APPENDIX E

Traffic Analysis

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TRAFFIC IMPACT STUDY

****

ORCHARD RIDGE – MEOLA ROAD ACCESS ALTERNATIVE

NYS ROUTE 303 AND MEOLA ROAD

TOWN OF CLARKSTOWN, NEW YORK

JOB NO. 1560

FEBRUARY 26, 2009

REVISED DECEMBER 19, 2011

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SECTION I

INTRODUCTION

A. PROJECT DESCRIPTION AND LOCATION (Figure No. 1)

Orchard Ridge is a proposed 320 dwelling unit adult housing development which is proposed on property located on the west side of NYS Route 303 between Brenner Drive and U.S. Route 9W in the Town of Clarkstown, New York. The site location is shown on Figure No. 1. Access to the site will be provided via a connection to the existing Meola Road. There is also a small commercially zoned parcel located south of Meola Road. While there are no current plans for the development of this parcel, a separate evaluation of this potential development is provided in Section III-I of this report.

A design year of 2012 has been utilized in this analysis in order to evaluate traffic conditions associated with the development of the Orchard Ridge site.

B. SCOPE OF STUDY

This study was prepared to identify current traffic conditions and to evaluate the potential traffic impacts of the proposed development on the surrounding roadway network.

Traffic counts were collected in the area by representatives of John Collins Engineers, P.C. during February 2009 and June 2009. These count data were also compared to information obtained from the New York State Department of Transportation (NYSDOT) and previous data collected by our office along the corridor. Together this information was utilized to establish the existing traffic conditions for the surrounding roadway system.

The Existing Traffic Volumes were projected to the future Design Year to account for normal background traffic growth in the area to develop the Year 2012 No-Build Traffic Volumes.

Estimates of traffic associated with the proposed Orchard Ridge development were made and added to the Year 2012 No-Build Traffic Volumes to obtain the Year 2012 Build Traffic Volumes.

Capacity analyses were then completed at each of the study intersections utilizing the Existing, No-Build, and Build Traffic Volumes in order to determine Levels of Service and operating conditions. Based on the results of the analyses, recommendations for improvements to serve future traffic conditions were then made.

SECTION II

EXISTING ROADWAY AND TRAFFIC CONDITIONS

A. DESCRIPTION OF EXISTING ROADWAY NETWORK

As indicated previously, the site is located along the west side of NYS Route 303. A description of this and other area roadways is provided below:

1. NYS Route 303 - is generally a two lane roadway with paved shoulders. The roadway originates at the New Jersey State Line in the Town of Orangetown and continues in a northerly direction intersecting with the NYS Thruway and continuing through the Town of Clarkstown. It terminates at a signalized intersection with U.S. Route 9W. In the immediate vicinity of the site, the roadway has a posted speed limit of 45mph south of the site and an unposted 55mph north of the site and there are southbound passing zones both north and south of the site.

2. U.S Route 9W - is a major north/south roadway which traverses throughout Rockland County and into Orange County. In the vicinity of the site it consists of one lane per direction and it has signalized intersections with NYS Route 303 and NYS Route 304.

3. Lake Road (CR 80) – intersects with NYS Route 303 south of this site at a signalized intersection. This roadway generally consists of one lane per direction and has a posted speed limit of 30mph.

4. Meola Road – intersects with NYS Route 303 at a "T" intersection. It consists of two lanes and currently provides access to an existing shopping plaza.

5. Other Roadways

   Brenner Lane is an existing roadway which provides access to an existing industrial park, located south of the site. Hemlock Drive is an existing roadway which intersects with Route 303 as a "T" intersection opposite the site.

B. YEAR 2009 EXISTING TRAFFIC VOLUMES (Figures No. 2 and 3)

Detailed turning movement traffic counts were collected by representatives of John Collins Engineers, P.C. during the weekday morning and afternoon peak hours at the following locations which include those requested to be studied by the NYSDOT:

- U.S. Route 9W and NYS Route 303
- NYS Route 303 and Hemlock Drive
- NYS Route 303 and Brenner Drive
- NYS Route 303 and Lake Road (C.R. 80)

- NYS Route 303 and Meola Road
- NYS Route 303 and Randi Lane/Hilltop Road

The actual counts were collected between 6:45AM - 9:15AM and 3:45PM - 6:15PM on February 10th, 11th, and June 17 and 18, 2009. In addition, available traffic count data from previous studies prepared by our office and from the New York State Department of Transportation was also referenced for the NYS Route 303 corridor. Based upon a review of the Existing Traffic Volumes, the peak hours were determined to occur as follows:

Weekday Peak AM Highway Hour -- 7:30 AM - 8:30 AM

Weekday Peak PM Highway Hour -- 4:30 PM - 5:30 PM

The resulting 2009 Existing Traffic Volumes for each of the intersections are identified on Figures No. 2 and 3.

SECTION III

EVALUATION OF FUTURE TRAFFIC CONDITIONS

A. YEAR 2012 PROJECTED TRAFFIC VOLUMES (Figures No. 4 and 5)

The Existing Traffic Volumes were projected to a 2012 Design Year utilizing a growth of 2% per year to account for background traffic growth in the area. The 2012 Projected Traffic Volumes are shown on Figures No. 4 and 5 for the Weekday Peak AM and Peak PM Hours, respectively. While the projections refer to a 2012 design year, it should be noted that recent counts have indicated little or lower growth in background traffic volumes and thus, it is likely that these projected volumes are more representative of future 2015 conditions.

B. OTHER DEVELOPMENT TRAFFIC VOLUMES (Figures No. 6 and 7)

Other specific planned area development traffic volumes were also added to the roadway system and included the traffic from the Kohl Industrial development and Hemlock Drive development. The traffic for these developments are shown on Figures No. 6 and 7 for the AM and PM Peak Hours.

C. YEAR 2012 NO-BUILD TRAFFIC VOLUMES (Figures No. 8 and 9)

The 2012 No-Build Traffic Volumes were obtained by adding the Other Development Traffic Volumes to the 2012 Projected Traffic Volumes. The resulting volumes are shown on Figures No. 8 and 9 for the Weekday Peak AM and Peak PM Hours, respectively.

D. SITE-GENERATED TRAFFIC VOLUMES (Table No. 1)

Based on information published by the Institute of Transportation Engineers (ITE) as contained in their report entitled, "Trip Generation", 8th Edition, 2008, estimates of the peak hour traffic volumes were computed for the proposed site. The resulting Site Generated Traffic Volumes are shown on Table No. 1. Appendix "G" of this report contains an evaluation of conditions using the trip generation rates for a non-age restricted Townhouse development as a sensitivity analysis.

E. ARRIVAL AND DEPARTURE DISTRIBUTIONS (Figures No. 10 and 11)

Based upon a review of the Existing Traffic Volumes, arrival and departure distributions were developed to assign the site generated traffic volumes to the roadway network and adjacent intersections. These distributions are shown on Figures No. 10 and 11.

F. YEAR 2012 BUILD TRAFFIC VOLUMES (Figures No. 12, 13, 14 and 15)

These Site Generated Traffic Volumes shown on Table No. 1 were assigned to the roadway network utilizing the above referenced arrival and departure distributions. The resulting Site Generated Traffic Volumes for the Weekday AM and PM Peak Hours are shown on Figures 12 and 13, respectively.

These Site Generated Traffic Volumes were then combined with the Design Year No-Build Traffic Volumes to obtain the Build Traffic Volumes, which are shown on Figures No. 14 and 15.

G. DESCRIPTION OF ANALYSIS PROCEDURES

In order to determine existing and future traffic operating conditions at the study area intersections, it was necessary to perform capacity analyses. The following is a brief description of the analysis method utilized in this report:

- Signalized Intersection Capacity Analysis

  The capacity analysis for a signalized intersection was performed in accordance with the procedures described in the 2000 Highway Capacity Manual, published by the Transportation Research Board. The terminology used in identifying traffic flow conditions is Levels of Service. A Level of Service "A" represents the best condition and a Level of Service "F" represents the worst condition. A Level of Service "C" is generally used as a design standard while a Level of Service "D" is acceptable during peak periods. A Level of Service "E" represents an operation near capacity. In order to identify an intersection's Level of Service, the average amount of vehicle delay is computed for each approach to the intersection as well as for the overall intersection.

- Unsignalized Intersection Capacity Analysis

  The unsignalized intersection capacity analysis method utilized in this report was also performed in accordance with the procedures described in the 2000 Highway Capacity Manual. The procedure is based on total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the

stop line. The average total delay for any particular critical movement is a function of the service rate or capacity of the approach and the degree of saturation. In order to identify the Level of Service, the average amount of vehicle delay is computed for each critical movement to the intersection.

Additional information concerning signalized and unsignalized Levels of Service can be found in Appendix "D" of this report.

H. RESULTS OF ANALYSIS AND RECOMMENDATIONS (Table No. 2)

Utilizing the procedures described above, a capacity analysis was conducted at each of the intersections for each of the peak periods utilizing the Existing, No-Build and Build Traffic Volumes. The results of the capacity analysis including the average vehicle delays, v/c ratios and Levels of Service by lane group are summarized in Table No. 2. A description of each of the intersections is presented below:

1. NYS Route 303 and U.S. Route 9W

U.S. Route 9W intersects with NYS Route 303 at a signalized full movement intersection. The northbound approach consists of separate left and a through/right turn lane (with the right turn channelized) while the southbound approach consists of a separate left and a through/right turn lane. The Route 9W westbound approach consists of a left/through and separate right turn lane and the eastbound approach consists of one lane exiting the residential access drive.

Capacity analysis conducted at this intersection indicates that the intersection currently experiences an overall Level of Service "C" or better under existing conditions.

This intersection was re-analyzed under future No-Build and Build conditions. A review of the analysis indicates that an overall Level of Service "C" will be maintained at the intersection during peak periods.

2. NYS Route 303 and Hemlock Drive

Hemlock Drive intersects with NYS Route 303 at a "T" intersection. All approaches to the intersection consist of one lane.

Capacity analysis conducted at this intersection indicates that on the Hemlock Drive approach, a Level of Service "C" is experienced for exiting traffic during the AM and PM Peak Hours. These Levels of Service under the No-Build and Build conditions are "D".

3. NYS Route 303 and Meola Road

Orchard Ridge will be provided access via Meola Road. Meola Road is also an access to Congers Colonial Plaza. Meola Road intersects with NYS Route 303 at a "T" intersection. All approaches to the intersection consist of one lane.

The capacity analysis for the existing traffic conditions during the AM and PM Peak Hours for the Meola Road approach indicates a Level of Service "B."

It is recommended that Meola Road be widened to provide additional width including two exiting lanes at Route 303. In addition, route 303 should be widened to provide a separate left turn lane northbound. This will serve the traffic destined to the existing shopping plaza as well as Orchard Ridge.

The capacity analysis conducted at this intersection utilizing the future No-Build and Build Traffic Volumes indicates that Levels of Service "C" or better will be obtained at Meola Road.

4. NYS Route 303 and Brenner Drive/Intercos Drive

This intersection is a four-way intersection which includes Brenner Drive on the eastbound approach and Intercos Drive on the westbound approach. All approaches consist of one lane and traffic is controlled by "stop" signs on the side road approaches.

Capacity analysis conducted at this intersection indicates that Levels of Service "C" or better are currently experienced at this intersection.

The capacity analysis was recomputed utilizing the 2012 No-Build and 2012 Build Traffic Volumes. A review of this analysis indicates Level of Service "D" or better will be experienced on the side road approaches.

5. NYS Route 303 and Lake Road (CR 80)

Lake Road intersects with NYS Route 303 at a signalized four-way intersection. The Lake Road eastbound approach widens at the intersection to provide a right turn lane. Also, on the NYS Route 303 northbound approach, there is a wide shoulder lane which is used as a bypass lane. The intersection currently operates at an overall Level of Service "C" or better during peak periods.

The analysis was recomputed for future No-Build and Build conditions. The analysis indicated that some signal timing modifications will be required to accommodate future traffic volumes with or without the proposed development. With these signal modifications, an overall Level of Service "C" will be experienced during both the AM and PM Peak Hours for both the No-Build and Build conditions.

6. NYS Route 303 and Randi Lane/Hilltop Road

Randi Lane/Hilltop Road intersect with NYS Route 303 at an unsignalized four-way intersection. Hilltop Road is located on the west approach of NYS Route 303 and Randi Lane on the east approach. All approaches consist of one lane and traffic is controlled by

"stop" signs on the side road approaches. The exiting capacity analysis conducted at this intersection indicates that Levels of Service "D" or better are experienced. The capacity analysis was computed utilizing the 2012 No-Build and 2012 Build Traffic Volumes. A review of this analysis indicates a Level of Service "E" will be experienced on the side road approaches.

I. CONSIDERATION OF POTENTIAL COMMERICAL PARCEL (Appendix "E")

South of Meola Road, there is a separate parcel which is zoned for commercial development. While there are no current plans for the development of this parcel, a separate evaluation of the potential impact of this development as an approximately 14,000 s.f. retail development was completed and is contained in Appendix "E". As can be seen from a review of this analysis as presented in Table No. 2A, with the completion of the improvements planned for the residential portion of the project, similar Levels of Service will be experienced at the intersections analyzed.

J. SENSITIVITY ANALYSIS WITH TOWN HOUSE TRIP RATES (Appendix "G")

A separate sensitivity analysis was also undertaken to determine any effect if the development experiences higher trip generation more consistent with a townhouse development. This analysis is contained in Appendix "G".

K. MAXIMUM POTENTIAL IMPACT SCENARIO (Appendix "H")

An additional analysis of potential traffic conditions, if the commercial parcel was developed and the residential site trip generation was similar to the townhouse trip rates, is referenced in Section J. The combined traffic volume figures for this scenario were developed by adding the volumes on Figures No. 12 and 12A and 13 and 13A to Figures No. 8 and 9. Under this scenario, with the same access improvements required under the conditions described in Section I, the Level of Service of "D" or better would be maintained at Route 303 and Meola Road (see Appendix "H").

