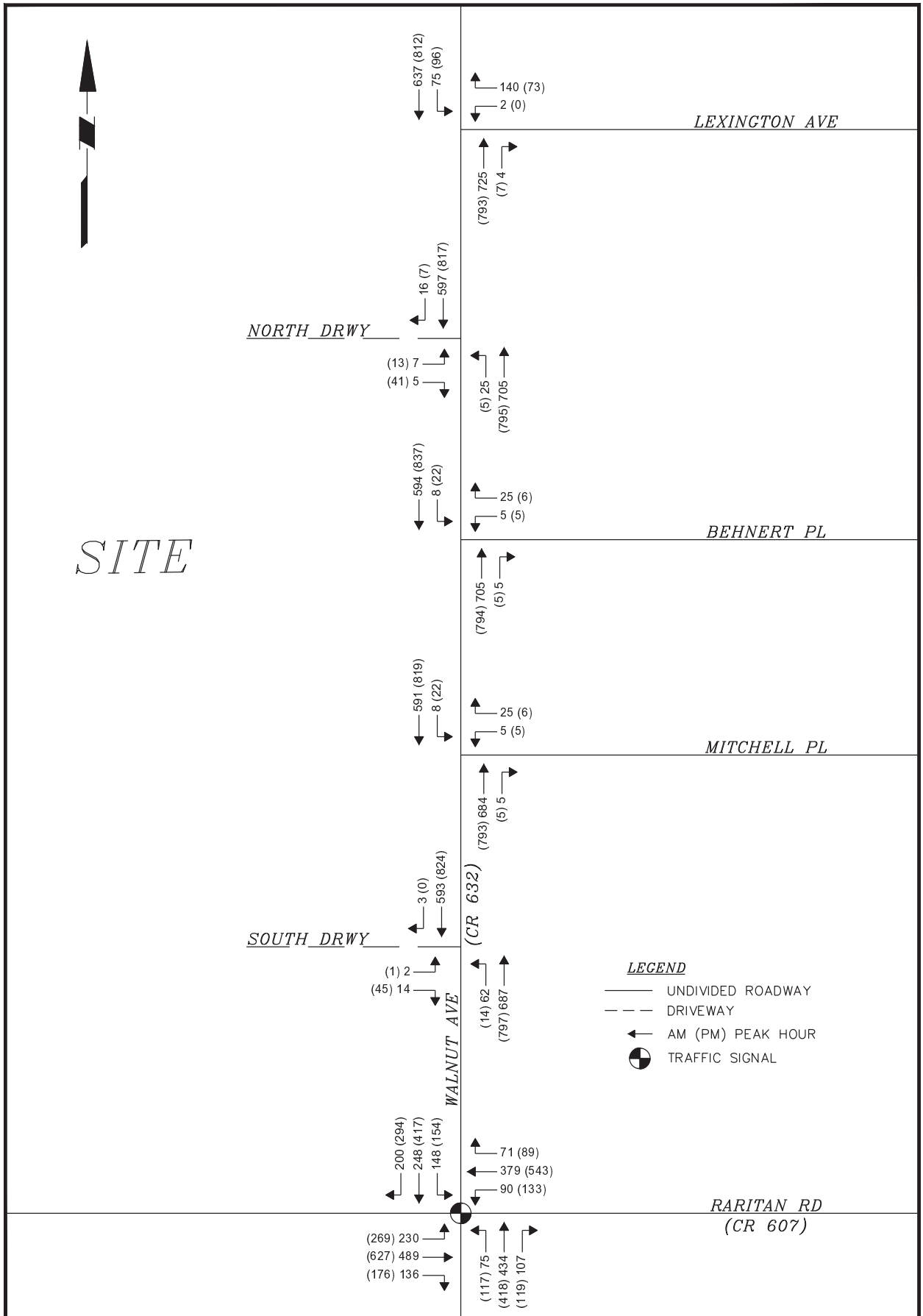

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989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
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Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
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750 WALNUT AVENUE

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UNION COUNTY NEW JERSEY

Drawing Title

2019 BASE TRAFFIC VOLUMES

Project No. 130102501	Drawing No. FIGURE 3
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 3 of 16

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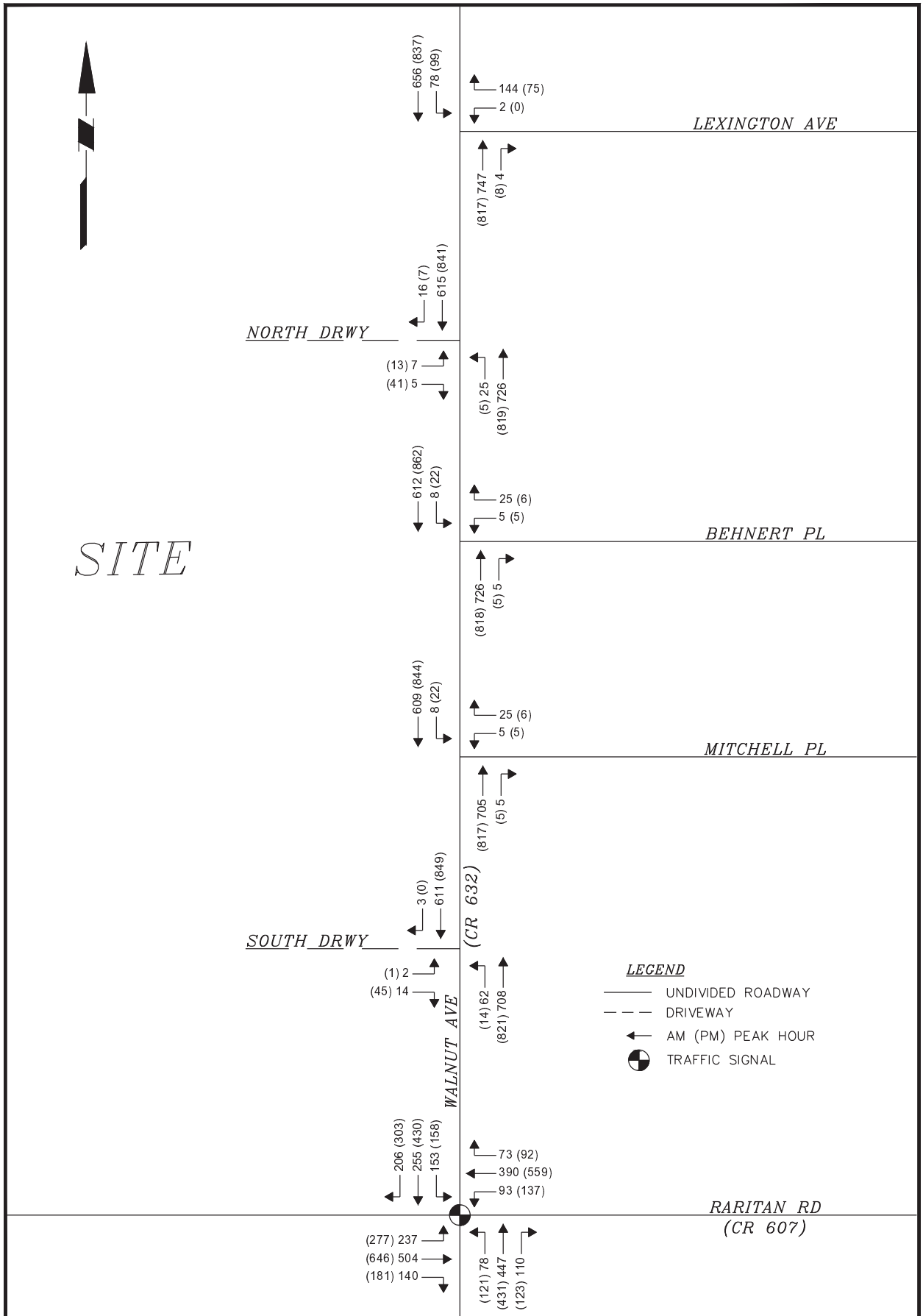

LANGAN
989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
Langan International LLC
Collectively known as Langan
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Drawing Title

2021 BASE TRAFFIC VOLUMES

Project No. 130102501	Drawing No. FIGURE 4
Date 02/16/2017	
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Submission Date FEBRUARY 2017	Sheet 4 of 16

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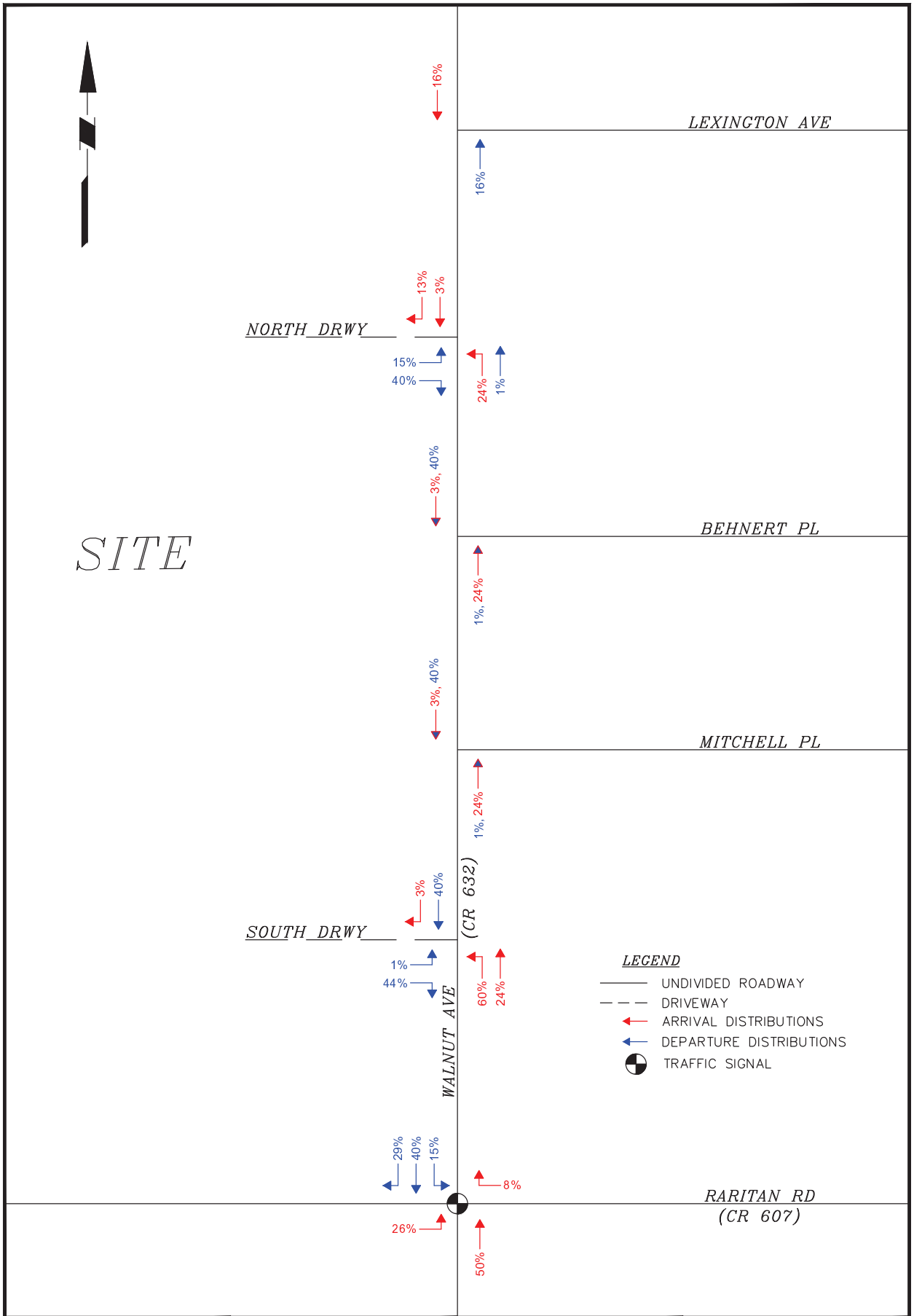

LANGAN
989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
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Project

750 WALNUT AVENUE

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UNION COUNTY **NEW JERSEY**

Drawing Title

ARRIVAL & DEPARTURE DISTRIBUTIONS OFFICE REOCCUPANCY

Project No. 130102501	Drawing No. FIGURE 5
Date 02/16/2017	
Scale N.T.S.	
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Submission Date FEBRUARY 2017	Sheet 5 of 16

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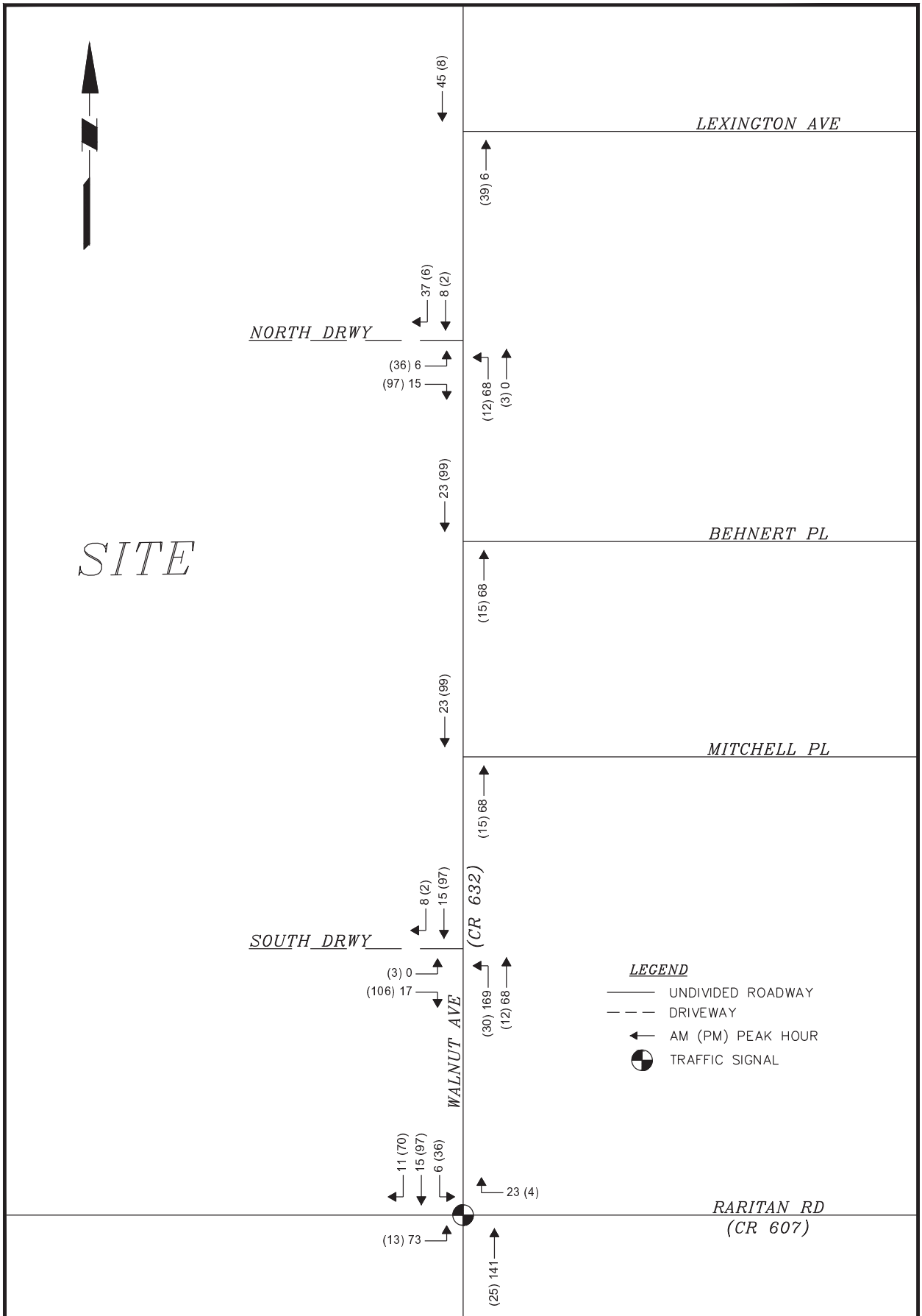

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Project

750 WALNUT AVENUE

BLOCK No. 541, LOT No. 2
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UNION COUNTY **NEW JERSEY**

Drawing Title

REOCCUPANCY SITE GENERATED TRIPS OFFFICE

Project No. 130102501	Drawing No. FIGURE 6
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 6 of 16

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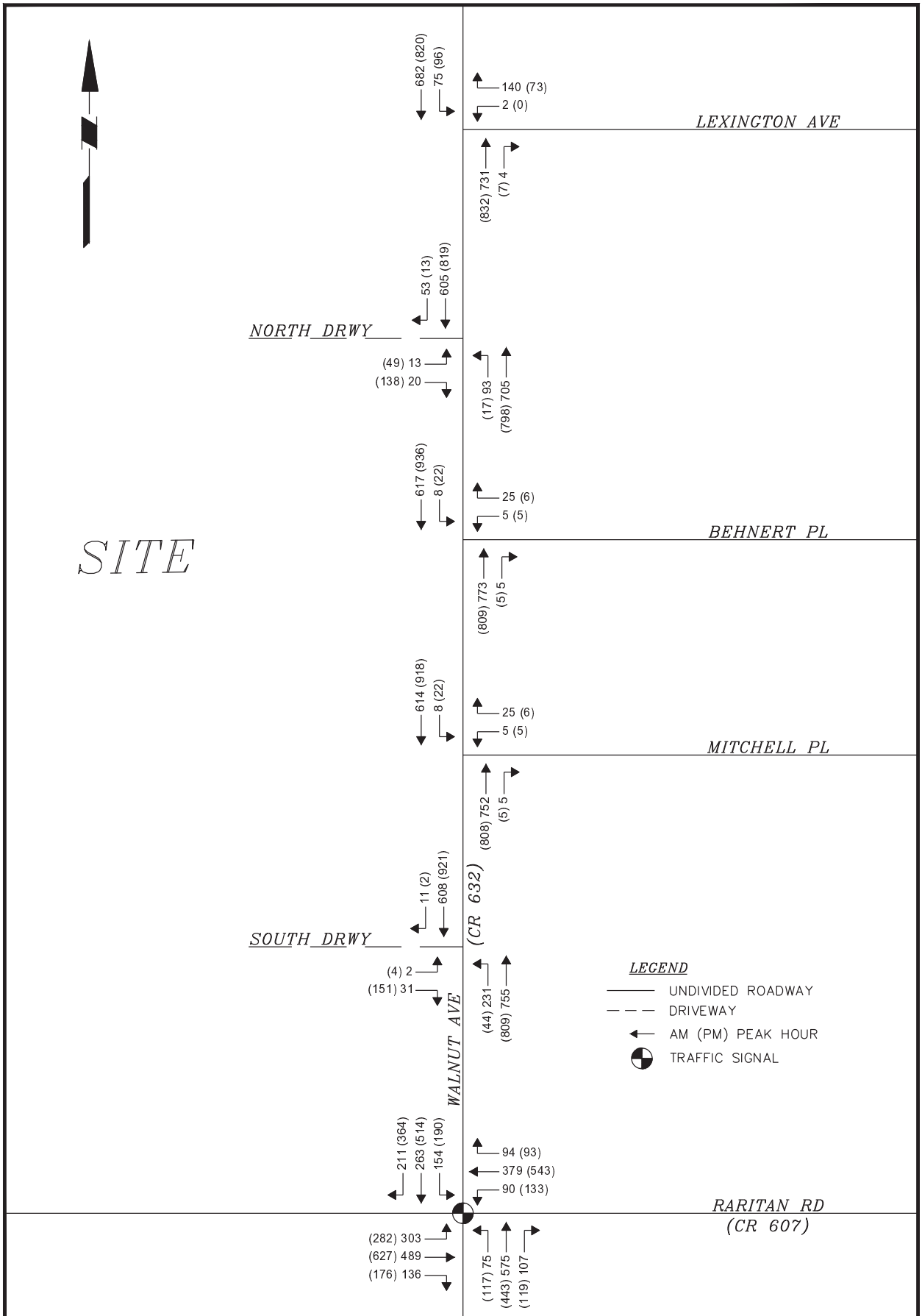

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Langan Engineering and Environmental Services, Inc.
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Project

750 WALNUT AVENUE

BLOCK No. 541, LOT No. 2
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UNION COUNTY **NEW JERSEY**

Drawing Title

2019 NO-BUILD TRAFFIC VOLUMES (REOCCUPANCY)

Project No. 130102501	Drawing No. FIGURE 7
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 7 of 16

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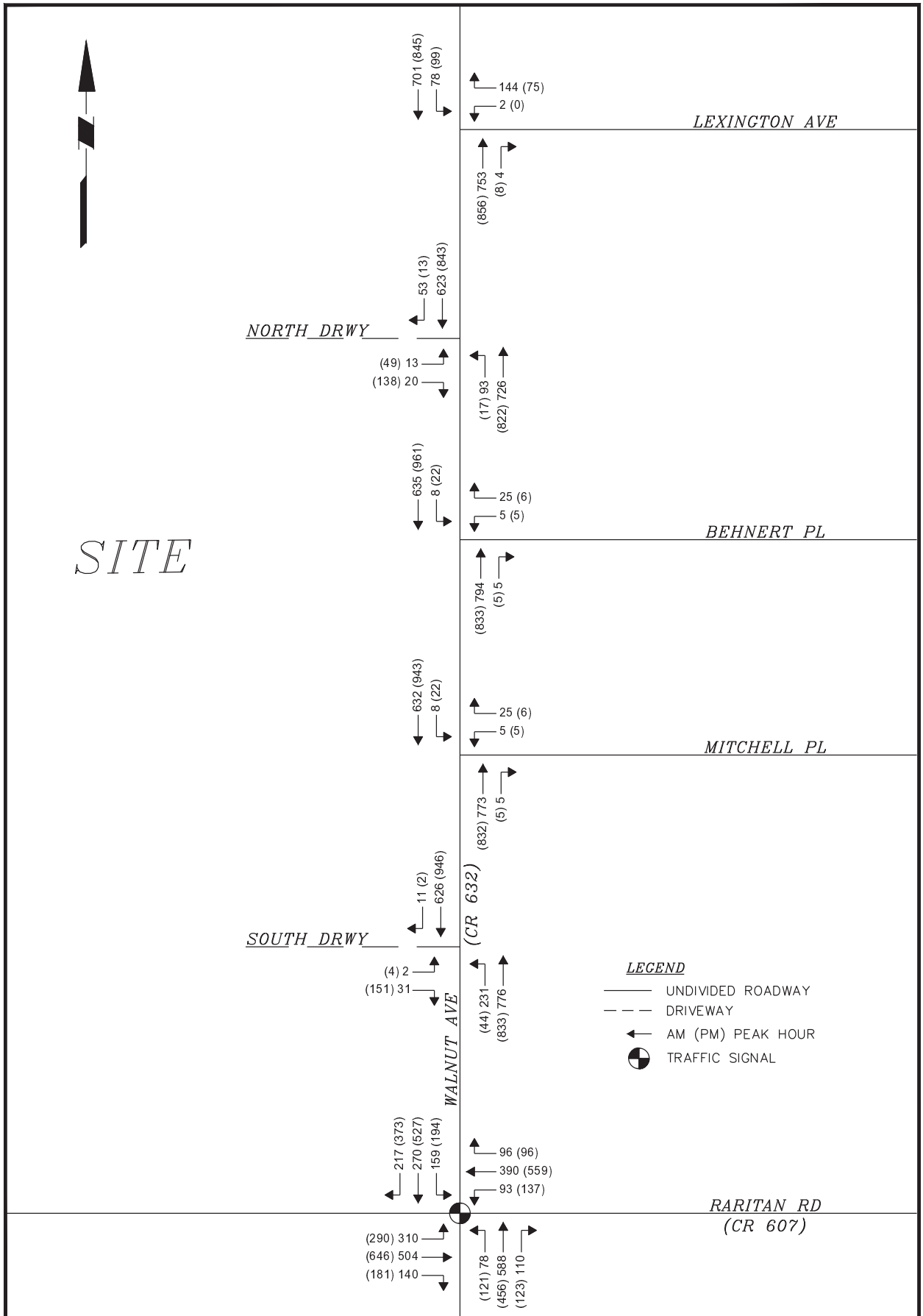
Filename: \\langan.com\data\LAW\data5\130102501\Engineering Data\Traffic\Figures & Tables\2017-02 TIS Figures\2017-02 TIS Figures Cranford NJ.dwg Date: 2/16/2017 Time: 13:04 User: kapehnke Style Table: Langan.stb Layout: 7-2019NB



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Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
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Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
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Langan International LLC
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NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

750 WALNUT AVENUE

BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY NEW JERSEY

Drawing Title

2021 NO-BUILD TRAFFIC VOLUMES (REOCCUPANCY)

Project No. 130102501	Drawing No. FIGURE 8
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 8 of 16

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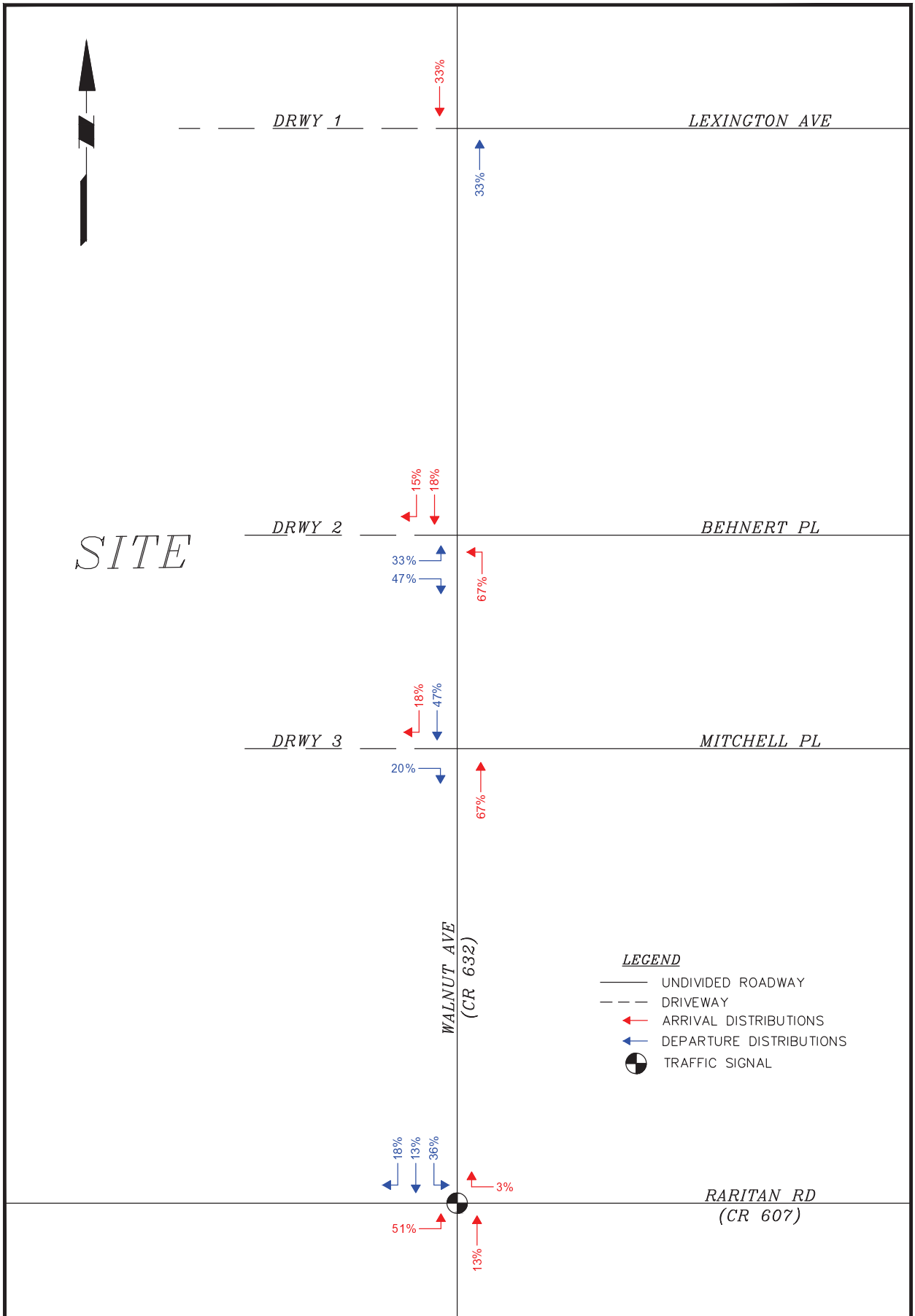

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Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
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Project
750 WALNUT AVENUE
BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY NEW JERSEY

Drawing Title
ARRIVAL & DEPARTURE DISTRIBUTIONS RESIDENTIAL PHASE 1

Project No. 130102501	Drawing No. FIGURE 9
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 9 of 16

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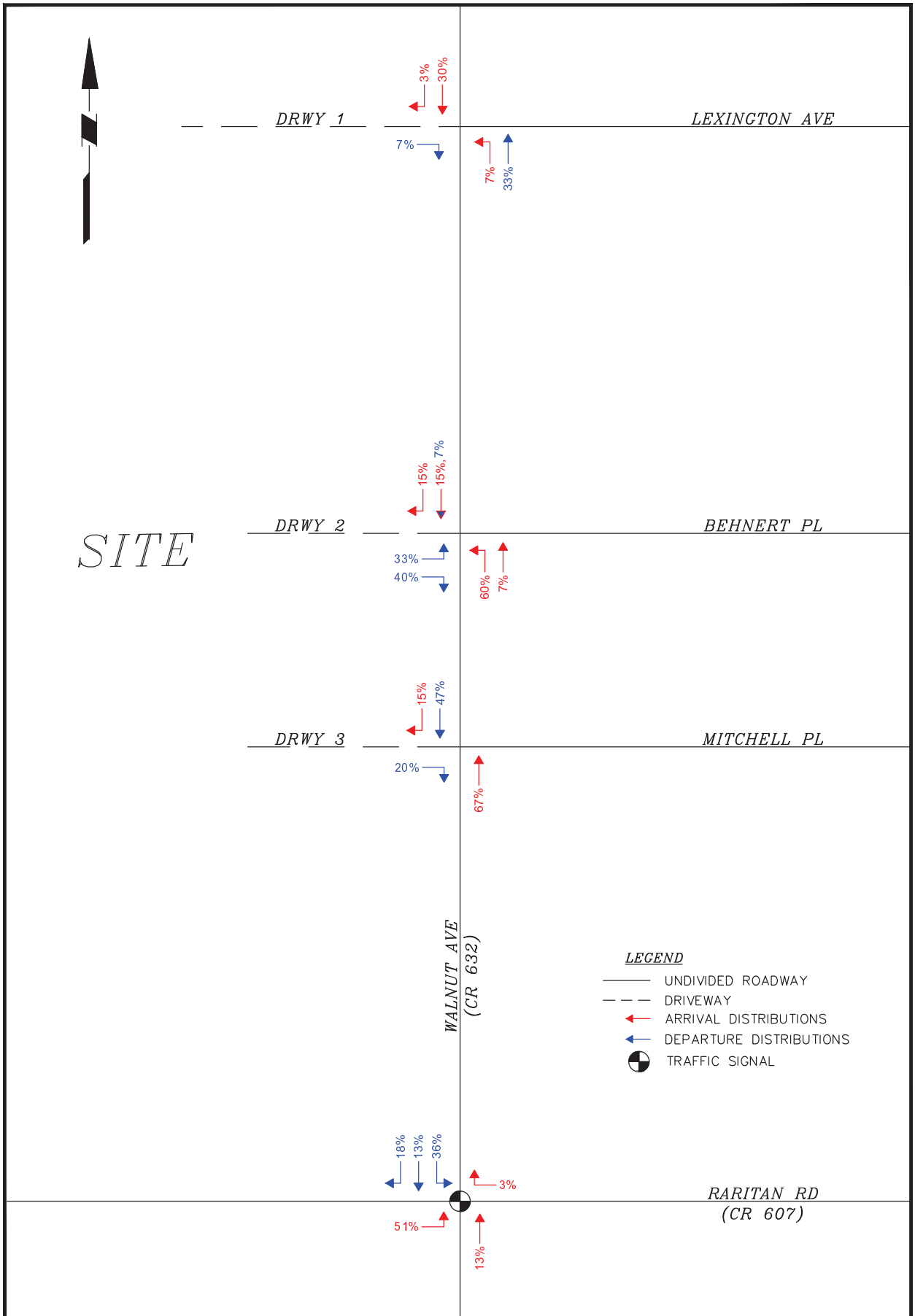

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989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
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Langan Engineering and Environmental Services, Inc.
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Project

750 WALNUT AVENUE

BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY NEW JERSEY

Drawing Title

ARRIVAL & DEPARTURE DISTRIBUTIONS RESIDENTIAL FULL BUILDOUT

Project No. 130102501	Drawing No. FIGURE 10
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 10 of 16

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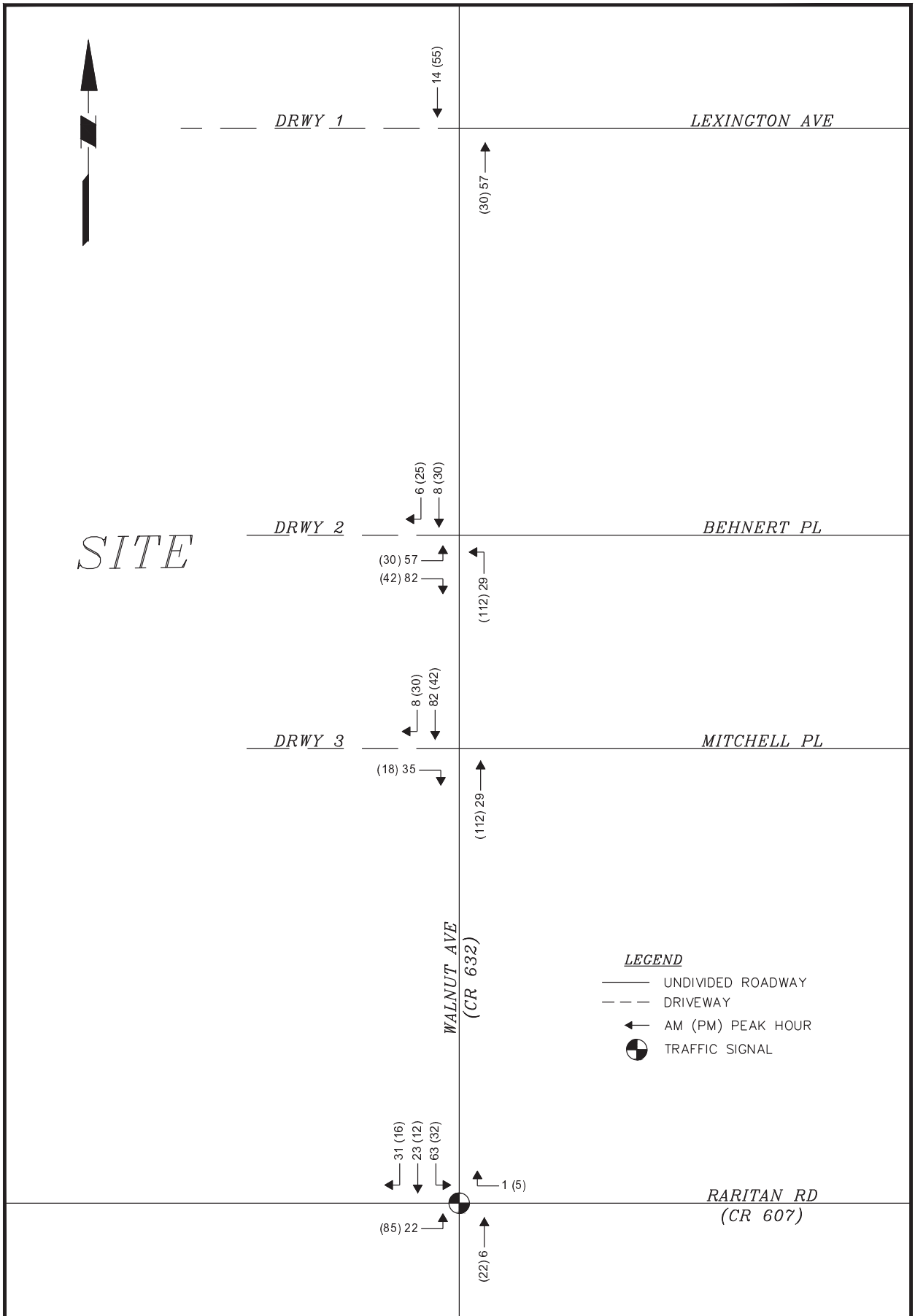

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Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
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Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
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Project
750 WALNUT AVENUE
BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY NEW JERSEY

Drawing Title
TOTAL SITE GENERATED TRIPS RESIDENTIAL PHASE 1

Project No. 130102501	Drawing No. FIGURE 11
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 11 of 16

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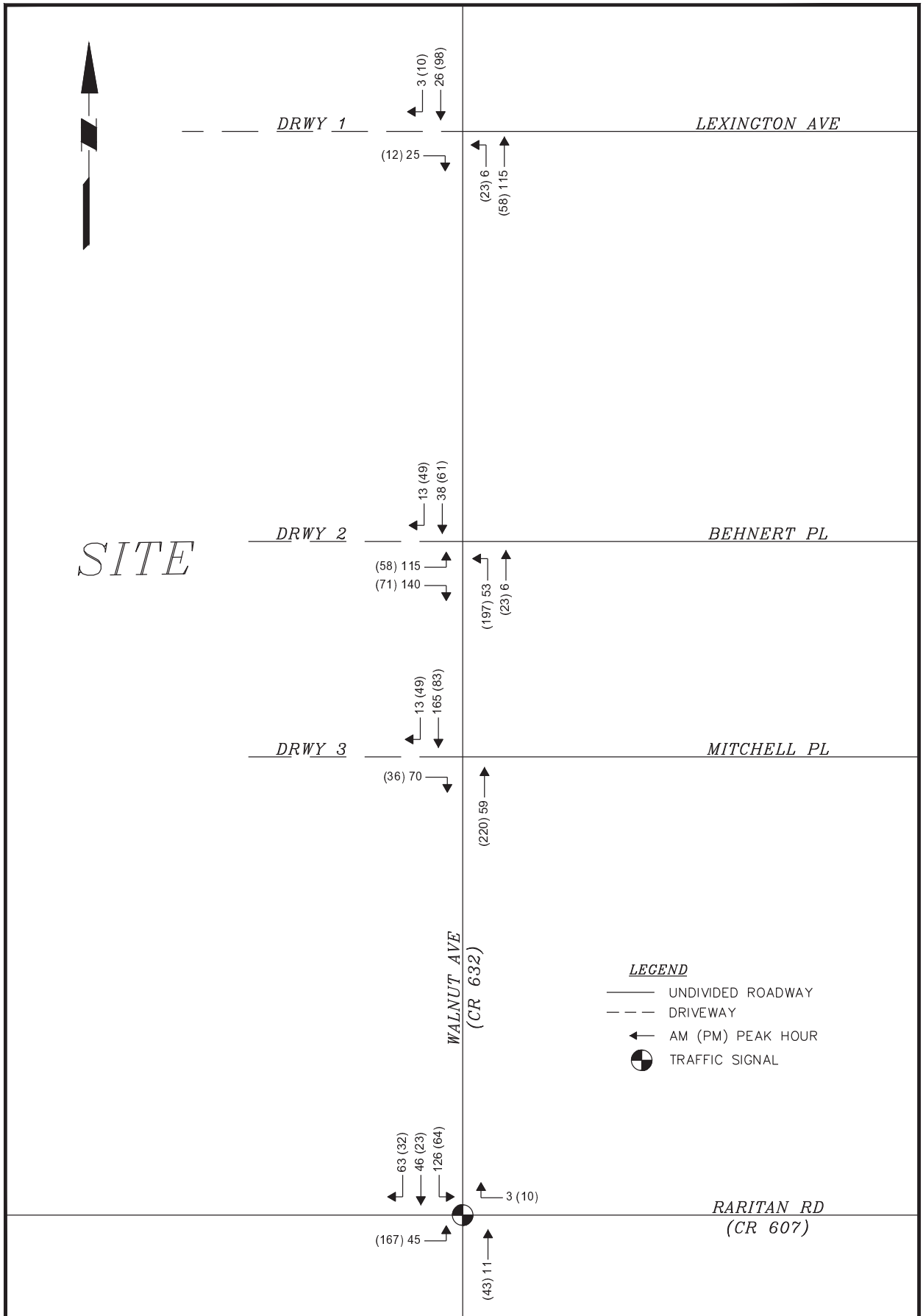

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Lawrenceville, NJ 08648
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Langan Engineering and Environmental Services, Inc.
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Project
750 WALNUT AVENUE
BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY NEW JERSEY

Drawing Title
TOTAL SITE GENERATED TRIPS RESIDENTIAL FULL BUILDOUT

Project No. 130102501	Drawing No. FIGURE 12
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 12 of 16

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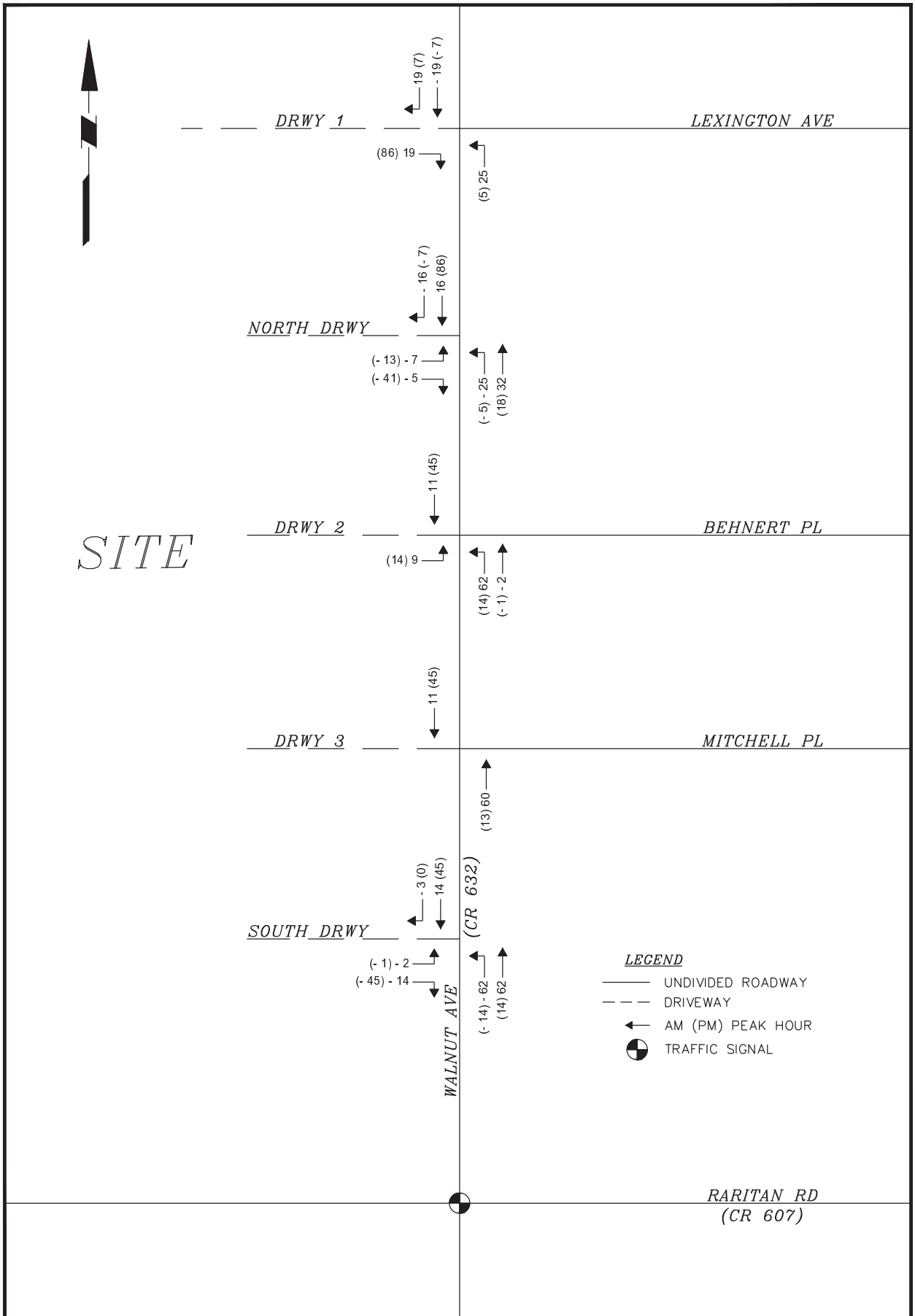

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Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
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Project
750 WALNUT AVENUE
BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY NEW JERSEY

Drawing Title
REDISTRIBUTED TRAFFIC VOLUMES (REMAINING OFFICE)

Project No. 130102501	Drawing No. FIGURE 13
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 13 of 16

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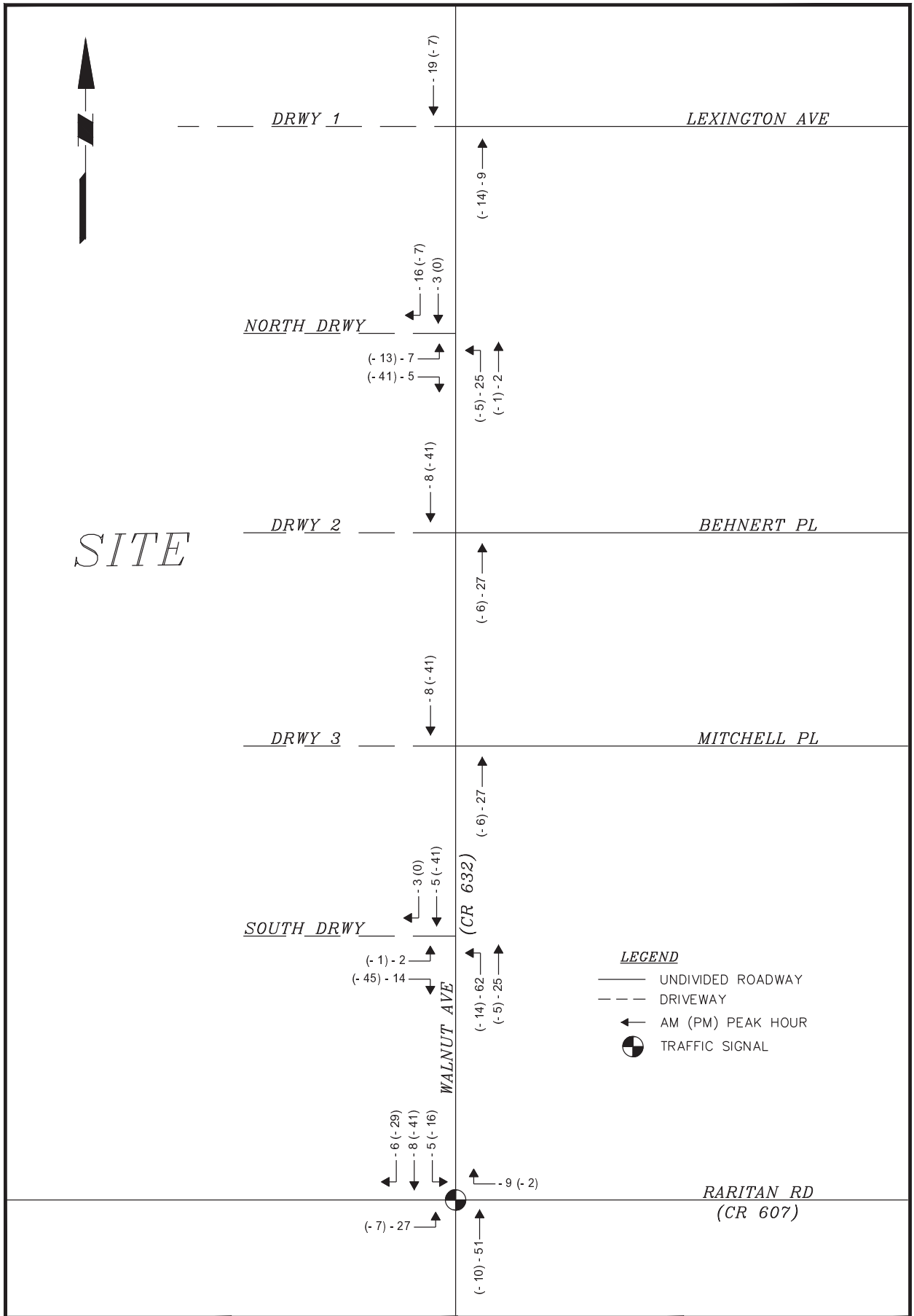

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Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
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Project

750 WALNUT AVENUE

BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY **NEW JERSEY**

Drawing Title

REMOVED TRAFFIC VOLUMES (EXISTING OFFICE)

Project No. 130102501	Drawing No. **FIGURE 14**
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 14 of 16

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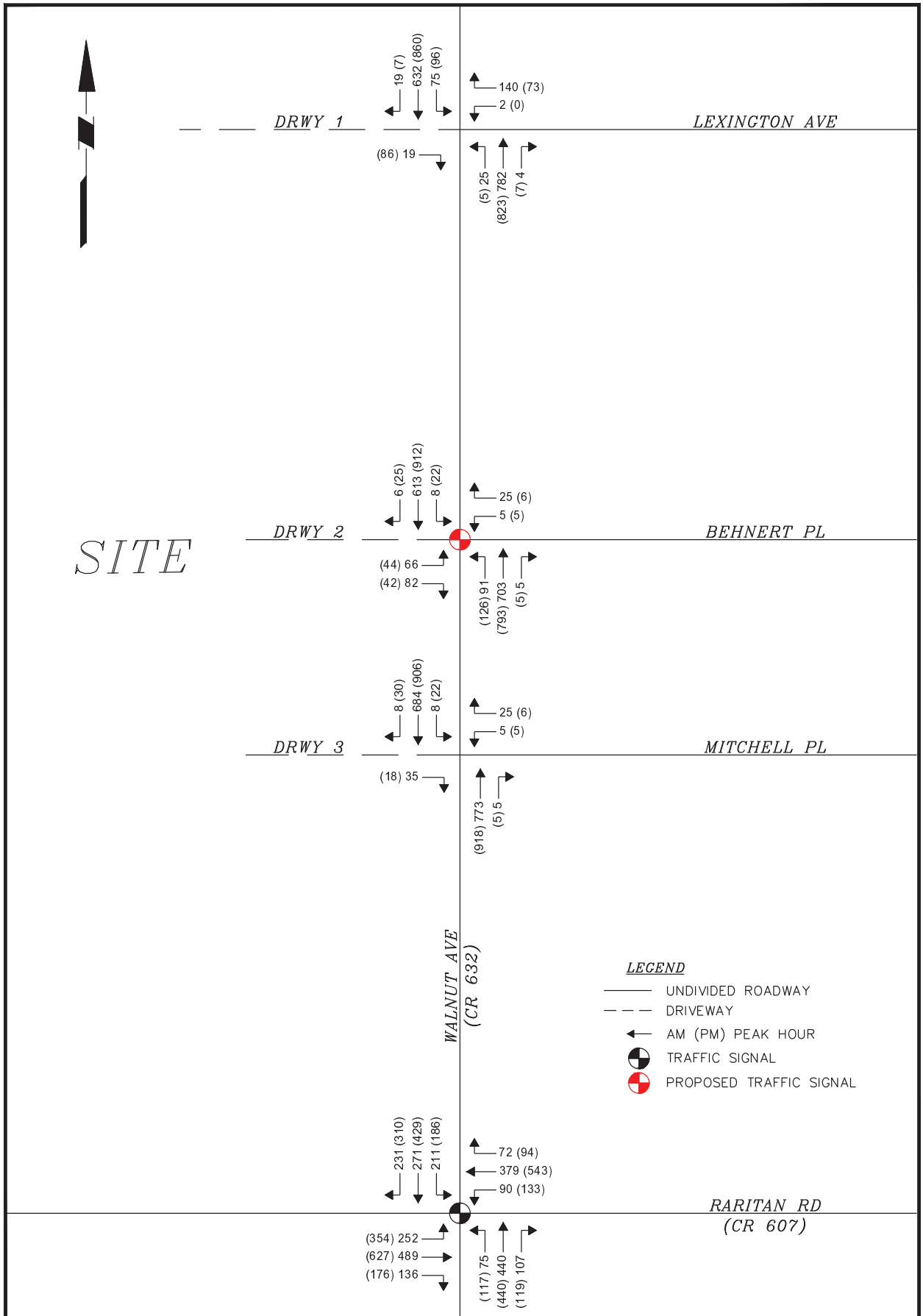
Filename: \\langan.com\data\LAW\data5\130102501\Engineering Data\Traffic\Figures & Tables\2017-02 TIS Figures\2017-02 TIS Figures Cranford NJ.dwg Date: 2/16/2017 Time: 13:04 User: kapehnke Style Table: Langan.stb Layout: 14-Remove



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989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
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Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
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Project
750 WALNUT AVENUE
BLOCK No. 541, LOT No. 2
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UNION COUNTY NEW JERSEY

Drawing Title
2019 BUILD TRAFFIC VOLUMES

Project No. 130102501	Drawing No. FIGURE 15
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 15 of 16

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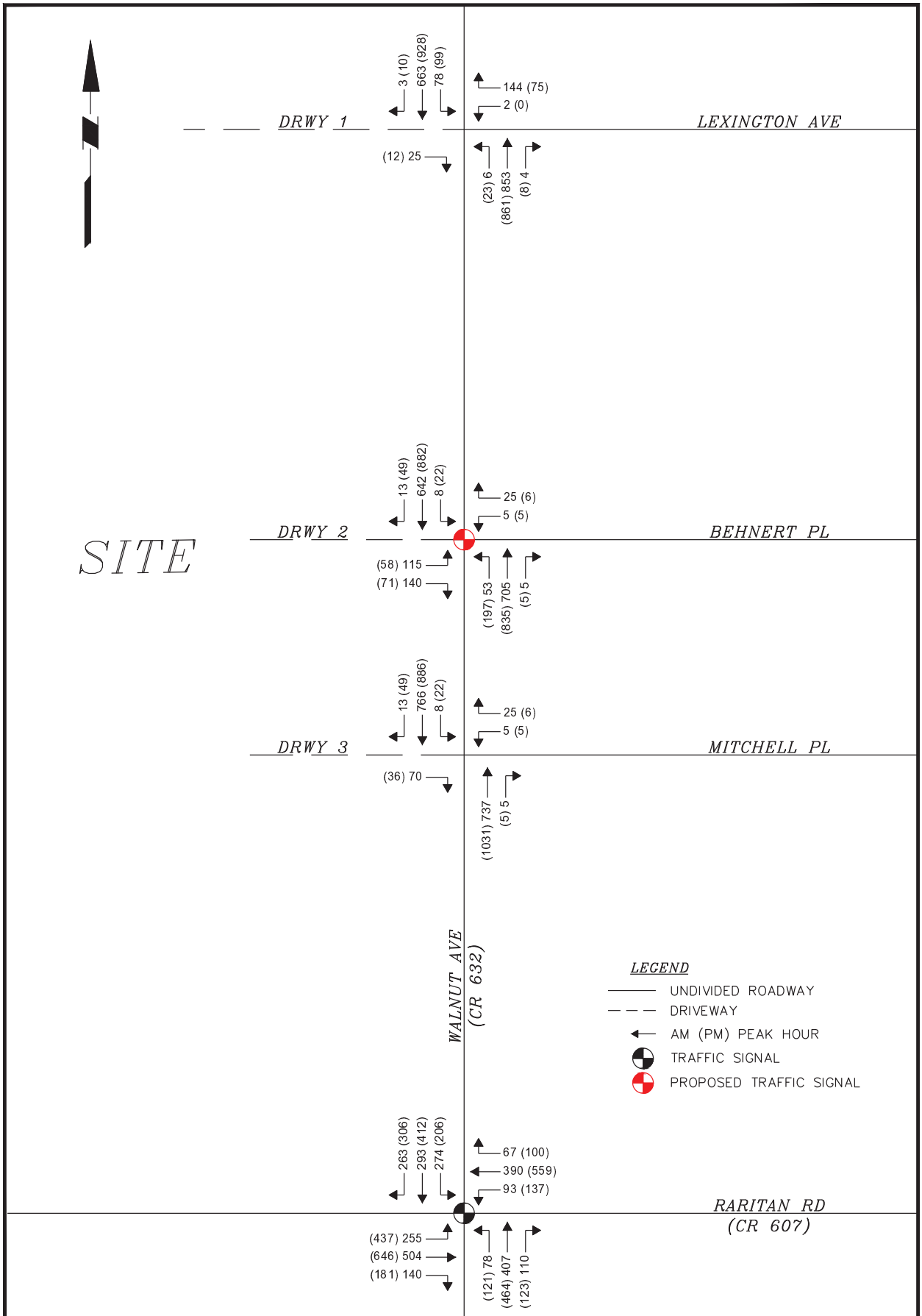

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Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
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Project
750 WALNUT AVENUE
BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY NEW JERSEY

Drawing Title
2021 BUILD TRAFFIC VOLUMES

Project No. 130102501	Drawing No. FIGURE 16
Date 02/16/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date FEBRUARY 2017	Sheet 16 of 16

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File name: \\langan.com\data\LAW\data5\130102501\Engineering Data\Traffic\Figures & Tables\2017-02 TIS Figures\2017-02 TIS Figures Cranford NJ.dwg Date: 2/16/2017 Time: 13:04 User: kapehnke Style Table: Langan.stb Layout: 16-2021Build

APPENDIX B
TRAFFIC COUNTS

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Raritan Rd & Walnut Ave
Manual Turning Movement Count
Weekday AM & PM Peak Hours
Tuesday, 25 October 2016

File Name : WALNUT_RD_AT_RARITAN_AVE_359025_10-25-2016
Site Code :
Start Date : 10/25/2016
Page No : 1

Groups Printed- Lights - Buses - Trucks - Pedestrians

	WALNUT AVE (CR 632) Southbound					RARITAN ROAD (CR 607) Westbound					WALNUT AVE (CR 632) Northbound					RARITAN ROAD (CR 607) Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	17	42	25	0	84	13	59	10	0	82	9	85	16	0	110	47	84	8	0	139	0	415	415
07:15 AM	26	36	43	0	105	12	77	16	0	105	14	110	25	0	149	64	105	16	0	185	0	544	544
07:30 AM	20	68	45	0	133	15	109	12	0	136	19	125	22	0	166	61	117	20	0	198	0	633	633
07:45 AM	39	51	46	0	136	19	97	15	0	131	13	124	32	0	169	75	121	31	0	227	0	663	663
Total	102	197	159	0	458	59	342	53	0	454	55	444	95	0	594	247	427	75	0	749	0	2255	2255
08:00 AM	38	62	48	0	148	18	83	23	0	124	21	84	25	0	130	48	113	34	0	195	0	597	597
08:15 AM	45	56	52	0	153	34	73	18	1	125	19	82	23	0	124	36	117	45	0	198	1	600	601
08:30 AM	27	36	46	0	109	20	98	21	0	139	32	92	32	0	156	57	97	41	0	195	0	599	599
08:45 AM	25	60	41	0	126	20	91	21	0	132	14	104	25	0	143	62	97	37	0	196	0	597	597
Total	135	214	187	0	536	92	345	83	1	520	86	362	105	0	553	203	424	157	0	784	1	2393	2394
*** BREAK ***																							
04:00 PM	41	92	71	0	204	26	102	17	1	145	29	78	29	1	136	73	141	35	0	249	2	734	736
04:15 PM	40	82	50	0	172	26	101	20	0	147	18	79	27	1	124	65	134	44	0	243	1	686	687
04:30 PM	30	95	61	0	186	30	138	24	0	192	26	79	30	0	135	66	146	42	0	254	0	767	767
04:45 PM	33	79	52	0	164	27	128	27	0	182	19	90	35	1	144	68	148	49	1	265	2	755	757
Total	144	348	234	0	726	109	469	88	1	666	92	326	121	3	539	272	569	170	1	1011	5	2942	2947
05:00 PM	51	104	64	0	219	38	129	21	0	188	35	103	35	1	173	62	144	37	3	243	4	823	827
05:15 PM	32	109	78	0	219	34	120	13	1	167	38	122	21	1	181	68	167	37	0	272	2	839	841
05:30 PM	31	107	87	0	225	28	142	24	0	194	20	85	23	0	128	59	141	45	0	245	0	792	792
05:45 PM	30	89	72	0	191	34	136	18	2	188	26	72	22	0	120	62	155	32	0	249	2	748	750
Total	144	409	301	0	854	134	527	76	3	737	119	382	101	2	602	251	607	151	3	1009	8	3202	3210
Grand Total	525	1168	881	0	2574	394	1683	300	5	2377	352	1514	422	5	2288	973	2027	553	4	3553	14	10792	10806
Apprch %	20.4	45.4	34.2			16.6	70.8	12.6			15.4	66.2	18.4			27.4	57.1	15.6					
Total %	4.9	10.8	8.2		23.9	3.7	15.6	2.8		22	3.3	14	3.9		21.2	9	18.8	5.1		32.9	0.1	99.9	
Lights	514	1150	864		2528	389	1633	283		2305	349	1491	413		2253	958	1966	546		3470	0	0	10556
% Lights	97.9	98.5	98.1	0	98.2	98.7	97	94.3	0	96.8	99.1	98.5	97.9	0	98.3	98.5	97	98.7	0	97.6	0	0	97.7
Buses	2	1	3		6	0	19	3		22	0	10	5		15	5	32	2		39	0	0	82
% Buses	0.4	0.1	0.3	0	0.2	0	1.1	1	0	0.9	0	0.7	1.2	0	0.7	0.5	1.6	0.4	0	1.1	0	0	0.8
Trucks	9	17	14		40	5	31	14		50	3	13	4		20	10	29	5		44	0	0	154
% Trucks	1.7	1.5	1.6	0	1.6	1.3	1.8	4.7	0	2.1	0.9	0.9	0.9	0	0.9	1	1.4	0.9	0	1.2	0	0	1.4
Pedestrians	0	0	0		0	0	0	0		5	0	0	0		5	0	0	0		4	0	0	14
% Pedestrians	0	0	0	0	0	0	0	0	100	0.2	0	0	0	100	0.2	0	0	0	100	0.1	0	0	0.1

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Raritan Rd & Walnut Ave
Manual Turning Movement Count
Weekday AM & PM Peak Hours
Tuesday, 25 October 2016

File Name : WALNUT_RD_AT_RARITAN_AVE_359025_10-25-2016
Site Code :
Start Date : 10/25/2016

	WALNUT AVE (CR 632) Southbound				RARITAN ROAD (CR 607) Westbound				WALNUT AVE (CR 632) Northbound				RARITAN ROAD (CR 607) Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	20	**68**	45	133	15	**109**	12	**136**	19	**125**	22	166	61	117	20	198	633
07:45 AM	39	51	46	136	19	97	15	131	13	124	**32**	**169**	**75**	**121**	31	**227**	**663**
08:00 AM	38	62	48	148	18	83	**23**	124	**21**	84	25	130	48	113	34	195	597
08:15 AM	**45**	56	**52**	**153**	**34**	73	18	125	19	82	23	124	36	117	**45**	198	600
Total Volume	142	237	191	570	86	362	68	516	72	415	102	589	220	468	130	818	2493
% App. Total	24.9	41.6	33.5		16.7	70.2	13.2		12.2	70.5	17.3		26.9	57.2	15.9		
PHF	.789	.871	.918	.931	.632	.830	.739	.949	.857	.830	.797	.871	.733	.967	.722	.901	.940
Lights	139	232	182	553	85	343	65	493	72	408	98	578	215	443	129	787	2411
% Lights	97.9	97.9	95.3	97.0	98.8	94.8	95.6	95.5	100	98.3	96.1	98.1	97.7	94.7	99.2	96.2	96.7
Buses	1	1	1	3	0	8	1	9	0	3	2	5	2	12	0	14	31
% Buses	0.7	0.4	0.5	0.5	0	2.2	1.5	1.7	0	0.7	2.0	0.8	0.9	2.6	0	1.7	1.2
Trucks	2	4	8	14	1	11	2	14	0	4	2	6	3	13	1	17	51
% Trucks	1.4	1.7	4.2	2.5	1.2	3.0	2.9	2.7	0	1.0	2.0	1.0	1.4	2.8	0.8	2.1	2.0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	33	79	52	164	27	128	**27**	182	19	90	**35**	144	**68**	148	**49**	265	755
05:00 PM	**51**	104	64	219	**38**	129	21	188	35	103	35	173	62	144	37	243	823
05:15 PM	32	**109**	78	219	34	120	13	167	**38**	**122**	21	**181**	68	**167**	37	**272**	**839**
05:30 PM	31	107	**87**	**225**	28	**142**	24	**194**	20	85	23	128	59	141	45	245	792
Total Volume	147	399	281	827	127	519	85	731	112	400	114	626	257	600	168	1025	3209
% App. Total	17.8	48.2	34		17.4	71	11.6		17.9	63.9	18.2		25.1	58.5	16.4		
PHF	.721	.915	.807	.919	.836	.914	.787	.942	.737	.820	.814	.865	.945	.898	.857	.942	.956
Lights	147	393	279	819	126	511	79	716	112	394	114	620	256	593	165	1014	3169
% Lights	100	98.5	99.3	99.0	99.2	98.5	92.9	97.9	100	98.5	100	99.0	99.6	98.8	98.2	98.9	98.8
Buses	0	0	0	0	0	2	0	2	0	2	0	2	1	4	0	5	9
% Buses	0	0	0	0	0	0.4	0	0.3	0	0.5	0	0.3	0.4	0.7	0	0.5	0.3
Trucks	0	6	2	8	1	6	6	13	0	4	0	4	0	3	3	6	31
% Trucks	0	1.5	0.7	1.0	0.8	1.2	7.1	1.8	0	1.0	0	0.6	0	0.5	1.8	0.6	1.0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Walnut Ave & North Drwy
Manual Turning Movement Count
Weekday AM & PM Peak Hours
Tuesday, 25 October 2016

File Name : WALNUT_AVE_AT_NORTH_DRIVEWAY_359051_10-25-2016
Site Code :
Start Date : 10/25/2016
Page No : 1

Groups Printed- Lights - Buses - Trucks

	WALNUT AVE (CR 632) Southbound				WALNUT AVE (CR 632) Northbound				NORTH DRIVEWAY Eastbound						
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	86	3	0	89	4	130	0	134	0	0	0	0	0	223	223
07:15 AM	105	4	0	109	6	168	0	174	0	0	0	0	0	283	283
07:30 AM	137	3	0	140	9	181	0	190	1	2	0	3	0	333	333
07:45 AM	141	7	0	148	6	199	0	205	3	1	0	4	0	357	357
Total	469	17	0	486	25	678	0	703	4	3	0	7	0	1196	1196
08:00 AM	153	4	0	157	8	152	0	160	2	0	0	2	0	319	319
08:15 AM	140	2	0	142	2	142	0	144	1	2	0	3	0	289	289
08:30 AM	121	4	0	125	11	152	0	163	0	1	0	1	0	289	289
08:45 AM	117	4	0	121	18	170	0	188	2	3	0	5	0	314	314
Total	531	14	0	545	39	616	0	655	5	6	0	11	0	1211	1211
*** BREAK ***															
04:00 PM	162	0	0	162	3	165	0	168	7	5	0	12	0	342	342
04:15 PM	162	1	0	163	1	159	0	160	5	3	0	8	0	331	331
04:30 PM	168	1	0	169	1	166	0	167	8	6	0	14	0	350	350
04:45 PM	168	3	0	171	2	171	0	173	1	5	0	6	0	350	350
Total	660	5	0	665	7	661	0	668	21	19	0	40	0	1373	1373
05:00 PM	199	0	0	199	0	202	0	202	4	12	0	16	0	417	417
05:15 PM	206	3	0	209	1	214	0	215	5	7	0	12	0	436	436
05:30 PM	208	1	0	209	2	173	0	175	3	17	0	20	0	404	404
05:45 PM	187	1	0	188	3	148	0	151	4	4	0	8	0	347	347
Total	800	5	0	805	6	737	0	743	16	40	0	56	0	1604	1604
Grand Total	2460	41	0	2501	77	2692	0	2769	46	68	0	114	0	5384	5384
Apprch %	98.4	1.6			2.8	97.2			40.4	59.6					
Total %	45.7	0.8		46.5	1.4	50		51.4	0.9	1.3		2.1	0	100	
Lights	2420	41		2461	75	2642		2717	43	68		111	0	0	5289
% Lights	98.4	100	0	98.4	97.4	98.1	0	98.1	93.5	100	0	97.4	0	0	98.2
Buses	5	0		5	0	17		17	0	0		0	0	0	22
% Buses	0.2	0	0	0.2	0	0.6	0	0.6	0	0	0	0	0	0	0.4
Trucks	35	0		35	2	33		35	3	0		3	0	0	73
% Trucks	1.4	0	0	1.4	2.6	1.2	0	1.3	6.5	0	0	2.6	0	0	1.4

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Walnut Ave & North Drwy
Manual Turning Movement Count
Weekday AM & PM Peak Hours
Tuesday, 25 October 2016

File Name : WALNUT_AVE_AT_NORTH_DRIVEWAY_359051_10-25-2016
Site Code :
Start Date : 10/25/2016
Page No : 2

	WALNUT AVE (CR 632) Southbound			WALNUT AVE (CR 632) Northbound			NORTH DRIVEWAY Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	137	3	140	**9**	181	190	1	**2**	3	333
07:45 AM	141	**7**	148	6	**199**	**205**	**3**	1	**4**	**357**
08:00 AM	**153**	4	**157**	8	152	160	2	0	2	319
08:15 AM	140	2	142	2	142	144	1	2	3	289
Total Volume	571	16	587	25	674	699	7	5	12	1298
% App. Total	97.3	2.7		3.6	96.4		58.3	41.7		
PHF	.933	.571	.935	.694	.847	.852	.583	.625	.750	.909
Lights	554	16	570	25	660	685	5	5	10	1265
% Lights	97.0	100	97.1	100	97.9	98.0	71.4	100	83.3	97.5
Buses	2	0	2	0	5	5	0	0	0	7
% Buses	0.4	0	0.3	0	0.7	0.7	0	0	0	0.5
Trucks	15	0	15	0	9	9	2	0	2	26
% Trucks	2.6	0	2.6	0	1.3	1.3	28.6	0	16.7	2.0
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	168	**3**	171	**2**	171	173	1	5	6	350
05:00 PM	199	0	199	0	202	202	4	12	16	417
05:15 PM	206	3	**209**	1	**214**	**215**	**5**	7	12	**436**
05:30 PM	**208**	1	209	2	173	175	3	**17**	**20**	404
Total Volume	781	7	788	5	760	765	13	41	54	1607
% App. Total	99.1	0.9		0.7	99.3		24.1	75.9		
PHF	.939	.583	.943	.625	.888	.890	.650	.603	.675	.921
Lights	772	7	779	4	751	755	13	41	54	1588
% Lights	98.8	100	98.9	80.0	98.8	98.7	100	100	100	98.8
Buses	0	0	0	0	4	4	0	0	0	4
% Buses	0	0	0	0	0.5	0.5	0	0	0	0.2
Trucks	9	0	9	1	5	6	0	0	0	15
% Trucks	1.2	0	1.1	20.0	0.7	0.8	0	0	0	0.9

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Walnut Ave & South Drwy
Manual Turning Movement Count
Weekday AM & PM Peak Hours
Tuesday, 25 October 2016

File Name : WALNUT_AVE_AT_SOUTH_DRIVEWAY_359064_10-25-2016
Site Code :
Start Date : 10/25/2016
Page No : 1

Groups Printed- Lights - Buses - Trucks

	WALNUT AVE (CR 632) Southbound				WALNUT AVE (CR 632) Northbound				SOUTH DRIVEWAY Eastbound						
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	75	0	0	75	24	131	0	155	2	3	0	5	0	235	235
07:15 AM	104	2	0	106	26	183	0	209	4	8	0	12	0	327	327
07:30 AM	134	2	0	136	20	190	0	210	1	3	0	4	0	350	350
07:45 AM	144	0	0	144	23	194	0	217	1	8	0	9	0	370	370
Total	457	4	0	461	93	698	0	791	8	22	0	30	0	1282	1282
08:00 AM	134	1	0	135	6	139	0	145	0	1	0	1	0	281	281
08:15 AM	155	0	0	155	13	134	0	147	0	2	0	2	0	304	304
08:30 AM	111	1	0	112	16	159	0	175	0	3	0	3	0	290	290
08:45 AM	113	1	0	114	6	173	0	179	1	3	0	4	0	297	297
Total	513	3	0	516	41	605	0	646	1	9	0	10	0	1172	1172
*** BREAK ***															
04:00 PM	164	4	0	168	4	164	0	168	4	29	0	33	0	369	369
04:15 PM	162	0	0	162	3	150	0	153	1	18	0	19	0	334	334
04:30 PM	171	0	0	171	1	178	0	179	0	15	0	15	0	365	365
04:45 PM	172	0	0	172	3	183	0	186	0	13	0	13	0	371	371
Total	669	4	0	673	11	675	0	686	5	75	0	80	0	1439	1439
05:00 PM	196	0	0	196	2	200	0	202	1	17	0	18	0	416	416
05:15 PM	204	0	0	204	3	207	0	210	0	10	0	10	0	424	424
05:30 PM	216	0	0	216	6	172	0	178	0	5	0	5	0	399	399
05:45 PM	179	1	0	180	3	148	0	151	0	7	0	7	0	338	338
Total	795	1	0	796	14	727	0	741	1	39	0	40	0	1577	1577
Grand Total	2434	12	0	2446	159	2705	0	2864	15	145	0	160	0	5470	5470
Apprch %	99.5	0.5			5.6	94.4			9.4	90.6					
Total %	44.5	0.2		44.7	2.9	49.5		52.4	0.3	2.7		2.9	0	100	
Lights	2389	11		2400	148	2659		2807	13	136		149	0	0	5356
% Lights	98.2	91.7	0	98.1	93.1	98.3	0	98	86.7	93.8	0	93.1	0	0	97.9
Buses	5	0		5	0	17		17	0	0		0	0	0	22
% Buses	0.2	0	0	0.2	0	0.6	0	0.6	0	0	0	0	0	0	0.4
Trucks	40	1		41	11	29		40	2	9		11	0	0	92
% Trucks	1.6	8.3	0	1.7	6.9	1.1	0	1.4	13.3	6.2	0	6.9	0	0	1.7