L. SUMMARY AND CONCLUSIONS

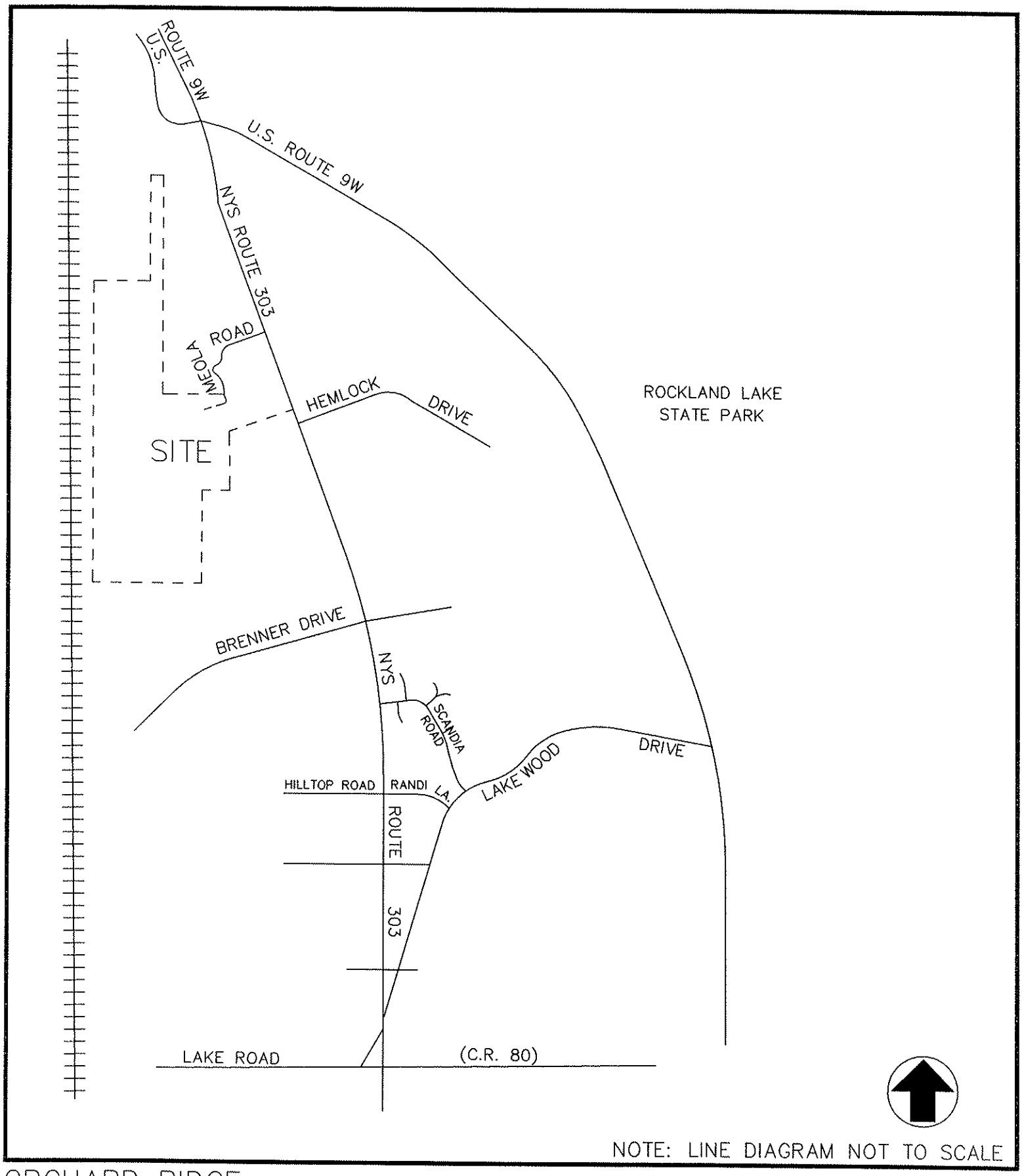
Based on the analyses contained herein, the additional traffic generated by the Orchard Ridge Site will not result in a significant negative impact on the surrounding intersections assuming that the above improvements are implemented. The final design of the improvements at Meola Road will be reviewed with NYSDOT as part of the Highway Work Permit Process.

Respectfully submitted,
JOHN COLLINS ENGINEERS, P.C.

Philip J. Grealy, Ph.D., P.E.

Appendix A

Figures



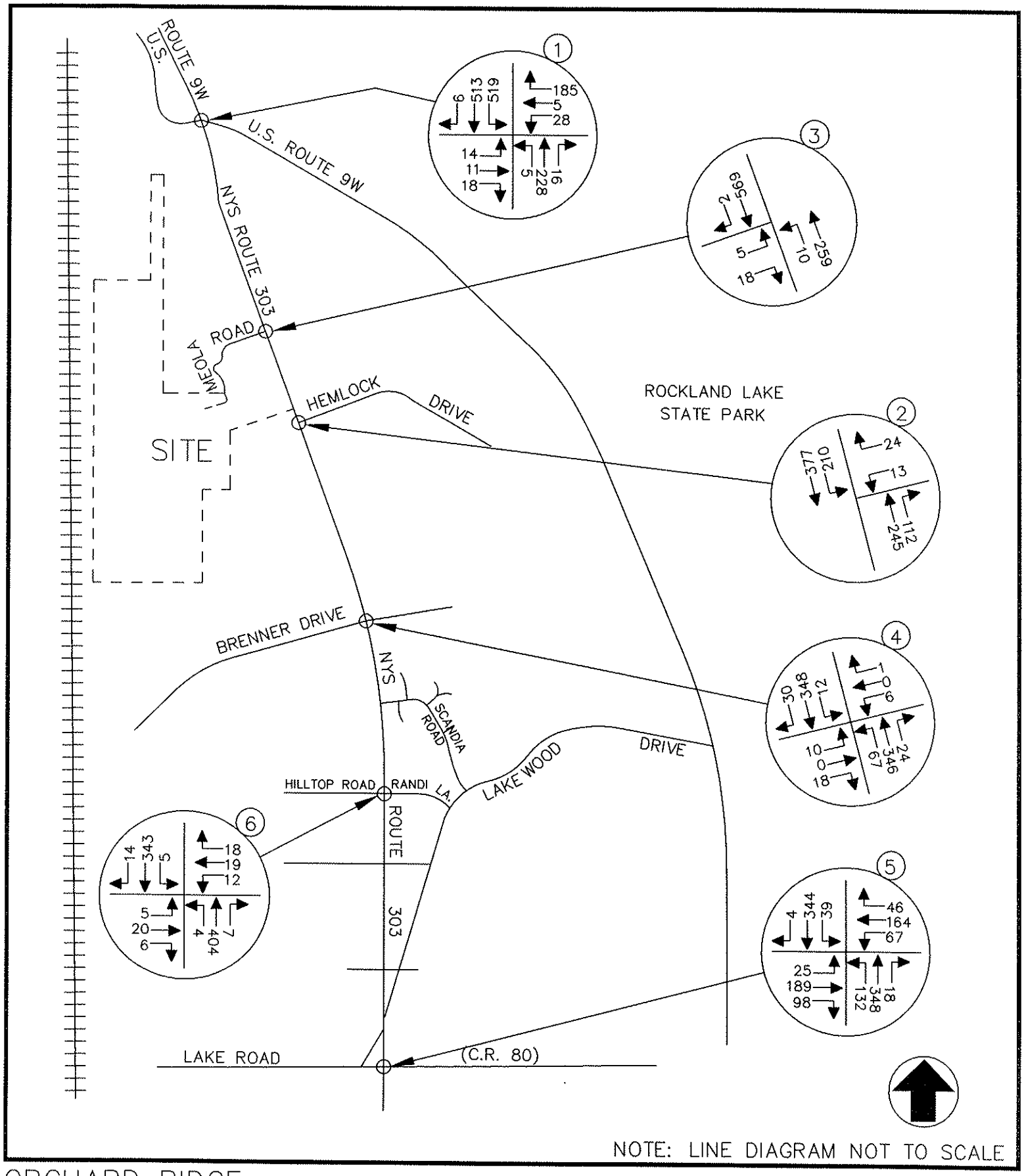
ORCHARD RIDGE

TOWN OF CLARKSTOWN, NEW YORK

SITE LOCATION MAP

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 1

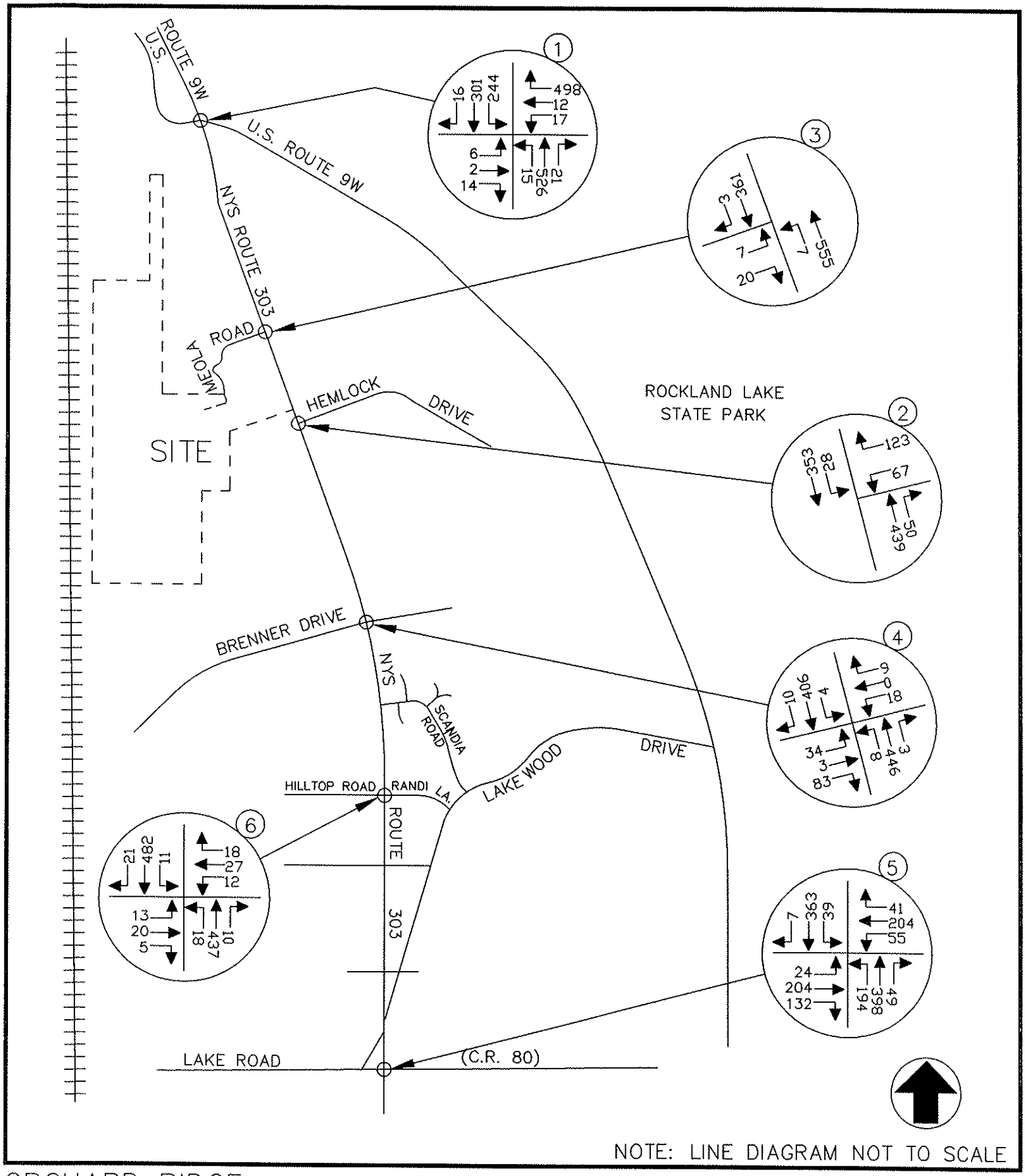


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2009 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 2



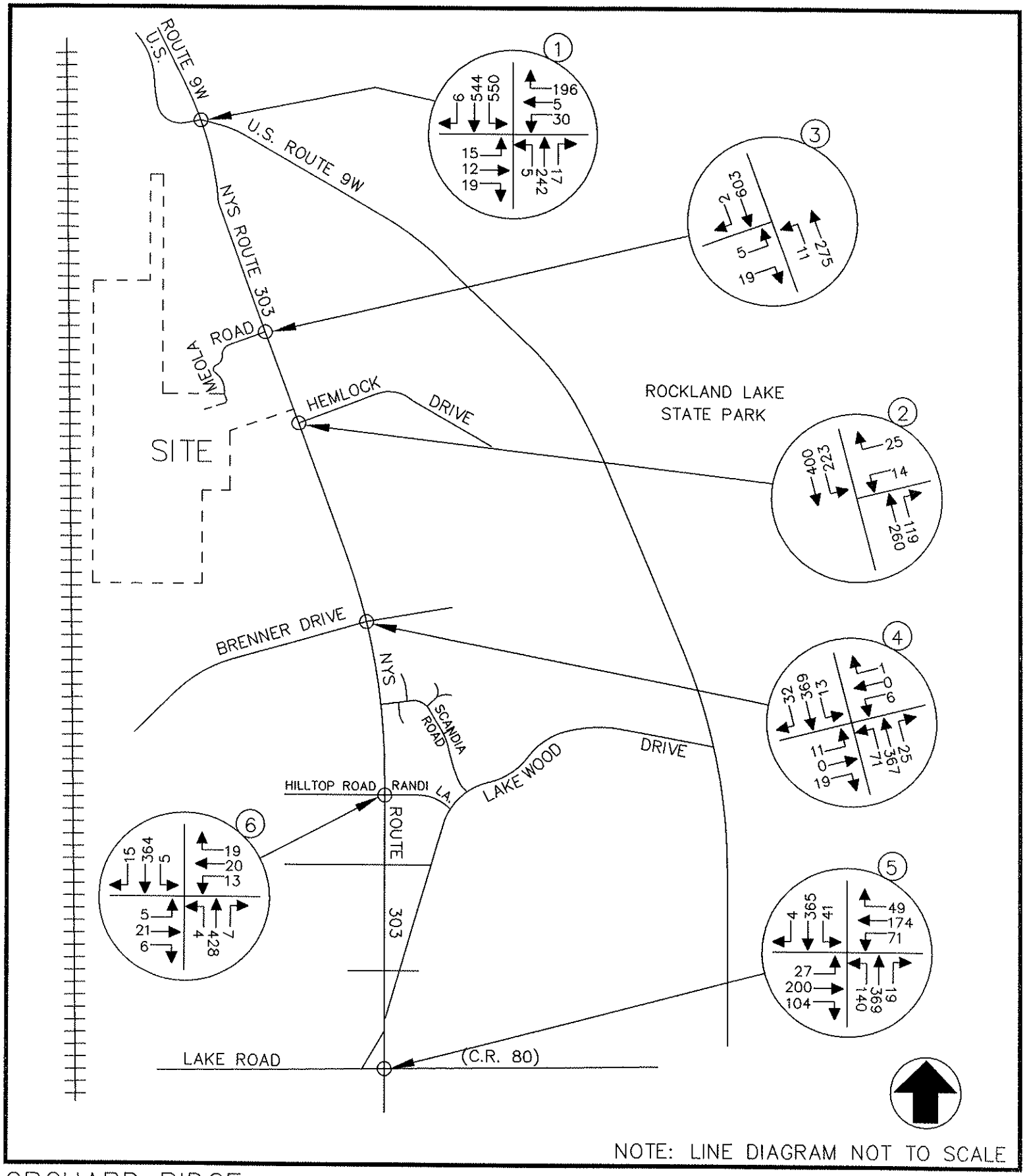
NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2009 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 3