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Walnut Ave & South Drwy
Manual Turning Movement Count
Weekday AM & PM Peak Hours
Tuesday, 25 October 2016

File Name : WALNUT_AVE_AT_SOUTH_DRIVEWAY_359064_10-25-2016
Site Code :
Start Date : 10/25/2016
Page No : 2

	WALNUT AVE (CR 632) Southbound			WALNUT AVE (CR 632) Northbound			SOUTH DRIVEWAY Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 11:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	134	**2**	136	20	190	210	**1**	3	4	350
07:45 AM	144	0	144	**23**	**194**	**217**	1	**8**	**9**	**370**
08:00 AM	134	1	135	6	139	145	0	1	1	281
08:15 AM	**155**	0	**155**	13	134	147	0	2	2	304
Total Volume	567	3	570	62	657	719	2	14	16	1305
% App. Total	99.5	0.5		8.6	91.4		12.5	87.5		
PHF	.915	.375	.919	.674	.847	.828	.500	.438	.444	.882
Lights	546	3	549	61	640	701	2	12	14	1264
% Lights	96.3	100	96.3	98.4	97.4	97.5	100	85.7	87.5	96.9
Buses	2	0	2	0	6	6	0	0	0	8
% Buses	0.4	0	0.4	0	0.9	0.8	0	0	0	0.6
Trucks	19	0	19	1	11	12	0	2	2	33
% Trucks	3.4	0	3.3	1.6	1.7	1.7	0	14.3	12.5	2.5
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	172	0	172	3	183	186	0	13	13	371
05:00 PM	196	0	196	2	200	202	**1**	**17**	**18**	416
05:15 PM	204	0	204	3	**207**	**210**	0	10	10	**424**
05:30 PM	**216**	0	**216**	**6**	172	178	0	5	5	399
Total Volume	788	0	788	14	762	776	1	45	46	1610
% App. Total	100	0		1.8	98.2		2.2	97.8		
PHF	.912	.000	.912	.583	.920	.924	.250	.662	.639	.949
Lights	780	0	780	10	755	765	1	43	44	1589
% Lights	99.0	0	99.0	71.4	99.1	98.6	100	95.6	95.7	98.7
Buses	0	0	0	0	3	3	0	0	0	3
% Buses	0	0	0	0	0.4	0.4	0	0	0	0.2
Trucks	8	0	8	4	4	8	0	2	2	18
% Trucks	1.0	0	1.0	28.6	0.5	1.0	0	4.4	4.3	1.1

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Walnut Ave & Lexington Ave
Manual Turning Movement Count
Weekday AM & PM Peak Hours
Tuesday, 25 October 2016

File Name : WALNUT_AVE_AT_LEXINGTON_AVE_359045_10-25-2016
Site Code :
Start Date : 10/25/2016
Page No : 1

Groups Printed- Lights - Buses - Trucks

	WALNUT AVE (CR 632) Southbound				LEXINGTON AVE Westbound				WALNUT AVE (CR 632) Northbound						
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	8	83	0	91	2	28	0	30	122	3	0	125	0	246	246
07:15 AM	8	113	0	121	0	27	0	27	169	0	0	169	0	317	317
07:30 AM	14	150	0	164	0	27	0	27	182	0	0	182	0	373	373
07:45 AM	18	163	0	181	0	49	0	49	204	2	0	206	0	436	436
Total	48	509	0	557	2	131	0	133	677	5	0	682	0	1372	1372
08:00 AM	23	155	0	178	1	30	0	31	159	0	0	159	0	368	368
08:15 AM	17	141	0	158	1	28	0	29	148	2	0	150	0	337	337
08:30 AM	22	126	0	148	0	23	0	23	150	0	0	150	0	321	321
08:45 AM	8	123	0	131	0	23	0	23	162	3	0	165	0	319	319
Total	70	545	0	615	2	104	0	106	619	5	0	624	0	1345	1345
*** BREAK ***															
04:00 PM	18	163	0	181	2	19	0	21	170	0	0	170	0	372	372
04:15 PM	30	162	0	192	1	19	0	20	171	1	0	172	0	384	384
04:30 PM	12	173	0	185	0	15	0	15	176	1	0	177	0	377	377
04:45 PM	14	162	0	176	0	18	0	18	175	2	0	177	0	371	371
Total	74	660	0	734	3	71	0	74	692	4	0	696	0	1504	1504
05:00 PM	34	200	0	234	0	19	0	19	196	1	0	197	0	450	450
05:15 PM	23	211	0	234	0	17	0	17	213	3	0	216	0	467	467
05:30 PM	21	204	0	225	0	16	0	16	174	1	0	175	0	416	416
05:45 PM	28	190	0	218	0	21	0	21	161	0	0	161	0	400	400
Total	106	805	0	911	0	73	0	73	744	5	0	749	0	1733	1733
Grand Total	298	2519	0	2817	7	379	0	386	2732	19	0	2751	0	5954	5954
Apprch %	10.6	89.4			1.8	98.2			99.3	0.7					
Total %	5	42.3		47.3	0.1	6.4		6.5	45.9	0.3		46.2	0	100	
Lights	295	2478		2773	7	373		380	2678	19		2697	0	0	5850
% Lights	99	98.4	0	98.4	100	98.4	0	98.4	98	100	0	98	0	0	98.3
Buses	0	5		5	0	2		2	19	0		19	0	0	26
% Buses	0	0.2	0	0.2	0	0.5	0	0.5	0.7	0	0	0.7	0	0	0.4
Trucks	3	36		39	0	4		4	35	0		35	0	0	78
% Trucks	1	1.4	0	1.4	0	1.1	0	1	1.3	0	0	1.3	0	0	1.3

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Walnut Ave & Lexington Ave
Manual Turning Movement Count
Weekday AM & PM Peak Hours
Tuesday, 25 October 2016

File Name : WALNUT_AVE_AT_LEXINGTON_AVE_359045_10-25-2016
Site Code :
Start Date : 10/25/2016
Page No : 2

	WALNUT AVE (CR 632) Southbound			LEXINGTON AVE Westbound			WALNUT AVE (CR 632) Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	14	150	164	0	27	27	182	0	182	373
07:45 AM	18	**163**	**181**	0	**49**	**49**	**204**	**2**	**206**	**436**
08:00 AM	**23**	155	178	**1**	30	31	159	0	159	368
08:15 AM	17	141	158	1	28	29	148	2	150	337
Total Volume	72	609	681	2	134	136	693	4	697	1514
% App. Total	10.6	89.4		1.5	98.5		99.4	0.6		
PHF	.783	.934	.941	.500	.684	.694	.849	.500	.846	.868
Lights	71	590	661	2	132	134	676	4	680	1475
% Lights	98.6	96.9	97.1	100	98.5	98.5	97.5	100	97.6	97.4
Buses	0	2	2	0	1	1	5	0	5	8
% Buses	0	0.3	0.3	0	0.7	0.7	0.7	0	0.7	0.5
Trucks	1	17	18	0	1	1	12	0	12	31
% Trucks	1.4	2.8	2.6	0	0.7	0.7	1.7	0	1.7	2.0
Peak Hour Analysis From 12:00 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	14	162	176	0	18	18	175	2	177	371
05:00 PM	**34**	200	**234**	0	**19**	**19**	196	1	197	450
05:15 PM	23	**211**	234	0	17	17	**213**	**3**	**216**	**467**
05:30 PM	21	204	225	0	16	16	174	1	175	416
Total Volume	92	777	869	0	70	70	758	7	765	1704
% App. Total	10.6	89.4		0	100		99.1	0.9		
PHF	.676	.921	.928	.000	.921	.921	.890	.583	.885	.912
Lights	91	770	861	0	70	70	748	7	755	1686
% Lights	98.9	99.1	99.1	0	100	100	98.7	100	98.7	98.9
Buses	0	0	0	0	0	0	3	0	3	3
% Buses	0	0	0	0	0	0	0.4	0	0.4	0.2
Trucks	1	7	8	0	0	0	7	0	7	15
% Trucks	1.1	0.9	0.9	0	0	0	0.9	0	0.9	0.9

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Site Code:
Station ID:
WALNUT AVE N OF MITCHELL PL
CRANFORD,NJ
Latitude: 0' 0.0000 Undefined

Start	23-Jan-17		24-Jan-17		25-Jan-17		26-Jan-17		27-Jan-17		Weekday Average		28-Jan-17		29-Jan-17	
Time	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB
12:00 AM	*	*	*	*	*	*	*	*	27	39	27	39	97	94	123	92
01:00	*	*	*	*	*	*	*	*	20	21	20	21	41	48	53	47
02:00	*	*	*	*	*	*	*	*	16	16	16	16	32	32	55	38
03:00	*	*	*	*	*	*	*	*	21	16	21	16	23	19	44	35
04:00	*	*	*	*	*	*	*	*	61	32	61	32	46	22	22	19
05:00	*	*	*	*	*	*	*	*	92	66	92	66	39	39	31	43
06:00	*	*	*	*	*	*	*	*	186	282	186	282	54	79	89	108
07:00	*	*	*	*	*	*	*	*	428	**621**	428	**621**	140	167	151	200
08:00	*	*	*	*	*	*	*	*	**554**	559	**554**	559	287	303	328	327
09:00	*	*	*	*	*	*	*	*	375	413	375	413	371	369	471	481
10:00	*	*	*	*	*	*	*	*	376	398	376	398	585	471	644	654
11:00	*	*	*	*	*	*	*	*	445	439	445	439	**847**	**646**	**773**	**744**
12:00 PM	*	*	*	*	*	*	*	*	475	511	475	511	**909**	770	811	**837**
01:00	*	*	*	*	*	*	*	*	548	516	548	516	892	804	**865**	831
02:00	*	*	*	*	*	*	*	*	512	524	512	524	905	811	785	781
03:00	*	*	*	*	*	*	*	*	706	624	706	624	820	**828**	783	807
04:00	*	*	*	*	*	*	*	*	764	655	764	655	769	781	757	788
05:00	*	*	*	*	*	*	*	*	**767**	**855**	**767**	**855**	775	763	670	710
06:00	*	*	*	*	*	*	*	*	671	714	671	714	723	697	611	661
07:00	*	*	*	*	*	*	*	*	496	553	496	553	537	569	466	474
08:00	*	*	*	*	*	*	*	*	385	409	385	409	409	393	317	301
09:00	*	*	*	*	*	*	*	*	270	308	270	308	423	359	215	230
10:00	*	*	*	*	*	*	*	*	190	212	190	212	279	283	138	100
11:00	*	*	*	*	*	*	**69**	**93**	123	165	96	129	211	166	82	68
Total	0	0	0	0	0	0	69	93	8508	8948	8481	8912	10214	9513	9284	9376
Day	0		0		0		162		17456		17393		19727		18660	
AM Peak	-	-	-	-	-	-	-	-	08:00	07:00	08:00	07:00	11:00	11:00	11:00	11:00
Vol.	-	-	-	-	-	-	-	-	554	621	554	621	847	646	773	744
PM Peak	-	-	-	-	-	-	23:00	23:00	17:00	17:00	17:00	17:00	12:00	15:00	13:00	12:00
Vol.	-	-	-	-	-	-	69	93	767	855	767	855	909	828	865	837

Traffic Databank

716 S Sixth Ave
Mount Vernon, NY 10550

Site Code:
Station ID:
WALNUT AVE N OF MITCHELL PL
CRANFORD,NJ
Latitude: 0' 0.0000 Undefined

Start	30-Jan-17		31-Jan-17		01-Feb-17		02-Feb-17		03-Feb-17		Weekday Average		04-Feb-17		05-Feb-17	
Time	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB
12:00 AM	35	41	49	46	46	38	39	44	49	45	44	43	85	81	**90**	**113**
01:00	16	28	23	20	16	22	29	36	20	28	21	27	48	40	51	31
02:00	11	19	15	8	16	12	22	15	18	22	16	15	35	30	42	39
03:00	15	10	32	15	38	15	32	23	25	24	28	17	48	31	39	26
04:00	43	37	59	34	86	51	79	39	91	46	72	41	63	37	14	12
05:00	132	104	142	104	110	101	108	75	140	100	126	97	45	50	29	26
06:00	261	319	266	301	239	315	230	333	216	323	242	318	93	102	7	16
07:00	532	**668**	533	**718**	484	735	506	**733**	504	**695**	512	**710**	201	237	0	0
08:00	**654**	656	**639**	689	**652**	**742**	**690**	694	**658**	678	**659**	692	303	364	1	0
09:00	425	464	448	529	500	430	532	571	506	503	482	499	419	463	1	1
10:00	407	465	494	478	372	406	408	467	421	507	420	465	578	585	*	*
11:00	444	455	452	459	492	415	422	439	556	516	473	457	**636**	**624**	*	*
12:00 PM	485	522	525	501	512	499	521	509	541	594	517	525	663	704	*	*
01:00	556	508	517	496	502	538	490	537	616	558	536	527	**672**	700	*	*
02:00	500	613	463	552	514	623	536	593	595	669	522	610	640	679	*	*
03:00	633	594	666	576	697	598	712	589	776	784	697	628	623	**750**	*	*
04:00	776	680	778	656	745	691	761	742	859	729	784	700	651	660	*	*
05:00	**847**	**796**	**829**	**817**	**926**	**859**	**937**	**835**	927	**838**	**893**	**829**	606	660	*	*
06:00	678	752	808	644	823	776	781	696	**972**	739	812	721	537	642	*	*
07:00	531	546	517	522	574	588	572	588	659	589	571	567	434	531	*	*
08:00	403	404	359	390	435	397	412	429	455	469	413	418	354	400	*	*
09:00	271	260	268	306	311	342	284	335	355	390	298	327	284	332	*	*
10:00	119	157	180	156	164	191	151	187	221	253	167	189	229	260	*	*
11:00	71	83	77	92	75	70	106	94	164	157	99	99	132	144	*	*
Total	8845	9181	9139	9109	9329	9454	9360	9603	10344	10256	9404	9521	8379	9106	274	264
Day	18026		18248		18783		18963		20600		18925		17485		538	
AM Peak	08:00	07:00	08:00	07:00	08:00	08:00	08:00	07:00	08:00	07:00	08:00	07:00	11:00	11:00	00:00	00:00
Vol.	654	668	639	718	652	742	690	733	658	695	659	710	636	624	90	113
PM Peak	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	18:00	17:00	17:00	17:00	13:00	15:00	-	-
Vol.	847	796	829	817	926	859	937	835	972	838	893	829	672	750	-	-

Comb. Total	18026	18248	18783	19125	38056	36318	37212	19198

ADT ADT 18,384 AADT 18,384

APPENDIX C
TIMING DIRECTIVE

RARITAN ROAD AND WALNUT AVENUE
TOWNSHIP OF CRANFORD, PARK
UNION COUNTY, NEW JERSEY

Revised January 5, 1994
Revised July 17, 1991
May 9, 1991

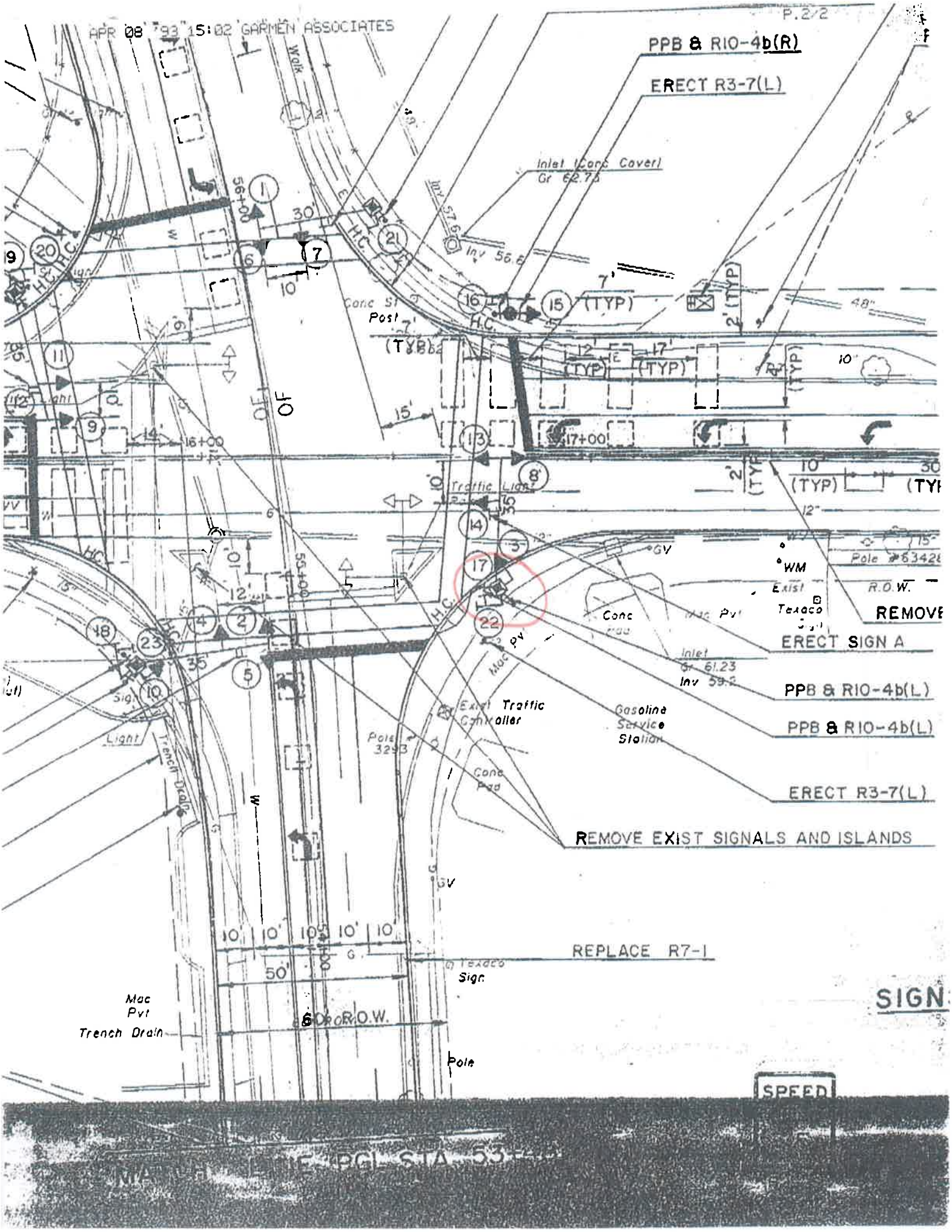
TIMING SCHEDULE

Phase	Signal Indications											Time (sec.)	
	1,2	3	4	5-7	8,9	10	11	12-14	15	16-19	20-23		
With Pedestrian Actuation													
1. Raritan Rd. Eb R.O.W	<G/G	<G/G	G	R	R	R	R	R	R	DW	DW	5-10	13%
Left Turn Change	<Y/G	<Y/G	G	R	R	R	R	R	R	DW	DW	3.0	
2. Raritan Rd. R.O.W.	G	G	G	G	R	R	R	R	R	W	DW	16.5 (min.)	40%
Pedestrian Clearance	G	G	G	G	R	R	R	R	R	FDW	DW	17.5	
Change	Y	Y	Y	Y	R	R	R	R	R	DW	DW	3.5	
Clearance	R	R	R	R	R	R	R	R	R	DW	DW	2.5	
3. Walnut Avenue Sb R.O.W	R	R	R	R	<G/G	<G/G	G	R	G	DW	DW	5-10	13%
Left Turn Change	R	R	R	R	<Y/G	<Y/G	G	R	G	DW	DW	3.0	
4. Walnut Avenue R.O.W	R	R	R	R	G	G	G	G	G	DW	W	9	34%
Pedestrian Clearance	R	R	R	R	G	G	G	G	G	DW	FDW	20	
Change	R	R	R	R	Y	Y	Y	Y	Y	DW	DW	3.5	
Clearance	R	R	R	R	R	R	R	R	R	DW	DW	2.5	
Flashing Operation	Y	Y	Y	Y	R	R	R	R	R	DARK	DARK		
Without Pedestrian Actuation													
1. Raritan Rd. Eb R.O.W	<G/G	<G/G	G	R	R	R	R	R	R	DW	DW	5-10	
Left Turn Change	<Y/G	<Y/G	G	R	R	R	R	R	R	DW	DW	3.0	
2. Raritan Rd. R.O.W.	G	G	G	G		R	R	R	R	DW	DW	37 (max)	
Change	Y	Y	Y	Y	R	R	R	R	R	DW	DW	3.5	
Clearance	R	R	R	R	R	R	R	R	R	DW	DW	2.5	
3. Walnut Avenue Sb R.O.W	R	R	R	R	G/G	<G/G	G	R	G	DW	DW	5-10	
Left Turn Change	R	R	R	R	<Y/G	<Y/G	G	R	G	DW	DW	3.0	
4. Walnut Avenue R.O.W	R	R	R	R		G	G	G		DW	DW	8-25	
Change	R	R	R	Y	Y	Y	Y	Y	Y	DW	DW	3.5	
Clearance	R	R	R	R	R	R				DW	DW	2.5	
Flashing Operation	Y	Y					Y			DARK	DARK		

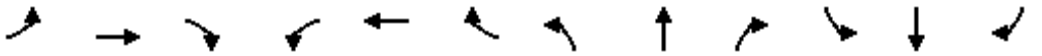
NOTES:

1. THE TRAFFIC CONTROLLER SHALL HAVE A 150 SECOND BACKGROUND CYCLE.
2. THE MEMORY AND RECALL SHALL BE OFF FOR PHASES 1, 3, AND 4.
3. PHASES 1, 3, AND 4 SHALL HAVE A VEHICLE EXTENSION OF 2 SECONDS.
4. THE ENDING OF FLASHING OPERATION SHALL OCCUR AT THE BEGINNING OF PHASE 2 GREEN.

JUL 24 '96 01:13


APR 08 '93 15:02 GARMEN ASSOCIATES
P.2/2
PPB & R10-4b(R)
ERECT R3-7(L)
Inlet (Conc Cover)
Gr 62.73
Inv 56.6
Conc St Post
Traffic Light
Exist Traffic Controller
Gasoline Service Station
Conc Pad
Mac Pvt
Texaco Sign
Pole 3293
Pole #63428
R.O.W.
REMOVE
ERECT SIGN A
Inlet
Gr 61.23
Inv 59.2
PPB & R10-4b(L)
PPB & R10-4b(L)
ERECT R3-7(L)
REMOVE EXIST SIGNALS AND ISLANDS
REPLACE R7-1
Mac Pvt
Trench Drain
60' R.O.W.
Pole
SIGN
SPEED
PCL STA 53

APPENDIX D
CAPACITY ANALYSIS



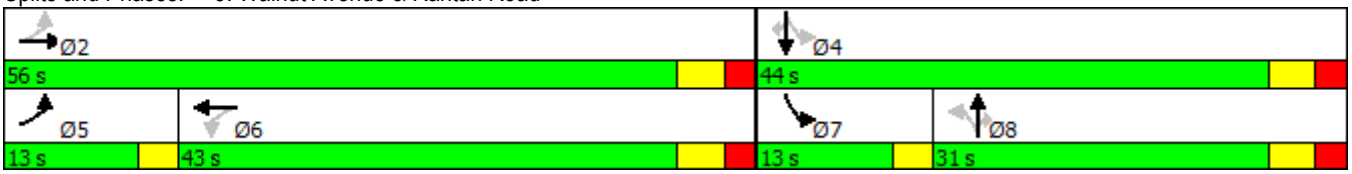
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	303	489	136	90	379	94	75	575	107	154	263	211
Future Volume (vph)	303	489	136	90	379	94	75	575	107	154	263	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Storage Length (ft)	350		0	125		0	250		300	150		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	50			25			100			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.970				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3177	0	1668	3173	0	1685	1756	1478	1668	1739	1449
Flt Permitted	0.376			0.399			0.588			0.143		
Satd. Flow (perm)	660	3177	0	701	3173	0	1043	1756	1478	251	1739	1449
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			35				114			224
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1739			301			1363			271	
Travel Time (s)		33.9			5.9			23.2			4.6	
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%	3%	1%	1%	3%	3%	0%	1%	2%	1%	2%	4%
Adj. Flow (vph)	322	520	145	96	403	100	80	612	114	164	280	224
Shared Lane Traffic (%)												
Lane Group Flow (vph)	322	665	0	96	503	0	80	612	114	164	280	224
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	Right	Left	Left	Right	L NA	L NA	R NA	L NA	Left	R NA
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		30			25			30			30	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm

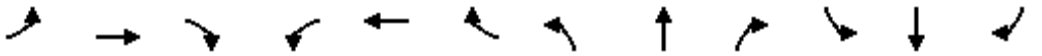
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		6	6		8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	37.0		37.0	37.0		8.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	43.0		43.0	43.0		14.0	14.0	14.0	8.0	14.0	14.0
Total Split (s)	13.0	56.0		43.0	43.0		31.0	31.0	31.0	13.0	44.0	44.0
Total Split (%)	13.0%	56.0%		43.0%	43.0%		31.0%	31.0%	31.0%	13.0%	44.0%	44.0%
Maximum Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
Yellow Time (s)	3.0	3.5		3.5	3.5		3.5	3.5	3.5	3.0	3.5	3.5
All-Red Time (s)	0.0	2.5		2.5	2.5		2.5	2.5	2.5	0.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0		6.0	6.0		6.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min		Min	Min		None	None	None	None	None	None
Act Effct Green (s)	53.0	50.0		37.0	37.0		25.0	25.0	25.0	40.6	37.6	37.6
Actuated g/C Ratio	0.53	0.50		0.37	0.37		0.25	0.25	0.25	0.41	0.38	0.38
v/c Ratio	0.71	0.41		0.37	0.42		0.31	1.39	0.25	0.69	0.43	0.33
Control Delay	24.6	15.2		28.2	22.9		34.4	220.1	7.3	35.6	25.5	4.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	15.2		28.2	22.9		34.4	220.1	7.3	35.6	25.5	4.3
LOS	C	B		C	C		C	F	A	D	C	A
Approach Delay		18.3			23.8			171.6			20.8	
Approach LOS		B			C			F			C	
90th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
90th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
70th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
70th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
50th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
50th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
30th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
30th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
10th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	8.1	36.1	36.1
10th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Gap	Hold	Hold
Stops (vph)	168	346		66	318		60	443	17	96	190	21
Fuel Used(gal)	7	12		2	10		2	35	1	3	4	1
CO Emissions (g/hr)	460	866		140	687		126	2477	92	190	304	90
NOx Emissions (g/hr)	90	168		27	134		25	482	18	37	59	18
VOC Emissions (g/hr)	107	201		33	159		29	574	21	44	71	21
Dilemma Vehicles (#)	0	23		0	24		0	20	0	0	10	0
Queue Length 50th (ft)	114	123		44	115		42	~524	0	67	130	0
Queue Length 95th (ft)	175	167		92	161		85	#734	42	#131	203	47
Internal Link Dist (ft)		1659			221			1283			191	
Turn Bay Length (ft)	350			125			250		300	150		
Base Capacity (vph)	452	1620		260	1200		261	441	456	244	663	691
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0

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	0	0
Reduced v/c Ratio	0.71	0.41		0.37	0.42		0.31	1.39	0.25	0.67	0.42	0.32

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 99.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.39			
Intersection Signal Delay: 60.3		Intersection LOS: E	
Intersection Capacity Utilization 118.8%		ICU Level of Service H	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 100			
70th %ile Actuated Cycle: 100			
50th %ile Actuated Cycle: 100			
30th %ile Actuated Cycle: 100			
10th %ile Actuated Cycle: 98.1			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Walnut Avenue & Raritan Road





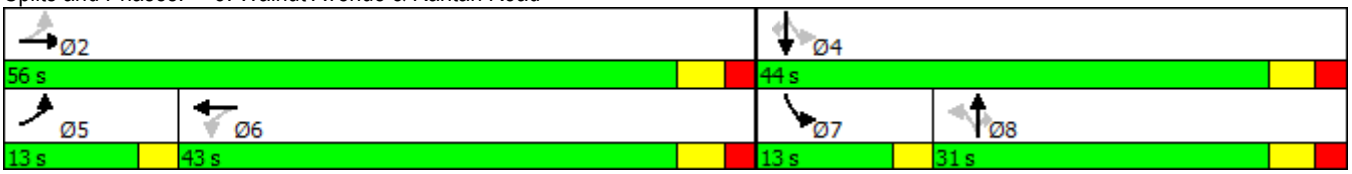
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	282	627	176	133	543	93	117	443	119	190	514	364
Future Volume (vph)	282	627	176	133	543	93	117	443	119	190	514	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Storage Length (ft)	350		0	125		0	250		300	150		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	50			25			100			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.978				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3219	0	1668	3234	0	1685	1756	1507	1685	1739	1492
Flt Permitted	0.279			0.337			0.329			0.143		
Satd. Flow (perm)	495	3219	0	592	3234	0	583	1756	1507	254	1739	1492
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			22				124			347
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1739			301			1363			271	
Travel Time (s)		33.9			5.9			23.2			4.6	
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 (%)	0%	1%	2%	1%	1%	7%	0%	1%	0%	0%	2%	1%
Adj. Flow (vph)	294	653	183	139	566	97	122	461	124	198	535	379
Shared Lane Traffic (%)												
Lane Group Flow (vph)	294	836	0	139	663	0	122	461	124	198	535	379
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	Right	Left	Left	Right	L NA	L NA	R NA	L NA	Left	R NA
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		30			25			30			30	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm

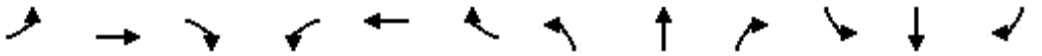
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		6	6		8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	37.0		37.0	37.0		8.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	43.0		43.0	43.0		14.0	14.0	14.0	8.0	14.0	14.0
Total Split (s)	13.0	56.0		43.0	43.0		31.0	31.0	31.0	13.0	44.0	44.0
Total Split (%)	13.0%	56.0%		43.0%	43.0%		31.0%	31.0%	31.0%	13.0%	44.0%	44.0%
Maximum Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
Yellow Time (s)	3.0	3.5		3.5	3.5		3.5	3.5	3.5	3.0	3.5	3.5
All-Red Time (s)	0.0	2.5		2.5	2.5		2.5	2.5	2.5	0.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0		6.0	6.0		6.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min		Min	Min		None	None	None	None	None	None
Act Effct Green (s)	53.0	50.0		37.0	37.0		25.0	25.0	25.0	40.9	37.9	37.9
Actuated g/C Ratio	0.53	0.50		0.37	0.37		0.25	0.25	0.25	0.41	0.38	0.38
v/c Ratio	0.77	0.51		0.63	0.55		0.84	1.05	0.26	0.80	0.81	0.49
Control Delay	29.8	17.0		41.4	26.1		80.1	94.4	7.2	46.0	39.3	5.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	17.0		41.4	26.1		80.1	94.4	7.2	46.0	39.3	5.7
LOS	C	B		D	C		F	F	A	D	D	A
Approach Delay		20.3			28.7			76.6			29.0	
Approach LOS		C			C			E			C	
90th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
90th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Max	Max
70th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
70th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Max	Max
50th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
50th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
30th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
30th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
10th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	9.7	37.7	37.7
10th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Gap	Hold	Hold
Stops (vph)	151	485		111	471		97	375	18	117	439	45
Fuel Used(gal)	6	17		3	14		4	16	1	4	11	2
CO Emissions (g/hr)	446	1154		240	975		276	1139	101	261	742	169
NOx Emissions (g/hr)	87	224		47	190		54	222	20	51	144	33
VOC Emissions (g/hr)	103	267		56	226		64	264	24	61	172	39
Dilemma Vehicles (#)	0	29		0	32		0	19	0	0	22	0
Queue Length 50th (ft)	102	168		72	167		74	~322	0	83	301	13
Queue Length 95th (ft)	#187	222		#161	224		#180	#516	44	#186	#476	77
Internal Link Dist (ft)		1659			221			1283			191	
Turn Bay Length (ft)	350			125			250		300	150		
Base Capacity (vph)	381	1636		219	1211		145	439	469	247	660	782
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0

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	0	0
Reduced v/c Ratio	0.77	0.51		0.63	0.55		0.84	1.05	0.26	0.80	0.81	0.48

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 99.9			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 35.3		Intersection LOS: D	
Intersection Capacity Utilization 115.4%		ICU Level of Service H	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 100			
70th %ile Actuated Cycle: 100			
50th %ile Actuated Cycle: 100			
30th %ile Actuated Cycle: 100			
10th %ile Actuated Cycle: 99.7			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Walnut Avenue & Raritan Road





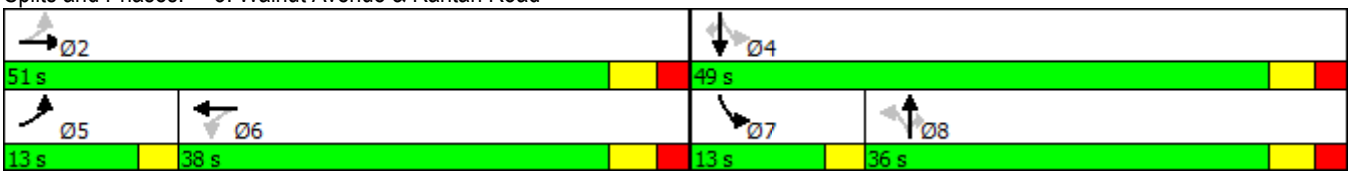
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	252	489	136	90	379	72	75	440	107	211	271	231
Future Volume (vph)	252	489	136	90	379	72	75	440	107	211	271	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Storage Length (ft)	350		0	125		0	250		300	150		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	50			25			100			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.976				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3177	0	1668	3193	0	1685	1756	1478	1668	1739	1449
Flt Permitted	0.372			0.399			0.583			0.151		
Satd. Flow (perm)	653	3177	0	701	3193	0	1034	1756	1478	265	1739	1449
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46			23				114			246
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1739			301			1363			271	
Travel Time (s)		33.9			5.9			23.2			4.6	
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%	3%	1%	1%	3%	3%	0%	1%	2%	1%	2%	4%
Adj. Flow (vph)	268	520	145	96	403	77	80	468	114	224	288	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	268	665	0	96	480	0	80	468	114	224	288	246
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	Right	Left	Left	Right	L NA	L NA	R NA	L NA	Left	R NA
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		30			25			30			30	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm

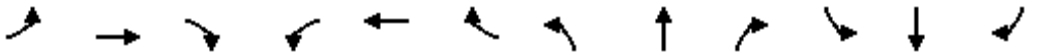
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		6	6		8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	32.0		32.0	32.0		8.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	38.0		38.0	38.0		14.0	14.0	14.0	8.0	14.0	14.0
Total Split (s)	13.0	51.0		38.0	38.0		36.0	36.0	36.0	13.0	49.0	49.0
Total Split (%)	13.0%	51.0%		38.0%	38.0%		36.0%	36.0%	36.0%	13.0%	49.0%	49.0%
Maximum Green (s)	10.0	45.0		32.0	32.0		30.0	30.0	30.0	10.0	43.0	43.0
Yellow Time (s)	3.0	3.5		3.5	3.5		3.5	3.5	3.5	3.0	3.5	3.5
All-Red Time (s)	0.0	2.5		2.5	2.5		2.5	2.5	2.5	0.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0		6.0	6.0		6.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min		Min	Min		None	None	None	None	None	None
Act Effct Green (s)	48.0	45.0		32.0	32.0		28.1	28.1	28.1	44.1	41.1	41.1
Actuated g/C Ratio	0.49	0.46		0.33	0.33		0.29	0.29	0.29	0.45	0.42	0.42
v/c Ratio	0.64	0.45		0.42	0.45		0.27	0.93	0.23	0.85	0.40	0.33
Control Delay	24.0	18.2		33.6	26.9		29.7	61.5	6.3	48.6	21.7	3.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	18.2		33.6	26.9		29.7	61.5	6.3	48.6	21.7	3.6
LOS	C	B		C	C		C	E	A	D	C	A
Approach Delay		19.9			28.0			48.2			23.8	
Approach LOS		B			C			D			C	
90th %ile Green (s)	10.0	45.0		32.0	32.0		30.0	30.0	30.0	10.0	43.0	43.0
90th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
70th %ile Green (s)	10.0	45.0		32.0	32.0		30.0	30.0	30.0	10.0	43.0	43.0
70th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
50th %ile Green (s)	10.0	45.0		32.0	32.0		30.0	30.0	30.0	10.0	43.0	43.0
50th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
30th %ile Green (s)	10.0	45.0		32.0	32.0		28.7	28.7	28.7	10.0	41.7	41.7
30th %ile Term Code	Max	Hold		Max	Max		Gap	Gap	Gap	Max	Hold	Hold
10th %ile Green (s)	9.7	44.7		32.0	32.0		22.0	22.0	22.0	10.0	35.0	35.0
10th %ile Term Code	Gap	Hold		Max	Max		Gap	Gap	Gap	Max	Hold	Hold
Stops (vph)	150	381		69	329		55	390	16	119	182	21
Fuel Used(gal)	6	13		2	10		2	13	1	4	5	2
CO Emissions (g/hr)	386	911		149	694		118	938	90	314	320	121
NOx Emissions (g/hr)	75	177		29	135		23	182	17	61	62	24
VOC Emissions (g/hr)	89	211		34	161		27	217	21	73	74	28
Dilemma Vehicles (#)	0	23		0	23		0	19	0	0	10	0
Queue Length 50th (ft)	102	138		48	121		39	284	0	86	122	0
Queue Length 95th (ft)	161	188		100	169		79	#468	39	#208	190	44
Internal Link Dist (ft)		1659			221			1283			191	
Turn Bay Length (ft)	350			125			250		300	150		
Base Capacity (vph)	422	1483		229	1058		316	537	531	262	763	774
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0

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	0	0
Reduced v/c Ratio	0.64	0.45		0.42	0.45		0.25	0.87	0.21	0.85	0.38	0.32

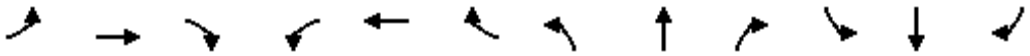
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 98.1			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 28.9		Intersection LOS: C	
Intersection Capacity Utilization 106.5%		ICU Level of Service G	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 100			
70th %ile Actuated Cycle: 100			
50th %ile Actuated Cycle: 100			
30th %ile Actuated Cycle: 98.7			
10th %ile Actuated Cycle: 91.7			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Walnut Avenue & Raritan Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	354	627	176	133	543	94	117	440	119	186	429	310
Future Volume (vph)	354	627	176	133	543	94	117	440	119	186	429	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Storage Length (ft)	350		0	125		0	250		300	150		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	50			25			100			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.978				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3219	0	1668	3234	0	1685	1756	1507	1685	1739	1492
Flt Permitted	0.249			0.337			0.470			0.143		
Satd. Flow (perm)	442	3219	0	592	3234	0	833	1756	1507	254	1739	1492
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			21				124			323
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1739			301			1363			271	
Travel Time (s)		33.9			5.9			23.2			4.6	
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 (%)	0%	1%	2%	1%	1%	7%	0%	1%	0%	0%	2%	1%
Adj. Flow (vph)	369	653	183	139	566	98	122	458	124	194	447	323
Shared Lane Traffic (%)												
Lane Group Flow (vph)	369	836	0	139	664	0	122	458	124	194	447	323
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	Right	Left	Left	Right	L NA	L NA	R NA	L NA	Left	R NA
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		30			25			30			30	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm

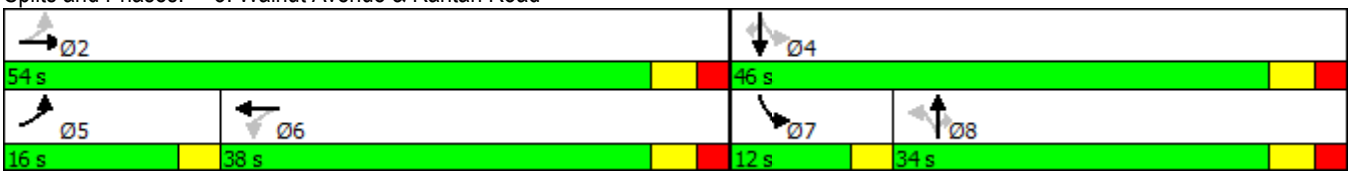


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		6	6		8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	32.0		32.0	32.0		8.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	38.0		38.0	38.0		14.0	14.0	14.0	8.0	14.0	14.0
Total Split (s)	16.0	54.0		38.0	38.0		34.0	34.0	34.0	12.0	46.0	46.0
Total Split (%)	16.0%	54.0%		38.0%	38.0%		34.0%	34.0%	34.0%	12.0%	46.0%	46.0%
Maximum Green (s)	13.0	48.0		32.0	32.0		28.0	28.0	28.0	9.0	40.0	40.0
Yellow Time (s)	3.0	3.5		3.5	3.5		3.5	3.5	3.5	3.0	3.5	3.5
All-Red Time (s)	0.0	2.5		2.5	2.5		2.5	2.5	2.5	0.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0		6.0	6.0		6.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min		Min	Min		None	None	None	None	None	None
Act Effct Green (s)	51.0	48.0		32.0	32.0		27.2	27.2	27.2	42.2	39.2	39.2
Actuated g/C Ratio	0.51	0.48		0.32	0.32		0.27	0.27	0.27	0.43	0.40	0.40
v/c Ratio	0.95	0.53		0.73	0.63		0.54	0.95	0.25	0.82	0.65	0.41
Control Delay	53.3	18.2		54.5	30.9		40.6	67.7	6.5	47.0	29.8	4.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	18.2		54.5	30.9		40.6	67.7	6.5	47.0	29.8	4.0
LOS	D	B		D	C		D	E	A	D	C	A
Approach Delay		29.0			35.0			52.2			24.6	
Approach LOS		C			C			D			C	
90th %ile Green (s)	13.0	48.0		32.0	32.0		28.0	28.0	28.0	9.0	40.0	40.0
90th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Max	Max
70th %ile Green (s)	13.0	48.0		32.0	32.0		28.0	28.0	28.0	9.0	40.0	40.0
70th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
50th %ile Green (s)	13.0	48.0		32.0	32.0		28.0	28.0	28.0	9.0	40.0	40.0
50th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
30th %ile Green (s)	13.0	48.0		32.0	32.0		28.0	28.0	28.0	9.0	40.0	40.0
30th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
10th %ile Green (s)	13.0	48.0		32.0	32.0		23.9	23.9	23.9	9.0	35.9	35.9
10th %ile Term Code	Max	Hold		Max	Max		Gap	Gap	Gap	Max	Hold	Hold
Stops (vph)	192	504		111	509		99	384	17	109	341	26
Fuel Used(gal)	10	17		4	15		3	14	1	4	8	2
CO Emissions (g/hr)	680	1178		264	1040		211	972	100	276	592	163
NOx Emissions (g/hr)	132	229		51	202		41	189	19	54	115	32
VOC Emissions (g/hr)	158	273		61	241		49	225	23	64	137	38
Dilemma Vehicles (#)	0	29		0	32		0	20	0	0	18	0
Queue Length 50th (ft)	141	177		78	183		66	284	0	78	226	0
Queue Length 95th (ft)	#315	233		#181	244		127	#475	42	#181	335	52
Internal Link Dist (ft)		1659			221			1283			191	
Turn Bay Length (ft)	350			125			250		300	150		
Base Capacity (vph)	390	1583		191	1058		235	495	514	238	701	794
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0

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	0	0
Reduced v/c Ratio	0.95	0.53		0.73	0.63		0.52	0.93	0.24	0.82	0.64	0.41

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 99.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 33.6		Intersection LOS: C	
Intersection Capacity Utilization 105.1%		ICU Level of Service G	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 100			
70th %ile Actuated Cycle: 100			
50th %ile Actuated Cycle: 100			
30th %ile Actuated Cycle: 100			
10th %ile Actuated Cycle: 95.9			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Walnut Avenue & Raritan Road



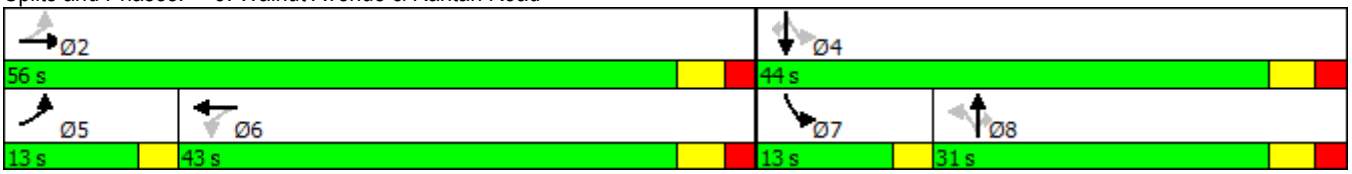
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	310	504	140	93	390	96	78	588	110	159	270	217
Future Volume (vph)	310	504	140	93	390	96	78	588	110	159	270	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Storage Length (ft)	350		0	125		0	250		300	150		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	50			25			100			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.970				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3177	0	1668	3173	0	1685	1756	1478	1668	1739	1449
Flt Permitted	0.367			0.391			0.584			0.143		
Satd. Flow (perm)	644	3177	0	687	3173	0	1036	1756	1478	251	1739	1449
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			34				117			231
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1739			301			1363			271	
Travel Time (s)		33.9			5.9			23.2			4.6	
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%	3%	1%	1%	3%	3%	0%	1%	2%	1%	2%	4%
Adj. Flow (vph)	330	536	149	99	415	102	83	626	117	169	287	231
Shared Lane Traffic (%)												
Lane Group Flow (vph)	330	685	0	99	517	0	83	626	117	169	287	231
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	Right	Left	Left	Right	L NA	L NA	R NA	L NA	Left	R NA
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		30			25			30			30	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm

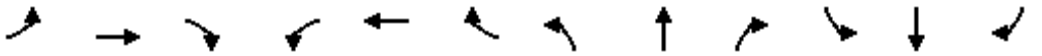
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		6	6		8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	37.0		37.0	37.0		8.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	43.0		43.0	43.0		14.0	14.0	14.0	8.0	14.0	14.0
Total Split (s)	13.0	56.0		43.0	43.0		31.0	31.0	31.0	13.0	44.0	44.0
Total Split (%)	13.0%	56.0%		43.0%	43.0%		31.0%	31.0%	31.0%	13.0%	44.0%	44.0%
Maximum Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
Yellow Time (s)	3.0	3.5		3.5	3.5		3.5	3.5	3.5	3.0	3.5	3.5
All-Red Time (s)	0.0	2.5		2.5	2.5		2.5	2.5	2.5	0.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0		6.0	6.0		6.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min		Min	Min		None	None	None	None	None	None
Act Effct Green (s)	53.0	50.0		37.0	37.0		25.0	25.0	25.0	40.7	37.7	37.7
Actuated g/C Ratio	0.53	0.50		0.37	0.37		0.25	0.25	0.25	0.41	0.38	0.38
v/c Ratio	0.74	0.42		0.39	0.43		0.32	1.42	0.26	0.71	0.44	0.33
Control Delay	26.6	15.4		28.9	23.2		34.7	233.6	7.3	36.9	25.7	4.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.6	15.4		28.9	23.2		34.7	233.6	7.3	36.9	25.7	4.3
LOS	C	B		C	C		C	F	A	D	C	A
Approach Delay		19.1			24.1			181.5			21.3	
Approach LOS		B			C			F			C	
90th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
90th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
70th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
70th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
50th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
50th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
30th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
30th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
10th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	8.4	36.4	36.4
10th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Gap	Hold	Hold
Stops (vph)	171	361		69	329		63	450	17	99	197	22
Fuel Used(gal)	7	13		2	10		2	38	1	3	4	1
CO Emissions (g/hr)	479	897		146	709		132	2644	94	199	314	93
NOx Emissions (g/hr)	93	174		28	138		26	514	18	39	61	18
VOC Emissions (g/hr)	111	208		34	164		31	613	22	46	73	22
Dilemma Vehicles (#)	0	24		0	24		0	21	0	0	10	0
Queue Length 50th (ft)	117	128		46	119		43	~542	0	69	134	0
Queue Length 95th (ft)	#192	173		95	166		88	#756	43	#140	208	47
Internal Link Dist (ft)		1659			221			1283			191	
Turn Bay Length (ft)	350			125			250		300	150		
Base Capacity (vph)	444	1619		255	1199		260	440	458	244	662	695
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0

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	0	0
Reduced v/c Ratio	0.74	0.42		0.39	0.43		0.32	1.42	0.26	0.69	0.43	0.33

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 99.7			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.42			
Intersection Signal Delay: 63.2		Intersection LOS: E	
Intersection Capacity Utilization 119.8%		ICU Level of Service H	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 100			
70th %ile Actuated Cycle: 100			
50th %ile Actuated Cycle: 100			
30th %ile Actuated Cycle: 100			
10th %ile Actuated Cycle: 98.4			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Walnut Avenue & Raritan Road





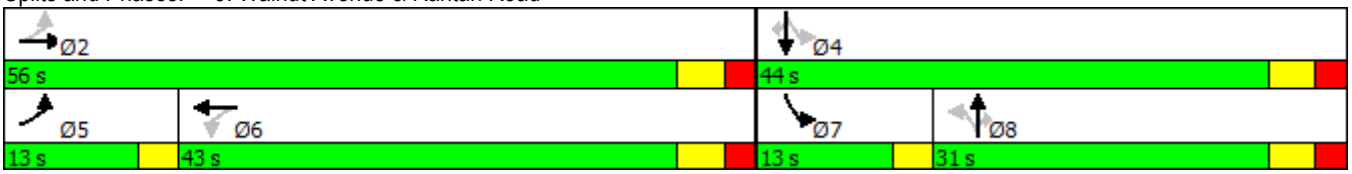
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	290	646	181	137	559	96	121	456	123	194	527	373
Future Volume (vph)	290	646	181	137	559	96	121	456	123	194	527	373
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Storage Length (ft)	350		0	125		0	250		300	150		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	50			25			100			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.978				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3219	0	1668	3234	0	1685	1756	1507	1685	1739	1492
Flt Permitted	0.268			0.329			0.308			0.143		
Satd. Flow (perm)	475	3219	0	578	3234	0	546	1756	1507	254	1739	1492
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			22				128			340
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1739			301			1363			271	
Travel Time (s)		33.9			5.9			23.2			4.6	
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 (%)	0%	1%	2%	1%	1%	7%	0%	1%	0%	0%	2%	1%
Adj. Flow (vph)	302	673	189	143	582	100	126	475	128	202	549	389
Shared Lane Traffic (%)												
Lane Group Flow (vph)	302	862	0	143	682	0	126	475	128	202	549	389
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	Right	Left	Left	Right	L NA	L NA	R NA	L NA	Left	R NA
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		30			25			30			30	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm

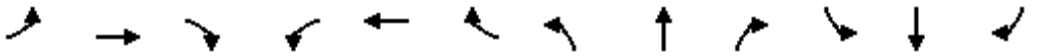
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		6	6		8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	37.0		37.0	37.0		8.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	43.0		43.0	43.0		14.0	14.0	14.0	8.0	14.0	14.0
Total Split (s)	13.0	56.0		43.0	43.0		31.0	31.0	31.0	13.0	44.0	44.0
Total Split (%)	13.0%	56.0%		43.0%	43.0%		31.0%	31.0%	31.0%	13.0%	44.0%	44.0%
Maximum Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
Yellow Time (s)	3.0	3.5		3.5	3.5		3.5	3.5	3.5	3.0	3.5	3.5
All-Red Time (s)	0.0	2.5		2.5	2.5		2.5	2.5	2.5	0.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0		6.0	6.0		6.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min		Min	Min		None	None	None	None	None	None
Act Effct Green (s)	53.0	50.0		37.0	37.0		25.0	25.0	25.0	41.0	38.0	38.0
Actuated g/C Ratio	0.53	0.50		0.37	0.37		0.25	0.25	0.25	0.41	0.38	0.38
v/c Ratio	0.81	0.53		0.67	0.56		0.93	1.08	0.27	0.82	0.83	0.50
Control Delay	33.7	17.3		44.5	26.4		99.5	103.9	7.1	47.5	40.9	6.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	17.3		44.5	26.4		99.5	103.9	7.1	47.5	40.9	6.4
LOS	C	B		D	C		F	F	A	D	D	A
Approach Delay		21.6			29.5			86.1			30.3	
Approach LOS		C			C			F			C	
90th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
90th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Max	Max
70th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
70th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Max	Max
50th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
50th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
30th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
30th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
10th %ile Green (s)	10.0	50.0		37.0	37.0		25.0	25.0	25.0	10.0	38.0	38.0
10th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
Stops (vph)	151	507		114	490		97	382	18	118	452	54
Fuel Used(gal)	7	17		4	14		5	18	1	4	11	3
CO Emissions (g/hr)	473	1197		253	1010		316	1231	104	270	774	182
NOx Emissions (g/hr)	92	233		49	196		61	240	20	53	151	35
VOC Emissions (g/hr)	110	277		59	234		73	285	24	63	179	42
Dilemma Vehicles (#)	0	30		0	33		0	19	0	0	22	0
Queue Length 50th (ft)	105	176		75	173		79	~341	0	85	312	20
Queue Length 95th (ft)	#207	232		#171	232		#193	#536	45	#193	#496	90
Internal Link Dist (ft)		1659			221			1283			191	
Turn Bay Length (ft)	350			125			250		300	150		
Base Capacity (vph)	372	1635		213	1210		136	439	472	247	660	777
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0

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	0	0
Reduced v/c Ratio	0.81	0.53		0.67	0.56		0.93	1.08	0.27	0.82	0.83	0.50

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 38.1		Intersection LOS: D	
Intersection Capacity Utilization 116.1%		ICU Level of Service H	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 100			
70th %ile Actuated Cycle: 100			
50th %ile Actuated Cycle: 100			
30th %ile Actuated Cycle: 100			
10th %ile Actuated Cycle: 100			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Walnut Avenue & Raritan Road





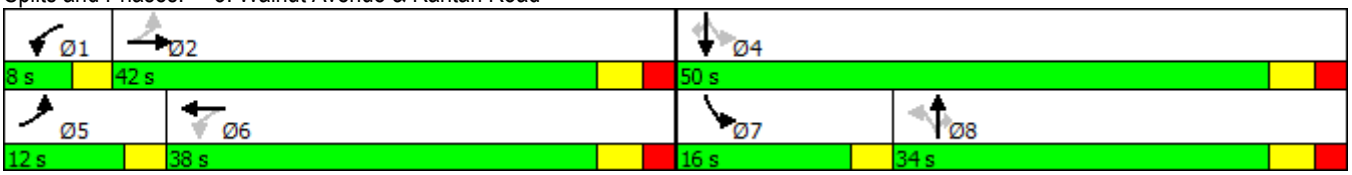
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	504	140	93	390	67	78	407	110	274	293	263
Future Volume (vph)	255	504	140	93	390	67	78	407	110	274	293	263
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Storage Length (ft)	350		0	125		0	250		300	150		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	50			25			100			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.978				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3177	0	1668	3199	0	1685	1756	1478	1668	1739	1449
Flt Permitted	0.369			0.341			0.571			0.161		
Satd. Flow (perm)	648	3177	0	599	3199	0	1013	1756	1478	283	1739	1449
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			20				131			280
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1739			301			1363			271	
Travel Time (s)		33.9			5.9			23.2			4.6	
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%	3%	1%	1%	3%	3%	0%	1%	2%	1%	2%	4%
Adj. Flow (vph)	271	536	149	99	415	71	83	433	117	291	312	280
Shared Lane Traffic (%)												
Lane Group Flow (vph)	271	685	0	99	486	0	83	433	117	291	312	280
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	Right	Left	Left	Right	L NA	L NA	R NA	L NA	Left	R NA
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		30			25			30			30	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm

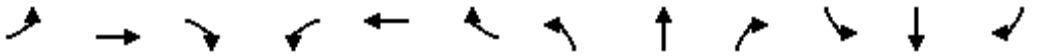
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	32.0		5.0	32.0		8.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	38.0		8.0	38.0		14.0	14.0	14.0	8.0	14.0	14.0
Total Split (s)	12.0	42.0		8.0	38.0		34.0	34.0	34.0	16.0	50.0	50.0
Total Split (%)	12.0%	42.0%		8.0%	38.0%		34.0%	34.0%	34.0%	16.0%	50.0%	50.0%
Maximum Green (s)	9.0	36.0		5.0	32.0		28.0	28.0	28.0	13.0	44.0	44.0
Yellow Time (s)	3.0	3.5		3.0	3.5		3.5	3.5	3.5	3.0	3.5	3.5
All-Red Time (s)	0.0	2.5		0.0	2.5		2.5	2.5	2.5	0.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0		3.0	6.0		6.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	47.1	37.7		40.0	32.0		26.2	26.2	26.2	45.2	42.2	42.2
Actuated g/C Ratio	0.48	0.38		0.41	0.33		0.27	0.27	0.27	0.46	0.43	0.43
v/c Ratio	0.67	0.55		0.33	0.46		0.31	0.93	0.24	0.93	0.42	0.36
Control Delay	26.8	25.1		18.8	27.2		32.2	62.7	5.3	58.0	21.5	3.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	25.1		18.8	27.2		32.2	62.7	5.3	58.0	21.5	3.5
LOS	C	C		B	C		C	E	A	E	C	A
Approach Delay		25.6			25.8			48.1			27.8	
Approach LOS		C			C			D			C	
90th %ile Green (s)	9.0	36.0		5.0	32.0		28.0	28.0	28.0	13.0	44.0	44.0
90th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
70th %ile Green (s)	9.0	36.0		5.0	32.0		28.0	28.0	28.0	13.0	44.0	44.0
70th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
50th %ile Green (s)	9.0	36.0		5.0	32.0		28.0	28.0	28.0	13.0	44.0	44.0
50th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
30th %ile Green (s)	9.0	36.0		5.0	32.0		26.8	26.8	26.8	13.0	42.8	42.8
30th %ile Term Code	Max	Hold		Max	Max		Gap	Gap	Gap	Max	Hold	Hold
10th %ile Green (s)	9.0	44.0		0.0	32.0		20.6	20.6	20.6	13.0	36.6	36.6
10th %ile Term Code	Max	Hold		Skip	Max		Gap	Gap	Gap	Max	Hold	Hold
Stops (vph)	154	465		55	337		60	361	12	159	195	22
Fuel Used(gal)	6	15		2	10		2	13	1	6	5	2
CO Emissions (g/hr)	402	1040		126	707		127	874	88	448	344	136
NOx Emissions (g/hr)	78	202		24	138		25	170	17	87	67	27
VOC Emissions (g/hr)	93	241		29	164		30	203	20	104	80	32
Dilemma Vehicles (#)	0	24		0	23		0	18	0	0	11	0
Queue Length 50th (ft)	106	173		34	123		42	264	0	117	132	0
Queue Length 95th (ft)	166	232		65	172		85	#438	34	#278	203	46
Internal Link Dist (ft)		1659			221			1283			191	
Turn Bay Length (ft)	350			125			250		300	150		
Base Capacity (vph)	403	1244		298	1056		288	500	515	313	779	803
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0

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	0	0
Reduced v/c Ratio	0.67	0.55		0.33	0.46		0.29	0.87	0.23	0.93	0.40	0.35

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 98.3			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 30.9		Intersection LOS: C	
Intersection Capacity Utilization 94.1%		ICU Level of Service F	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 100			
70th %ile Actuated Cycle: 100			
50th %ile Actuated Cycle: 100			
30th %ile Actuated Cycle: 98.8			
10th %ile Actuated Cycle: 92.6			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Walnut Avenue & Raritan Road





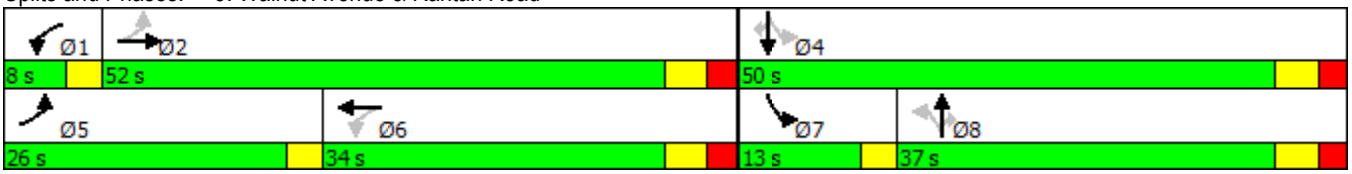
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	437	646	181	137	559	100	121	464	123	206	412	306
Future Volume (vph)	437	646	181	137	559	100	121	464	123	206	412	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Storage Length (ft)	350		0	125		0	250		300	150		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	50			25			100			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.977				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3219	0	1668	3230	0	1685	1756	1507	1685	1739	1492
Flt Permitted	0.169			0.329			0.485			0.118		
Satd. Flow (perm)	300	3219	0	578	3230	0	860	1756	1507	209	1739	1492
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			18				128			319
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1739			301			1363			271	
Travel Time (s)		33.9			5.9			23.2			4.6	
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 (%)	0%	1%	2%	1%	1%	7%	0%	1%	0%	0%	2%	1%
Adj. Flow (vph)	455	673	189	143	582	104	126	483	128	215	429	319
Shared Lane Traffic (%)												
Lane Group Flow (vph)	455	862	0	143	686	0	126	483	128	215	429	319
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	Right	Left	Left	Right	L NA	L NA	R NA	L NA	Left	R NA
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		30			25			30			30	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	28.0		5.0	28.0		8.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	34.0		8.0	34.0		14.0	14.0	14.0	8.0	14.0	14.0
Total Split (s)	26.0	52.0		8.0	34.0		37.0	37.0	37.0	13.0	50.0	50.0
Total Split (%)	23.6%	47.3%		7.3%	30.9%		33.6%	33.6%	33.6%	11.8%	45.5%	45.5%
Maximum Green (s)	23.0	46.0		5.0	28.0		31.0	31.0	31.0	10.0	44.0	44.0
Yellow Time (s)	3.0	3.5		3.0	3.5		3.5	3.5	3.5	3.0	3.5	3.5
All-Red Time (s)	0.0	2.5		0.0	2.5		2.5	2.5	2.5	0.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0		3.0	6.0		6.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	57.0	46.0		36.0	28.0		31.0	31.0	31.0	47.0	44.0	44.0
Actuated g/C Ratio	0.52	0.42		0.33	0.25		0.28	0.28	0.28	0.43	0.40	0.40
v/c Ratio	1.02	0.63		0.60	0.82		0.52	0.98	0.25	0.96	0.62	0.40
Control Delay	76.0	26.5		31.3	47.0		42.4	75.5	6.6	78.1	31.0	4.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	26.5		31.3	47.0		42.4	75.5	6.6	78.1	31.0	4.1
LOS	E	C		C	D		D	E	A	E	C	A
Approach Delay		43.6			44.3			57.8			32.6	
Approach LOS		D			D			E			C	
90th %ile Green (s)	23.0	46.0		5.0	28.0		31.0	31.0	31.0	10.0	44.0	44.0
90th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
70th %ile Green (s)	23.0	46.0		5.0	28.0		31.0	31.0	31.0	10.0	44.0	44.0
70th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
50th %ile Green (s)	23.0	46.0		5.0	28.0		31.0	31.0	31.0	10.0	44.0	44.0
50th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
30th %ile Green (s)	23.0	46.0		5.0	28.0		31.0	31.0	31.0	10.0	44.0	44.0
30th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
10th %ile Green (s)	23.0	46.0		5.0	28.0		31.0	31.0	31.0	10.0	44.0	44.0
10th %ile Term Code	Max	Hold		Max	Max		Max	Max	Max	Max	Hold	Hold
Stops (vph)	286	607		106	585		101	403	17	118	322	25
Fuel Used(gal)	14	19		3	18		3	15	1	6	8	2
CO Emissions (g/hr)	1006	1358		223	1258		221	1075	103	395	572	161
NOx Emissions (g/hr)	196	264		43	245		43	209	20	77	111	31
VOC Emissions (g/hr)	233	315		52	291		51	249	24	91	133	37
Dilemma Vehicles (#)	0	27		0	30		0	19	0	0	14	0
Queue Length 50th (ft)	~272	236		51	235		75	338	0	99	237	0
Queue Length 95th (ft)	#474	304		87	#309		140	#550	45	#253	346	54
Internal Link Dist (ft)		1659			221			1283			191	
Turn Bay Length (ft)	350			125			250		300	150		
Base Capacity (vph)	445	1369		238	835		242	494	516	223	695	788
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0

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	0	0
Reduced v/c Ratio	1.02	0.63		0.60	0.82		0.52	0.98	0.25	0.96	0.62	0.40

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 43.7		Intersection LOS: D	
Intersection Capacity Utilization 100.0%		ICU Level of Service G	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 110			
70th %ile Actuated Cycle: 110			
50th %ile Actuated Cycle: 110			
30th %ile Actuated Cycle: 110			
10th %ile Actuated Cycle: 110			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Walnut Avenue & Raritan Road



Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	20	93	705	605	53
Future Vol, veh/h	13	20	93	705	605	53
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	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	15	0	0	1	3	0
Mvmt Flow	14	22	102	775	665	58

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1673	694	723	0	-	0
Stage 1	694	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Critical Hdwy	6.55	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.55	-	-	-	-	-
Critical Hdwy Stg 2	5.55	-	-	-	-	-
Follow-up Hdwy	3.635	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	98	446	889	-	-	-
Stage 1	473	-	-	-	-	-
Stage 2	345	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	78	446	889	-	-	-
Mov Cap-2 Maneuver	78	-	-	-	-	-
Stage 1	473	-	-	-	-	-
Stage 2	276	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.3	1.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	889	-	78	446	-	-
HCM Lane V/C Ratio	0.115	-	0.183	0.049	-	-
HCM Control Delay (s)	9.6	0	61.2	13.5	-	-
HCM Lane LOS	A	A	F	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.6	0.2	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	138	17	798	819	13
Future Vol, veh/h	49	138	17	798	819	13
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	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	1	1	0
Mvmt Flow	53	150	18	867	890	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1801	897	904	0	-	0
Stage 1	897	-	-	-	-	-
Stage 2	904	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.16	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.254	-	-	-
Pot Cap-1 Maneuver	89	341	736	-	-	-
Stage 1	401	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	85	341	736	-	-	-
Mov Cap-2 Maneuver	85	-	-	-	-	-
Stage 1	401	-	-	-	-	-
Stage 2	379	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	43.9	0.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	736	-	85	341	-	-
HCM Lane V/C Ratio	0.025	-	0.627	0.44	-	-
HCM Control Delay (s)	10	0	101.2	23.6	-	-
HCM Lane LOS	B	A	F	C	-	-
HCM 95th %tile Q(veh)	0.1	-	2.9	2.2	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	20	93	726	623	53
Future Vol, veh/h	13	20	93	726	623	53
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	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	15	0	0	1	3	0
Mvmt Flow	14	22	102	798	685	58

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1716	714	743	0	-	0
Stage 1	714	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Critical Hdwy	6.55	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.55	-	-	-	-	-
Critical Hdwy Stg 2	5.55	-	-	-	-	-
Follow-up Hdwy	3.635	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	92	435	873	-	-	-
Stage 1	462	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	73	435	873	-	-	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	462	-	-	-	-	-
Stage 2	265	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.3	1.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	873	-	73	435	-	-
HCM Lane V/C Ratio	0.117	-	0.196	0.051	-	-
HCM Control Delay (s)	9.7	0	65.9	13.7	-	-
HCM Lane LOS	A	A	F	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.7	0.2	-	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	138	17	822	843	13
Future Vol, veh/h	49	138	17	822	843	13
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	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	1	1	0
Mvmt Flow	53	150	18	893	916	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1853	923	930	0	-	0
Stage 1	923	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.16	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.254	-	-	-
Pot Cap-1 Maneuver	82	330	719	-	-	-
Stage 1	390	-	-	-	-	-
Stage 2	387	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	78	330	719	-	-	-
Mov Cap-2 Maneuver	78	-	-	-	-	-
Stage 1	390	-	-	-	-	-
Stage 2	368	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	49.3	0.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	719	-	78	330	-	-
HCM Lane V/C Ratio	0.026	-	0.683	0.455	-	-
HCM Control Delay (s)	10.1	0	118.6	24.7	-	-
HCM Lane LOS	B	A	F	C	-	-
HCM 95th %tile Q(veh)	0.1	-	3.2	2.3	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	31	231	755	608	11
Future Vol, veh/h	2	31	231	755	608	11
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	40	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	7	2	2	3	0
Mvmt Flow	2	35	263	858	691	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2080	697	703	0	-	0
Stage 1	697	-	-	-	-	-
Stage 2	1383	-	-	-	-	-
Critical Hdwy	6.4	6.27	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.363	2.218	-	-	-
Pot Cap-1 Maneuver	59	433	895	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	235	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	26	433	895	-	-	-
Mov Cap-2 Maneuver	26	-	-	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	103	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.6	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	895	-	26	433	-	-
HCM Lane V/C Ratio	0.293	-	0.087	0.081	-	-
HCM Control Delay (s)	10.7	0	156.3	14	-	-
HCM Lane LOS	B	A	F	B	-	-
HCM 95th %tile Q(veh)	1.2	-	0.3	0.3	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	151	44	809	921	2
Future Vol, veh/h	4	151	44	809	921	2
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	40	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	4	9	1	1	0
Mvmt Flow	4	159	46	852	969	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1915	971	972	0	-	0
Stage 1	971	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Critical Hdwy	6.4	6.24	4.19	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	2.281	-	-	-
Pot Cap-1 Maneuver	75	304	682	-	-	-
Stage 1	370	-	-	-	-	-
Stage 2	381	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	65	304	682	-	-	-
Mov Cap-2 Maneuver	65	-	-	-	-	-
Stage 1	370	-	-	-	-	-
Stage 2	332	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	30	0.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	682	-	65	304	-	-
HCM Lane V/C Ratio	0.068	-	0.065	0.523	-	-
HCM Control Delay (s)	10.7	0	64.2	29.1	-	-
HCM Lane LOS	B	A	F	D	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	2.8	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	31	231	776	626	11
Future Vol, veh/h	2	31	231	776	626	11
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	40	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	7	2	2	3	0
Mvmt Flow	2	35	263	882	711	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2125	718	724	0	-	0
Stage 1	718	-	-	-	-	-
Stage 2	1407	-	-	-	-	-
Critical Hdwy	6.4	6.27	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.363	2.218	-	-	-
Pot Cap-1 Maneuver	56	421	879	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	229	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	23	421	879	-	-	-
Mov Cap-2 Maneuver	23	-	-	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	95	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.2	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	879	-	23	421	-	-
HCM Lane V/C Ratio	0.299	-	0.099	0.084	-	-
HCM Control Delay (s)	10.8	0	178	14.3	-	-
HCM Lane LOS	B	A	F	B	-	-
HCM 95th %tile Q(veh)	1.3	-	0.3	0.3	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	151	44	833	946	2
Future Vol, veh/h	4	151	44	833	946	2
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	40	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	4	9	1	1	0
Mvmt Flow	4	159	46	877	996	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1966	997	998	0	-	0
Stage 1	997	-	-	-	-	-
Stage 2	969	-	-	-	-	-
Critical Hdwy	6.4	6.24	4.19	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	2.281	-	-	-
Pot Cap-1 Maneuver	70	294	667	-	-	-
Stage 1	360	-	-	-	-	-
Stage 2	371	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	61	294	667	-	-	-
Mov Cap-2 Maneuver	61	-	-	-	-	-
Stage 1	360	-	-	-	-	-
Stage 2	321	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31.8	0.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	667	-	61	294	-	-
HCM Lane V/C Ratio	0.069	-	0.069	0.541	-	-
HCM Control Delay (s)	10.8	0	68.3	30.8	-	-
HCM Lane LOS	B	A	F	D	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	3	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	140	731	4	75	682
Future Vol, veh/h	2	140	731	4	75	682
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	1	2	0	1	3
Mvmt Flow	2	161	840	5	86	784

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1799	843	0	0	845	0
Stage 1	843	-	-	-	-	-
Stage 2	956	-	-	-	-	-
Critical Hdwy	6.4	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	89	365	-	-	796	-
Stage 1	426	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	72	365	-	-	796	-
Mov Cap-2 Maneuver	72	-	-	-	-	-
Stage 1	426	-	-	-	-	-
Stage 2	304	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.5	0	1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	345	796	-
HCM Lane V/C Ratio	-	-	0.473	0.108	-
HCM Control Delay (s)	-	-	24.5	10.1	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	2.4	0.4	-

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	73	832	7	96	820
Future Vol, veh/h	0	73	832	7	96	820
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	0	1	1
Mvmt Flow	0	80	914	8	105	901

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2030	918	0	0	922	0
Stage 1	918	-	-	-	-	-
Stage 2	1112	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.11	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.209	-
Pot Cap-1 Maneuver	64	332	-	-	745	-
Stage 1	392	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	46	332	-	-	745	-
Mov Cap-2 Maneuver	46	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	228	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.3	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	332	745	-
HCM Lane V/C Ratio	-	-	0.242	0.142	-
HCM Control Delay (s)	-	-	19.3	10.6	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0.5	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	19	2	0	140	25	782	4	75	632	19
Future Vol, veh/h	0	0	19	2	0	140	25	782	4	75	632	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	1	0	2	0	1	3	0
Mvmt Flow	0	0	22	2	0	161	29	899	5	86	726	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1949	1871	737	1880	1880	901	748	0	0	903	0	0
Stage 1	910	910	-	959	959	-	-	-	-	-	-	-
Stage 2	1039	961	-	921	921	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.21	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.309	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	49	73	422	55	72	338	870	-	-	757	-	-
Stage 1	332	356	-	311	338	-	-	-	-	-	-	-
Stage 2	281	337	-	327	352	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	21	55	422	42	54	338	870	-	-	757	-	-
Mov Cap-2 Maneuver	21	55	-	42	54	-	-	-	-	-	-	-
Stage 1	310	287	-	290	315	-	-	-	-	-	-	-
Stage 2	137	314	-	250	283	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14	29.3	0.3	1.1
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	870	-	-	422	307	757	-	-
HCM Lane V/C Ratio	0.033	-	-	0.052	0.532	0.114	-	-
HCM Control Delay (s)	9.3	0	-	14	29.3	10.4	0	-
HCM Lane LOS	A	A	-	B	D	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	2.9	0.4	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	86	0	0	73	5	823	7	96	860	7
Future Vol, veh/h	0	0	86	0	0	73	5	823	7	96	860	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	1	1	0
Mvmt Flow	0	0	95	0	0	80	5	904	8	105	945	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2119	2083	949	2126	2083	908	953	0	0	912	0	0
Stage 1	1160	1160	-	919	919	-	-	-	-	-	-	-
Stage 2	959	923	-	1207	1164	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	37	54	319	37	54	336	729	-	-	751	-	-
Stage 1	240	272	-	328	353	-	-	-	-	-	-	-
Stage 2	311	351	-	226	271	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	21	37	319	20	37	336	729	-	-	751	-	-
Mov Cap-2 Maneuver	21	37	-	20	37	-	-	-	-	-	-	-
Stage 1	237	191	-	323	348	-	-	-	-	-	-	-
Stage 2	233	346	-	112	190	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21	19	0.1	1.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	729	-	-	319	336	751	-	-
HCM Lane V/C Ratio	0.008	-	-	0.296	0.239	0.14	-	-
HCM Control Delay (s)	10	0	-	21	19	10.6	0	-
HCM Lane LOS	A	A	-	C	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	1.2	0.9	0.5	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	144	753	4	78	701
Future Vol, veh/h	2	144	753	4	78	701
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	1	2	0	1	3
Mvmt Flow	2	166	866	5	90	806

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1853	868	0	0	870	0
Stage 1	868	-	-	-	-	-
Stage 2	985	-	-	-	-	-
Critical Hdwy	6.4	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	82	353	-	-	779	-
Stage 1	414	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	65	353	-	-	779	-
Mov Cap-2 Maneuver	65	-	-	-	-	-
Stage 1	414	-	-	-	-	-
Stage 2	289	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.3	0	1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	333	779	-
HCM Lane V/C Ratio	-	-	0.504	0.115	-
HCM Control Delay (s)	-	-	26.3	10.2	0
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	2.7	0.4	-

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	75	856	8	99	845
Future Vol, veh/h	0	75	856	8	99	845
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	0	1	1
Mvmt Flow	0	82	941	9	109	929

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2091	945	0	0	949	0
Stage 1	945	-	-	-	-	-
Stage 2	1146	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.11	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.209	-
Pot Cap-1 Maneuver	58	320	-	-	728	-
Stage 1	381	-	-	-	-	-
Stage 2	306	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	40	320	-	-	728	-
Mov Cap-2 Maneuver	40	-	-	-	-	-
Stage 1	381	-	-	-	-	-
Stage 2	211	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.1	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	320	728	-
HCM Lane V/C Ratio	-	-	0.258	0.149	-
HCM Control Delay (s)	-	-	20.1	10.8	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	1	0.5	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	25	2	0	144	6	853	4	78	663	3
Future Vol, veh/h	0	0	25	2	0	144	6	853	4	78	663	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	1	0	2	0	1	3	0
Mvmt Flow	0	0	29	2	0	166	7	980	5	90	762	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2022	1942	764	1954	1942	983	766	0	0	985	0	0
Stage 1	943	943	-	997	997	-	-	-	-	-	-	-
Stage 2	1079	999	-	957	945	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.21	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.309	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	44	66	407	49	66	303	856	-	-	705	-	-
Stage 1	318	344	-	297	325	-	-	-	-	-	-	-
Stage 2	267	324	-	312	343	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	16	50	407	37	50	303	856	-	-	705	-	-
Mov Cap-2 Maneuver	16	50	-	37	50	-	-	-	-	-	-	-
Stage 1	312	268	-	292	319	-	-	-	-	-	-	-
Stage 2	119	318	-	226	267	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.5	36.4	0.1	1.1
HCM LOS	B	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	856	-	-	407	276	705	-	-
HCM Lane V/C Ratio	0.008	-	-	0.071	0.608	0.127	-	-
HCM Control Delay (s)	9.2	0	-	14.5	36.4	10.8	0	-
HCM Lane LOS	A	A	-	B	E	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	3.7	0.4	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	12	0	0	75	23	861	8	99	928	10
Future Vol, veh/h	0	0	12	0	0	75	23	861	8	99	928	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	1	1	0
Mvmt Flow	0	0	13	0	0	82	25	946	9	109	1020	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2285	2248	1025	2250	2249	951	1031	0	0	955	0	0
Stage 1	1243	1243	-	1001	1001	-	-	-	-	-	-	-
Stage 2	1042	1005	-	1249	1248	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	28	42	288	30	42	318	682	-	-	724	-	-
Stage 1	216	249	-	295	323	-	-	-	-	-	-	-
Stage 2	280	322	-	214	247	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	14	25	288	20	25	318	682	-	-	724	-	-
Mov Cap-2 Maneuver	14	25	-	20	25	-	-	-	-	-	-	-
Stage 1	199	161	-	272	298	-	-	-	-	-	-	-
Stage 2	191	297	-	132	160	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.1	20.2	0.3	1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	682	-	-	288	318	724	-	-
HCM Lane V/C Ratio	0.037	-	-	0.046	0.259	0.15	-	-
HCM Control Delay (s)	10.5	0	-	18.1	20.2	10.8	0	-
HCM Lane LOS	B	A	-	C	C	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1	0.5	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	25	773	5	8	617
Future Vol, veh/h	5	25	773	5	8	617
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	5	27	840	5	9	671

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1531	843	0	0	846	0
Stage 1	843	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	130	367	-	-	800	-
Stage 1	426	-	-	-	-	-
Stage 2	503	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	128	367	-	-	800	-
Mov Cap-2 Maneuver	128	-	-	-	-	-
Stage 1	426	-	-	-	-	-
Stage 2	494	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.5	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	280	800	-
HCM Lane V/C Ratio	-	-	0.116	0.011	-
HCM Control Delay (s)	-	-	19.5	9.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	6	809	5	22	936
Future Vol, veh/h	5	6	809	5	22	936
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	5	7	879	5	24	1017

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1947	882	0	0	885	0
Stage 1	882	-	-	-	-	-
Stage 2	1065	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	72	348	-	-	773	-
Stage 1	408	-	-	-	-	-
Stage 2	334	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	67	348	-	-	773	-
Mov Cap-2 Maneuver	67	-	-	-	-	-
Stage 1	408	-	-	-	-	-
Stage 2	310	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.3	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	120	773	-
HCM Lane V/C Ratio	-	-	0.1	0.031	-
HCM Control Delay (s)	-	-	38.3	9.8	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	11.9

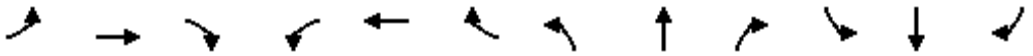
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	0	82	5	0	25	91	703	5	8	613	6
Future Vol, veh/h	66	0	82	5	0	25	91	703	5	8	613	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	3	0
Mvmt Flow	72	0	89	5	0	27	99	764	5	9	666	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1665	1654	670	1652	1655	767	673	0	0	770	0	0
Stage 1	687	687	-	965	965	-	-	-	-	-	-	-
Stage 2	978	967	-	687	690	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	78	99	460	79	99	405	927	-	-	854	-	-
Stage 1	440	450	-	309	336	-	-	-	-	-	-	-
Stage 2	304	335	-	440	449	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 66	87	460	58	87	405	927	-	-	854	-	-
Mov Cap-2 Maneuver	~ 66	87	-	58	87	-	-	-	-	-	-	-
Stage 1	393	442	-	276	300	-	-	-	-	-	-	-
Stage 2	253	299	-	349	441	-	-	-	-	-	-	-

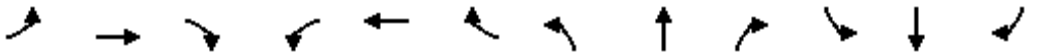
Approach	EB	WB	NB	SB
HCM Control Delay, s	116.8	26.1	1.1	0.1
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	927	-	-	66	460	203	854	-	-
HCM Lane V/C Ratio	0.107	-	-	1.087	0.194	0.161	0.01	-	-
HCM Control Delay (s)	9.3	-	-	243.6	14.7	26.1	9.3	0	-
HCM Lane LOS	A	-	-	F	B	D	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	5.6	0.7	0.6	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	0	82	5	0	25	91	703	5	8	613	6
Future Volume (vph)	66	0	82	5	0	25	91	703	5	8	613	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	100		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.886			0.999			0.999	
Flt Protected		0.950			0.992		0.950				0.999	
Satd. Flow (prot)	0	1805	1615	0	1670	0	1805	1879	0	0	1842	0
Flt Permitted		0.736			0.946		0.415				0.991	
Satd. Flow (perm)	0	1398	1615	0	1592	0	788	1879	0	0	1827	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			89		27			1			1	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		307			209			435			205	
Travel Time (s)		8.4			5.7			8.5			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	3%	0%
Adj. Flow (vph)	72	0	89	5	0	27	99	764	5	9	666	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	72	89	0	32	0	99	769	0	0	682	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

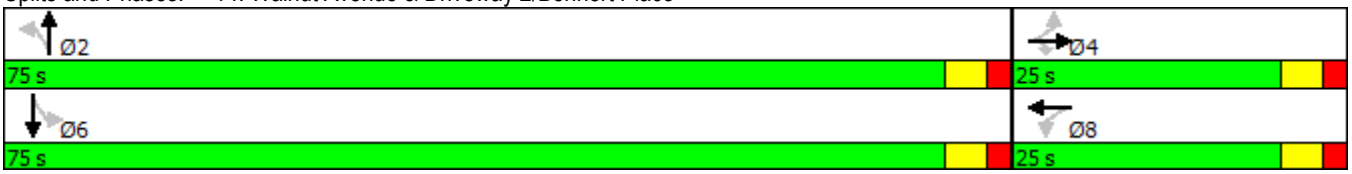


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		30.0	30.0		30.0	30.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		35.0	35.0		35.0	35.0	
Total Split (s)	25.0	25.0	25.0	25.0	25.0		75.0	75.0		75.0	75.0	
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	
Maximum Green (s)	20.0	20.0	20.0	20.0	20.0		70.0	70.0		70.0	70.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	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		5.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Act Effct Green (s)		10.1	10.1		10.1		35.3	35.3			35.3	
Actuated g/C Ratio		0.20	0.20		0.20		0.69	0.69			0.69	
v/c Ratio		0.26	0.23		0.10		0.18	0.60			0.54	
Control Delay		21.0	7.1		10.2		5.5	8.5			7.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	
Total Delay		21.0	7.1		10.2		5.5	8.5			7.8	
LOS		C	A		B		A	A			A	
Approach Delay		13.3			10.2			8.2			7.8	
Approach LOS		B			B			A			A	
90th %ile Green (s)	10.5	10.5	10.5	10.5	10.5		35.8	35.8		35.8	35.8	
90th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Gap	Gap		Hold	Hold	
70th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		30.0	30.0		30.0	30.0	
70th %ile Term Code	Min	Min	Min	Hold	Hold		Min	Min		Min	Min	
50th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		30.0	30.0		30.0	30.0	
50th %ile Term Code	Min	Min	Min	Hold	Hold		Min	Min		Min	Min	
30th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		30.0	30.0		30.0	30.0	
30th %ile Term Code	Min	Min	Min	Hold	Hold		Min	Min		Min	Min	
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		45.0	45.0		45.0	45.0	
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Dwell	Dwell		Dwell	Dwell	
Stops (vph)		56	20		15		38	389			323	
Fuel Used(gal)		1	0		0		1	6			6	
CO Emissions (g/hr)		47	29		12		47	445			410	
NOx Emissions (g/hr)		9	6		2		9	87			80	
VOC Emissions (g/hr)		11	7		3		11	103			95	
Dilemma Vehicles (#)		0	0		0		0	43			38	
Queue Length 50th (ft)		18	0		1		11	127			106	
Queue Length 95th (ft)		52	30		20		28	226			189	
Internal Link Dist (ft)		227			129			355			125	
Turn Bay Length (ft)			100				100					
Base Capacity (vph)		546	685		639		788	1879			1827	
Starvation Cap Reductn		0	0		0		0	0			0	
Spillback Cap Reductn		0	0		0		0	0			0	
Storage Cap Reductn		0	0		0		0	0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.13	0.13		0.05		0.13	0.41			0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 51.3			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 82.1%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 56.3			
70th %ile Actuated Cycle: 50			
50th %ile Actuated Cycle: 50			
30th %ile Actuated Cycle: 50			
10th %ile Actuated Cycle: 50			

Splits and Phases: 14: Walnut Avenue & Driveway 2/Behnert Place



Intersection	
Int Delay, s/veh	17.9

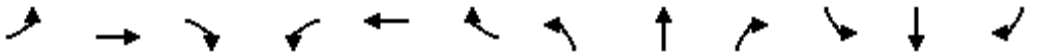
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	0	42	5	0	6	126	793	5	22	912	25
Future Vol, veh/h	44	0	42	5	0	6	126	793	5	22	912	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	48	0	46	5	0	7	137	862	5	24	991	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2195	2194	1005	2192	2205	865	1018	0	0	867	0	0
Stage 1	1053	1053	-	1139	1139	-	-	-	-	-	-	-
Stage 2	1142	1141	-	1053	1066	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 33	46	296	33	45	356	689	-	-	785	-	-
Stage 1	276	306	-	247	278	-	-	-	-	-	-	-
Stage 2	246	278	-	276	301	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 26	34	296	22	33	356	689	-	-	785	-	-
Mov Cap-2 Maneuver	~ 26	34	-	22	33	-	-	-	-	-	-	-
Stage 1	221	284	-	198	223	-	-	-	-	-	-	-
Stage 2	193	223	-	217	280	-	-	-	-	-	-	-

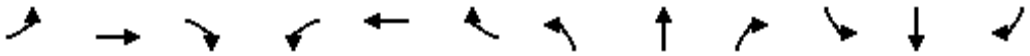
Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 377.8	111.8	1.6	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	689	-	-	26	296	45	785	-	-
HCM Lane V/C Ratio	0.199	-	-	1.839	0.154	0.266	0.03	-	-
HCM Control Delay (s)	11.5	-	-	$ 720	19.4	111.8	9.7	0	-
HCM Lane LOS	B	-	-	F	C	F	A	A	-
HCM 95th %tile Q(veh)	0.7	-	-	5.8	0.5	0.9	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	0	42	5	0	6	126	793	5	22	912	25
Future Volume (vph)	44	0	42	5	0	6	126	793	5	22	912	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	100		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.921			0.999			0.997	
Flt Protected		0.950			0.980		0.950				0.999	
Satd. Flow (prot)	0	1805	1615	0	1715	0	1805	1879	0	0	1875	0
Flt Permitted		0.750			0.873		0.291				0.975	
Satd. Flow (perm)	0	1425	1615	0	1528	0	553	1879	0	0	1830	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			46		22			1			3	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		307			209			435			205	
Travel Time (s)		8.4			5.7			8.5			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	48	0	46	5	0	7	137	862	5	24	991	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	46	0	12	0	137	867	0	0	1042	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

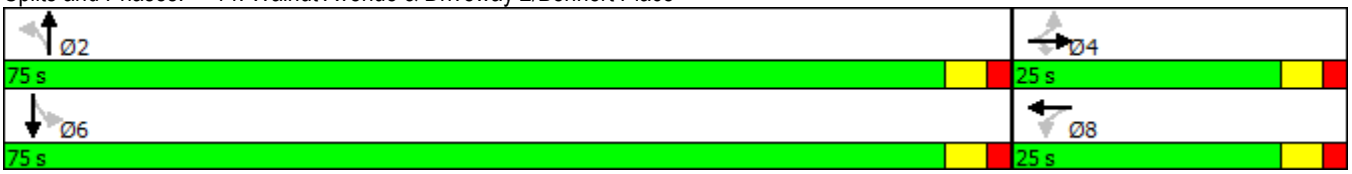


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		30.0	30.0		30.0	30.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		35.0	35.0		35.0	35.0	
Total Split (s)	25.0	25.0	25.0	25.0	25.0		75.0	75.0		75.0	75.0	
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	
Maximum Green (s)	20.0	20.0	20.0	20.0	20.0		70.0	70.0		70.0	70.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	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		5.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Act Effct Green (s)		10.4	10.4		10.4		48.3	48.3			48.3	
Actuated g/C Ratio		0.16	0.16		0.16		0.76	0.76			0.76	
v/c Ratio		0.21	0.15		0.04		0.33	0.61			0.75	
Control Delay		30.1	11.7		9.3		6.4	7.3			10.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	
Total Delay		30.1	11.7		9.3		6.4	7.3			10.8	
LOS		C	B		A		A	A			B	
Approach Delay		21.1			9.3			7.2			10.8	
Approach LOS		C			A			A			B	
90th %ile Green (s)	10.7	10.7	10.7	10.7	10.7		64.4	64.4		64.4	64.4	
90th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Hold	Hold		Gap	Gap	
70th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		45.7	45.7		45.7	45.7	
70th %ile Term Code	Min	Min	Min	Hold	Hold		Hold	Hold		Gap	Gap	
50th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		36.8	36.8		36.8	36.8	
50th %ile Term Code	Min	Min	Min	Hold	Hold		Hold	Hold		Gap	Gap	
30th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		41.8	41.8		41.8	41.8	
30th %ile Term Code	Min	Min	Min	Hold	Hold		Dwell	Dwell		Dwell	Dwell	
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		45.0	45.0		45.0	45.0	
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Dwell	Dwell		Dwell	Dwell	
Stops (vph)		39	13		3		44	357			560	
Fuel Used(gal)		1	0		0		1	6			10	
CO Emissions (g/hr)		37	18		4		62	446			704	
NOx Emissions (g/hr)		7	4		1		12	87			137	
VOC Emissions (g/hr)		9	4		1		14	103			163	
Dilemma Vehicles (#)		0	0		0		0	41			48	
Queue Length 50th (ft)		14	0		0		18	157			234	
Queue Length 95th (ft)		57	30		11		42	250			400	
Internal Link Dist (ft)		227			129			355			125	
Turn Bay Length (ft)			100				100					
Base Capacity (vph)		460	552		508		533	1812			1765	
Starvation Cap Reductn		0	0		0		0	0			0	
Spillback Cap Reductn		0	0		0		0	0			0	
Storage Cap Reductn		0	0		0		0	0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.10	0.08		0.02		0.26	0.48			0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 63.9			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 94.6%		ICU Level of Service F	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 85.1			
70th %ile Actuated Cycle: 65.7			
50th %ile Actuated Cycle: 56.8			
30th %ile Actuated Cycle: 61.8			
10th %ile Actuated Cycle: 50			

Splits and Phases: 14: Walnut Avenue & Driveway 2/Behnert Place



Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	25	794	5	8	635
Future Vol, veh/h	5	25	794	5	8	635
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	5	27	863	5	9	690

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1574	866	0	0	868	0
Stage 1	866	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	122	356	-	-	785	-
Stage 1	415	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	120	356	-	-	785	-
Mov Cap-2 Maneuver	120	-	-	-	-	-
Stage 1	415	-	-	-	-	-
Stage 2	483	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	268	785	-
HCM Lane V/C Ratio	-	-	0.122	0.011	-
HCM Control Delay (s)	-	-	20.3	9.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	6	833	5	22	961
Future Vol, veh/h	5	6	833	5	22	961
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	5	7	905	5	24	1045

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2000	908	0	0	911	0
Stage 1	908	-	-	-	-	-
Stage 2	1092	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	67	336	-	-	756	-
Stage 1	397	-	-	-	-	-
Stage 2	324	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	62	336	-	-	756	-
Mov Cap-2 Maneuver	62	-	-	-	-	-
Stage 1	397	-	-	-	-	-
Stage 2	299	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	40.9	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	112	756	-
HCM Lane V/C Ratio	-	-	0.107	0.032	-
HCM Control Delay (s)	-	-	40.9	9.9	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	33.6

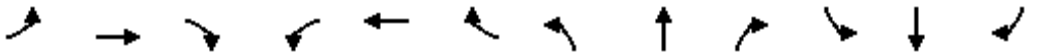
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	115	0	140	5	0	25	53	705	5	8	642	13
Future Vol, veh/h	115	0	140	5	0	25	53	705	5	8	642	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	3	0
Mvmt Flow	125	0	152	5	0	27	58	766	5	9	698	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1620	1609	705	1606	1613	769	712	0	0	772	0	0
Stage 1	722	722	-	884	884	-	-	-	-	-	-	-
Stage 2	898	887	-	722	729	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 84	106	440	86	105	404	897	-	-	852	-	-
Stage 1	421	434	-	343	366	-	-	-	-	-	-	-
Stage 2	337	365	-	421	431	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 73	97	440	53	96	404	897	-	-	852	-	-
Mov Cap-2 Maneuver	~ 73	97	-	53	96	-	-	-	-	-	-	-
Stage 1	394	426	-	321	342	-	-	-	-	-	-	-
Stage 2	294	341	-	270	423	-	-	-	-	-	-	-

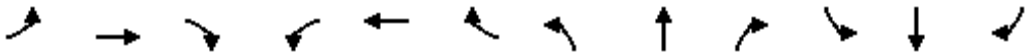
Approach	EB	WB	NB	SB
HCM Control Delay, s	220.2	27.5	0.6	0.1
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	897	-	-	73	440	192	852	-	-
HCM Lane V/C Ratio	0.064	-	-	1.712	0.346	0.17	0.01	-	-
HCM Control Delay (s)	9.3	-	-	$ 467	17.4	27.5	9.3	0	-
HCM Lane LOS	A	-	-	F	C	D	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	10.8	1.5	0.6	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	0	140	5	0	25	53	705	5	8	642	13
Future Volume (vph)	115	0	140	5	0	25	53	705	5	8	642	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	100		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.886			0.999			0.997	
Flt Protected		0.950			0.992		0.950				0.999	
Satd. Flow (prot)	0	1805	1615	0	1670	0	1805	1879	0	0	1839	0
Flt Permitted		0.736			0.950		0.380				0.991	
Satd. Flow (perm)	0	1398	1615	0	1599	0	722	1879	0	0	1824	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			152		27			1			2	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		307			209			435			205	
Travel Time (s)		8.4			5.7			8.5			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	3%	0%
Adj. Flow (vph)	125	0	152	5	0	27	58	766	5	9	698	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	152	0	32	0	58	771	0	0	721	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

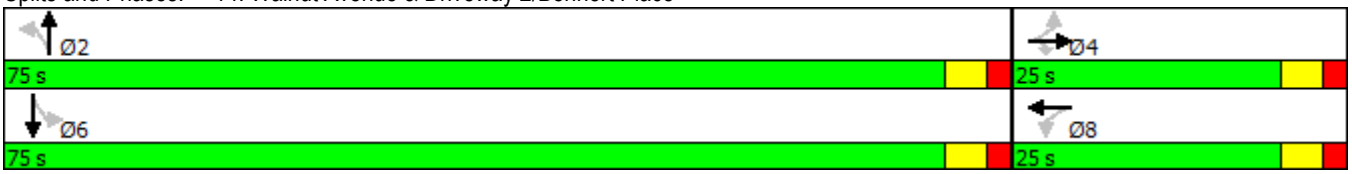


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		30.0	30.0		30.0	30.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		35.0	35.0		35.0	35.0	
Total Split (s)	25.0	25.0	25.0	25.0	25.0		75.0	75.0		75.0	75.0	
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	
Maximum Green (s)	20.0	20.0	20.0	20.0	20.0		70.0	70.0		70.0	70.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	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		5.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Act Effct Green (s)		10.9	10.9		10.9		32.3	32.3			32.3	
Actuated g/C Ratio		0.20	0.20		0.20		0.60	0.60			0.60	
v/c Ratio		0.44	0.34		0.09		0.13	0.68			0.65	
Control Delay		25.1	6.7		10.4		5.5	10.8			10.4	
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	
Total Delay		25.1	6.7		10.4		5.5	10.8			10.4	
LOS		C	A		B		A	B			B	
Approach Delay		15.0			10.4			10.4			10.4	
Approach LOS		B			B			B			B	
90th %ile Green (s)	14.4	14.4	14.4	14.4	14.4		42.2	42.2		42.2	42.2	
90th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Gap	Gap		Hold	Hold	
70th %ile Green (s)	10.4	10.4	10.4	10.4	10.4		30.0	30.0		30.0	30.0	
70th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Min	Min		Min	Min	
50th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		30.0	30.0		30.0	30.0	
50th %ile Term Code	Min	Min	Min	Hold	Hold		Min	Min		Min	Min	
30th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		30.0	30.0		30.0	30.0	
30th %ile Term Code	Min	Min	Min	Hold	Hold		Min	Min		Min	Min	
10th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		30.0	30.0		30.0	30.0	
10th %ile Term Code	Min	Min	Min	Hold	Hold		Min	Min		Min	Min	
Stops (vph)		95	25		14		21	429			391	
Fuel Used(gal)		1	1		0		0	7			7	
CO Emissions (g/hr)		88	46		12		27	490			484	
NOx Emissions (g/hr)		17	9		2		5	95			94	
VOC Emissions (g/hr)		20	11		3		6	114			112	
Dilemma Vehicles (#)		0	0		0		0	48			44	
Queue Length 50th (ft)		32	0		1		6	127			116	
Queue Length 95th (ft)		90	41		21		21	271			248	
Internal Link Dist (ft)		227			129			355			125	
Turn Bay Length (ft)			100				100					
Base Capacity (vph)		530	707		623		722	1879			1824	
Starvation Cap Reductn		0	0		0		0	0			0	
Spillback Cap Reductn		0	0		0		0	0			0	
Storage Cap Reductn		0	0		0		0	0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.24	0.21		0.05		0.08	0.41			0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 53.4			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 11.1		Intersection LOS: B	
Intersection Capacity Utilization 64.5%		ICU Level of Service C	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 66.6			
70th %ile Actuated Cycle: 50.4			
50th %ile Actuated Cycle: 50			
30th %ile Actuated Cycle: 50			
10th %ile Actuated Cycle: 50			

Splits and Phases: 14: Walnut Avenue & Driveway 2/Behnert Place



Intersection	
Int Delay, s/veh	48.8

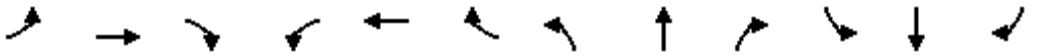
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	0	71	5	0	6	197	835	5	22	882	49
Future Vol, veh/h	58	0	71	5	0	6	197	835	5	22	882	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	63	0	77	5	0	7	214	908	5	24	959	53

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2375	2374	985	2372	2399	910	1012	0	0	913	0	0
Stage 1	1033	1033	-	1339	1339	-	-	-	-	-	-	-
Stage 2	1342	1341	-	1033	1060	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 24	35	304	24	34	336	693	-	-	755	-	-
Stage 1	283	312	-	190	224	-	-	-	-	-	-	-
Stage 2	190	223	-	283	303	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 17	22	304	13	22	336	693	-	-	755	-	-
Mov Cap-2 Maneuver	~ 17	22	-	13	22	-	-	-	-	-	-	-
Stage 1	196	289	-	131	155	-	-	-	-	-	-	-
Stage 2	129	154	-	196	281	-	-	-	-	-	-	-

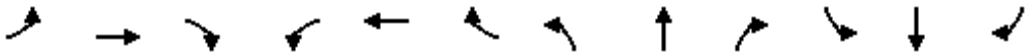
Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 765.7	218.6	2.4	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	693	-	-	17	304	27	755	-	-
HCM Lane V/C Ratio	0.309	-	-	3.708	0.254	0.443	0.032	-	-
HCM Control Delay (s)	12.5	-	-	$ 1677.5	20.8	218.6	9.9	0	-
HCM Lane LOS	B	-	-	F	C	F	A	A	-
HCM 95th %tile Q(veh)	1.3	-	-	8.5	1	1.4	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	0	71	5	0	6	197	835	5	22	882	49
Future Volume (vph)	58	0	71	5	0	6	197	835	5	22	882	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	100		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.921			0.999			0.993	
Flt Protected		0.950			0.980		0.950				0.999	
Satd. Flow (prot)	0	1805	1615	0	1715	0	1805	1879	0	0	1868	0
Flt Permitted		0.750			0.873		0.291				0.973	
Satd. Flow (perm)	0	1425	1615	0	1528	0	553	1879	0	0	1819	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			77		22			1			6	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		307			209			435			205	
Travel Time (s)		8.4			5.7			8.5			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	63	0	77	5	0	7	214	908	5	24	959	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	77	0	12	0	214	913	0	0	1036	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

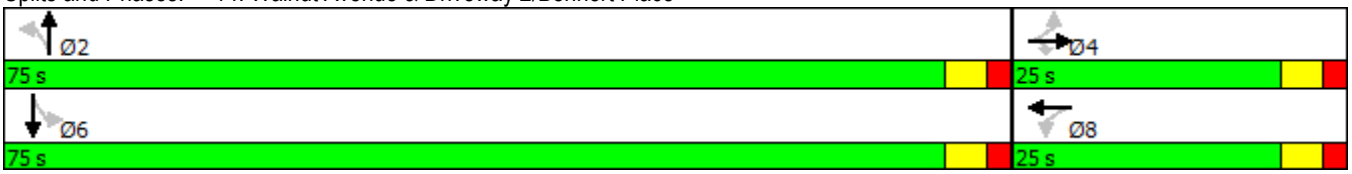


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		30.0	30.0		30.0	30.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		35.0	35.0		35.0	35.0	
Total Split (s)	25.0	25.0	25.0	25.0	25.0		75.0	75.0		75.0	75.0	
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	
Maximum Green (s)	20.0	20.0	20.0	20.0	20.0		70.0	70.0		70.0	70.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	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		5.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Act Effct Green (s)		10.8	10.8		10.8		46.4	46.4			46.4	
Actuated g/C Ratio		0.17	0.17		0.17		0.74	0.74			0.74	
v/c Ratio		0.26	0.23		0.04		0.52	0.66			0.77	
Control Delay		30.8	10.5		9.2		10.5	8.4			11.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	
Total Delay		30.8	10.5		9.2		10.5	8.4			11.6	
LOS		C	B		A		B	A			B	
Approach Delay		19.6			9.2			8.8			11.6	
Approach LOS		B			A			A			B	
90th %ile Green (s)	12.3	12.3	12.3	12.3	12.3		68.4	68.4		68.4	68.4	
90th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Hold	Hold		Gap	Gap	
70th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		45.6	45.6		45.6	45.6	
70th %ile Term Code	Min	Min	Min	Hold	Hold		Hold	Hold		Gap	Gap	
50th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		36.7	36.7		36.7	36.7	
50th %ile Term Code	Min	Min	Min	Hold	Hold		Hold	Hold		Gap	Gap	
30th %ile Green (s)	10.0	10.0	10.0	10.0	10.0		30.7	30.7		30.7	30.7	
30th %ile Term Code	Min	Min	Min	Hold	Hold		Hold	Hold		Gap	Gap	
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		45.0	45.0		45.0	45.0	
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Dwell	Dwell		Dwell	Dwell	
Stops (vph)		49	18		3		91	411			573	
Fuel Used(gal)		1	0		0		2	7			10	
CO Emissions (g/hr)		49	28		4		121	501			719	
NOx Emissions (g/hr)		10	6		1		23	97			140	
VOC Emissions (g/hr)		11	7		1		28	116			167	
Dilemma Vehicles (#)		0	0		0		0	41			46	
Queue Length 50th (ft)		19	0		0		34	173			233	
Queue Length 95th (ft)		73	39		11		92	303			432	
Internal Link Dist (ft)		227			129			355			125	
Turn Bay Length (ft)			100				100					
Base Capacity (vph)		476	591		526		528	1793			1736	
Starvation Cap Reductn		0	0		0		0	0			0	
Spillback Cap Reductn		0	0		0		0	0			0	
Storage Cap Reductn		0	0		0		0	0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.13	0.13		0.02		0.41	0.51			0.60	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 62.7			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 115.7%		ICU Level of Service H	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 90.7			
70th %ile Actuated Cycle: 65.6			
50th %ile Actuated Cycle: 56.7			
30th %ile Actuated Cycle: 50.7			
10th %ile Actuated Cycle: 50			

Splits and Phases: 14: Walnut Avenue & Driveway 2/Behnert Place



Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	25	752	5	8	614
Future Vol, veh/h	5	25	752	5	8	614
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	5	27	817	5	9	667

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1505	820	0	0	823	0
Stage 1	820	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	135	378	-	-	816	-
Stage 1	436	-	-	-	-	-
Stage 2	504	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	133	378	-	-	816	-
Mov Cap-2 Maneuver	133	-	-	-	-	-
Stage 1	436	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	289	816	-
HCM Lane V/C Ratio	-	-	0.113	0.011	-
HCM Control Delay (s)	-	-	19	9.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	6	808	5	22	918
Future Vol, veh/h	5	6	808	5	22	918
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	5	7	878	5	24	998

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1927	881	0	0	884	0
Stage 1	881	-	-	-	-	-
Stage 2	1046	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	74	349	-	-	774	-
Stage 1	408	-	-	-	-	-
Stage 2	341	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	69	349	-	-	774	-
Mov Cap-2 Maneuver	69	-	-	-	-	-
Stage 1	408	-	-	-	-	-
Stage 2	317	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	37.4	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	123	774	-
HCM Lane V/C Ratio	-	-	0.097	0.031	-
HCM Control Delay (s)	-	-	37.4	9.8	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	35	5	0	25	0	773	5	8	684	8
Future Vol, veh/h	0	0	35	5	0	25	0	773	5	8	684	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	3	0
Mvmt Flow	0	0	38	5	0	27	0	840	5	9	743	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	743	1604	1604	843	-	0	0	846	0	0
Stage 1	-	-	-	843	843	-	-	-	-	-	-	-
Stage 2	-	-	-	761	761	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.2	7.1	6.5	6.2	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	418	86	107	367	0	-	-	800	-	0
Stage 1	0	0	-	361	382	-	0	-	-	-	-	0
Stage 2	0	0	-	401	417	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	418	77	105	367	-	-	-	800	-	-
Mov Cap-2 Maneuver	-	-	-	77	105	-	-	-	-	-	-	-
Stage 1	-	-	-	361	382	-	-	-	-	-	-	-
Stage 2	-	-	-	358	409	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.5	23.7	0	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	418	225	800	-
HCM Lane V/C Ratio	-	-	0.091	0.145	0.011	-
HCM Control Delay (s)	-	-	14.5	23.7	9.5	0
HCM Lane LOS	-	-	B	C	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.5	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	18	5	0	6	0	918	5	22	906	30
Future Vol, veh/h	0	0	18	5	0	6	0	918	5	22	906	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	0	0	20	5	0	7	0	998	5	24	985	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	985	2034	2034	1001	-	0	0	1003	0	0
Stage 1	-	-	-	1001	1001	-	-	-	-	-	-	-
Stage 2	-	-	-	1033	1033	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.2	7.1	6.5	6.2	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	304	43	58	297	0	-	-	698	-	0
Stage 1	0	0	-	295	323	-	0	-	-	-	-	0
Stage 2	0	0	-	283	312	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	304	38	54	297	-	-	-	698	-	-
Mov Cap-2 Maneuver	-	-	-	38	54	-	-	-	-	-	-	-
Stage 1	-	-	-	295	323	-	-	-	-	-	-	-
Stage 2	-	-	-	245	288	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.7	64.7	0	0.2
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	304	72	698	-
HCM Lane V/C Ratio	-	-	0.064	0.166	0.034	-
HCM Control Delay (s)	-	-	17.7	64.7	10.3	0
HCM Lane LOS	-	-	C	F	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.6	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	25	773	5	8	632
Future Vol, veh/h	5	25	773	5	8	632
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	5	27	840	5	9	687