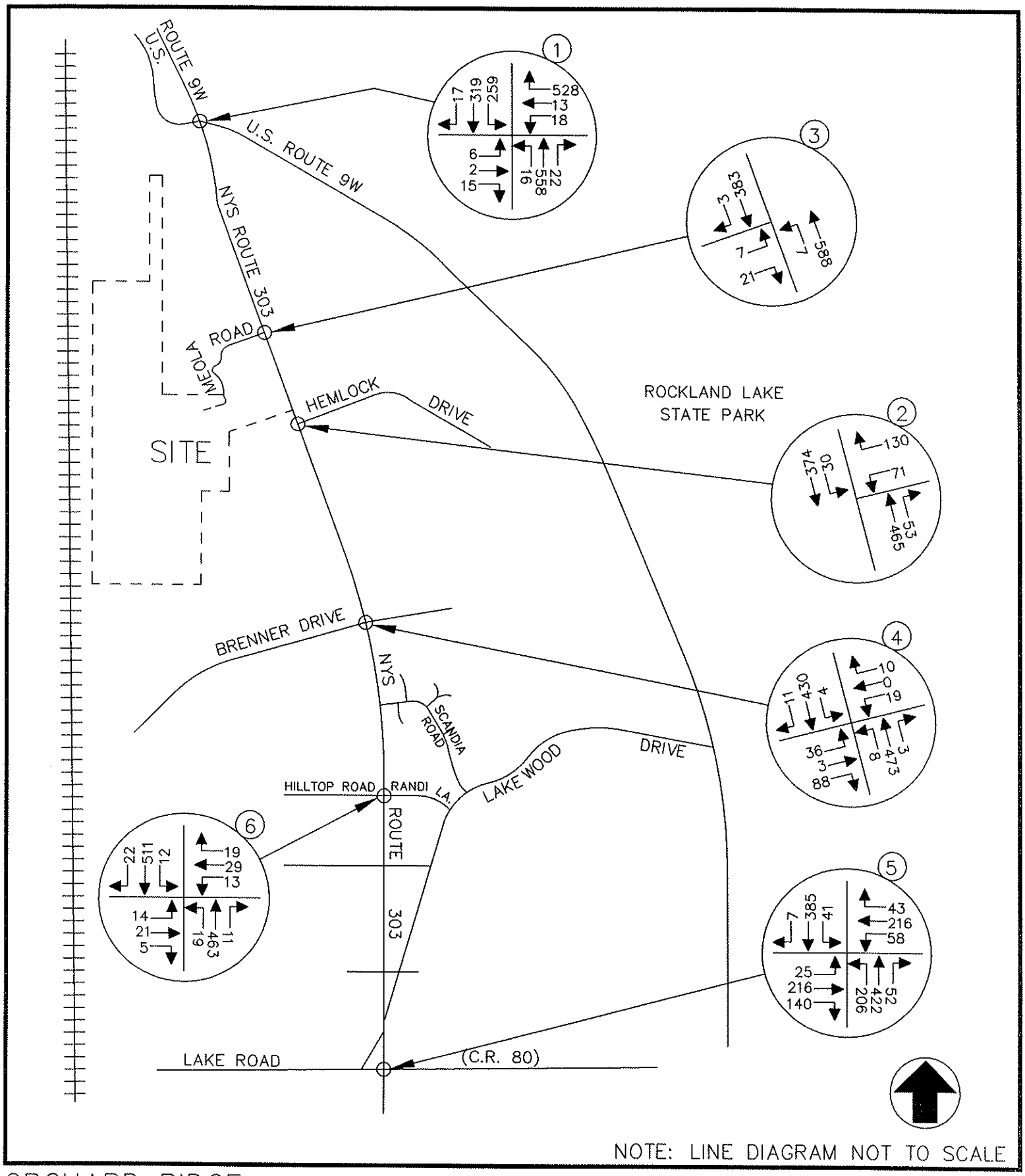
NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO.4

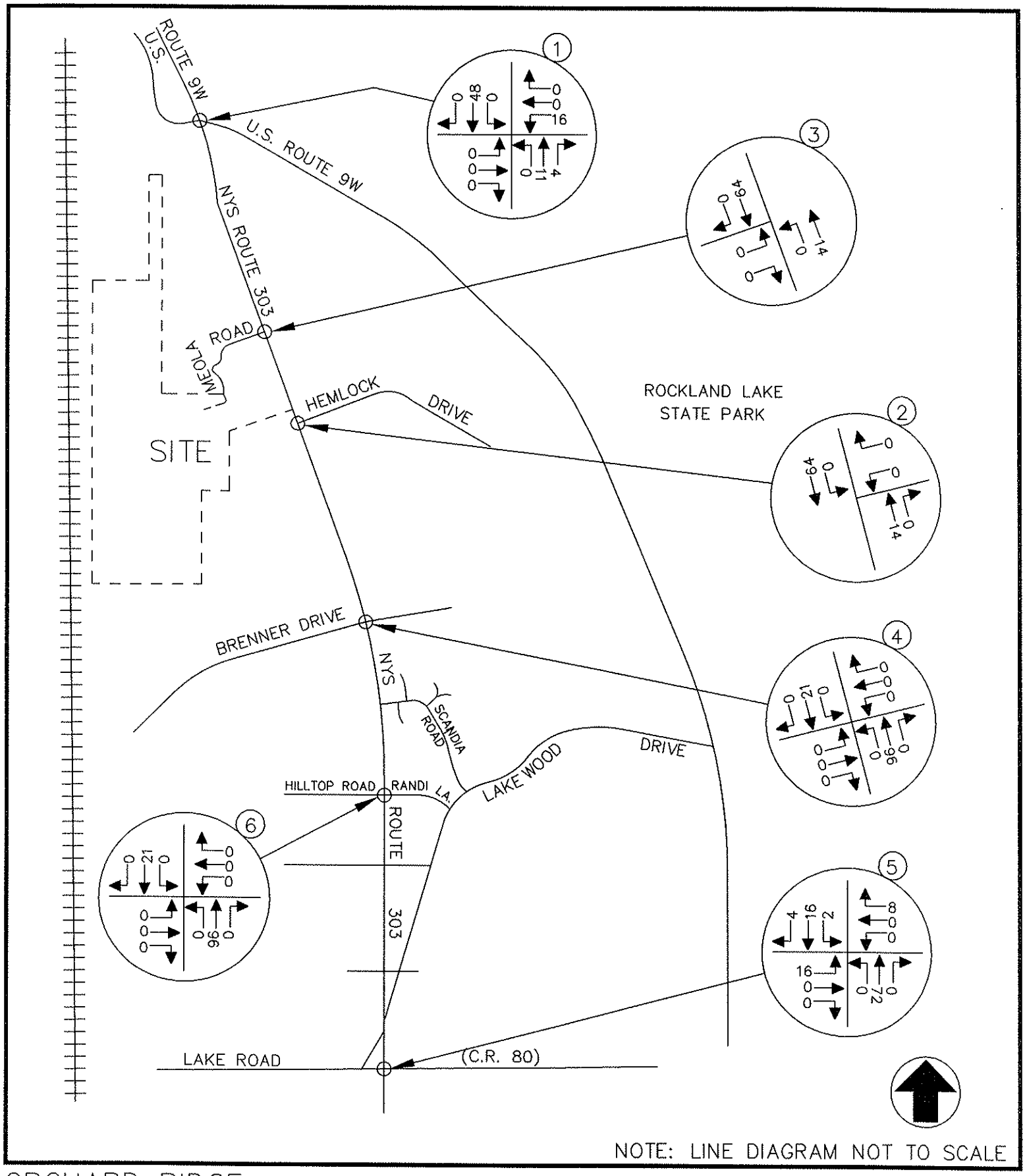


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 5

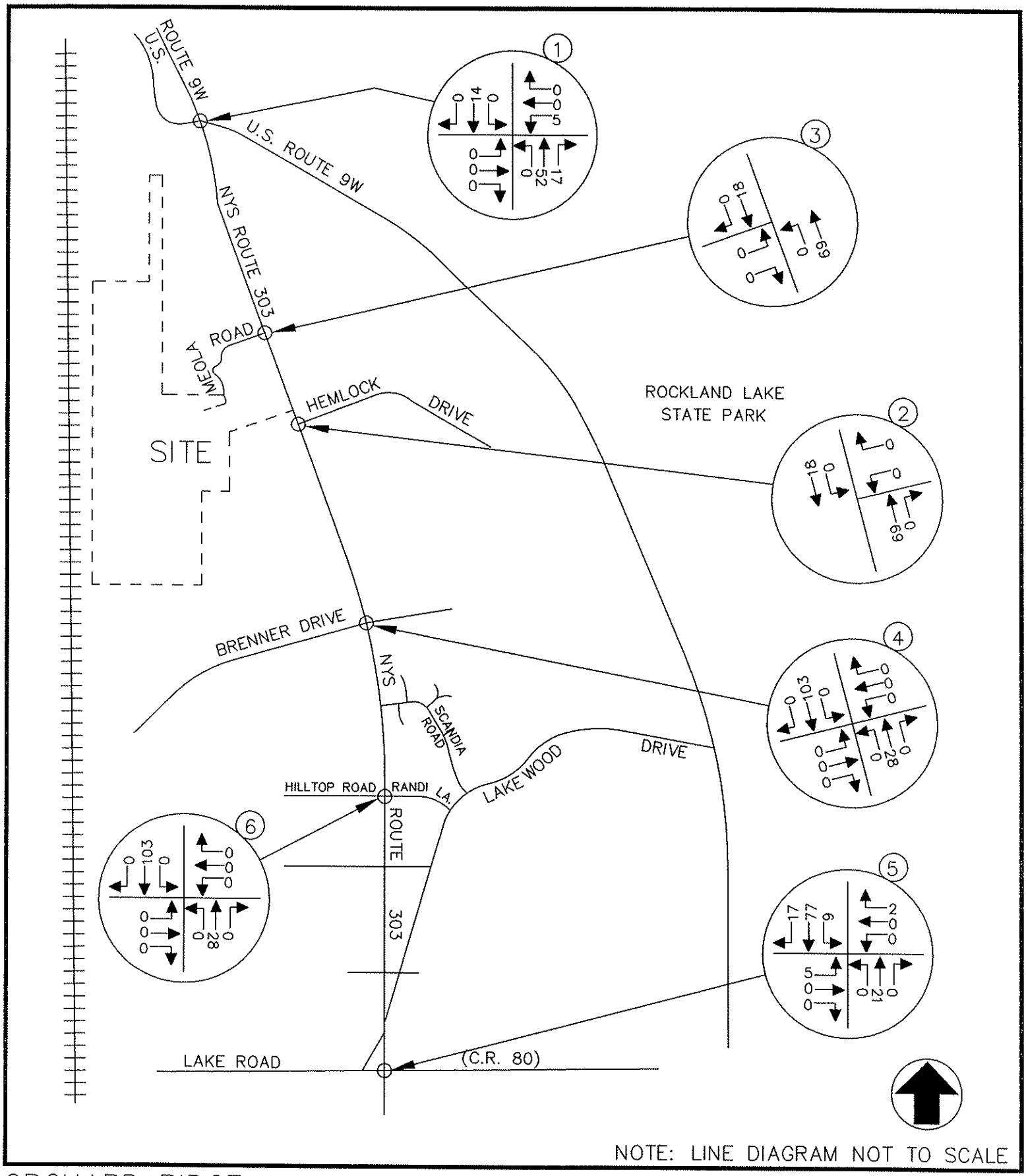


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

OTHER DEVELOPMENT TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 6

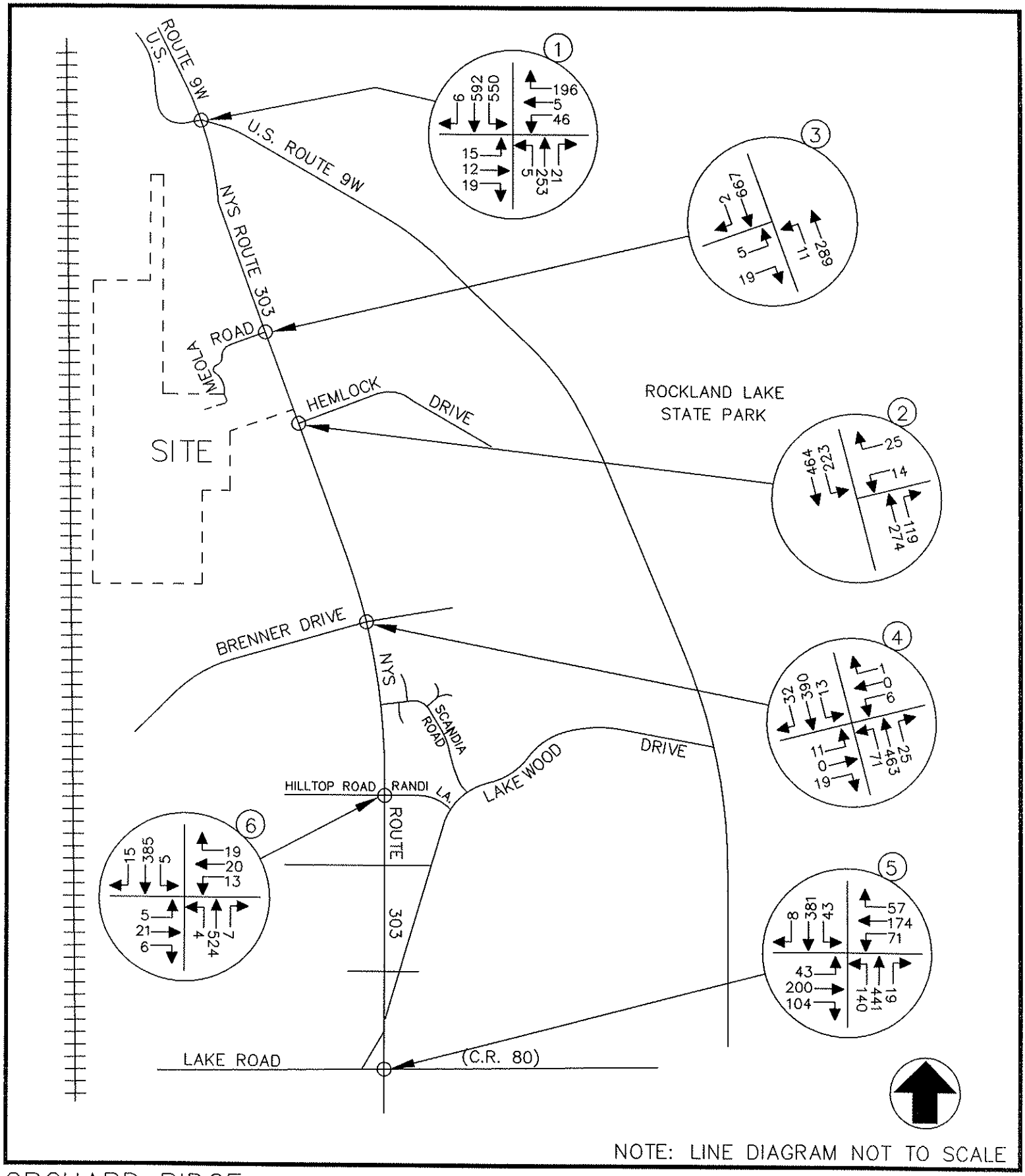


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

OTHER DEVELOPMENT TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO.7



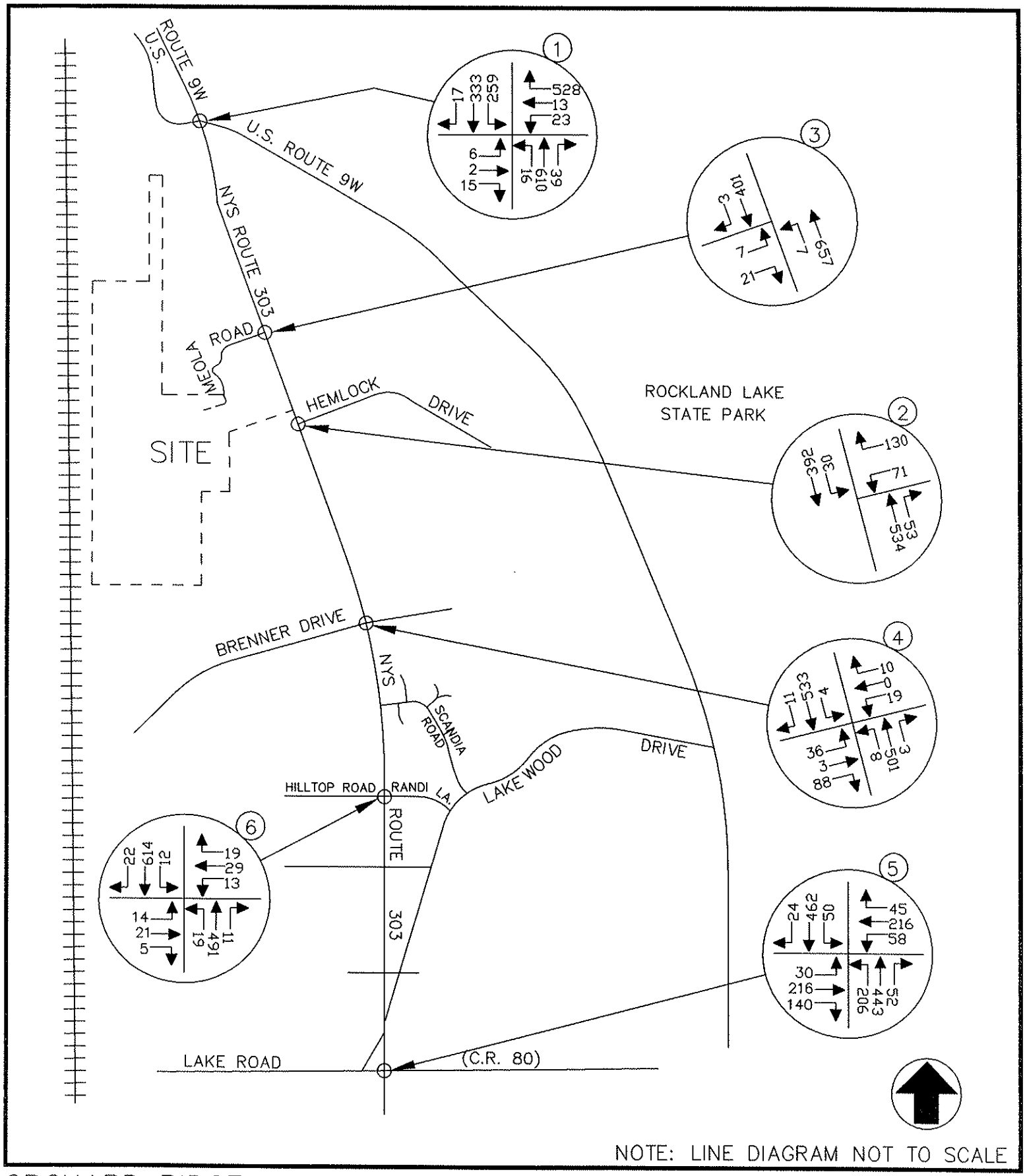
NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 8



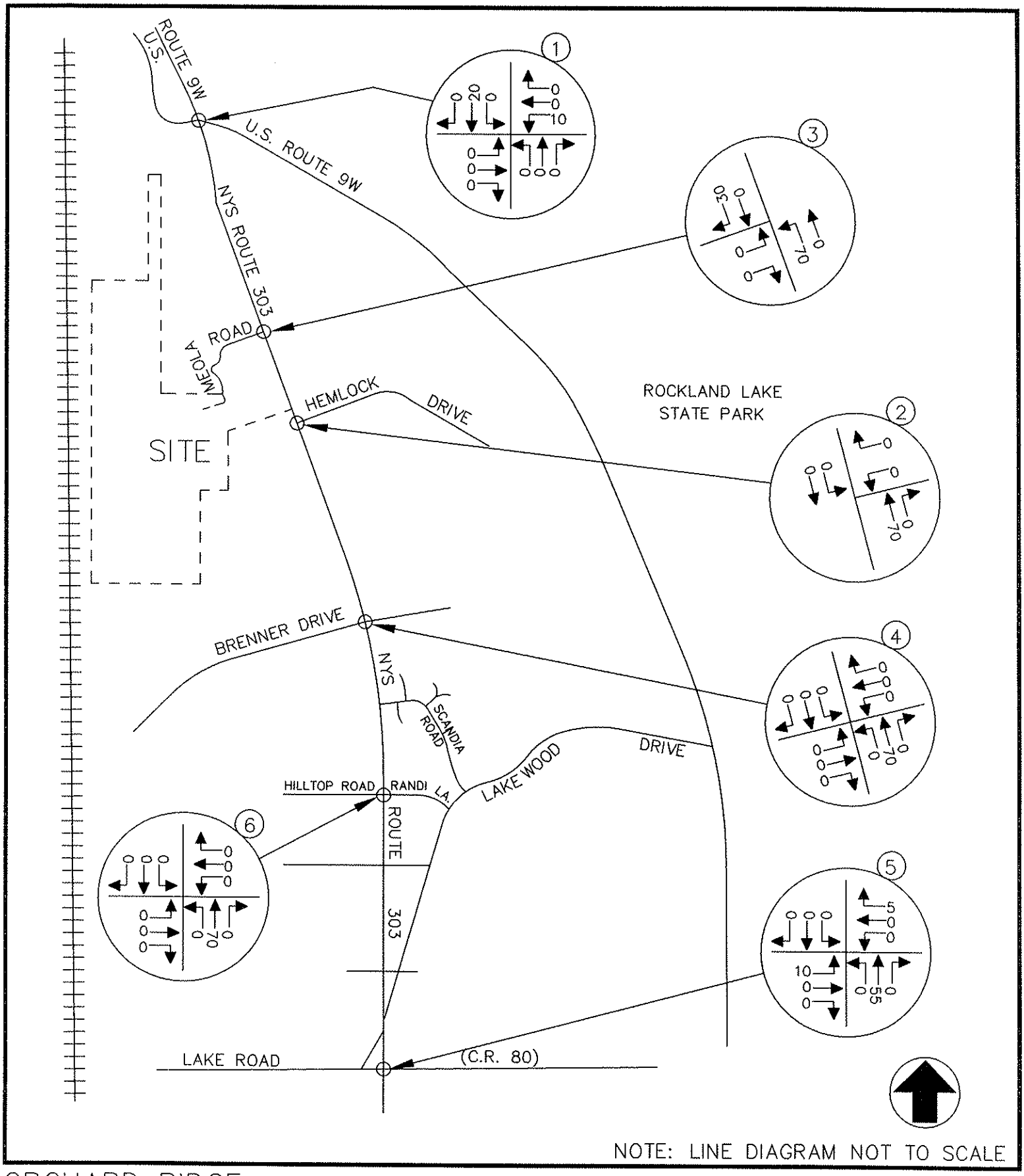
NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 9