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1547	843	0	0	846	0
Stage 1	843	-	-	-	-	-
Stage 2	704	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	127	367	-	-	800	-
Stage 1	426	-	-	-	-	-
Stage 2	494	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	125	367	-	-	800	-
Mov Cap-2 Maneuver	125	-	-	-	-	-
Stage 1	426	-	-	-	-	-
Stage 2	485	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	277	800	-
HCM Lane V/C Ratio	-	-	0.118	0.011	-
HCM Control Delay (s)	-	-	19.7	9.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	6	832	5	22	943
Future Vol, veh/h	5	6	832	5	22	943
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	5	7	904	5	24	1025

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1980	907	0	0	910	0
Stage 1	907	-	-	-	-	-
Stage 2	1073	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	69	337	-	-	757	-
Stage 1	397	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	64	337	-	-	757	-
Mov Cap-2 Maneuver	64	-	-	-	-	-
Stage 1	397	-	-	-	-	-
Stage 2	307	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39.9	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	115	757	-
HCM Lane V/C Ratio	-	-	0.104	0.032	-
HCM Control Delay (s)	-	-	39.9	9.9	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	70	5	0	25	0	737	5	8	766	13
Future Vol, veh/h	0	0	70	5	0	25	0	737	5	8	766	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	3	0
Mvmt Flow	0	0	76	5	0	27	0	801	5	9	833	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	833	1654	1654	804	-	0	0	807	0	0
Stage 1	-	-	-	804	804	-	-	-	-	-	-	-
Stage 2	-	-	-	850	850	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.2	7.1	6.5	6.2	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	372	79	99	386	0	-	-	827	-	0
Stage 1	0	0	-	380	398	-	0	-	-	-	-	0
Stage 2	0	0	-	358	380	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	372	62	97	386	-	-	-	827	-	-
Mov Cap-2 Maneuver	-	-	-	62	97	-	-	-	-	-	-	-
Stage 1	-	-	-	380	398	-	-	-	-	-	-	-
Stage 2	-	-	-	279	372	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.1	25.7	0	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	372	206	827	-
HCM Lane V/C Ratio	-	-	0.205	0.158	0.011	-
HCM Control Delay (s)	-	-	17.1	25.7	9.4	0
HCM Lane LOS	-	-	C	D	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.6	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	36	5	0	6	0	1031	5	22	886	49
Future Vol, veh/h	0	0	36	5	0	6	0	1031	5	22	886	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	0	0	39	5	0	7	0	1121	5	24	963	53

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	963	2134	2134	1123	-	0	0	1126	0	0
Stage 1	-	-	-	1123	1123	-	-	-	-	-	-	-
Stage 2	-	-	-	1011	1011	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.2	7.1	6.5	6.2	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	313	36	50	253	0	-	-	628	-	0
Stage 1	0	0	-	252	283	-	0	-	-	-	-	0
Stage 2	0	0	-	291	320	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	313	30	46	253	-	-	-	628	-	-
Mov Cap-2 Maneuver	-	-	-	30	46	-	-	-	-	-	-	-
Stage 1	-	-	-	252	283	-	-	-	-	-	-	-
Stage 2	-	-	-	234	294	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.1	82.5	0	0.3
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	313	58	628	-
HCM Lane V/C Ratio	-	-	0.125	0.206	0.038	-
HCM Control Delay (s)	-	-	18.1	82.5	11	0
HCM Lane LOS	-	-	C	F	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.7	0.1	-

APPENDIX E
WARRANT WORKSHEETS

Table E1 – Existing Traffic Volumes

2017 (treated as 2016) Existing - from ATR Count on Tuesday 1/31/2017												
	Site Driveway 2			Behnert Pl			Walnut Ave			Walnut Ave		
	Eastbound			Westbound			Northbound			Southbound		
2017 Existing	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
	DW	DW	DW	DW	DW	DW	DW		DW	DW		DW
6:00 AM				5		10		301	5	5	266	
7:00 AM				5		25		718	5	8	533	
8:00 AM				5		25		689	5	8	639	
9:00 AM				5		10		529	5	5	448	
10:00 AM				5		5		478	5	5	494	
11:00 AM				5		5		459	5	5	452	
12:00 PM				5		5		501	5	5	525	
1:00 PM				5		5		496	5	5	517	
2:00 PM				5		5		552	5	5	463	
3:00 PM				5		5		576	5	10	666	
4:00 PM				5		6		656	5	22	778	
5:00 PM				5		6		817	5	22	829	
6:00 PM				5		5		644	5	10	808	
7:00 PM				5		5		522	5	5	517	
8:00 PM				5		5		390	5	5	359	
9:00 PM				5		5		306	5	5	268	

Table E2 – 2019 Base Traffic Volumes (1.5% growth rate over 3 years)

2019 Base												
	Site Driveway 2			Behnert Pl			Walnut Ave			Walnut Ave		
	Eastbound			Westbound			Northbound			Southbound		
1.5% x 3yrs	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
6:00 AM	0	0	0	5	0	10	0	315	5	5	278	0
7:00 AM	0	0	0	5	0	25	0	751	5	8	557	0
8:00 AM	0	0	0	5	0	25	0	720	5	8	668	0
9:00 AM	0	0	0	5	0	10	0	553	5	5	468	0
10:00 AM	0	0	0	5	0	5	0	500	5	5	517	0
11:00 AM	0	0	0	5	0	5	0	480	5	5	473	0
12:00 PM	0	0	0	5	0	5	0	524	5	5	549	0
1:00 PM	0	0	0	5	0	5	0	519	5	5	541	0
2:00 PM	0	0	0	5	0	5	0	577	5	5	484	0
3:00 PM	0	0	0	5	0	5	0	602	5	10	696	0
4:00 PM	0	0	0	5	0	6	0	686	5	22	814	0
5:00 PM	0	0	0	5	0	6	0	854	5	22	867	0
6:00 PM	0	0	0	5	0	5	0	673	5	10	845	0
7:00 PM	0	0	0	5	0	5	0	546	5	5	541	0
8:00 PM	0	0	0	5	0	5	0	408	5	5	375	0
9:00 PM	0	0	0	5	0	5	0	320	5	5	280	0

Table E3 – 2021 Base Traffic Volumes (1.5% growth rate over 5 years)

2021 Base												
	Site Driveway 2			Behnert Pl			Walnut Ave			Walnut Ave		
	Eastbound			Westbound			Northbound			Southbound		
1.5% x 5yrs	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
6:00 AM	0	0	0	5	0	10	0	324	5	5	287	0
7:00 AM	0	0	0	5	0	25	0	773	5	8	574	0
8:00 AM	0	0	0	5	0	25	0	742	5	8	688	0
9:00 AM	0	0	0	5	0	10	0	570	5	5	483	0
10:00 AM	0	0	0	5	0	5	0	515	5	5	532	0
11:00 AM	0	0	0	5	0	5	0	494	5	5	487	0
12:00 PM	0	0	0	5	0	5	0	540	5	5	566	0
1:00 PM	0	0	0	5	0	5	0	534	5	5	557	0
2:00 PM	0	0	0	5	0	5	0	595	5	5	499	0
3:00 PM	0	0	0	5	0	5	0	621	5	10	717	0
4:00 PM	0	0	0	5	0	6	0	707	5	22	838	0
5:00 PM	0	0	0	5	0	6	0	880	5	22	893	0
6:00 PM	0	0	0	5	0	5	0	694	5	10	870	0
7:00 PM	0	0	0	5	0	5	0	562	5	5	557	0
8:00 PM	0	0	0	5	0	5	0	420	5	5	387	0
9:00 PM	0	0	0	5	0	5	0	330	5	5	289	0

Table E4 – Existing Office Enter & Exit Volume from October 2016 Traffic Count

Existing Traffic Count - Peak Hour Enter & Exit - used to determine Scenario A Daily Enter/Exit

Location	Time	EB		NB	SB
		Left	Right	Left	Right
North Drwy	7:00 AM	4	3	25	17
	8:00 AM	5	6	39	14
	4:00 PM	21	19	7	5
	5:00 PM	16	40	6	5
South Drwy	7:00 AM	8	22	93	4
	8:00 AM	1	9	41	3
	4:00 PM	5	75	11	4
	5:00 PM	1	39	14	1
Total	7:00 AM	12	25	118	21
	8:00 AM	6	15	80	17
	4:00 PM	26	94	18	9
	5:00 PM	17	79	20	6

Location	Time	In	Out	Total	
Total	7:00 AM	139	37	176	For Scenario A
	8:00 AM	97	21	118	
	4:00 PM	27	120	147	
	5:00 PM	26	96	122	

Table E5 – Daily Variation of Remaining Office Space (Phase 1 Only)

WEEKDAY

Based on January 2015 ITE Journal Article (10,000ssf to 903,000sf)

Weekday Time	Hourly Variation in Office Development Traffic		Scenario B			Scenario A				
	Percent of Daily		Weekday Daily (199,582sf)		Total	Weekday Daily (Based on Exsitng Count)		Total		
	Enter	Exit	1110 Enter	1110 Exit		922.00 Enter	1142.00 Exit		922.00	1142.00
6:00 AM	4.6%	0.7%	51	8	59	42	8	50		
7:00 AM	14.9%	1.9%	165	21	186	**139**	**37**	176	**932.89**	**1947.37**
8:00 AM	20.7%	3.0%	230	33	263	**97**	**21**	118	468.60	700.00
9:00 AM	8.2%	3.2%	91	36	127	76	37	113		
10:00 AM	5.0%	3.9%	56	43	99	46	45	91		
11:00 AM	5.1%	8.6%	57	95	152	47	98	145		
12:00 PM	8.7%	10.5%	97	117	214	80	120	200		
1:00 PM	10.0%	6.6%	111	73	184	92	75	167		
2:00 PM	5.9%	6.3%	65	70	135	54	72	126		
3:00 PM	4.3%	9.5%	48	105	153	40	108	148		
4:00 PM	3.4%	15.4%	38	171	209	**27**	**120**	147	**794.12**	**779.22**
5:00 PM	2.5%	16.5%	28	183	211	**26**	**96**	122	1040.00	581.82
6:00 PM	1.4%	5.5%	16	61	77	13	63	76		
7:00 PM	0.9%	2.5%	10	28	38	8	29	37		
8:00 PM	0.7%	1.6%	8	18	26	6	18	24		
9:00 PM	0.6%	1.1%	7	12	19	6	13	19		

Note: Scenario A is based on a back calculation of the peak hour volumes, as shown in Table E4, in relation to the "percent of daily" to determine the average daily entering and exiting volume. Scenario B is based on ITE data estimate of daily traffic volume based on Land Use Code 710.

Table E6 – Daily Variation of Residential

WEEKDAY

Based on January 2015 ITE Journal Article (Excluding Senior-Oriented Facilities)

Weekday Time	Hourly Variation in Office Development Traffic		Scenario A & B			Scenario C		
	Percent of Daily		Weekday Daily (436 units)		Total	Weekday Daily (886 units)		Total
	Enter	Exit	1450 Enter	1449 Exit		2946 Enter	2946 Exit	
6:00 AM	1.6%	5.7%	23	83	106	47	168	215
7:00 AM	2.5%	9.0%	36	171	207	74	345	419
8:00 AM	3.7%	9.1%	54	172	226	109	348	457
9:00 AM	3.7%	6.5%	54	94	148	109	191	300
10:00 AM	4.1%	5.5%	59	80	139	121	162	283
11:00 AM	4.5%	5.7%	65	83	148	133	168	301
12:00 PM	5.3%	5.3%	77	77	154	156	156	312
1:00 PM	5.4%	5.7%	78	83	161	159	168	327
2:00 PM	6.5%	5.9%	94	86	180	191	174	365
3:00 PM	8.1%	6.3%	117	91	208	239	186	425
4:00 PM	9.8%	6.3%	142	91	233	289	186	475
5:00 PM	10.8%	6.5%	157	94	251	318	191	509
6:00 PM	8.5%	5.1%	123	74	197	250	150	400
7:00 PM	5.9%	4.9%	86	71	157	174	144	318
8:00 PM	5.1%	3.4%	74	49	123	150	100	250
9:00 PM	4.2%	2.3%	61	33	94	124	68	192

Note: Scenario A & B = Phase 1; Scenario C = Full Buildout.

Table E7 – Daily Variation of Remaining Office Space (Existing Counts)

Remaining Office Site Trips - using back calculation of enter/exit trips from october 2016 traffic counts												
	Site Driveway 2			Behnert Pl			Walnut Ave			Walnut Ave		
	Eastbound			Westbound			Northbound			Southbound		
Scenario A	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
							60%	24%				
	16%		60%								24%	
6:00 AM	1	0	5	0	0	0	25	10	0	0	2	0
7:00 AM	6	0	22	0	0	0	83	33	0	0	9	0
8:00 AM	3	0	13	0	0	0	58	23	0	0	5	0
9:00 AM	6	0	22	0	0	0	46	18	0	0	9	0
10:00 AM	7	0	27	0	0	0	28	11	0	0	11	0
11:00 AM	16	0	59	0	0	0	28	11	0	0	24	0
12:00 PM	19	0	72	0	0	0	48	19	0	0	29	0
1:00 PM	12	0	45	0	0	0	55	22	0	0	18	0
2:00 PM	12	0	43	0	0	0	32	13	0	0	17	0
3:00 PM	17	0	65	0	0	0	24	10	0	0	26	0
4:00 PM	19	0	72	0	0	0	16	6	0	0	29	0
5:00 PM	15	0	58	0	0	0	16	6	0	0	23	0
6:00 PM	10	0	38	0	0	0	8	3	0	0	15	0
7:00 PM	5	0	17	0	0	0	5	2	0	0	7	0
8:00 PM	3	0	11	0	0	0	4	1	0	0	4	0
9:00 PM	2	0	8	0	0	0	4	1	0	0	3	0

Note: Uses Tables E4 and E5

Table E8 – Daily Variation of Residential (Phase 1 – 436 units)

Proposed Residential Site Trips (436 apt units)												
	Site Driveway 2			Behnert Pl			Walnut Ave			Walnut Ave		
	Eastbound			Westbound			Northbound			Southbound		
Scenario A	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
							67%				18%	15%
	33%		47%									
6:00 AM	27	0	39	0	0	0	15	0	0	0	4	3
7:00 AM	56	0	80	0	0	0	24	0	0	0	6	5
8:00 AM	57	0	81	0	0	0	36	0	0	0	10	8
9:00 AM	31	0	44	0	0	0	36	0	0	0	10	8
10:00 AM	26	0	38	0	0	0	40	0	0	0	11	9
11:00 AM	27	0	39	0	0	0	44	0	0	0	12	10
12:00 PM	25	0	36	0	0	0	52	0	0	0	14	12
1:00 PM	27	0	39	0	0	0	52	0	0	0	14	12
2:00 PM	28	0	40	0	0	0	63	0	0	0	17	14
3:00 PM	30	0	43	0	0	0	78	0	0	0	21	18
4:00 PM	30	0	43	0	0	0	95	0	0	0	26	21
5:00 PM	31	0	44	0	0	0	105	0	0	0	28	24
6:00 PM	24	0	35	0	0	0	82	0	0	0	22	18
7:00 PM	23	0	33	0	0	0	58	0	0	0	15	13
8:00 PM	16	0	23	0	0	0	50	0	0	0	13	11
9:00 PM	11	0	16	0	0	0	41	0	0	0	11	9

Note: Uses Table E6

Table E9 – Scenario A 2019 Build Traffic Volumes

2019 Build (Scenario A)												
	Site Driveway 2			Behnert Pl			Walnut Ave			Walnut Ave		
	Eastbound			Westbound			Northbound			Southbound		
Scenario A	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
6:00 AM	28	0	44	5	0	10	40	325	5	5	284	3
7:00 AM	62	0	102	5	0	25	107	784	5	8	572	5
8:00 AM	60	0	94	5	0	25	94	743	5	8	683	8
9:00 AM	37	0	66	5	0	10	82	571	5	5	487	8
10:00 AM	33	0	65	5	0	5	68	511	5	5	539	9
11:00 AM	43	0	98	5	0	5	72	491	5	5	509	10
12:00 PM	44	0	108	5	0	5	100	543	5	5	592	12
1:00 PM	39	0	84	5	0	5	107	541	5	5	573	12
2:00 PM	40	0	83	5	0	5	95	590	5	5	518	14
3:00 PM	47	0	108	5	0	5	102	612	5	10	743	18
4:00 PM	49	0	115	5	0	6	111	692	5	22	869	21
5:00 PM	46	0	102	5	0	6	121	860	5	22	918	24
6:00 PM	34	0	73	5	0	5	90	676	5	10	882	18
7:00 PM	28	0	50	5	0	5	63	548	5	5	563	13
8:00 PM	19	0	34	5	0	5	54	409	5	5	392	11
9:00 PM	13	0	24	5	0	5	45	321	5	5	294	9

Note: Scenario A Build = 2019 Base (Table E2) + Table E7 (Office) + Table E8 (P1 Residential)

Table E10 – Daily Variation of Remaining Office Space (ITE Data)

Remaining Office Site Trips (199,852sf) - using ITE office trip generation estimates												
	Site Driveway 2			Behnert Pl			Walnut Ave			Walnut Ave		
	Eastbound			Westbound			Northbound			Southbound		
Scenario B	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
							60%	24%				
	16%		60%								24%	
6:00 AM	1	0	5	0	0	0	31	12	0	0	2	0
7:00 AM	3	0	13	0	0	0	99	40	0	0	5	0
8:00 AM	5	0	20	0	0	0	138	55	0	0	8	0
9:00 AM	6	0	22	0	0	0	55	22	0	0	9	0
10:00 AM	7	0	26	0	0	0	34	13	0	0	10	0
11:00 AM	15	0	57	0	0	0	34	14	0	0	23	0
12:00 PM	19	0	70	0	0	0	58	23	0	0	28	0
1:00 PM	12	0	44	0	0	0	67	27	0	0	18	0
2:00 PM	11	0	42	0	0	0	39	16	0	0	17	0
3:00 PM	17	0	63	0	0	0	29	12	0	0	25	0
4:00 PM	27	0	103	0	0	0	23	9	0	0	41	0
5:00 PM	29	0	110	0	0	0	17	7	0	0	44	0
6:00 PM	10	0	37	0	0	0	10	4	0	0	15	0
7:00 PM	4	0	17	0	0	0	6	2	0	0	7	0
8:00 PM	3	0	11	0	0	0	5	2	0	0	4	0
9:00 PM	2	0	7	0	0	0	4	2	0	0	3	0

Note: Uses Table E5

Table E11 – Daily Variation of Residential (Phase 1 – 436 units)

Proposed Residential Site Trips (436 apt units)												
	Site Driveway 2			Behnert Pl			Walnut Ave			Walnut Ave		
	Eastbound			Westbound			Northbound			Southbound		
Scenario B	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
							67%				18%	15%
	33%		47%									
6:00 AM	27	0	39	0	0	0	15	0	0	0	4	3
7:00 AM	56	0	80	0	0	0	24	0	0	0	6	5
8:00 AM	57	0	81	0	0	0	36	0	0	0	10	8
9:00 AM	31	0	44	0	0	0	36	0	0	0	10	8
10:00 AM	26	0	38	0	0	0	40	0	0	0	11	9
11:00 AM	27	0	39	0	0	0	44	0	0	0	12	10
12:00 PM	25	0	36	0	0	0	52	0	0	0	14	12
1:00 PM	27	0	39	0	0	0	52	0	0	0	14	12
2:00 PM	28	0	40	0	0	0	63	0	0	0	17	14
3:00 PM	30	0	43	0	0	0	78	0	0	0	21	18
4:00 PM	30	0	43	0	0	0	95	0	0	0	26	21
5:00 PM	31	0	44	0	0	0	105	0	0	0	28	24
6:00 PM	24	0	35	0	0	0	82	0	0	0	22	18
7:00 PM	23	0	33	0	0	0	58	0	0	0	15	13
8:00 PM	16	0	23	0	0	0	50	0	0	0	13	11
9:00 PM	11	0	16	0	0	0	41	0	0	0	11	9

Note: Uses Table E6

Table E12 – Scenario B 2019 Build Traffic Volumes

2019 Build (Scenario B)												
	Site Driveway 2			Behnert Pl			Walnut Ave			Walnut Ave		
	Eastbound			Westbound			Northbound			Southbound		
Scenario B	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
6:00 AM	28	0	44	5	0	10	46	327	5	5	284	3
7:00 AM	59	0	93	5	0	25	123	791	5	8	568	5
8:00 AM	62	0	101	5	0	25	174	775	5	8	686	8
9:00 AM	37	0	66	5	0	10	91	575	5	5	487	8
10:00 AM	33	0	64	5	0	5	74	513	5	5	538	9
11:00 AM	42	0	96	5	0	5	78	494	5	5	508	10
12:00 PM	44	0	106	5	0	5	110	547	5	5	591	12
1:00 PM	39	0	83	5	0	5	119	546	5	5	573	12
2:00 PM	39	0	82	5	0	5	102	593	5	5	518	14
3:00 PM	47	0	106	5	0	5	107	614	5	10	742	18
4:00 PM	57	0	146	5	0	6	118	695	5	22	881	21
5:00 PM	60	0	154	5	0	6	122	861	5	22	939	24
6:00 PM	34	0	72	5	0	5	92	677	5	10	882	18
7:00 PM	27	0	50	5	0	5	64	548	5	5	563	13
8:00 PM	19	0	34	5	0	5	55	410	5	5	392	11
9:00 PM	13	0	23	5	0	5	45	322	5	5	294	9

Note: Scenario B Build = 2019 Base (Table E2) + Table E10 (Office) + Table E11(P1 Residential)

Table E13 – Daily Variation of Residential (Full Buildout – 886 units)

Proposed Residential Site Trips (886 apt units)												
	Site Driveway 2			Behnert Pl			Walnut Ave			Walnut Ave		
	Eastbound			Westbound			Northbound			Southbound		
Scenario C	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
							60%	7%			15%	15%
	33%		40%								7%	
6:00 AM	55	0	67	0	0	0	28	3	0	0	19	7
7:00 AM	114	0	138	0	0	0	44	5	0	0	35	11
8:00 AM	115	0	139	0	0	0	65	8	0	0	40	16
9:00 AM	63	0	76	0	0	0	65	8	0	0	29	16
10:00 AM	53	0	65	0	0	0	73	8	0	0	29	18
11:00 AM	55	0	67	0	0	0	80	9	0	0	32	20
12:00 PM	51	0	62	0	0	0	94	11	0	0	34	23
1:00 PM	55	0	67	0	0	0	95	11	0	0	36	24
2:00 PM	57	0	70	0	0	0	115	13	0	0	41	29
3:00 PM	61	0	74	0	0	0	143	17	0	0	49	36
4:00 PM	61	0	74	0	0	0	173	20	0	0	56	43
5:00 PM	63	0	76	0	0	0	191	22	0	0	61	48
6:00 PM	50	0	60	0	0	0	150	18	0	0	49	38
7:00 PM	48	0	58	0	0	0	104	12	0	0	36	26
8:00 PM	33	0	40	0	0	0	90	11	0	0	30	23
9:00 PM	22	0	27	0	0	0	74	9	0	0	24	19

Note: Uses Table E6

Table E14 – Scenario C 2021 Build Traffic Volumes

2021 Build (Scenario C)												
	Site Driveway 2			Behnert Pl			Walnut Ave			Walnut Ave		
	Eastbound			Westbound			Northbound			Southbound		
Scenario C	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
6:00 AM	55	0	67	5	0	10	28	327	5	5	306	7
7:00 AM	114	0	138	5	0	25	44	778	5	8	609	11
8:00 AM	115	0	139	5	0	25	65	750	5	8	728	16
9:00 AM	63	0	76	5	0	10	65	578	5	5	512	16
10:00 AM	53	0	65	5	0	5	73	523	5	5	561	18
11:00 AM	55	0	67	5	0	5	80	503	5	5	519	20
12:00 PM	51	0	62	5	0	5	94	551	5	5	600	23
1:00 PM	55	0	67	5	0	5	95	545	5	5	593	24
2:00 PM	57	0	70	5	0	5	115	608	5	5	540	29
3:00 PM	61	0	74	5	0	5	143	638	5	10	766	36
4:00 PM	61	0	74	5	0	6	173	727	5	22	894	43
5:00 PM	63	0	76	5	0	6	191	902	5	22	954	48
6:00 PM	50	0	60	5	0	5	150	712	5	10	919	38
7:00 PM	48	0	58	5	0	5	104	574	5	5	593	26
8:00 PM	33	0	40	5	0	5	90	431	5	5	417	23
9:00 PM	22	0	27	5	0	5	74	339	5	5	313	19

Note: Scenario C Build = 2021 Base (Table E3) + Table E13 (FB Residential)

HOURLY VARIATION IN TRIP GENERATION FOR OFFICE AND RESIDENTIAL LAND USES

By Aaron T. Zimmerman, PTP

Abstract

Following the development of *Trip Generation*, 8th Edition, a call for data was sent out to ITE members soliciting twenty-four hour trip generation data. In response, ITE members submitted hundreds of datasets for not only the land uses discussed in this article, but also for other land uses such as shopping centers, auto dealerships, golf courses, hotels, and daycare centers, among others. Due to the short time frame between completion of the initial data collection portion of this project and development of the most recent edition of *Trip Generation Manual*, twenty-four hour summaries for office and residential land uses were not included in the ninth edition.

This article presents hourly distributions of trip generation for both office and residential land uses. It is intended to supplement the information that is published in the ITE *Trip Generation Manual,* 9th Edition.

Data Collection

This article presents the results of a data collection effort of twenty-four hour trip generation data for office and residential land uses to supplement those currently published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual,* 9th Edition. The data reported is intended to assist planners and engineers seeking to project four, eight, twelve, or more than twelve hours of traffic volumes for a signal warrant analysis. Other important uses include conducting trip generation and parking demand analyses of multiple study hours as part of a traffic impact study for multiuse developments. Specifically, developments that are composed of land uses with differing peak hours for entering and exiting traffic, such as office, retail, residential, movie theaters, sports arenas, restaurants, and daycare centers for example. In addition, the hourly variations will be useful for estimating emissions associated with land use developments. The current method for determining hourly traffic distribution for a particular land use typically involves collecting field counts at a limited number of sites and then making important assumptions about adaptability to the analysis site. The primary goal of this data collection effort was to consolidate twenty-four hour data, collected and submitted for inclusion in ITE's trip generation database, with recently collected datasets. These data were then used to report the average percentage distributions in summary tables making it readily available for all transportation professionals.

Purpose

Most of the hourly datasets analyzed for this study were collected using tube counters and then submitted to ITE on spreadsheets organized in either fifteen-minute or one-hour intervals, typically for each individual driveway serving the site. These newly-collected raw datasets, as well as previously submitted twenty-four hour datasets from the ITE trip generation database, were compiled into spreadsheets in one-hour increments and assigned to the appropriate *Trip Generation Manual* land use codes with guidance from

Table 1: Office Uses Combined

Time	Average Weekday		Average Saturday		Average Sunday	
	Percent of 24-Hour Entering Traffic	Percent of 24-Hour Exiting Traffic	Percent of 24-Hour Entering Traffic	Percent of 24-Hour Exiting Traffic	Percent of 24-Hour Entering Traffic	Percent of 24-Hour Exiting Traffic
6–7 a.m.	4.6	0.7	4.1	1.4	1.8	2.4
7–8 a.m.	14.9	1.9	5.4	2.5	3.8	1.2
8–9 a.m.	20.7	3.0	9.1	1.5	6.0	2.9
9–10 a.m.	8.2	3.2	7.2	3.9	6.6	3.8
10–11 a.m.	5.0	3.9	6.8	4.6	9.7	7.5
11–12 p.m.	5.1	8.6	7.1	11.3	8.9	9.6
12–1 p.m.	8.7	10.5	8.1	14.0	6.9	9.1
1–2 p.m.	10.0	6.6	7.3	8.3	8.6	12.0
2–3 p.m.	5.9	6.3	7.6	7.7	6.6	8.2
3–4 p.m.	4.3	9.5	6.0	9.6	4.6	6.3
4–5 p.m.	3.4	15.4	3.1	7.9	5.5	7.5
5–6 p.m.	2.5	16.5	3.2	6.9	3.1	6.7
6–7 p.m.	1.4	5.5	2.5	3.2	3.5	4.1
7–8 p.m.	0.9	2.5	2.0	2.2	2.7	2.9
8–9 p.m.	0.7	1.6	2.4	2.1	3.3	4.3
9–10 p.m.	0.6	1.1	1.4	1.4	3.1	3.1
10 p.m.–6 a.m.	3.2	3.2	16.9	11.4	15.3	8.4

ITE. Once hourly traffic calculations and land use code assignments were verified for accuracy by ITE staff, the average hourly traffic volumes were then summarized into tables as a percentage of the twenty-hour total entering and exiting vehicles from 6:00 a.m. to 10:00 p.m. This range of hours not only represents an expansion of four hours beyond the range of summary data published in previous editions of *Trip Generation* but also the inclusion of the critical morning commuter peak hours. For practical purposes, information was not provided for individual hours in the middle of the night. Instead, percentages for the combined period of 10:00 p.m. to 6:00 a.m. were provided in the last line of the summary tables. Where available, datasets for Saturdays and Sundays were also tabulated and summarized.

Office Land Uses

There were a total of 38 combined site observations for average weekday data, and five sites observed for each of Saturday and Sunday. The datasets were initially analyzed for each of three office land uses separately—General Office Building (710), Corporate Headquarters (714), and Office Park (750)—but due to the similarities in hourly distributions, it was determined that a combined summary table would provide a more robust and accurate depiction of hourly variations in traffic for general office uses. As expected, ingress traffic tended to be highest in the morning commuter period as office employees arrive for work, while egress traffic tended to be highest during the evening commuter period as office employees leave work for home. There was also a noticeable spike in the middle of the day due to office workers leaving and returning from lunch. The size of office developments analyzed ranged from 10,000 to 903,000 square feet. Based on the analysis conducted, it is noted that size of the office development had no discernible impact on the hourly distribution throughout the day.

Residential Land Uses

There were a total of 40 combined site observations for average weekday data, 36 site observations for average Saturday data, and 35 site observations for average Sunday data compiled for all residential land uses. Analysis of individual residential uses indicated that the general trip generation characteristics throughout the day were noticeably different between traditional residential uses (i.e., apartment, single family home, townhomes, condominiums) and senior-oriented residential uses (i.e., senior-attached, senior-detached, continuing care). Therefore, two separate and distinct summary tables combining similar types of residential uses (senior-oriented facilities only and non-senior residential only) were developed, as shown in Tables 2 and 3. As expected, the traditional residential uses generate a large egress of traffic during the weekday morning commuter rush hours and a similarly large ingress during the evening commuter peak hours. Contrarily, the largest ingress/egress period for senior-oriented residential uses tended to occur after the morning commuter peak hours and before the evening peak hours. The sizes of traditional residential uses

Table 2: Residential Uses Combined – Excluding Senior–Oriented Facilities

Time	Average Weekday		Average Saturday		Average Sunday	
	Percent of 24-Hour Entering Traffic	Percent of 24-Hour Exiting Traffic	Percent of 24-Hour Entering Traffic	Percent of 24-Hour Exiting Traffic	Percent of 24-Hour Entering Traffic	Percent of 24-Hour Exiting Traffic
6–7 a.m.	1.6	5.7	1.1	2.1	0.9	1.9
7–8 a.m.	2.5	9.0	1.8	3.6	1.6	3.3
8–9 a.m.	3.7	9.1	2.8	5.6	2.6	4.7
9–10 a.m.	3.7	6.5	4.4	7.3	3.5	6.8
10–11 a.m.	4.1	5.5	5.6	7.7	6.3	7.5
11–12 p.m.	4.5	5.7	6.9	7.5	6.4	9.5
12–1 p.m.	5.3	5.3	6.6	7.8	6.9	7.6
1–2 p.m.	5.4	5.7	7.1	6.9	7.2	7.4
2–3 p.m.	6.5	5.9	7.1	6.7	7.2	6.6
3–4 p.m.	8.1	6.3	7.4	6.1	7.3	6.6
4–5 p.m.	9.8	6.3	8.5	5.9	8.0	6.7
5–6 p.m.	10.8	6.5	8.6	6.3	7.3	6.9
6–7 p.m.	8.5	5.1	6.4	6.0	5.8	5.1
7–8 p.m.	5.9	4.9	5.2	4.9	5.5	4.1
8–9 p.m.	5.1	3.4	4.2	3.6	4.6	3.3
9–10 p.m.	4.2	2.3	3.8	2.6	4.3	2.7
10 p.m.–6 a.m.	10.3	5.6	12.4	9.3	14.6	9.4

Table 3: Residential Uses Combined–Senior-Oriented Facilities Only

Time	Average Weekday		Average Saturday		Average Sunday	
	Percent of 24-Hour Entering Traffic	Percent of 24-Hour Exiting Traffic	Percent of 24-Hour Entering Traffic	Percent of 24-Hour Exiting Traffic	Percent of 24-Hour Entering Traffic	Percent of 24-Hour Exiting Traffic
6–7 a.m.	3.6	2.0	4.0	1.3	3.7	1.5
7–8 a.m.	5.4	4.5	3.2	3.8	2.8	3.8
8–9 a.m.	6.5	5.8	3.3	3.6	2.9	4.4
9–10 a.m.	6.0	7.5	5.0	6.1	4.1	5.6
10–11 a.m.	7.3	8.0	7.5	7.1	7.6	6.6
11–12 p.m.	8.2	6.8	8.9	8.1	8.2	5.8
12–1 p.m.	8.2	7.7	8.0	7.3	8.6	6.8
1–2 p.m.	7.7	8.0	7.5	7.3	8.2	7.6
2–3 p.m.	8.8	8.0	8.6	7.7	9.5	9.6
3–4 p.m.	9.9	9.6	11.1	11.3	10.5	11.5
4–5 p.m.	6.7	7.6	6.6	7.3	6.8	7.4
5–6 p.m.	4.7	6.5	4.8	5.1	5.6	6.1
6–7 p.m.	3.9	4.4	4.4	3.9	5.2	4.7
7–8 p.m.	4.0	5.0	5.3	6.5	5.0	6.1
8–9 p.m.	3.0	3.1	3.9	4.6	4.3	4.9
9–10 p.m.	1.7	1.6	2.0	2.7	2.0	2.5
10 p.m.–6 a.m.	4.3	3.9	5.7	6.3	4.9	5.1

ranged from 46 to 1,248 dwelling units, and the sizes of senior-oriented developments analyzed ranged from 28 to 2,238 dwelling units. As with the office land use data, smaller and larger sized residential communities generally had similar hourly distributions.