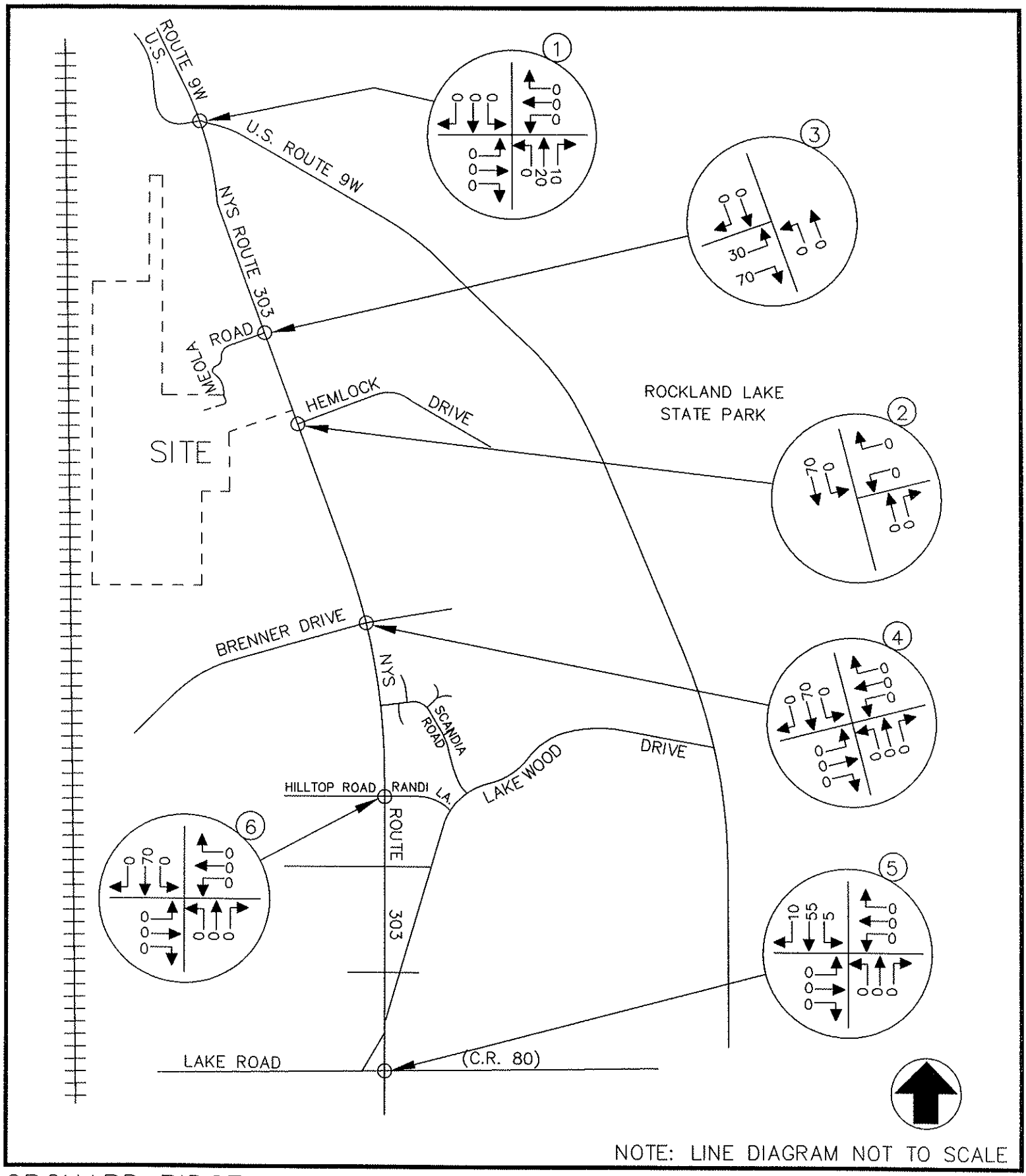


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

ARRIVAL DISTRIBUTION
(ALL VALUES EXPRESSED AS A %)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 10

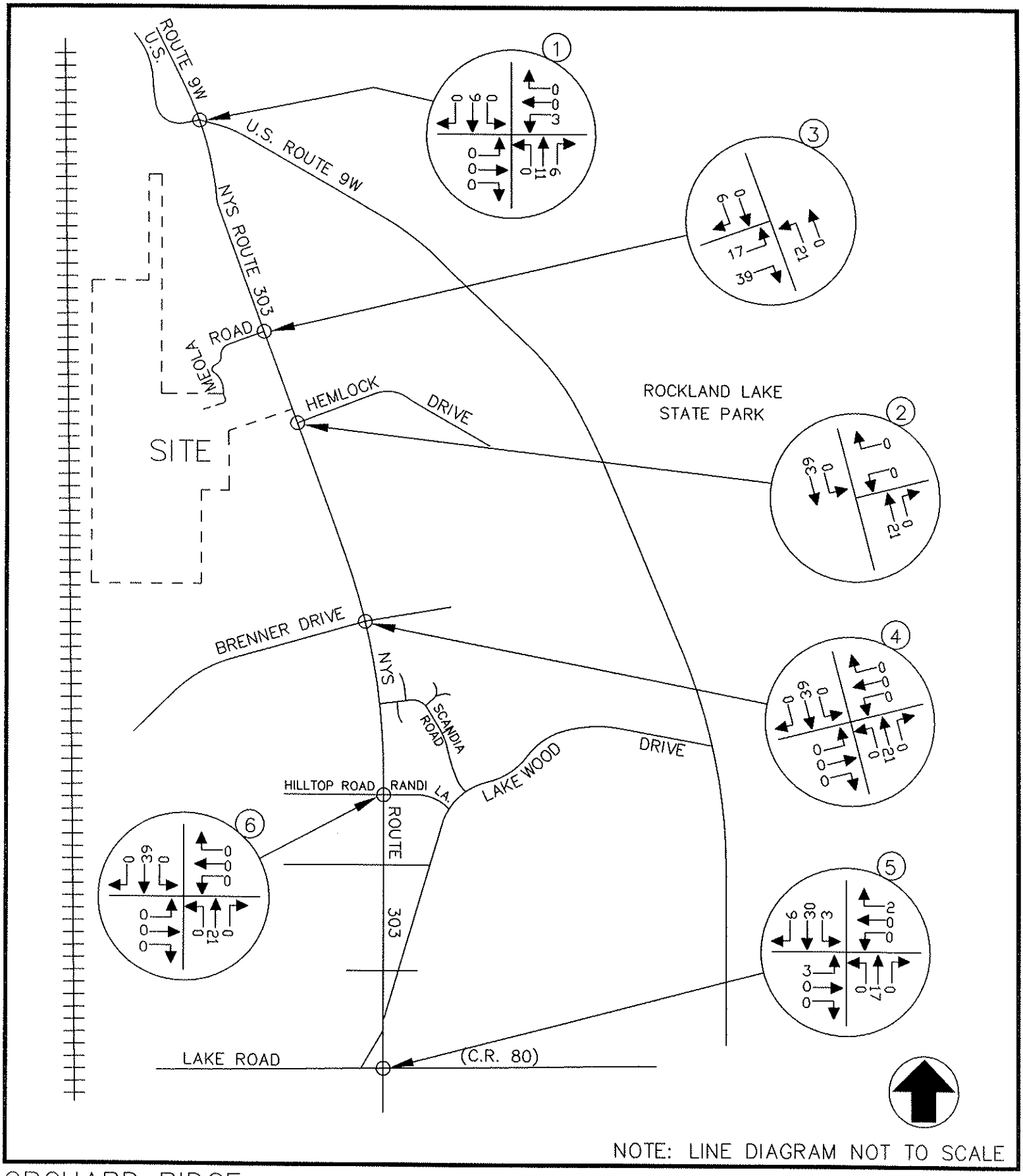


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

DEPARTURE DISTRIBUTION
(ALL VALUES EXPRESSED AS A %)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 11

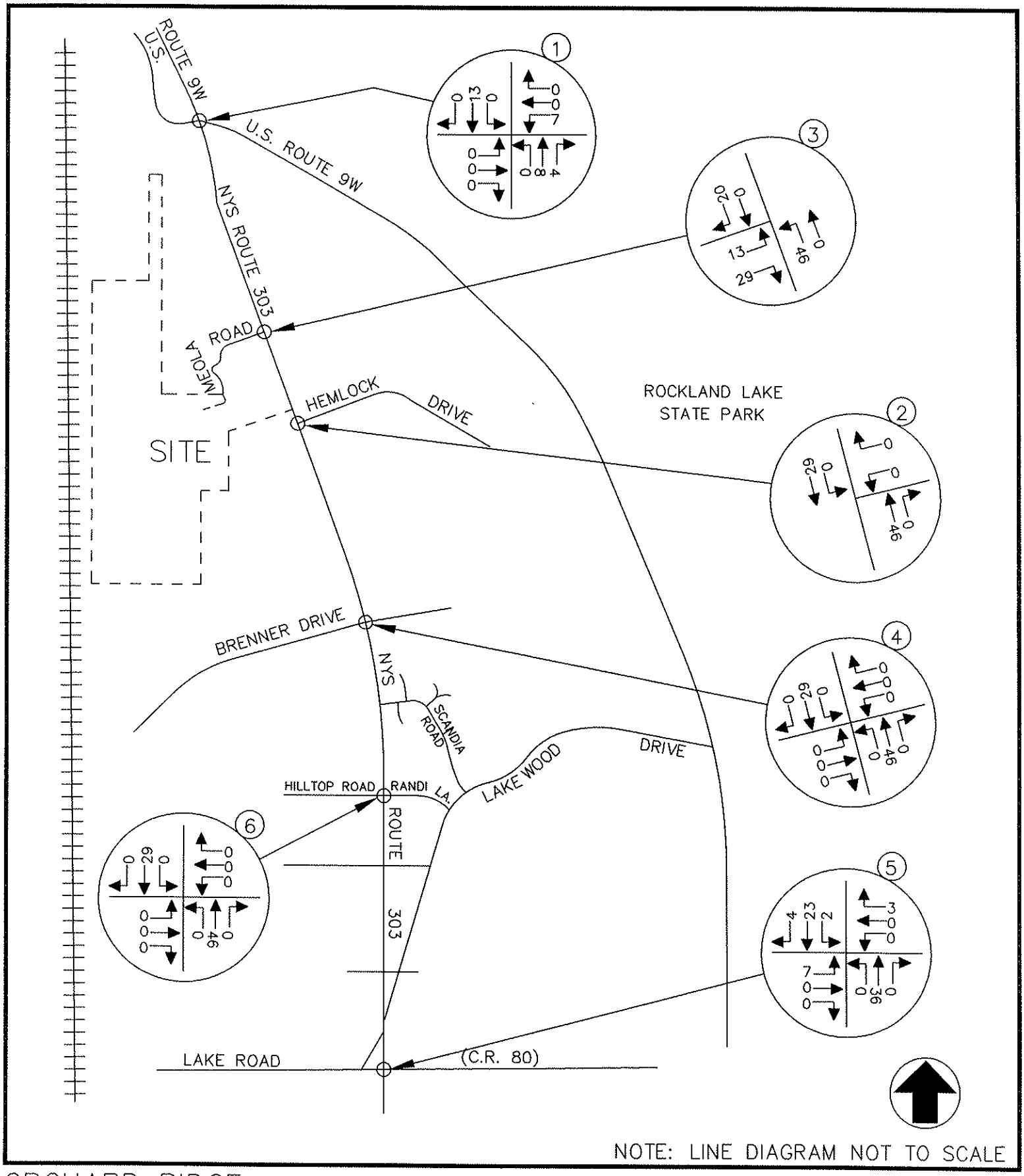


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 12

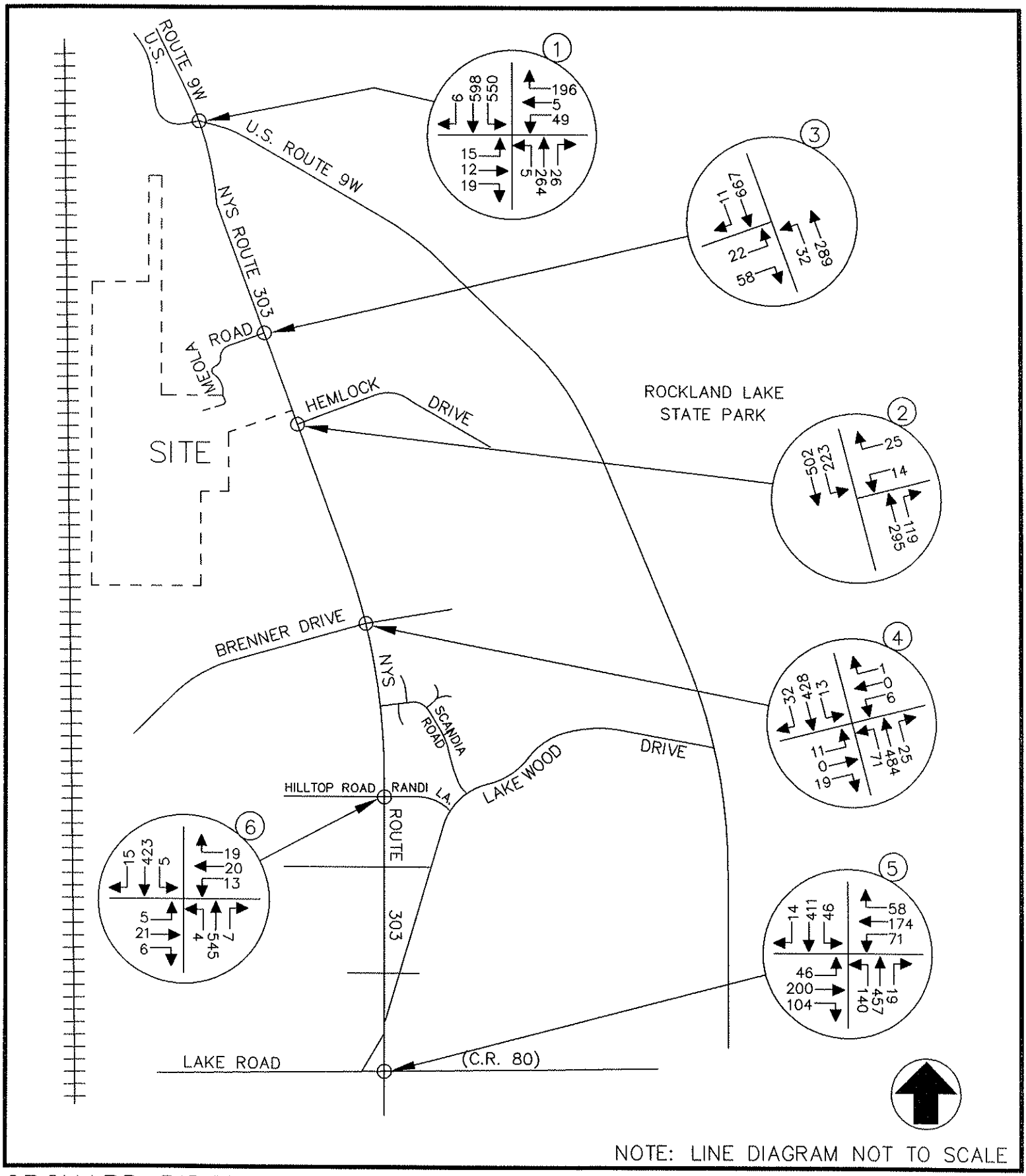


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 13

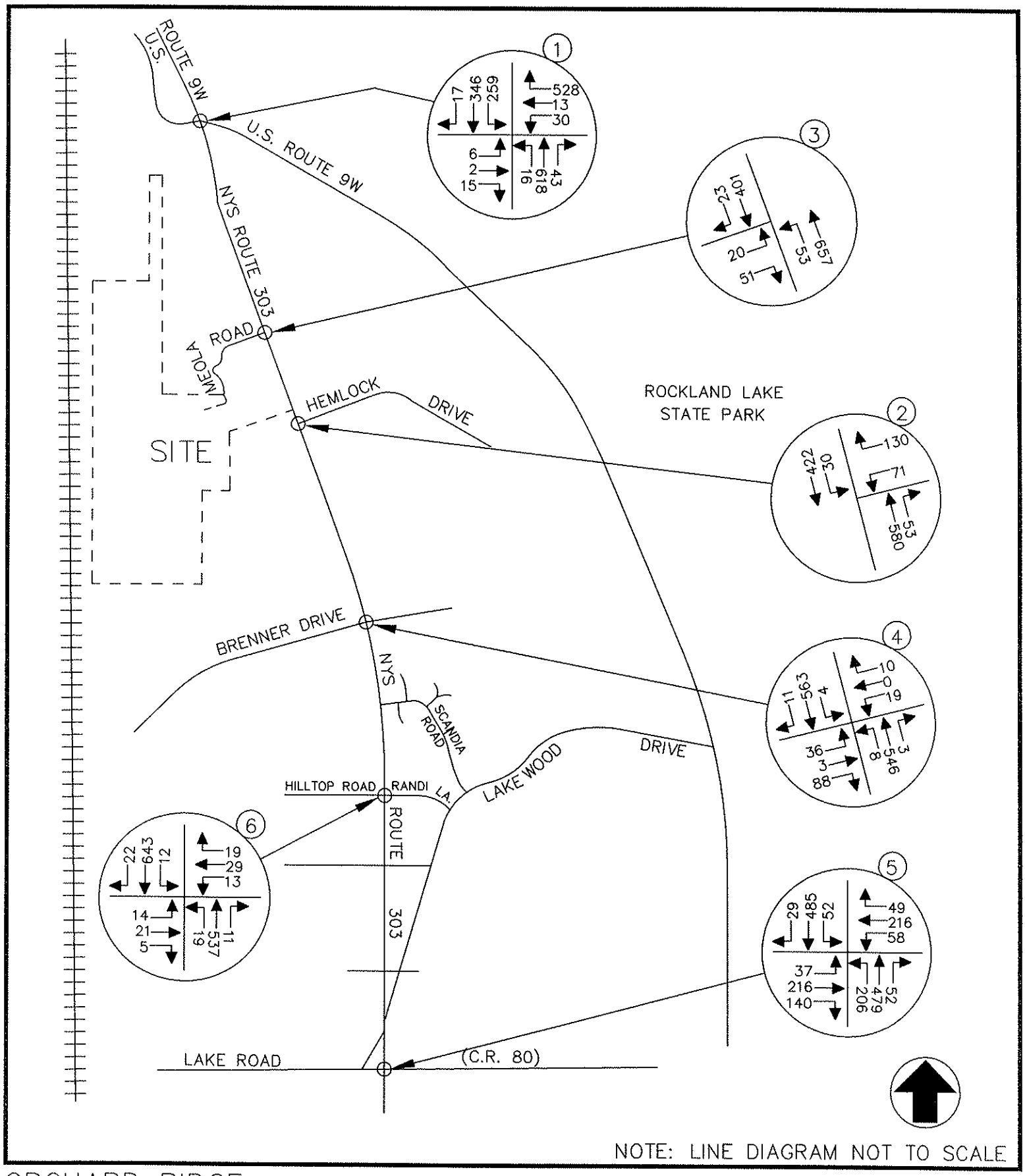


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 14



NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 15

Appendix B

Tables

TABLE NO. 1

HOURLY TRIP GENERATION RATES (HTGR) AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

ORCHARD RIDGE CLARKSTOWN, NY	ENTRY		EXIT	
	HTGR*	VOLUME	HTGR*	VOLUME
SENIOR HOUSING (DETACHED) (320 DWELLING UNITS)				
PEAK AM HOUR	0.09	30	0.17	55
PEAK PM HOUR	0.20	65	0.13	42

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 8TH EDITION, 2008. ITE LAND USE CODE - 252 - SENIOR HOUSING.

TABLE NO. 2

LEVEL OF SERVICE SUMMARY TABLE

				2009 EXISTING				2012 NO-BUILD				2012 BUILD			
				AM		PM		AM		PM		AM		PM	
				DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C
1	N.Y.S. ROUTE 303/U.S. ROUTE 9W &	**SIGNALIZED**													
	U.S. ROUTE 9W/HIDDEN VALLEY	NB	L	A[6.6]	0.01	A[4.5]	0.03	A[7.9]	0.02	A[4.6]	0.03	A[8.0]	0.02	A[4.7]	0.03
			TR	B[13.1]	0.34	B[19.0]	0.74	B[13.4]	0.39	C[27.0]	0.87	B[13.6]	0.41	C[28.8]	0.89
		SB	L	C[19.5]	0.83	B[10.5]	0.60	C[31.1]	0.91	C[23.0]	0.77	D[35.5]	0.93	C[25.8]	0.78
			TR	B[18.9]	0.71	B[13.2]	0.42	C[24.0]	0.82	B[13.6]	0.47	C[24.5]	0.83	B[13.7]	0.49
		EB	LTR	C[23.4]	0.16	C[23.7]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09
		WB	LT	C[23.2]	0.13	C[23.9]	0.11	C[23.8]	0.21	C[24.1]	0.14	C[23.9]	0.23	C[24.3]	0.17
			R	B[14.1]	0.32	C[34.6]	0.89	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95
		OVERALL		B[17.8]	-	C[23.7]	-	C[23.4]	-	C[28.4]	-	C[24.9]	-	C[29.3]	-
2	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**													
	HEMLOCK DRIVE	SB	LT	A[8.9]	0.20	A[8.7]	0.03	A[9.2]	0.22	A[9.1]	0.04	A[9.3]	0.23	A[9.2]	0.04
		WB	LR	C[18.0]	0.13	C[19.9]	0.47	C[21.7]	0.16	D[26.8]	0.58	C[23.5]	0.18	D[31.5]	0.63
3	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**													
	MEOLA ROAD	NB	LT	A[8.9]	0.01	A[8.2]	0.01	A[9.3]	0.01	A[8.3]	0.01	A[9.4]	0.04	A[8.5]	0.05
		EB	LR	B[14.7]	0.06	B[13.8]	0.07	C[16.6]	0.08	C[15.2]	0.08	C[21.8]	0.29	C[20.3]	0.25
	WITH IMPROVEMENTS	NB	L	-	-	-	-	-	-	-	-	A[9.4]	0.04	A[8.5]	0.05
		EB	L	-	-	-	-	-	-	-	-	C[17.5]	0.08	C[19.9]	0.08
			R	-	-	-	-	-	-	-	-	C[16.0]	0.16	B[11.8]	0.10
4	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**													
	BRENNER DRIVE/	NB	LTR	A[8.4]	0.07	A[8.3]	0.01	A[8.6]	0.07	A[8.8]	0.01	A[8.7]	0.08	A[8.9]	0.01
	INTERCOS DRIVEWAY	SB	LTR	A[8.2]	0.01	A[8.4]	0.00	A[8.6]	0.01	A[8.6]	0.00	A[8.7]	0.01	A[8.8]	0.00
		EB	LTR	C[15.6]	0.08	C[18.7]	0.34	C[18.8]	0.11	D[26.8]	0.46	C[20.5]	0.12	D[31.3]	0.51
		WB	LTR	C[19.5]	0.03	C[20.7]	0.12	C[24.7]	0.04	D[27.6]	0.17	D[26.7]	0.04	D[31.4]	0.19
5	N.Y.S. ROUTE 303 &	**SIGNALIZED**													
	LAKE ROAD	NB	L	B[14.0]	0.34	B[17.2]	0.51	B[15.0]	0.38	C[22.3]	0.63	B[15.7]	0.40	C[23.6]	0.65
			TR	B[13.5]	0.45	B[15.3]	0.55	B[15.5]	0.57	B[16.6]	0.61	B[15.9]	0.59	B[17.8]	0.66
		SB	LTR	C[25.0]	0.58	C[26.1]	0.62	C[27.4]	0.66	C[33.2]	0.81	C[29.8]	0.73	C[37.1]	0.86
		EB	LT	C[26.3]	0.45	C[26.9]	0.48	C[28.6]	0.54	C[27.9]	0.52	C[29.0]	0.55	C[28.8]	0.55
			R	C[22.7]	0.23	C[23.9]	0.31	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33
		WB	LTR	C[31.6]	0.63	C[31.4]	0.64	D[38.0]	0.75	C[34.7]	0.71	D[38.4]	0.76	C[35.8]	0.73
		OVERALL		C[22.4]	-	C[23.1]	-	C[24.9]	-	C[26.8]	-	C[25.8]	-	C[28.5]	-
6	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**													
	RANDI LANE/HILLTOP ROAD	NB	LTR	A[8.2]	0.00	A[8.7]	0.02	A[8.3]	0.00	A[9.2]	0.02	A[8.4]	0.00	A[9.3]	0.02
		SB	LTR	A[8.3]	0.00	A[8.5]	0.01	A[8.7]	0.01	A[8.7]	0.01	A[8.8]	0.01	A[8.8]	0.01
		EB	LTR	C[21.9]	0.13	D[27.6]	0.20	D[29.3]	0.19	E[41.0]	0.30	D[33.0]	0.21	E[49.2]	0.35
		WB	LTR	C[21.3]	0.20	D[25.6]	0.27	D[29.9]	0.28	E[38.1]	0.39	D[34.0]	0.32	E[45.7]	0.44

NOTES:

THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH AS WELL AS FOR THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTION.

TABLE NO. 2-SB

LEVEL OF SERVICE SUMMARY TABLE
(COMMERCIAL & TOWNHOUSE TRIP RATES)

				2009 EXISTING				2012 NO-BUILD				2012 BUILD				COMMERCIAL & TOWNHOUSE RATES 2012 BUILD			
				AM		PM		AM		PM		AM		PM		AM		PM	
				DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C
1	N.Y.S. ROUTE 303/U.S. ROUTE 9W & U.S. ROUTE 9W/HIDDEN VALLEY	**SIGNALIZED**																	
		NB	L	A[6.6]	0.01	A[4.5]	0.03	A[7.9]	0.02	A[4.6]	0.03	A[8.0]	0.02	A[4.7]	0.03	A[8.1]	0.02	A[4.8]	0.03
			TR	B[13.1]	0.34	B[19.0]	0.74	B[13.4]	0.39	C[27.0]	0.87	B[13.6]	0.41	C[28.8]	0.89	B[13.9]	0.44	C[32.1]	0.91
		SB	L	C[19.5]	0.83	B[10.5]	0.60	C[31.1]	0.91	C[23.0]	0.77	D[35.5]	0.93	C[25.8]	0.78	D[42.6]	0.96	C[30.9]	0.82
			TR	B[18.9]	0.71	B[13.2]	0.42	C[24.0]	0.82	B[13.6]	0.47	C[24.5]	0.83	B[13.7]	0.49	C[24.7]	0.83	B[14.0]	0.51
		EB	LTR	C[23.4]	0.16	C[23.7]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09
		WB	LT	C[23.2]	0.13	C[23.9]	0.11	C[23.8]	0.21	C[24.1]	0.14	C[23.9]	0.23	C[24.3]	0.17	C[23.9]	0.23	C[24.6]	0.22
			R	B[14.1]	0.32	C[34.6]	0.89	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95
		OVERALL		B[17.8]	-	C[23.7]	-	C[23.4]	-	C[28.4]	-	C[24.9]	-	C[29.3]	-	C[27.1]	-	C[31.0]	-
2	N.Y.S. ROUTE 303 & HEMLOCK DRIVE	**UNSIGNALIZED**																	
		SB	LT	A[8.9]	0.20	A[8.7]	0.03	A[9.2]	0.22	A[9.1]	0.04	A[9.3]	0.23	A[9.2]	0.04	A[9.3]	0.23	A[9.5]	0.04
		WB	LR	C[18.0]	0.13	C[19.9]	0.47	C[21.7]	0.16	D[26.8]	0.58	C[23.5]	0.18	D[31.5]	0.63	C[25.0]	0.19	E[41.2]	0.72
3	N.Y.S. ROUTE 303 & MEOLA ROAD	**UNSIGNALIZED**																	
		NB	LT	A[8.9]	0.01	A[8.2]	0.01	A[9.3]	0.01	A[8.3]	0.01	A[9.3]	0.01	A[8.4]	0.01	A[9.6]	0.06	A[9.0]	0.15
		EB	LR	B[14.7]	0.06	B[13.8]	0.07	C[16.6]	0.08	C[15.2]	0.08	C[16.9]	0.08	C[15.6]	0.08	E[36.3]	0.62	F[86.0]	0.89
	WITH IMPROVEMENTS	NB	L	-	-	-	-	-	-	-	-	A[9.4]	0.04	A[8.5]	0.05	A[9.5]	0.06	A[9.0]	0.15
		EB	L	-	-	-	-	-	-	-	-	C[17.5]	0.08	C[19.9]	0.08	C[19.3]	0.18	D[31.6]	0.34
			R	-	-	-	-	-	-	-	-	C[16.0]	0.16	B[11.8]	0.10	C[18.2]	0.31	B[12.8]	0.20
4	N.Y.S. ROUTE 303 & BRENNER DRIVE/ INTERCOS DRIVEWAY	**UNSIGNALIZED**																	
		NB	LTR	A[8.4]	0.07	A[8.3]	0.01	A[8.6]	0.07	A[8.8]	0.01	A[8.7]	0.08	A[8.9]	0.01	A[8.9]	0.08	A[9.1]	0.01
		SB	LTR	A[8.2]	0.01	A[8.4]	0.00	A[8.6]	0.01	A[8.6]	0.00	A[8.7]	0.01	A[8.8]	0.00	A[8.7]	0.01	A[9.0]	0.00
		EB	LTR	C[15.6]	0.08	C[18.7]	0.34	C[18.8]	0.11	D[26.8]	0.46	C[20.5]	0.12	D[31.3]	0.51	C[22.2]	0.14	E[39.7]	0.59
		WB	LTR	C[19.5]	0.03	C[20.7]	0.12	C[24.7]	0.04	D[27.6]	0.17	D[26.7]	0.04	D[31.4]	0.19	D[28.8]	0.04	E[38.2]	0.23
5	N.Y.S. ROUTE 303 & LAKE ROAD	**SIGNALIZED**																	
		NB	L	B[14.0]	0.34	B[17.2]	0.51	B[15.0]	0.38	C[22.3]	0.63	B[15.7]	0.40	C[23.6]	0.65	B[16.6]	0.42	C[25.7]	0.68
			TR	B[13.5]	0.45	B[15.3]	0.55	B[15.5]	0.57	B[16.6]	0.61	B[15.9]	0.59	B[17.8]	0.66	B[16.0]	0.59	B[19.8]	0.72
		SB	LTR	C[25.0]	0.58	C[26.1]	0.62	C[27.4]	0.66	C[33.2]	0.81	C[29.8]	0.73	C[37.1]	0.86	C[33.4]	0.80	D[46.1]	0.93
		EB	LT	C[26.3]	0.45	C[26.9]	0.48	C[28.6]	0.54	C[27.9]	0.52	C[29.0]	0.55	C[28.8]	0.55	C[29.0]	0.55	C[30.3]	0.60
			R	C[22.7]	0.23	C[23.9]	0.31	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33
		WB	LTR	C[31.6]	0.63	C[31.4]	0.64	D[38.0]	0.75	C[34.7]	0.71	D[38.4]	0.76	C[35.8]	0.73	D[38.7]	0.76	D[37.3]	0.76
		OVERALL		C[22.4]	-	C[23.1]	-	C[24.9]	-	C[26.8]	-	C[25.8]	-	C[28.5]	-	C[27.1]	-	C[32.2]	-
6	N.Y.S. ROUTE 303 & RANDI LANE/HILLTOP ROAD	**UNSIGNALIZED**																	
		NB	LTR	A[8.2]	0.00	A[8.7]	0.02	A[8.3]	0.00	A[9.2]	0.02	A[8.4]	0.00	A[9.3]	0.02	A[8.6]	0.00	A[9.3]	0.02
		SB	LTR	A[8.3]	0.00	A[8.5]	0.01	A[8.7]	0.01	A[8.7]	0.01	A[8.8]	0.01	A[8.8]	0.01	A[8.8]	0.01	A[8.9]	0.01
		EB	LTR	C[21.9]	0.13	D[27.6]	0.20	D[29.3]	0.19	E[41.0]	0.30	D[33.0]	0.21	E[49.2]	0.35	E[37.0]	0.23	E[49.8]	0.34
		WB	LTR	C[21.3]	0.20	D[25.6]	0.27	D[29.9]	0.28	E[38.1]	0.39	D[34.0]	0.32	E[45.7]	0.44	E[38.2]	0.35	E[46.2]	0.43

NOTES

THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH AS WELL AS FOR THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTION.