The time-of-day summary tables reported both in this article and in the ninth edition should be used only as a reference. Professional judgment should be exercised with regard to the limited number of site observations, utilizing data for the hours after 10:00 p.m., and in situations where peak hour data may not fit perfectly with the distributions provided. As explained in *Trip Generation Handbook,* 3rd Edition, time-of-day data should not be used to determine peak hour traffic volumes. Instead, peak hour volumes should be estimated by using the standard regression analysis and data plots presented for each land use code in *Trip Generation Manual*. Also note that the percentages in the summary tables do not add up to 100 percent due to rounding. **itej**

Acknowledgments

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Note

The twenty-four hour distribution of trip generation for office and residential land uses presented in the summary tables contained in this article are the result of an effort to develop and provide a useful tool that can be directly applicable to the work done daily by transportation professionals. Although the summary tables provided in this article and in the ninth edition cover a large share of the land uses most regularly analyzed by transportation professionals, the author strongly encourages readers to submit time-of-day trip generation data to ITE to improve the robustness of existing twenty-four hour distribution summaries and to allow summaries for additional land use codes to be established in future editions of Trip Generation Manual. *Time-of-day trip generation data can be submitted to ITE by completing the "Data Collection Form" located at www.ite.org/tripgeneration/index.asp.*

Aaron Zimmerman, PTP, *is a transportation planner coordinator for the Maryland-National Capital Park and Planning Commission in Silver Spring, MD, USA. He holds a master's degree in transportation policy, operations, and logistics from George Mason University and a bachelor's degree in urban planning from the State University of New York at Albany. From 2008–2009, Aaron worked at ITE headquarters as transportation planning director. During that timeframe he was instrumental in the founding of the organization Young Professionals in Transportation (YPT). Aaron currently serves on the ITE Young Member Committee and is treasurer for YPT International. He is a member of ITE.*

SCENARIO A
1 MINOR (EB LEFT/THRU) & 1 MAJOR

Warrants Summary Report

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	1
Approach Speed	35	25

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	No	
Condition A or B Met'	No	0 Hours met (8 required)
Condition A and B Me	No	0 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	No	0 Hours met (4 required)
Warrant 3, Peak Hour		
	No	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	No	0 Hours met (1 required)

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

Major Street Name:	Walnut Ave
Major Street Direction:	NB/SB
Minor Street Direction:	EB/WB

WARRANT 1 MET? **No**

Details:

Condition A Met?	No	0 Hours met (8 required)
Condition B Met?	No	0 Hours met (8 required)

Hour	Major Street Vehicles (Total of Both Approaches)		High Volume Minor Approach Vehicles		100% Standard Met? Cond. A OR Cond. B		80% Standard Met? Cond. A AND Cond. B	
					Condition A 100% Column	Condition B 100% Column	Condition A 80% Column	Condition B 80% Column
06:00 to 07:00	**662**		**28**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
07:00 to 08:00	**1,481**		**62**		No	No	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	Yes				
08:00 to 09:00	**1,541**		**60**		No	No	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

09:00 to 10:00	**1,158**		**37**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
10:00 to 11:00	**1,137**		**33**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
11:00 to 12:00	**1,092**		**43**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
12:00 to 13:00	**1,257**		**44**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
13:00 to 14:00	**1,243**		**39**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

14:00 to 15:00	**1,227**		**40**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
15:00 to 16:00	**1,490**		**47**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
16:00 to 17:00	**1,720**		**49**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
17:00 to 18:00	**1,950**		**46**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
18:00 to 19:00	**1,681**		**34**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

19:00 to 20:00	**1,197**		**28**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
20:00 to 21:00	**876**		**19**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
21:00 to 22:00	**679**		**13**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

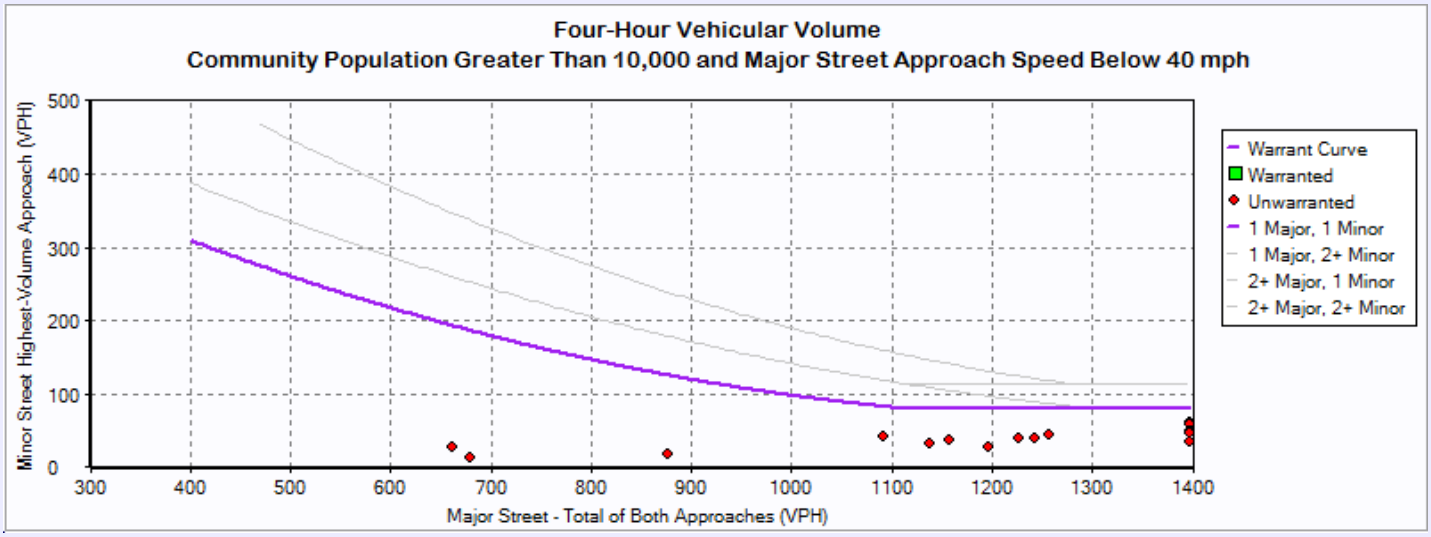
Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	1
Approch Speed	35	25

Warrant 2 Met? **No**

Details:

Notes	0 Hours met (4 required)
Low population	No



Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Hourly Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
00:00:00 - 01:00:00	0	0
01:00:00 - 02:00:00	0	0
02:00:00 - 03:00:00	0	0
03:00:00 - 04:00:00	0	0
04:00:00 - 05:00:00	0	0
05:00:00 - 06:00:00	0	0
06:00:00 - 07:00:00	662	28
07:00:00 - 08:00:00	1,481	62
08:00:00 - 09:00:00	1,541	60
09:00:00 - 10:00:00	1,158	37
10:00:00 - 11:00:00	1,137	33
11:00:00 - 12:00:00	1,092	43
12:00:00 - 13:00:00	1,257	44
13:00:00 - 14:00:00	1,243	39
14:00:00 - 15:00:00	1,227	40
15:00:00 - 16:00:00	1,490	47
16:00:00 - 17:00:00	1,720	49
17:00:00 - 18:00:00	1,950	46
18:00:00 - 19:00:00	1,681	34
19:00:00 - 20:00:00	1,197	28
20:00:00 - 21:00:00	876	19
21:00:00 - 22:00:00	679	13
22:00:00 - 23:00:00	0	0

23:00:00 - 00:00:00	0	0

Warranted Hours

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)

Note: Only data of hours warranted is represented in the above table.

Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	1
Approch Speed	35	25

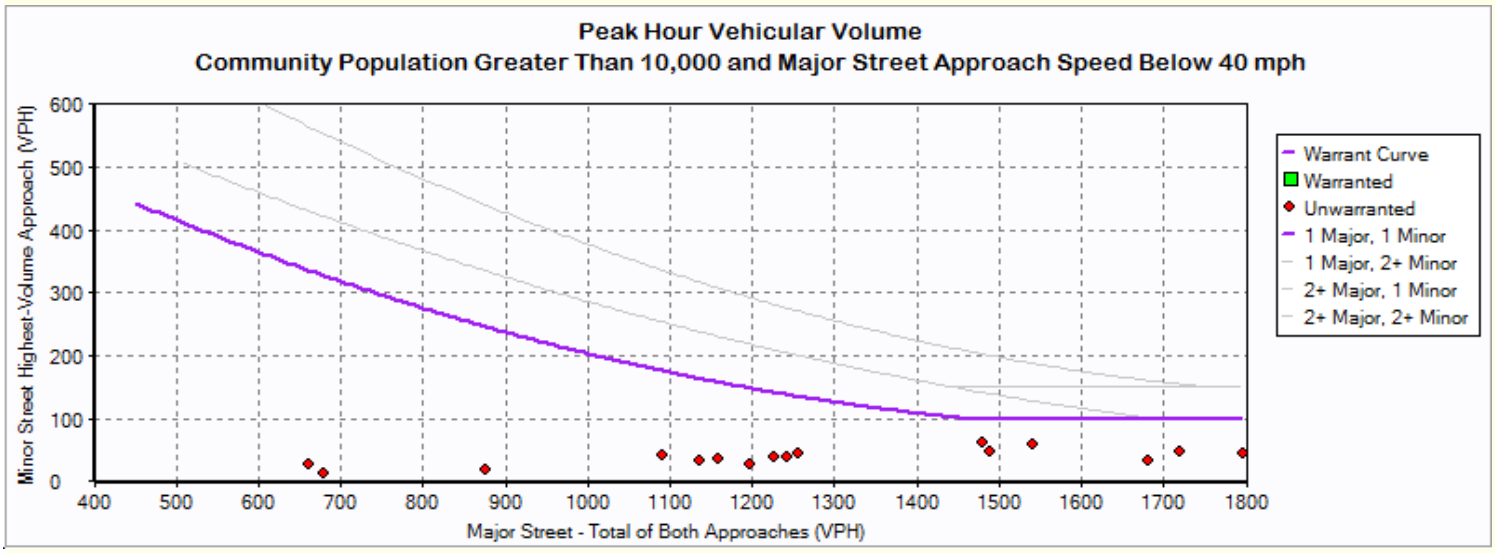
Warrant 3 Met? **No**

Details

Low Population? No

Condition A Met	No	**Condition B Met**	No
Notes	0 Hours met (1 required)	**Notes**	0 Hours met (1 required)

Minor Approach Time Delay Condition Met?	Not Met
Minor Approach Volume Condition Met?	Met
Total Entering Intersection Volume Condition Met?	Not Met



Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
6:00	662	28
7:00	1,481	62
8:00	1,541	60
9:00	1,158	37
10:00	1,137	33
11:00	1,092	43
12:00	1,257	44
13:00	1,243	39
14:00	1,227	40
15:00	1,490	47
16:00	1,720	49
17:00	1,950	46
18:00	1,681	34
19:00	1,197	28
20:00	876	19
21:00	679	13

SCENARIO A
2 MINOR (EB LEFT/THRU & RIGHT) & 1 MAJOR

Warrants Summary Report

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	2
Approach Speed	35	25

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	Yes	
Condition A or B Met'	Yes	11 Hours met (8 required)
Condition A and B Me	No	2 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	Yes	9 Hours met (4 required)
Warrant 3, Peak Hour		
	Yes	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	Yes	5 Hours met (1 required)

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

Major Street Name:	Walnut Ave
Major Street Direction:	NB/SB
Minor Street Direction:	EB/WB

WARRANT 1 MET? Yes

Details:

Condition A Met?	Yes	11 Hours met (8 required)
Condition B Met?	No	2 Hours met (8 required)

Hour	Major Street Vehicles (Total of Both Approaches)		High Volume Minor Approach Vehicles		100% Standard Met? Cond. A OR Cond. B		80% Standard Met? Cond. A AND Cond. B	
					Condition A 100% Column	Condition B 100% Column	Condition A 80% Column	Condition B 80% Column
06:00 to 07:00	**662**		**72**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	No				
07:00 to 08:00	**1,481**		**164**		No	Yes*	Yes*	Yes*
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	Yes				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
08:00 to 09:00	**1,541**		**154**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

09:00 to 10:00	**1,158**		**103**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
10:00 to 11:00	**1,137**		**98**		No	No	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
11:00 to 12:00	**1,092**		**141**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
12:00 to 13:00	**1,257**		**152**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
13:00 to 14:00	**1,243**		**123**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

14:00 to 15:00	**1,227**		**123**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
15:00 to 16:00	**1,490**		**155**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
16:00 to 17:00	**1,720**		**164**		No	Yes*	Yes*	Yes*
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	Yes				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
17:00 to 18:00	**1,950**		**148**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
18:00 to 19:00	**1,681**		**107**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

19:00 to 20:00	**1,197**		**78**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	No				
20:00 to 21:00	**876**		**53**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	No				
21:00 to 22:00	**679**		**37**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	No				

Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

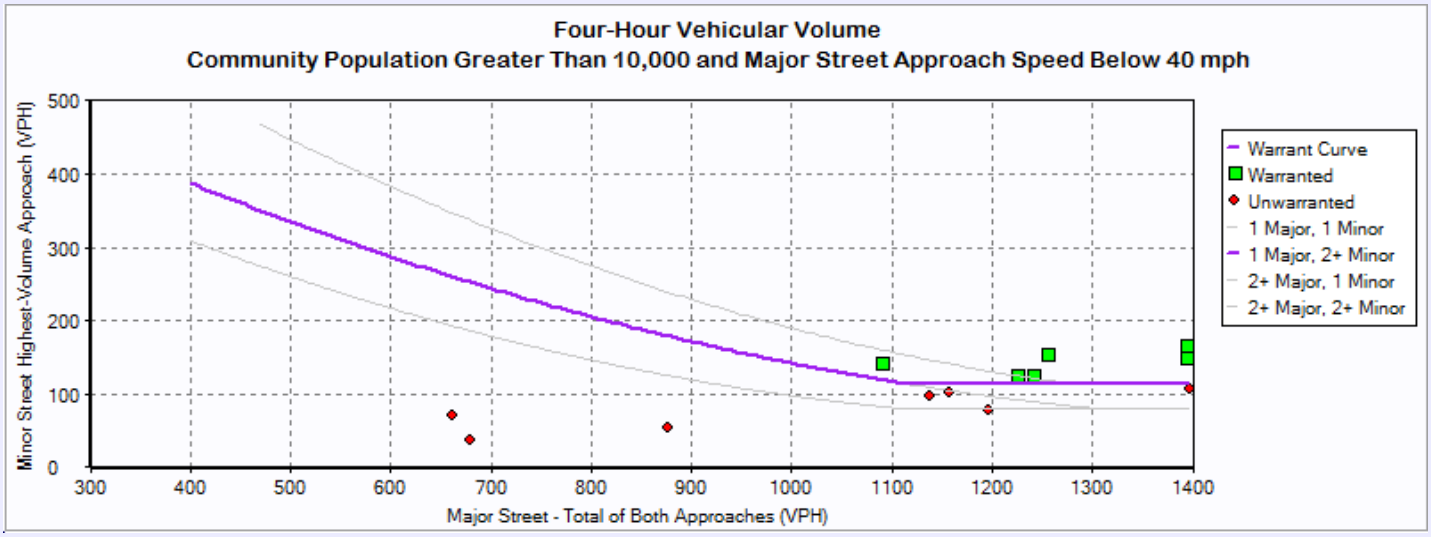
Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	2
Approch Speed	35	25

Warrant 2 Met? **Yes**

Details:

Notes	9 Hours met (4 required)
Low population	No



Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Hourly Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
00:00:00 - 01:00:00	0	0
01:00:00 - 02:00:00	0	0
02:00:00 - 03:00:00	0	0
03:00:00 - 04:00:00	0	0
04:00:00 - 05:00:00	0	0
05:00:00 - 06:00:00	0	0
06:00:00 - 07:00:00	662	72
07:00:00 - 08:00:00	1,481	164
08:00:00 - 09:00:00	1,541	154
09:00:00 - 10:00:00	1,158	103
10:00:00 - 11:00:00	1,137	98
11:00:00 - 12:00:00	1,092	141
12:00:00 - 13:00:00	1,257	152
13:00:00 - 14:00:00	1,243	123
14:00:00 - 15:00:00	1,227	123
15:00:00 - 16:00:00	1,490	155
16:00:00 - 17:00:00	1,720	164
17:00:00 - 18:00:00	1,950	148
18:00:00 - 19:00:00	1,681	107
19:00:00 - 20:00:00	1,197	78
20:00:00 - 21:00:00	876	53
21:00:00 - 22:00:00	679	37
22:00:00 - 23:00:00	0	0

23:00:00 - 00:00:00	0	0

Warranted Hours

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
07:00:00 - 08:00:00	1,481.00	164.00
08:00:00 - 09:00:00	1,541.00	154.00
11:00:00 - 12:00:00	1,092.00	141.00
12:00:00 - 13:00:00	1,257.00	152.00
13:00:00 - 14:00:00	1,243.00	123.00
14:00:00 - 15:00:00	1,227.00	123.00
15:00:00 - 16:00:00	1,490.00	155.00
16:00:00 - 17:00:00	1,720.00	164.00
17:00:00 - 18:00:00	1,950.00	148.00

Note: Only data of hours warranted is represented in the above table.

Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	2
Approch Speed	35	25

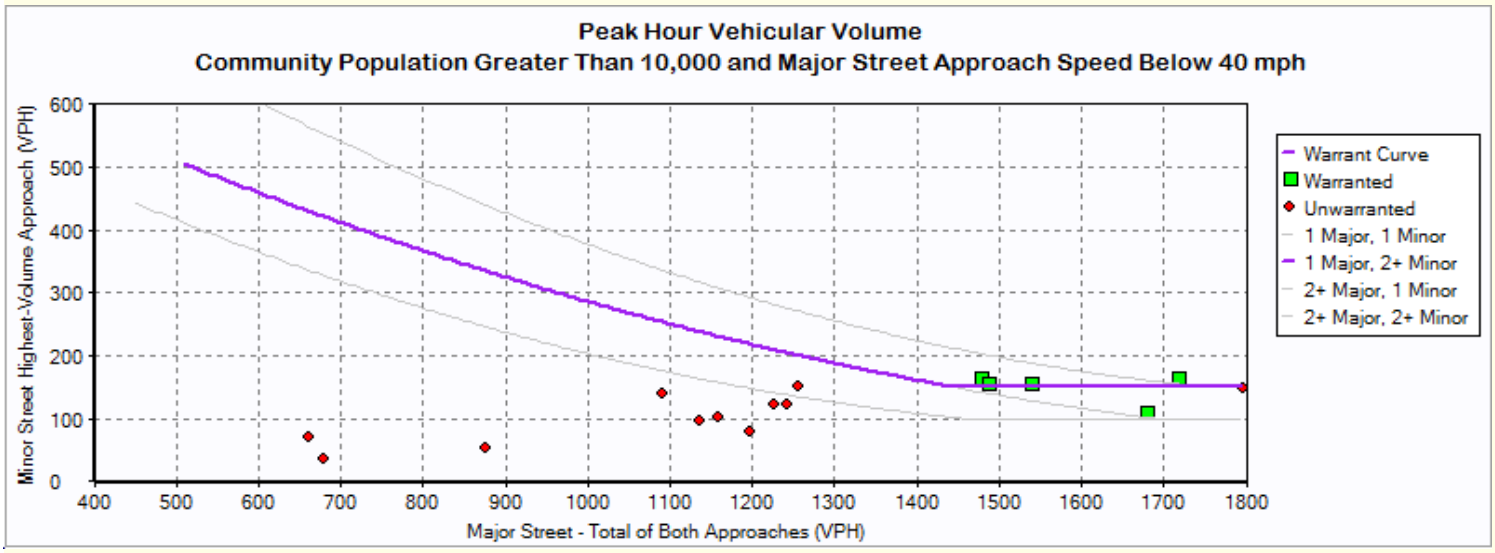
Warrant 3 Met? **Yes**

Details

Low Population? No

Condition A Met	No	**Condition B Met**	Yes
Notes	0 Hours met (1 required)	**Notes**	5 Hours met (1 required)

Minor Approach Time Delay Condition Met?	Not Met
Minor Approach Volume Condition Met?	Met
Total Entering Intersection Volume Condition Met?	Not Met



Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
6:00	662	72
7:00	1,481	164
8:00	1,541	154
9:00	1,158	103
10:00	1,137	98
11:00	1,092	141
12:00	1,257	152
13:00	1,243	123
14:00	1,227	123
15:00	1,490	155
16:00	1,720	164
17:00	1,950	148
18:00	1,681	107
19:00	1,197	78
20:00	876	53
21:00	679	37

SCENARIO B
1 MINOR (EB LEFT/THRU) & 1 MAJOR

Warrants Summary Report

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	1
Approach Speed	35	25

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	No	
Condition A or B Met'	No	0 Hours met (8 required)
Condition A and B Me	No	0 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	No	0 Hours met (4 required)
Warrant 3, Peak Hour		
	No	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	No	0 Hours met (1 required)

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

Major Street Name:	Walnut Ave
Major Street Direction:	NB/SB
Minor Street Direction:	EB/WB

WARRANT 1 MET? **No**

Details:

Condition A Met?	No	0 Hours met (8 required)
Condition B Met?	No	0 Hours met (8 required)

Hour	Major Street Vehicles (Total of Both Approaches)		High Volume Minor Approach Vehicles		100% Standard Met? Cond. A OR Cond. B		80% Standard Met? Cond. A AND Cond. B	
					Condition A 100% Column	Condition B 100% Column	Condition A 80% Column	Condition B 80% Column
06:00 to 07:00	**670**		**28**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
07:00 to 08:00	**1,500**		**59**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
08:00 to 09:00	**1,656**		**62**		No	No	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

09:00 to 10:00	**1,171**		**37**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
10:00 to 11:00	**1,144**		**33**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
11:00 to 12:00	**1,100**		**42**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
12:00 to 13:00	**1,270**		**44**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
13:00 to 14:00	**1,260**		**39**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

14:00 to 15:00	**1,237**		**39**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
15:00 to 16:00	**1,496**		**47**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
16:00 to 17:00	**1,742**		**57**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
17:00 to 18:00	**1,973**		**60**		No	No	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	Yes				
18:00 to 19:00	**1,684**		**34**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

19:00 to 20:00	**1,198**		**27**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
20:00 to 21:00	**878**		**19**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
21:00 to 22:00	**680**		**13**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

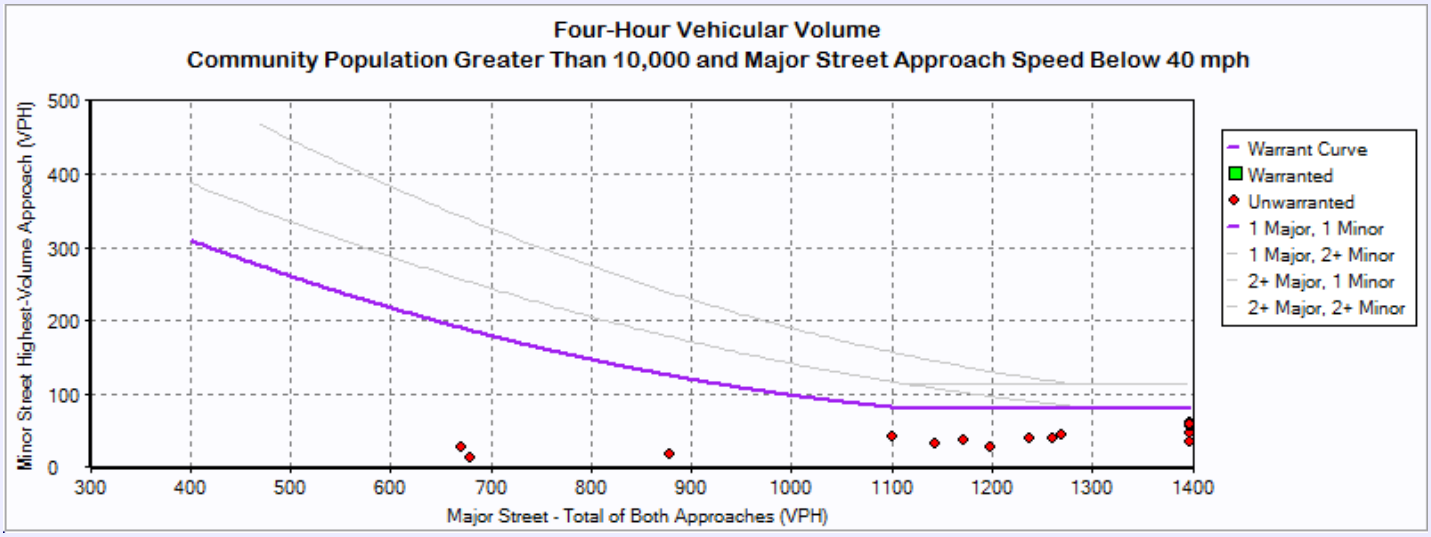
Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	1
Approch Speed	35	25

Warrant 2 Met? **No**

Details:

Notes	0 Hours met (4 required)
Low population	No



Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Hourly Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
00:00:00 - 01:00:00	0	0
01:00:00 - 02:00:00	0	0
02:00:00 - 03:00:00	0	0
03:00:00 - 04:00:00	0	0
04:00:00 - 05:00:00	0	0
05:00:00 - 06:00:00	0	0
06:00:00 - 07:00:00	670	28
07:00:00 - 08:00:00	1,500	59
08:00:00 - 09:00:00	1,656	62
09:00:00 - 10:00:00	1,171	37
10:00:00 - 11:00:00	1,144	33
11:00:00 - 12:00:00	1,100	42
12:00:00 - 13:00:00	1,270	44
13:00:00 - 14:00:00	1,260	39
14:00:00 - 15:00:00	1,237	39
15:00:00 - 16:00:00	1,496	47
16:00:00 - 17:00:00	1,742	57
17:00:00 - 18:00:00	1,973	60
18:00:00 - 19:00:00	1,684	34
19:00:00 - 20:00:00	1,198	27
20:00:00 - 21:00:00	878	19
21:00:00 - 22:00:00	680	13
22:00:00 - 23:00:00	0	0

23:00:00 - 00:00:00	0	0

Warranted Hours

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)

Note: Only data of hours warranted is represented in the above table.

Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	1
Approch Speed	35	25

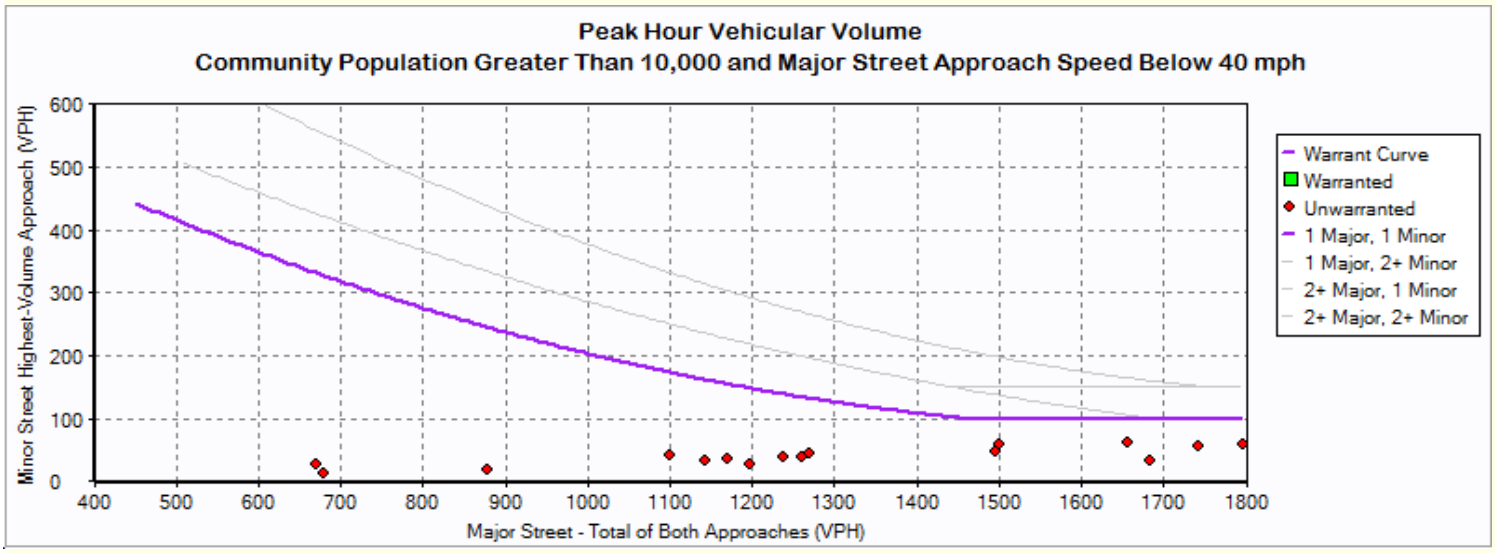
Warrant 3 Met? **No**

Details

Low Population? No

Condition A Met	No	**Condition B Met**	No
Notes	0 Hours met (1 required)	**Notes**	0 Hours met (1 required)

Minor Approach Time Delay Condition Met?	Not Met
Minor Approach Volume Condition Met?	Met
Total Entering Intersection Volume Condition Met?	Not Met



Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
6:00	670	28
7:00	1,500	59
8:00	1,656	62
9:00	1,171	37
10:00	1,144	33
11:00	1,100	42
12:00	1,270	44
13:00	1,260	39
14:00	1,237	39
15:00	1,496	47
16:00	1,742	57
17:00	1,973	60
18:00	1,684	34
19:00	1,198	27
20:00	878	19
21:00	680	13

SCENARIO B
2 MINOR (EB LEFT/THRU & RIGHT) & 1 MAJOR

Warrants Summary Report

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	2
Approach Speed	35	25

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	Yes	
Condition A or B Met'	Yes	11 Hours met (8 required)
Condition A and B Me	No	3 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	Yes	10 Hours met (4 required)
Warrant 3, Peak Hour		
	Yes	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	Yes	6 Hours met (1 required)

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

Major Street Name:	Walnut Ave
Major Street Direction:	NB/SB
Minor Street Direction:	EB/WB

WARRANT 1 MET? Yes

Details:

Condition A Met?	Yes	11 Hours met (8 required)
Condition B Met?	No	3 Hours met (8 required)

Hour	Major Street Vehicles (Total of Both Approaches)		High Volume Minor Approach Vehicles		100% Standard Met? Cond. A OR Cond. B		80% Standard Met? Cond. A AND Cond. B	
					Condition A 100% Column	Condition B 100% Column	Condition A 80% Column	Condition B 80% Column
06:00 to 07:00	**670**		**72**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	No				
07:00 to 08:00	**1,500**		**152**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
08:00 to 09:00	**1,656**		**163**		No	Yes*	Yes*	Yes*
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	Yes				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

09:00 to 10:00	**1,171**		**103**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
10:00 to 11:00	**1,144**		**97**		No	No	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
11:00 to 12:00	**1,100**		**138**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
12:00 to 13:00	**1,270**		**150**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
13:00 to 14:00	**1,260**		**122**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

14:00 to 15:00	**1,237**		**121**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
15:00 to 16:00	**1,496**		**153**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
16:00 to 17:00	**1,742**		**203**		Yes*	Yes*	Yes*	Yes*
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	Yes				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	Yes				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
17:00 to 18:00	**1,973**		**214**		Yes*	Yes*	Yes*	Yes*
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	Yes				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	Yes				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
18:00 to 19:00	**1,684**		**106**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

19:00 to 20:00	**1,198**		**77**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	No				
20:00 to 21:00	**878**		**53**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	No				
21:00 to 22:00	**680**		**36**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	No				

Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

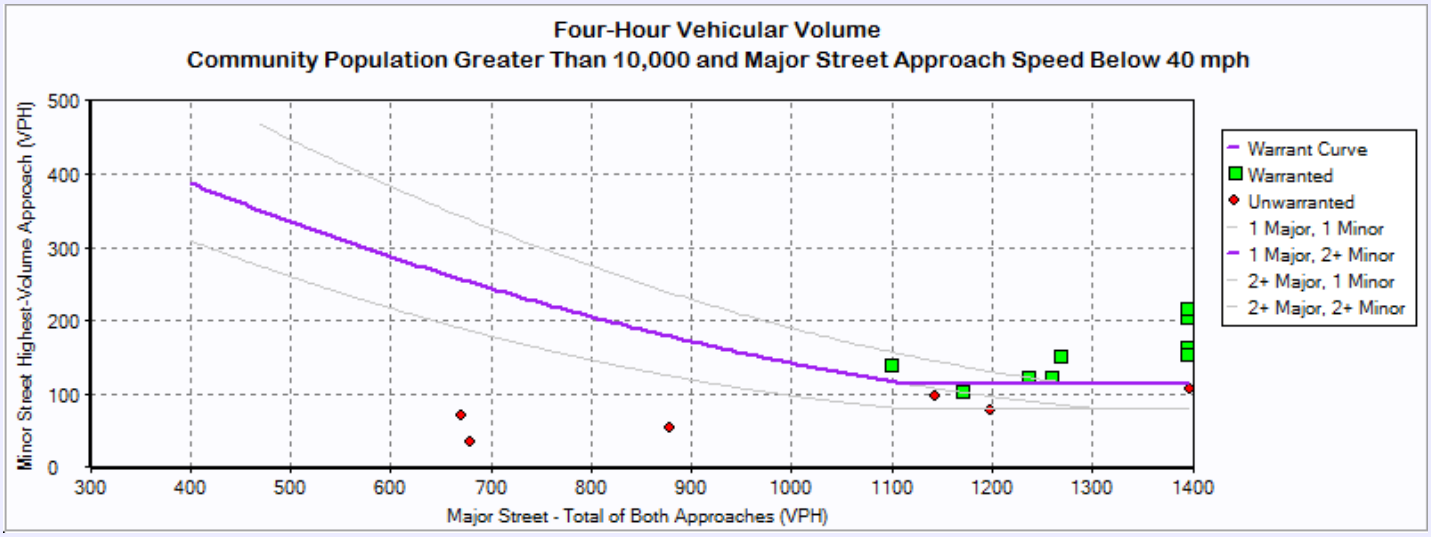
Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	2
Approch Speed	35	25

Warrant 2 Met? **Yes**

Details:

Notes	10 Hours met (4 required)
Low population	No



Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Hourly Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
00:00:00 - 01:00:00	0	0
01:00:00 - 02:00:00	0	0
02:00:00 - 03:00:00	0	0
03:00:00 - 04:00:00	0	0
04:00:00 - 05:00:00	0	0
05:00:00 - 06:00:00	0	0
06:00:00 - 07:00:00	670	72
07:00:00 - 08:00:00	1,500	152
08:00:00 - 09:00:00	1,656	163
09:00:00 - 10:00:00	1,171	103
10:00:00 - 11:00:00	1,144	97
11:00:00 - 12:00:00	1,100	138
12:00:00 - 13:00:00	1,270	150
13:00:00 - 14:00:00	1,260	122
14:00:00 - 15:00:00	1,237	121
15:00:00 - 16:00:00	1,496	153
16:00:00 - 17:00:00	1,742	203
17:00:00 - 18:00:00	1,973	214
18:00:00 - 19:00:00	1,684	106
19:00:00 - 20:00:00	1,198	77
20:00:00 - 21:00:00	878	53
21:00:00 - 22:00:00	680	36
22:00:00 - 23:00:00	0	0

23:00:00 - 00:00:00	0	0

Warranted Hours

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
07:00:00 - 08:00:00	1,500.00	152.00
08:00:00 - 09:00:00	1,656.00	163.00
09:00:00 - 10:00:00	1,171.00	103.00
11:00:00 - 12:00:00	1,100.00	138.00
12:00:00 - 13:00:00	1,270.00	150.00
13:00:00 - 14:00:00	1,260.00	122.00
14:00:00 - 15:00:00	1,237.00	121.00
15:00:00 - 16:00:00	1,496.00	153.00
16:00:00 - 17:00:00	1,742.00	203.00
17:00:00 - 18:00:00	1,973.00	214.00

Note: Only data of hours warranted is represented in the above table.

Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

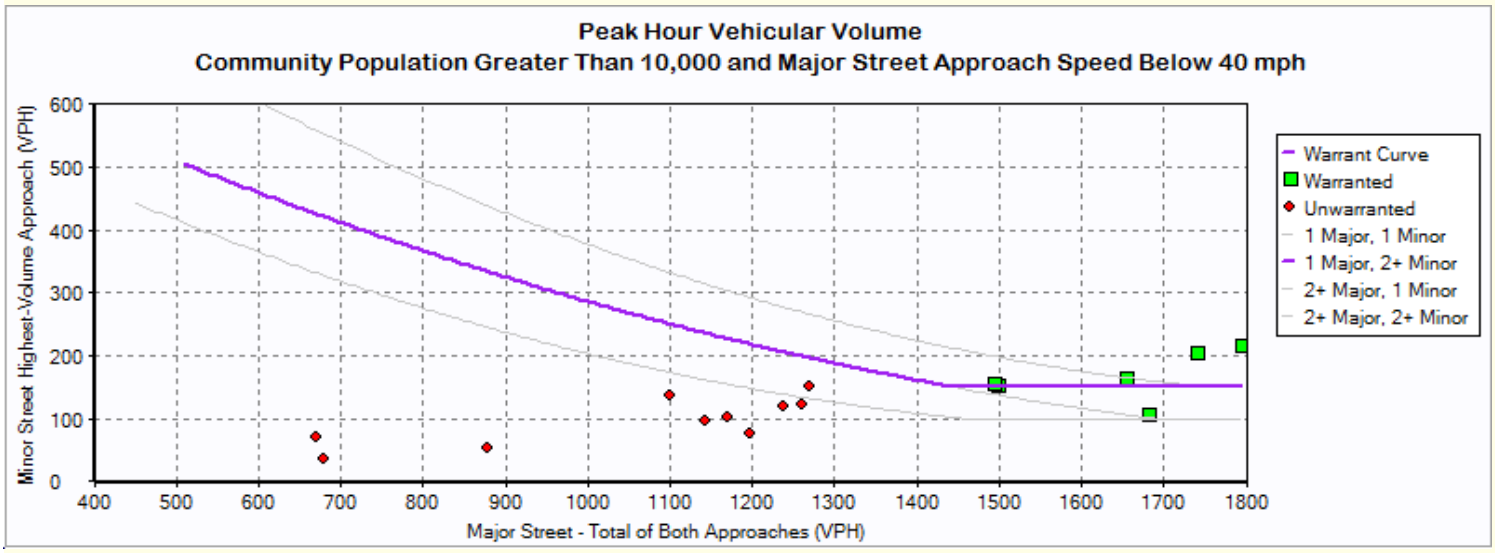
	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	2
Approch Speed	35	25

Warrant 3 Met? **Yes**

Details

Low Population?	No		
Condition A Met	No	**Condition B Met**	Yes
Notes	0 Hours met (1 required)	**Notes**	6 Hours met (1 required)

Minor Approach Time Delay Condition Met?	Not Met
Minor Approach Volume Condition Met?	Met
Total Entering Intersection Volume Condition Met?	Not Met



Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
6:00	670	72
7:00	1,500	152
8:00	1,656	163
9:00	1,171	103
10:00	1,144	97
11:00	1,100	138
12:00	1,270	150
13:00	1,260	122
14:00	1,237	121
15:00	1,496	153
16:00	1,742	203
17:00	1,973	214
18:00	1,684	106
19:00	1,198	77
20:00	878	53
21:00	680	36

SCENARIO C
1 MINOR (EB LEFT/THRU) & 1 MAJOR

Warrants Summary Report

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	1
Approach Speed	35	25

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	No	
Condition A or B Met'	No	2 Hours met (8 required)
Condition A and B Me	No	0 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	No	2 Hours met (4 required)
Warrant 3, Peak Hour		
	Yes	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	Yes	2 Hours met (1 required)

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

Major Street Name:	Walnut Ave
Major Street Direction:	NB/SB
Minor Street Direction:	EB/WB

WARRANT 1 MET? **No**

Details:

Condition A Met?	No	2 Hours met (8 required)
Condition B Met?	No	0 Hours met (8 required)

Hour	Major Street Vehicles (Total of Both Approaches)		High Volume Minor Approach Vehicles		100% Standard Met? Cond. A OR Cond. B		80% Standard Met? Cond. A AND Cond. B	
					Condition A 100% Column	Condition B 100% Column	Condition A 80% Column	Condition B 80% Column
06:00 to 07:00	**678**		**55**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
07:00 to 08:00	**1,455**		**114**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	Yes				
08:00 to 09:00	**1,572**		**115**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

09:00 to 10:00	**1,181**		**63**		No	No	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	Yes				
10:00 to 11:00	**1,185**		**53**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
11:00 to 12:00	**1,132**		**55**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
12:00 to 13:00	**1,278**		**51**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
13:00 to 14:00	**1,267**		**55**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

14:00 to 15:00	**1,302**		**57**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				
15:00 to 16:00	**1,598**		**61**		No	No	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	Yes				
16:00 to 17:00	**1,864**		**61**		No	No	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	Yes				
17:00 to 18:00	**2,122**		**63**		No	No	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	Yes				
18:00 to 19:00	**1,834**		**50**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

19:00 to 20:00	**1,307**		**48**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

20:00 to 21:00	**971**		**33**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

21:00 to 22:00	**755**		**22**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

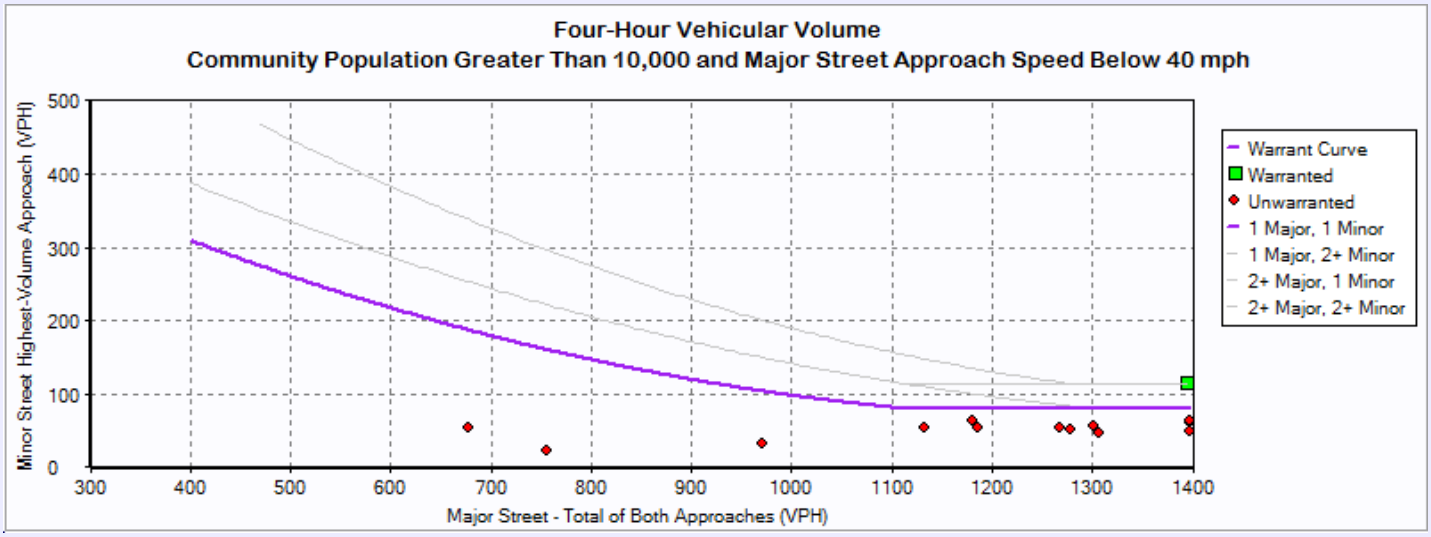
Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	1
Approch Speed	35	25

Warrant 2 Met? **No**

Details:

Notes	2 Hours met (4 required)
Low population	No



Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Hourly Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
00:00:00 - 01:00:00	0	0
01:00:00 - 02:00:00	0	0
02:00:00 - 03:00:00	0	0
03:00:00 - 04:00:00	0	0
04:00:00 - 05:00:00	0	0
05:00:00 - 06:00:00	0	0
06:00:00 - 07:00:00	678	55
07:00:00 - 08:00:00	1,455	114
08:00:00 - 09:00:00	1,572	115
09:00:00 - 10:00:00	1,181	63
10:00:00 - 11:00:00	1,185	53
11:00:00 - 12:00:00	1,132	55
12:00:00 - 13:00:00	1,278	51
13:00:00 - 14:00:00	1,267	55
14:00:00 - 15:00:00	1,302	57
15:00:00 - 16:00:00	1,598	61
16:00:00 - 17:00:00	1,864	61
17:00:00 - 18:00:00	2,122	63
18:00:00 - 19:00:00	1,834	50
19:00:00 - 20:00:00	1,307	48
20:00:00 - 21:00:00	971	33
21:00:00 - 22:00:00	755	22
22:00:00 - 23:00:00	0	0

23:00:00 - 00:00:00	0	0

Warranted Hours

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
07:00:00 - 08:00:00	1,455.00	114.00
08:00:00 - 09:00:00	1,572.00	115.00

Note: Only data of hours warranted is represented in the above table.

Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	1
Approch Speed	35	25

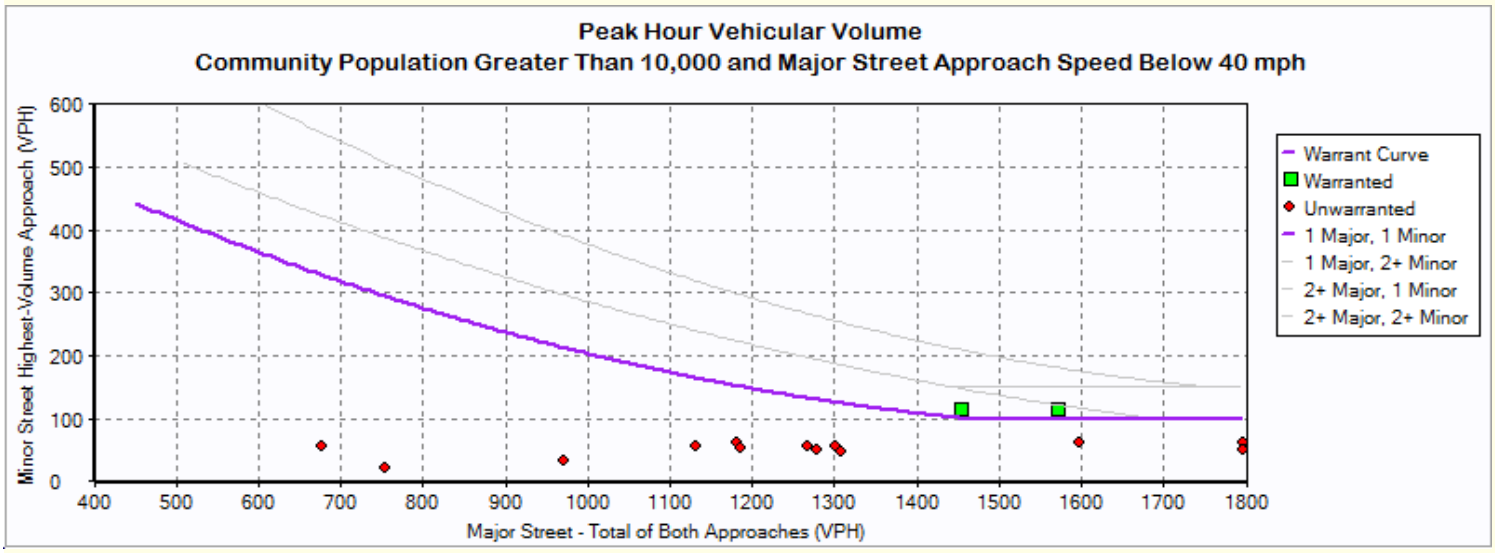
Warrant 3 Met? **Yes**

Details

Low Population? No

Condition A Met	No	**Condition B Met**	Yes
Notes	0 Hours met (1 required)	**Notes**	2 Hours met (1 required)

Minor Approach Time Delay Condition Met?	Not Met
Minor Approach Volume Condition Met?	Met
Total Entering Intersection Volume Condition Met?	Not Met



Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
6:00	678	55
7:00	1,455	114
8:00	1,572	115
9:00	1,181	63
10:00	1,185	53
11:00	1,132	55
12:00	1,278	51
13:00	1,267	55
14:00	1,302	57
15:00	1,598	61
16:00	1,864	61
17:00	2,122	63
18:00	1,834	50
19:00	1,307	48
20:00	971	33
21:00	755	22

SCENARIO C
2 MINOR (EB LEFT/THRU & RIGHT) & 1 MAJOR

Warrants Summary Report

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	2
Approach Speed	35	25

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	Yes	
Condition A or B Met'	Yes	13 Hours met (8 required)
Condition A and B Me	No	2 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	Yes	12 Hours met (4 required)
Warrant 3, Peak Hour		
	Yes	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	Yes	3 Hours met (1 required)

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

Major Street Name:	Walnut Ave
Major Street Direction:	NB/SB
Minor Street Direction:	EB/WB

WARRANT 1 MET? Yes

Details:

Condition A Met?	Yes	13 Hours met (8 required)
Condition B Met?	No	2 Hours met (8 required)

Hour	Major Street Vehicles (Total of Both Approaches)		High Volume Minor Approach Vehicles		100% Standard Met? Cond. A OR Cond. B		80% Standard Met? Cond. A AND Cond. B	
					Condition A 100% Column	Condition B 100% Column	Condition A 80% Column	Condition B 80% Column
06:00 to 07:00	**678**		**122**		No	No	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
07:00 to 08:00	**1,455**		**252**		Yes*	Yes*	Yes*	Yes*
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	Yes				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	Yes				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
08:00 to 09:00	**1,572**		**254**		Yes*	Yes*	Yes*	Yes*
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	Yes				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	Yes				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

09:00 to 10:00	**1,181**		**139**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
10:00 to 11:00	**1,185**		**118**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
11:00 to 12:00	**1,132**		**122**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
12:00 to 13:00	**1,278**		**113**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
13:00 to 14:00	**1,267**		**122**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

14:00 to 15:00	**1,302**		**127**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
15:00 to 16:00	**1,598**		**135**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
16:00 to 17:00	**1,864**		**135**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
17:00 to 18:00	**2,122**		**139**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
18:00 to 19:00	**1,834**		**110**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				

Warrant 1: Eight-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

19:00 to 20:00	**1,307**		**106**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	Yes				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	Yes				
20:00 to 21:00	**971**		**73**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	No				
21:00 to 22:00	**755**		**49**		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	Yes	**Volume >= 100% column (100)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (80)?**	No				

Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

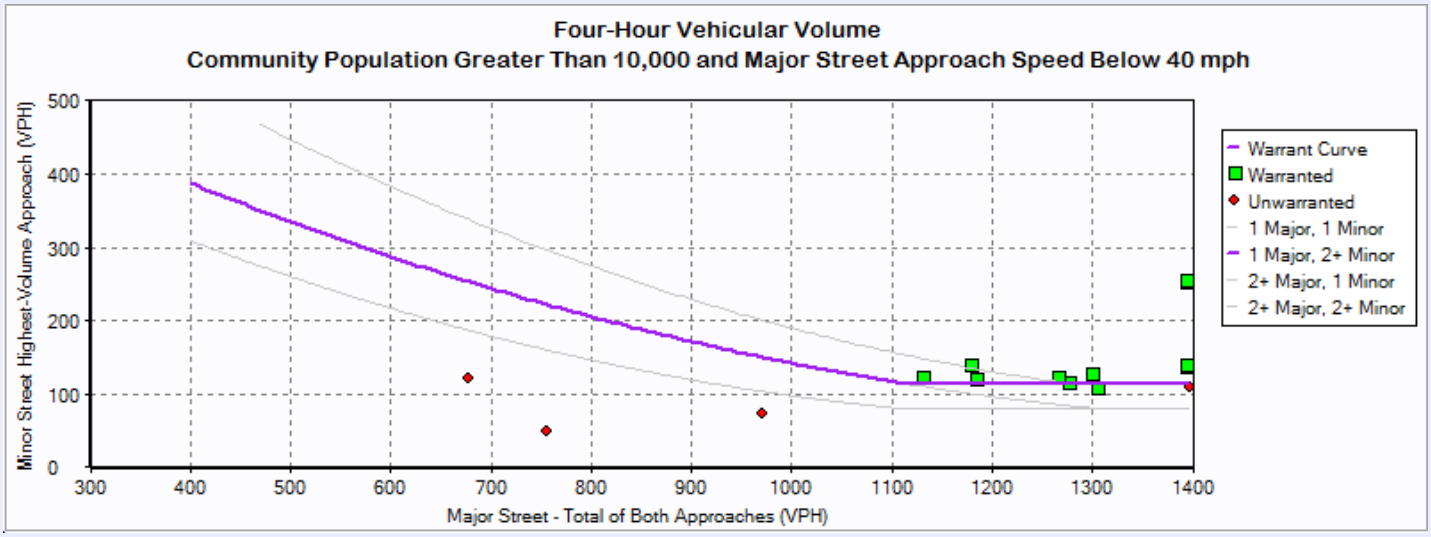
Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	2
Approch Speed	35	25

Warrant 2 Met? **Yes**

Details:

Notes	12 Hours met (4 required)
Low population	No



Warrant 2: Four-hour Vehicular Volume

1: Walnut Ave & Behnert Pl/Drwy 2

Hourly Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
00:00:00 - 01:00:00	0	0
01:00:00 - 02:00:00	0	0
02:00:00 - 03:00:00	0	0
03:00:00 - 04:00:00	0	0
04:00:00 - 05:00:00	0	0
05:00:00 - 06:00:00	0	0
06:00:00 - 07:00:00	678	122
07:00:00 - 08:00:00	1,455	252
08:00:00 - 09:00:00	1,572	254
09:00:00 - 10:00:00	1,181	139
10:00:00 - 11:00:00	1,185	118
11:00:00 - 12:00:00	1,132	122
12:00:00 - 13:00:00	1,278	113
13:00:00 - 14:00:00	1,267	122
14:00:00 - 15:00:00	1,302	127
15:00:00 - 16:00:00	1,598	135
16:00:00 - 17:00:00	1,864	135
17:00:00 - 18:00:00	2,122	139
18:00:00 - 19:00:00	1,834	110
19:00:00 - 20:00:00	1,307	106
20:00:00 - 21:00:00	971	73
21:00:00 - 22:00:00	755	49
22:00:00 - 23:00:00	0	0

23:00:00 - 00:00:00	0	0

Warranted Hours

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
07:00:00 - 08:00:00	1,455.00	252.00
08:00:00 - 09:00:00	1,572.00	254.00
09:00:00 - 10:00:00	1,181.00	139.00
10:00:00 - 11:00:00	1,185.00	118.00
11:00:00 - 12:00:00	1,132.00	122.00
12:00:00 - 13:00:00	1,278.00	113.00
13:00:00 - 14:00:00	1,267.00	122.00
14:00:00 - 15:00:00	1,302.00	127.00
15:00:00 - 16:00:00	1,598.00	135.00
16:00:00 - 17:00:00	1,864.00	135.00
17:00:00 - 18:00:00	2,122.00	139.00
19:00:00 - 20:00:00	1,307.00	106.00

Note: Only data of hours warranted is represented in the above table.

Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Intersection Information

	Major Street	Minor Street
Street Name	Walnut Ave	Behnert Pl
Direction	NB/SB	EB/WB
Number of Lanes	1	2
Approch Speed	35	25

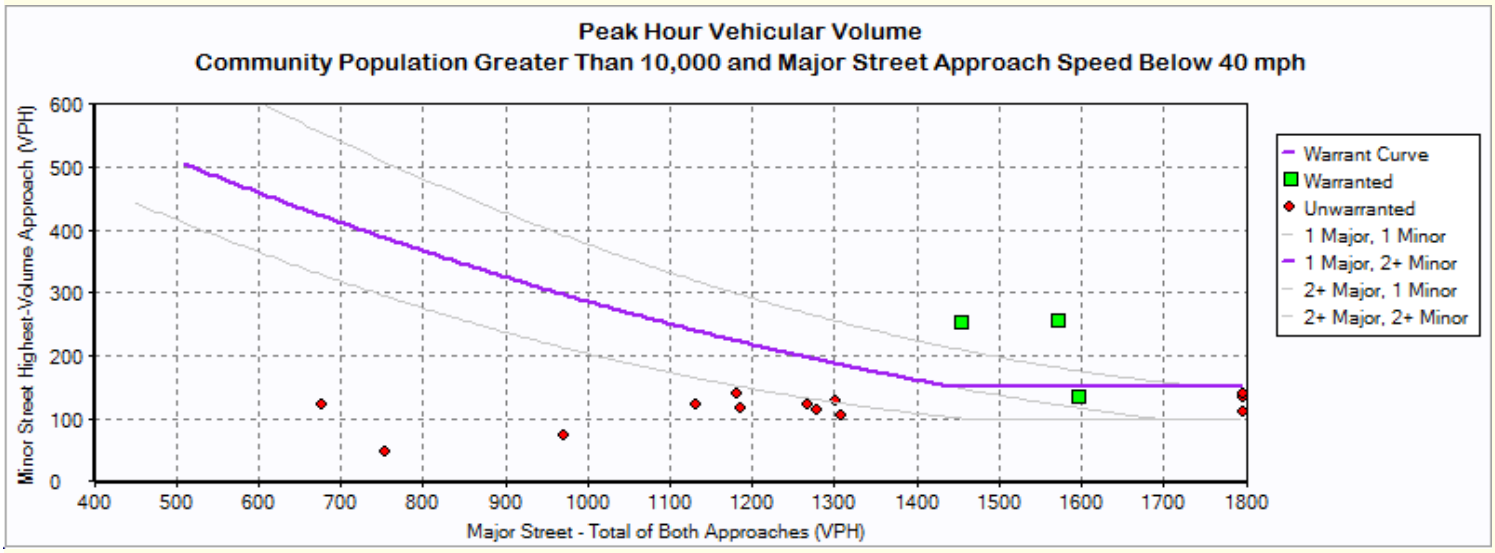
Warrant 3 Met? **Yes**

Details

Low Population? No

Condition A Met	No	**Condition B Met**	Yes
Notes	0 Hours met (1 required)	**Notes**	3 Hours met (1 required)

Minor Approach Time Delay Condition Met?	Not Met
Minor Approach Volume Condition Met?	Met
Total Entering Intersection Volume Condition Met?	Not Met

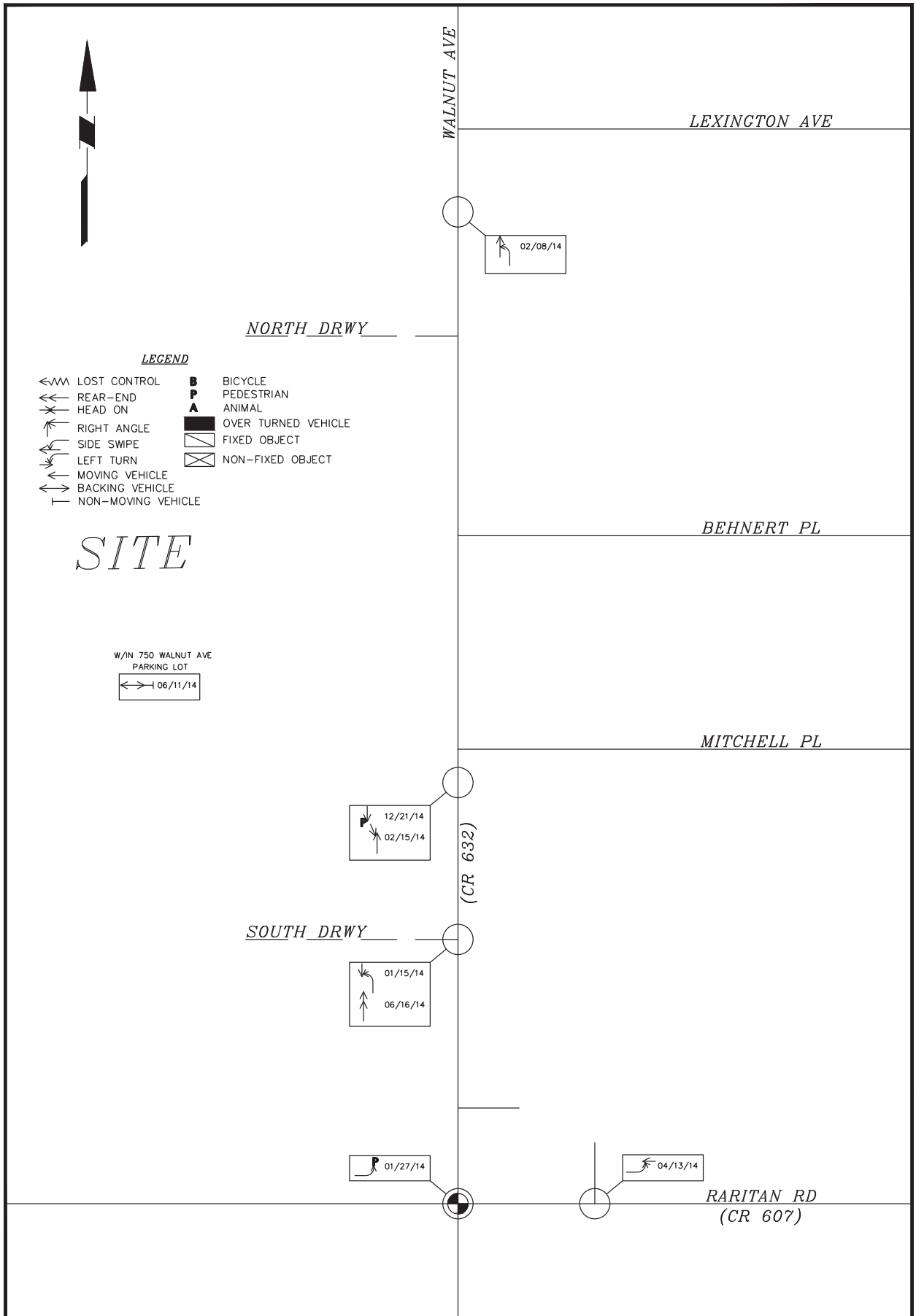


Warrant 3: Peak Hour

1: Walnut Ave & Behnert Pl/Drwy 2

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
6:00	678	122
7:00	1,455	252
8:00	1,572	254
9:00	1,181	139
10:00	1,185	118
11:00	1,132	122
12:00	1,278	113
13:00	1,267	122
14:00	1,302	127
15:00	1,598	135
16:00	1,864	135
17:00	2,122	139
18:00	1,834	110
19:00	1,307	106
20:00	971	73
21:00	755	49

APPENDIX F
ACCIDENT SUMMARY REPORTS



LANGAN
989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
Langan International LLC
Collectively known as Langan
NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

750 WALNUT AVENUE

BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY **NEW JERSEY**

Drawing Title

2014 ACCIDENT REPORT SUMMARY

Project No. 130102501	Drawing No. FIGURE 1
Date 03/08/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date MARCH 2017	Sheet 1 of 4

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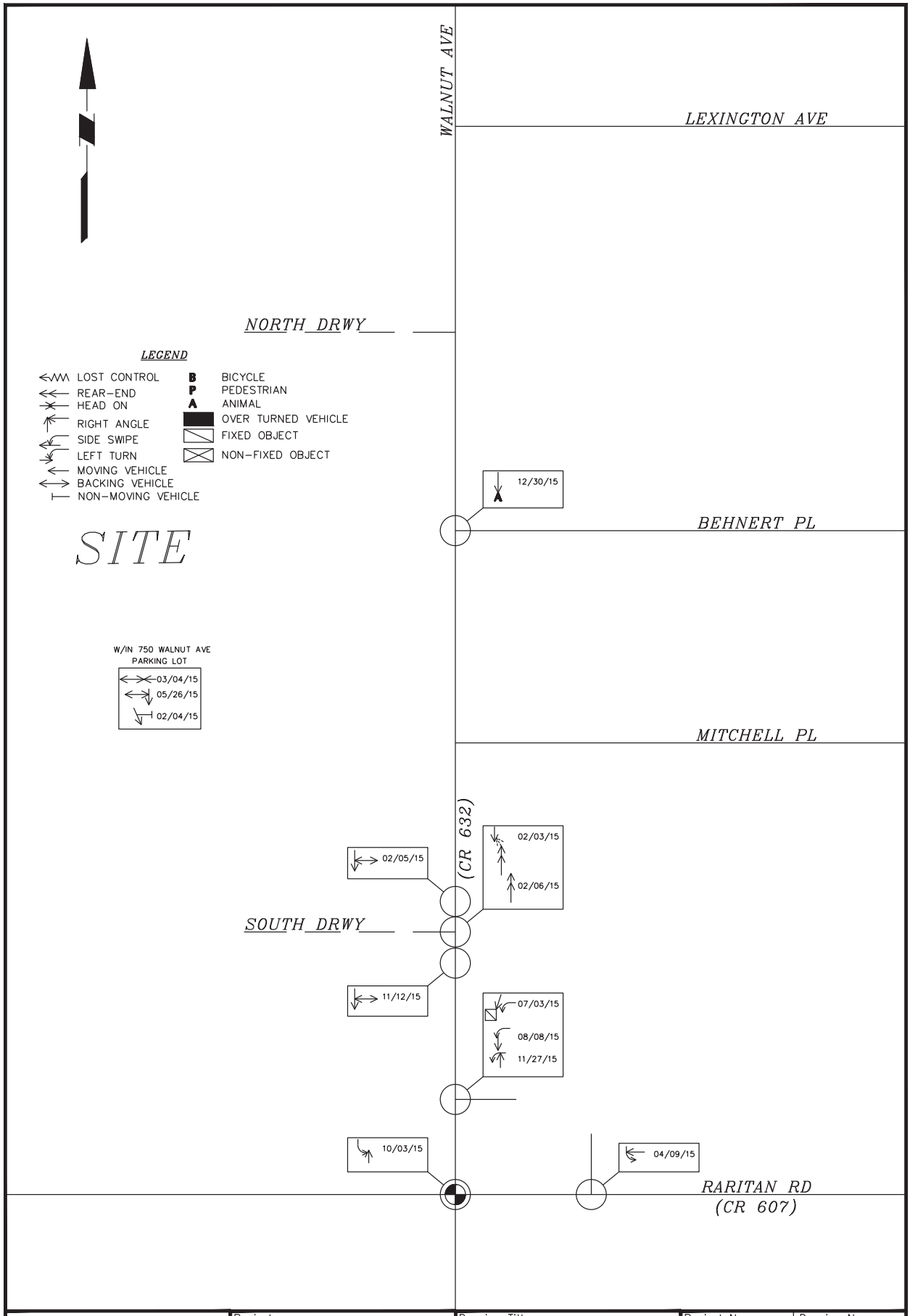
File name: \\langan.com\data\LAW\data5\130102501\Engineering Data\Traffic\Accident Data\2017-03 Accident Data Walnut Ave.dwg Date: 3/8/2017 Time: 10:38 User: kapehnke Style Table: Langan.stb Layout: 1-2014



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Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A
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Project
750 WALNUT AVENUE
BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY **NEW JERSEY**

Drawing Title
2015 ACCIDENT REPORT SUMMARY

Project No. 130102501	Drawing No. FIGURE 2
Date 03/08/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date MARCH 2017	Sheet 2 of 4

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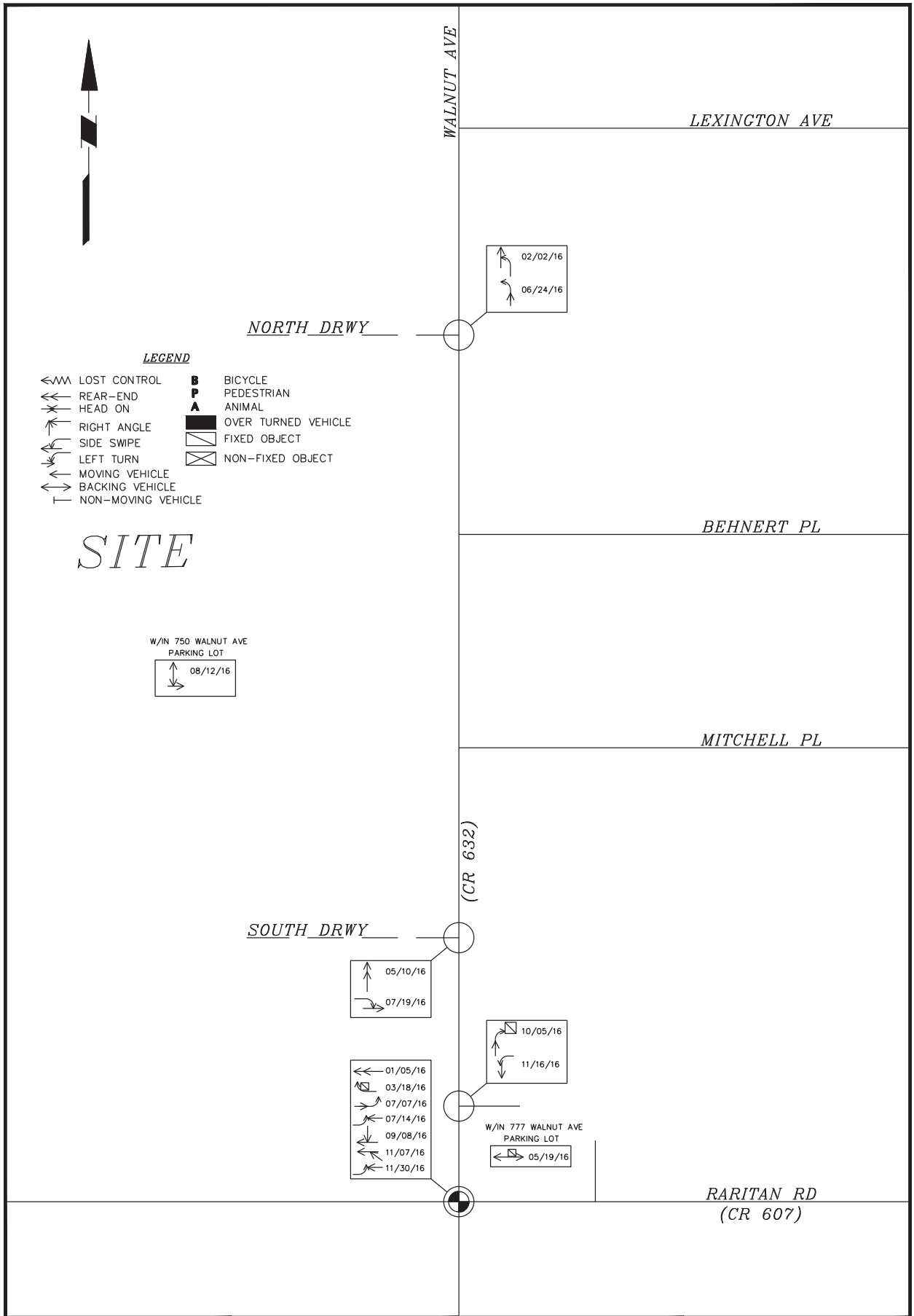

LANGAN
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Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
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Project

750 WALNUT AVENUE

BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD

UNION COUNTY **NEW JERSEY**

Drawing Title

2016 ACCIDENT REPORT SUMMARY

Project No. 130102501	Drawing No. FIGURE 3
Date 03/08/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date MARCH 2017	Sheet 3 of 4

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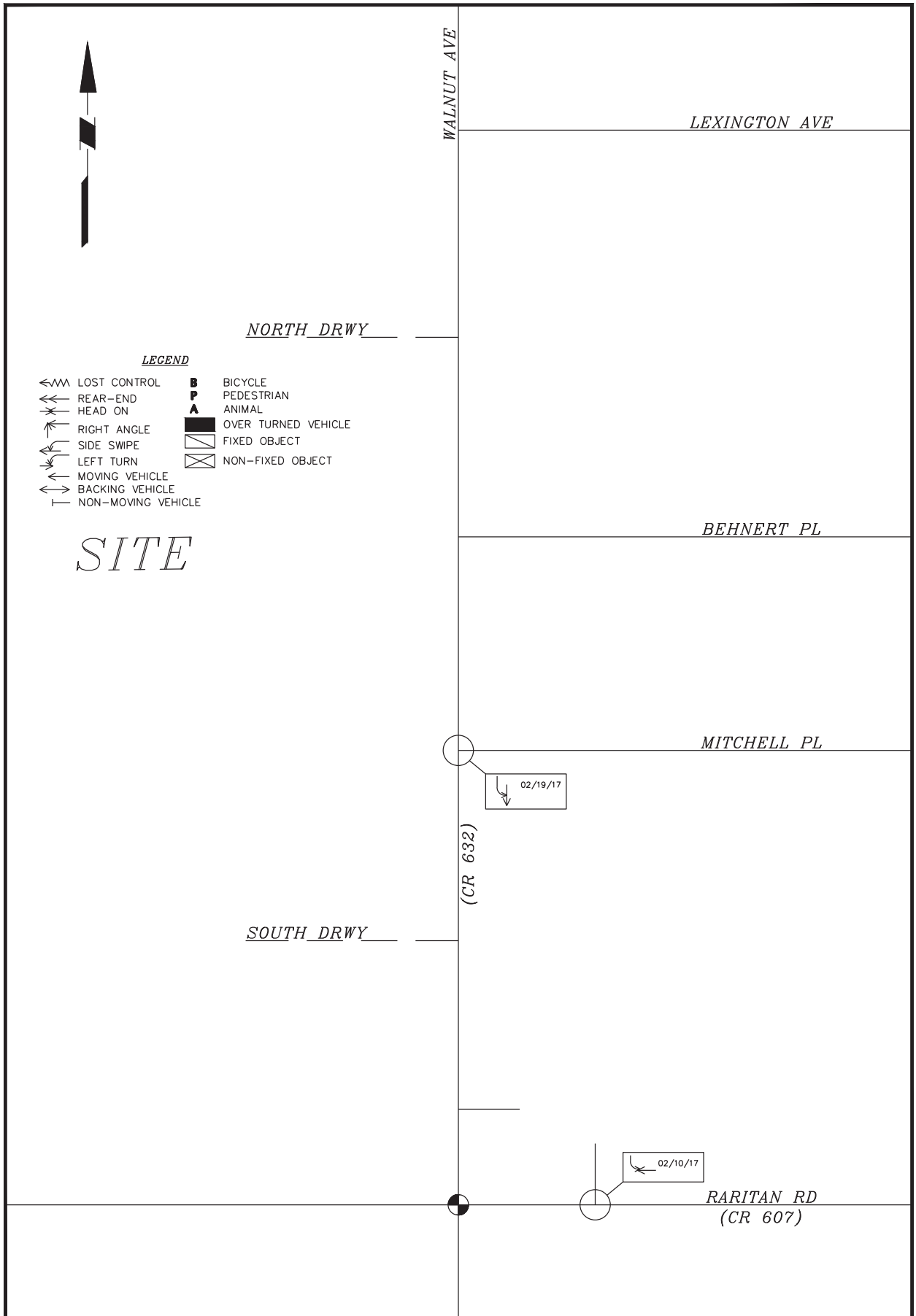

LANGAN
989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A
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Project
750 WALNUT AVENUE
BLOCK No. 541, LOT No. 2
TOWNSHIP OF CRANFORD
UNION COUNTY **NEW JERSEY**

Drawing Title
2017 ACCIDENT REPORT SUMMARY

Project No. 130102501	Drawing No. FIGURE 4
Date 03/08/2017	
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date MARCH 2017	Sheet 4 of 4

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