Appendix C

Capacity Analysis

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMEX1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2009 EXISTING TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	14	11	18	28	5	185	5	228	16	519	513	6
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	14.0						10.0	31.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	306	1532	0.16	0.20	23.4	C	23.4	C
Westbound								
LT	284	1418	0.13	0.20	23.2	C	15.5	B
R	643	1553	0.32	0.41	14.1	B		
Northbound								
L	445	1702	0.01	0.66	6.6	A		
TR	786	1774	0.34	0.44	13.1	B	12.9	B
Southbound								
L	698	1736	0.83	0.66	19.5	B		
TR	808	1824	0.71	0.44	18.9	B	19.2	B

Intersection Delay = 17.8 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMEX1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2009 EXISTING TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	6	2	14	17	12	498	15	526	21	244	301	16
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			7			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	13.0						10.0	32.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	282	1521	0.09	0.19	23.7	C	23.7	C
Westbound								
LT	289	1557	0.11	0.19	23.9	C	34.0	C
R	621	1553	0.89	0.40	34.6	C		
Northbound								
L	634	1702	0.03	0.67	4.5	A		
TR	816	1784	0.74	0.46	19.0	B	18.6	B
Southbound								
L	454	1736	0.60	0.67	10.5	B		
TR	829	1814	0.42	0.46	13.2	B	12.0	B

Intersection Delay = 21.3 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMNB1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 NO-BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	15	12	19	46	5	196	5	253	21	550	592	6
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	14.0						10.0	31.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	304	1522	0.17	0.20	23.4	C	23.4	C
Westbound								
LT	267	1337	0.21	0.20	23.8	C	16.3	B
R	643	1553	0.34	0.41	14.3	B		
Northbound								
L	382	1702	0.02	0.66	7.9	A		
TR	784	1771	0.39	0.44	13.4	B	13.3	B
Southbound								
L	669	1736	0.91	0.66	31.1	C		
TR	808	1825	0.82	0.44	24.0	C	27.4	C

Intersection Delay = 23.4 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMNB1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 NO-BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	6	2	15	23	13	528	16	610	39	259	333	17
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			13			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left	A				SB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	A			
Green		13.0						10.0	32.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	282	1519	0.09	0.19	23.8	C	23.8	C
Westbound								
LT	281	1512	0.14	0.19	24.1	C	42.5	D
R	621	1553	0.95	0.40	43.7	D		
Northbound								
L	604	1702	0.03	0.67	4.6	A		
TR	814	1780	0.87	0.46	27.0	C	26.5	C
Southbound								
L	376	1736	0.77	0.67	23.0	C		
TR	829	1814	0.47	0.46	13.6	B	17.6	B

Intersection Delay = 28.4 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMB1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	15	12	19	49	5	196	5	264	26	550	598	6
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left	A				SB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	A			
Green		14.0						10.0	31.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	304	1520	0.17	0.20	23.4	C	23.4	C
Westbound								
LT	266	1328	0.23	0.20	23.9	C	16.4	B
R	643	1553	0.34	0.41	14.3	B		
Northbound								
L	377	1702	0.02	0.66	8.0	A		
TR	783	1767	0.41	0.44	13.6	B	13.5	B
Southbound								
L	654	1736	0.93	0.66	35.5	D		
TR	808	1825	0.83	0.44	24.5	C	29.8	C

Intersection Delay = 24.9 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMB1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	6	2	15	30	13	528	16	618	43	259	346	17
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			13			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left	A				SB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	A			
Green		13.0						10.0	32.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	282	1517	0.09	0.19	23.8	C	23.8	C
Westbound								
LT	273	1472	0.17	0.19	24.3	C	42.3	D
R	621	1553	0.95	0.40	43.7	D		
Northbound								
L	593	1702	0.03	0.67	4.7	A		
TR	813	1779	0.89	0.46	28.8	C	28.3	C
Southbound								
L	367	1736	0.78	0.67	25.8	C		
TR	830	1815	0.49	0.46	13.7	B	18.8	B

Intersection Delay = 29.3 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & HEMLOCK DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560AMEX2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		245	112	210	377	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		272	124	233	418	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0		0	1
Configuration			TR		LT	
Upstream Signal?		No				No

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13		24			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	14		26			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes		0	0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		233		40				
C(m) (vph)		1146		317				
v/c		0.20		0.13				
95% queue length		0.76		0.43				
Control Delay		8.9		18.0				
LOS		A		C				
Approach Delay				18.0				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & HEMLOCK DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560PMEX2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		439	50	28	353	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		487	55	31	392	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	67		123			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	74		136			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		31		210				
C(m) (vph)		1012		448				
v/c		0.03		0.47				
95% queue length		0.09		2.45				
Control Delay		8.7		19.9				
LOS		A		C				
Approach Delay				19.9				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & HEMLOCK DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560AMNB2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		274	119	223	464	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		304	132	247	515	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14		25			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	15		27			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		247		42				
C(m) (vph)		1108		257				
v/c		0.22		0.16				
95% queue length		0.85		0.57				
Control Delay		9.2		21.7				
LOS		A		C				
Approach Delay				21.7				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & HEMLOCK DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560PMNB2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		534	53	30	392	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		593	58	33	435	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71		130			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	78		144			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		33		222				
C(m) (vph)		921		381				
v/c		0.04		0.58				
95% queue length		0.11		3.55				
Control Delay		9.1		26.8				
LOS		A		D				
Approach Delay				26.8				
Approach LOS				D				

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		295	119	223	502	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		327	132	247	557	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14		25			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	15		27			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes		0	0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		247		42				
C(m) (vph)		1086		236				
v/c		0.23		0.18				
95% queue length		0.88		0.63				
Control Delay		9.3		23.5				
LOS		A		C				
Approach Delay				23.5				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		580	53	30	422	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		644	58	33	468	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71		130			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	78		144			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		33		222				
C(m) (vph)		882		350				
v/c		0.04		0.63				
95% queue length		0.12		4.13				
Control Delay		9.2		31.5				
LOS		A		D				
Approach Delay				31.5				
Approach LOS				D				

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560AMEX3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	259			569	2
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	11	287			632	2
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				5		18
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				5		20
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/		No	/
Lanes				0	0	
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	11						25	
C(m) (vph)	935						396	
v/c	0.01						0.06	
95% queue length	0.04						0.20	
Control Delay	8.9						14.7	
LOS	A						B	
Approach Delay							14.7	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560PMEX3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	7	555			361	3
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	7	616			401	3
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				7		20
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				7		22
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes					0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	7						29	
C(m) (vph)	1139						439	
v/c	0.01						0.07	
95% queue length	0.02						0.21	
Control Delay	8.2						13.8	
LOS	A						B	
Approach Delay							13.8	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560AMNB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	11	289			667	2
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	12	321			741	2
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				5		19
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				5		21
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	12						26	
C(m) (vph)	851						335	
v/c	0.01						0.08	
95% queue length	0.04						0.25	
Control Delay	9.3						16.6	
LOS	A						C	
Approach Delay							16.6	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560PMNB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	7	657			401	3
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	7	730			445	3
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				7		21
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				7		23
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	7						30	
C(m) (vph)	1097						383	
v/c	0.01						0.08	
95% queue length	0.02						0.25	
Control Delay	8.3						15.2	
LOS	A						C	
Approach Delay							15.2	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	32	289			667	11
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	35	321			741	12
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				22		58
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				24		64
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	35						88	
C(m) (vph)	844						301	
v/c	0.04						0.29	
95% queue length	0.13						1.19	
Control Delay	9.4						21.8	
LOS	A						C	
Approach Delay							21.8	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	53	657			401	23
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	58	730			445	25
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				20		51
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				22		56
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	58						78	
C(m) (vph)	1076						312	
v/c	0.05						0.25	
95% queue length	0.17						0.97	
Control Delay	8.5						20.3	
LOS	A						C	
Approach Delay							20.3	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB3 (WITH IMPROVEMENTS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	32	289			667	11
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	35	321			741	12
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				22		58
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				24		64
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	35					24		64
C(m) (vph)	844					311		391
v/c	0.04					0.08		0.16
95% queue length	0.13					0.25		0.58
Control Delay	9.4					17.5		16.0
LOS	A					C		C
Approach Delay							16.4	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB3 (WITH IMPROVEMENTS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	53	657			401	23
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	58	730			445	25
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				20		51
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				22		56
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	58					22		56
C(m) (vph)	1076					264		582
v/c	0.05					0.08		0.10
95% queue length	0.17					0.27		0.32
Control Delay	8.5					19.9		11.8
LOS	A					C		B
Approach Delay							14.1	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560AMEX4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	67	346	24	12	348	30
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	74	384	26	13	386	33
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	1	10	0	18
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	6	0	1	11	0	20
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR	.	LTR			LTR	
v (vph)	74	13		7			31	
C(m) (vph)	1124	1133		255			371	
v/c	0.07	0.01		0.03			0.08	
95% queue length	0.21	0.03		0.08			0.27	
Control Delay	8.4	8.2		19.5			15.6	
LOS	A	A		C			C	
Approach Delay				19.5			15.6	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560PMEX4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	8	446	3	4	406	10
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	8	495	3	4	451	11
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	18	0	9	34	3	83
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	20	0	10	37	3	92
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	8	4		30			132	
C(m) (vph)	1084	1051		259			394	
v/c	0.01	0.00		0.12			0.34	
95% queue length	0.02	0.01		0.39			1.45	
Control Delay	8.3	8.4		20.7			18.7	
LOS	A	A		C			C	
Approach Delay				20.7			18.7	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560AMNB4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	71	463	25	13	390	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	514	27	14	433	35
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	1	11	0	19
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	6	0	1	12	0	21
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	78	14		7			33	
C(m) (vph)	1078	1013		190			293	
v/c	0.07	0.01		0.04			0.11	
95% queue length	0.23	0.04		0.11			0.38	
Control Delay	8.6	8.6		24.7			18.8	
LOS	A	A		C			C	
Approach Delay				24.7			18.8	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560PMNB4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	8	501	3	4	533	11
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	8	556	3	4	592	12
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	19	0	10	36	3	88
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	0	11	40	3	97
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	8	4		32			140	
C(m) (vph)	959	997		191			302	
v/c	0.01	0.00		0.17			0.46	
95% queue length	0.03	0.01		0.59			2.33	
Control Delay	8.8	8.6		27.6			26.8	
LOS	A	A		D			D	
Approach Delay				27.6			26.8	
Approach LOS				D			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	71	484	25	13	428	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	537	27	14	475	35
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	1	11	0	19
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	6	0	1	12	0	21
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	78	14		7			33	
C(m) (vph)	1040	993		173			265	
v/c	0.08	0.01		0.04			0.12	
95% queue length	0.24	0.04		0.13			0.42	
Control Delay	8.7	8.7		26.7			20.5	
LOS	A	A		D			C	
Approach Delay				26.7			20.5	
Approach LOS				D			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	8	546	3	4	563	11
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	8	606	3	4	625	12
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	19	0	10	36	3	88
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	0	11	40	3	97
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	8	4		32			140	
C(m) (vph)	932	955		168			273	
v/c	0.01	0.00		0.19			0.51	
95% queue length	0.03	0.01		0.68			2.71	
Control Delay	8.9	8.8		31.4			31.3	
LOS	A	A		D			D	
Approach Delay				31.4			31.3	
Approach LOS				D			D	

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMEX5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2009 EXISTING TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	25	189	98	67	164	46	132	348	18	39	344	4
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						10.0	35.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	528	1583	0.45	0.33	26.3	C	25.2	C
R	479	1436	0.23	0.33	22.7	C		
Westbound								
LTR	484	1451	0.63	0.33	31.6	C	31.6	C
Northbound								
L	433	1555	0.34	0.56	14.0	B		
TR	903	1625	0.45	0.56	13.5	B	13.6	B
Southbound								
LTR	738	1897	0.58	0.39	25.0	C	25.0	C

Intersection Delay = 22.4 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMEX5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2009 EXISTING TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	24	204	132	55	204	41	194	398	49	39	363	7
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	P	P		
Thru	P					Thru	P	P		
Right	P					Right	P	P		
Peds						Peds				
WB Left	P				SB	Left		P		
Thru	P					Thru		P		
Right	P					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						10.0	35.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	531	1592	0.48	0.33	26.9	C	25.8	C
R	479	1436	0.31	0.33	23.9	C		
Westbound								
LTR	521	1562	0.64	0.33	31.4	C	31.4	C
Northbound								
L	421	1555	0.51	0.56	17.2	B		
TR	894	1610	0.55	0.56	15.3	B	15.9	B
Southbound								
LTR	731	1879	0.62	0.39	26.1	C	26.1	C

Intersection Delay = 23.1 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMNB5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 NO-BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	43	200	104	71	174	57	140	441	19	43	381	8
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	P	P		
Thru	P					Thru	P	P		
Right	P					Right	P	P		
Peds						Peds				
WB Left	P				SB	Left		P		
Thru	P					Thru		P		
Right	P					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						10.0	35.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	498	1495	0.54	0.33	28.6	C	26.9	C
R	479	1436	0.24	0.33	23.0	C		
Westbound								
LTR	444	1332	0.75	0.33	38.0	D	38.0	D
Northbound								
L	411	1555	0.38	0.56	15.0	B		
TR	904	1627	0.57	0.56	15.5	B	15.4	B
Southbound								
LTR	723	1860	0.66	0.39	27.4	C	27.4	C

Intersection Delay = 24.9 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMNB5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 NO-BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	30	216	140	58	216	45	206	443	52	50	462	24
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						9.0	36.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	524	1573	0.52	0.33	27.9	C	26.6	C
R	479	1436	0.33	0.33	24.2	C		
Westbound								
LTR	496	1488	0.71	0.33	34.7	C	34.7	C
Northbound								
L	361	1555	0.63	0.56	22.3	C		
TR	895	1611	0.61	0.56	16.6	B	18.3	B
Southbound								
LTR	738	1844	0.81	0.40	33.2	C	33.2	C

Intersection Delay = 26.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMB5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	46	200	104	71	174	58	140	457	19	46	411	14
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	P	P		
Thru	P					Thru	P	P		
Right	P					Right	P	P		
Peds						Peds				
WB Left	P				SB	Left		P		
Thru	P					Thru		P		
Right	P					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						10.0	35.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	492	1477	0.55	0.33	29.0	C	27.2	C
R	479	1436	0.24	0.33	23.0	C		
Westbound								
LTR	442	1325	0.76	0.33	38.4	D	38.4	D
Northbound								
L	393	1555	0.40	0.56	15.7	B		
TR	904	1627	0.59	0.56	15.9	B	15.9	B
Southbound								
LTR	720	1852	0.73	0.39	29.8	C	29.8	C

Intersection Delay = 25.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMB5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	37	216	140	58	216	49	206	479	52	52	485	29
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						9.0	36.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	509	1528	0.55	0.33	28.8	C	27.2	C
R	479	1436	0.33	0.33	24.2	C		
Westbound								
LTR	489	1466	0.73	0.33	35.8	D	35.8	D
Northbound								
L	350	1555	0.65	0.56	23.6	C		
TR	896	1613	0.66	0.56	17.8	B	19.4	B
Southbound								
LTR	733	1832	0.86	0.40	37.1	D	37.1	D

Intersection Delay = 28.5 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560AMEX6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	404	7	5	343	14
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	4	448	7	5	381	15
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	12	19	18	5	20	6
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	13	21	20	5	22	6
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	4	5		54			33	
C(m) (vph)	1146	1090		274			246	
v/c	0.00	0.00		0.20			0.13	
95% queue length	0.01	0.01		0.72			0.46	
Control Delay	8.2	8.3		21.3			21.9	
LOS	A	A		C			C	
Approach Delay				21.3			21.9	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560PMEX6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	18	437	10	11	482	21
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	20	485	11	12	535	23
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	12	27	18	13	20	5
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	13	30	20	14	22	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	20	12		63			41	
C(m) (vph)	998	1052		237			200	
v/c	0.02	0.01		0.27			0.20	
95% queue length	0.06	0.03		1.04			0.75	
Control Delay	8.7	8.5		25.6			27.6	
LOS	A	A		D			D	
Approach Delay				25.6			27.6	
Approach LOS				D			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560AMNB6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	524	7	5	385	15
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	4	582	7	5	427	16
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	20	19	5	21	6
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	22	21	5	23	6
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	4	5		57			34	
C(m) (vph)	1101	972		201			182	
v/c	0.00	0.01		0.28			0.19	
95% queue length	0.01	0.02		1.12			0.67	
Control Delay	8.3	8.7		29.9			29.3	
LOS	A	A		D			D	
Approach Delay				29.9			29.3	
Approach LOS				D			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560PMNB6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	19	491	11	12	614	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	545	12	13	682	24
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	29	19	14	21	5
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	32	21	15	23	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	21	13		67			43	
C(m) (vph)	878	999		174			142	
v/c	0.02	0.01		0.39			0.30	
95% queue length	0.07	0.04		1.67			1.19	
Control Delay	9.2	8.7		38.1			41.0	
LOS	A	A		E			E	
Approach Delay				38.1			41.0	
Approach LOS				E			E	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	545	7	5	423	15
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	4	605	7	5	470	16
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	20	19	5	21	6
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	22	21	5	23	6
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	4	5		57			34	
C(m) (vph)	1062	953		180			162	
v/c	0.00	0.01		0.32			0.21	
95% queue length	0.01	0.02		1.28			0.76	
Control Delay	8.4	8.8		34.0			33.0	
LOS	A	A		D			D	
Approach Delay				34.0			33.0	
Approach LOS				D			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	19	537	11	12	643	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	596	12	13	714	24
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	29	19	14	21	5
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	32	21	15	23	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	21	13		67			43	
C(m) (vph)	855	956		153			123	
v/c	0.02	0.01		0.44			0.35	
95% queue length	0.08	0.04		1.97			1.41	
Control Delay	9.3	8.8		45.7			49.2	
LOS	A	A		E			E	
Approach Delay				45.7			49.2	
Approach LOS				E			E	

Appendix D

Level of Service Standards

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a 15-minute analysis period. The criteria are given in Exhibit 16-2 from the 2000 Highway Capacity Manual published by the Transportation Research Board.

EXHIBIT 16-2

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE (LOS)	CONTROL DELAY PER VEHICLE (S/VEH)
A	≤10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

LEVEL OF SERVICE A describes operations with low control delay, up to 10 seconds per vehicle (s/veh). This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.

LEVEL OF SERVICE B describes operations with control delay greater than 10 and up to 20 seconds per vehicle (s/veh). This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with Level of Service "A", causing higher levels of delay.

LEVEL OF SERVICE C describes operations with control delay greater than 20 and up to 35 seconds per vehicle (s/veh). These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LEVEL OF SERVICE D describes operations with control delay greater than 35 and up to 55 seconds per vehicle (s/veh). At Level of Service D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LEVEL OF SERVICE E describes operations with control delay greater than 55 and up to 80 seconds per vehicle (s/veh). This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.

LEVEL OF SERVICE F describes operations with control delay in excess of 80 seconds per vehicle (s/veh). This level is considered unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

The Level of Service (LOS) for unsignalized intersections is determined by the computed or measured control delay and is defined for each minor movement. Control delay is defined as the total elapsed time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. This total elapsed time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to speed of vehicles in queue. Average control delay for any particular minor movement is a function of the capacity of the approach and the degree of saturation. The Level of Service Criteria are given in Exhibit 17-2 from the 2000 Highway Capacity Manual published by the Transportation Research Board.

EXHIBIT 17-2

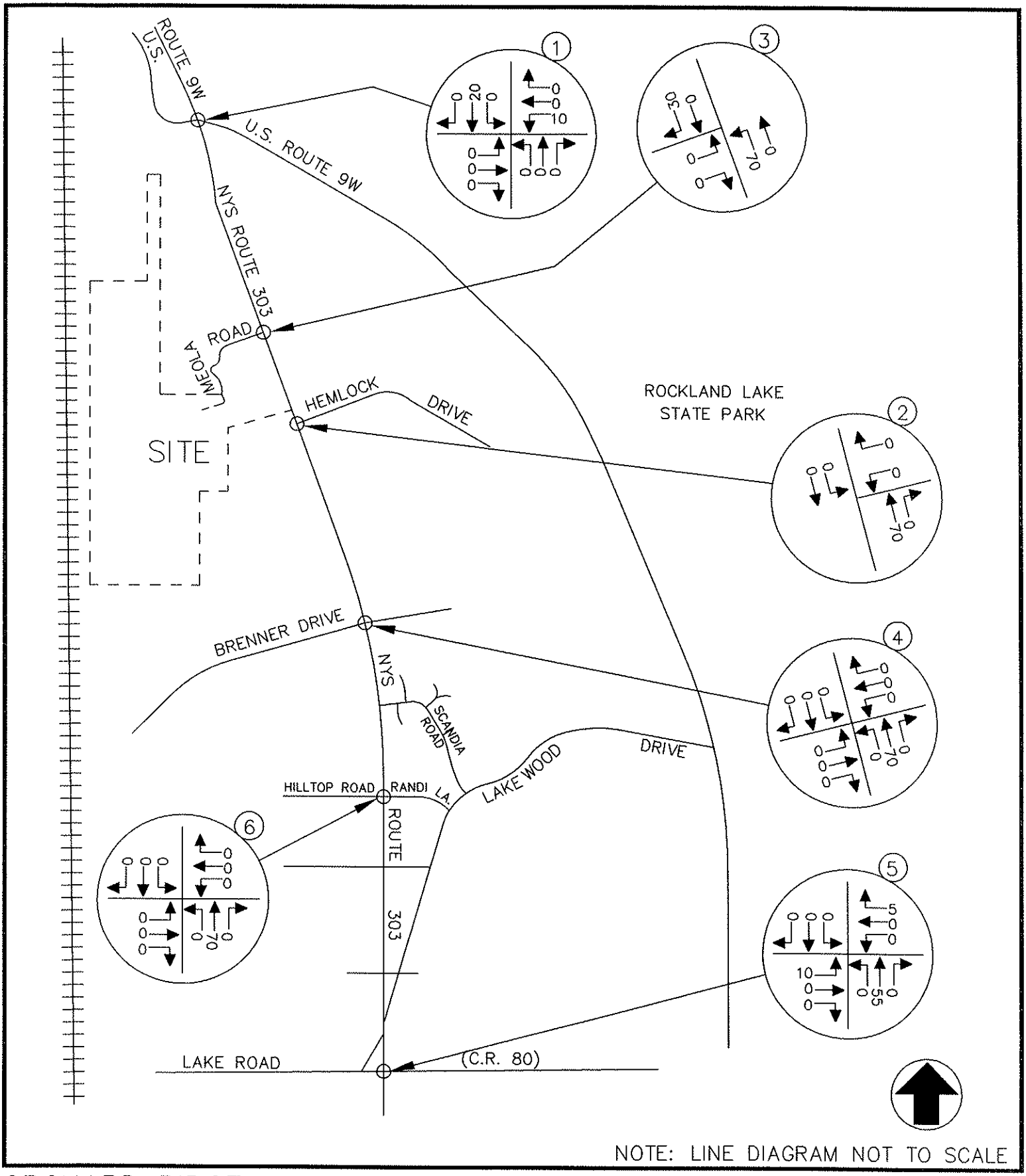
LEVEL OF SERVICE FOR CRITERIA
FOR UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE (LOS)	AVERAGE CONTROL DELAY (S/VEH)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

The Level of Service Criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections.

Appendix E

Consideration of Potential Commercial Parcel



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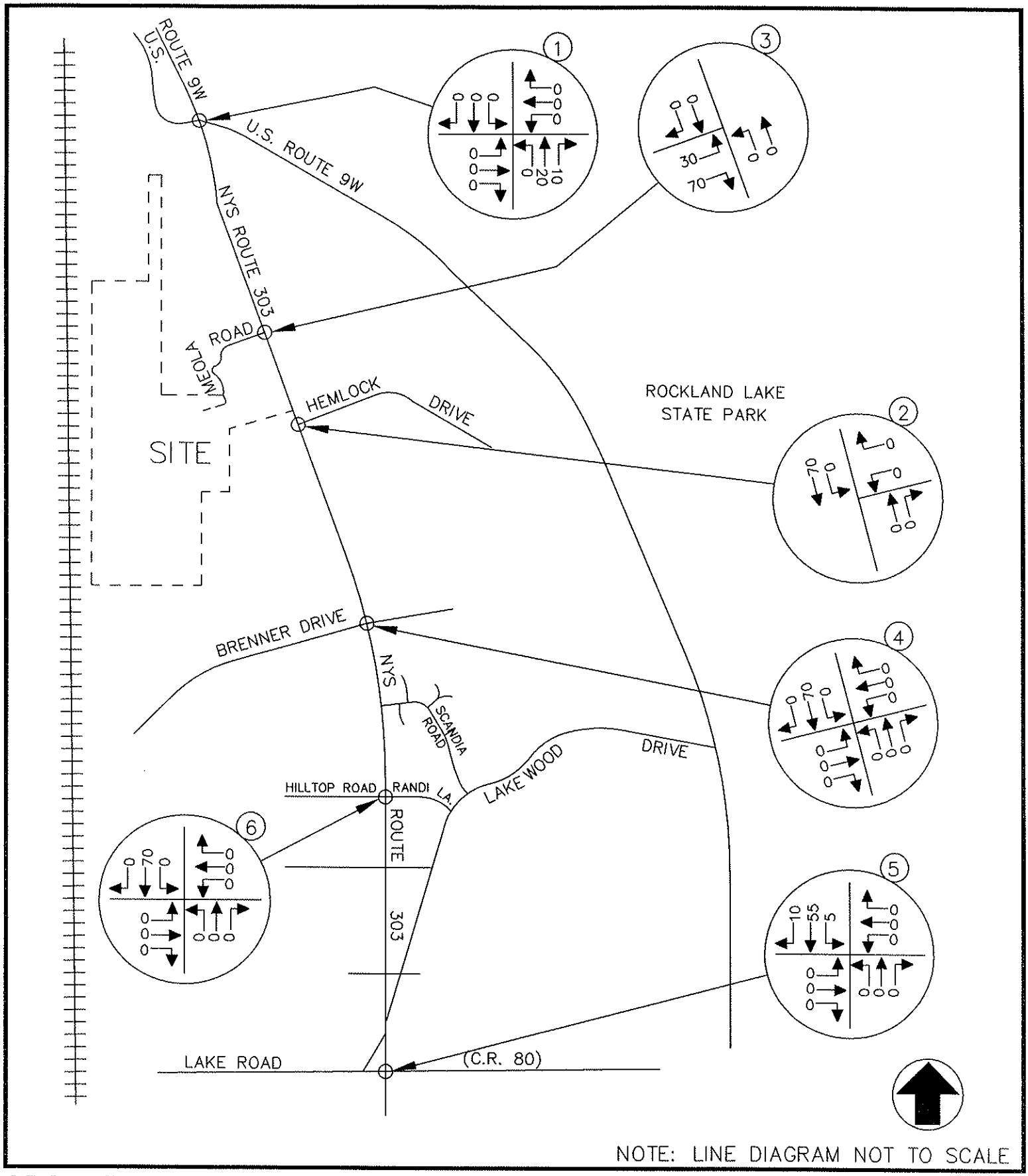
PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 10A



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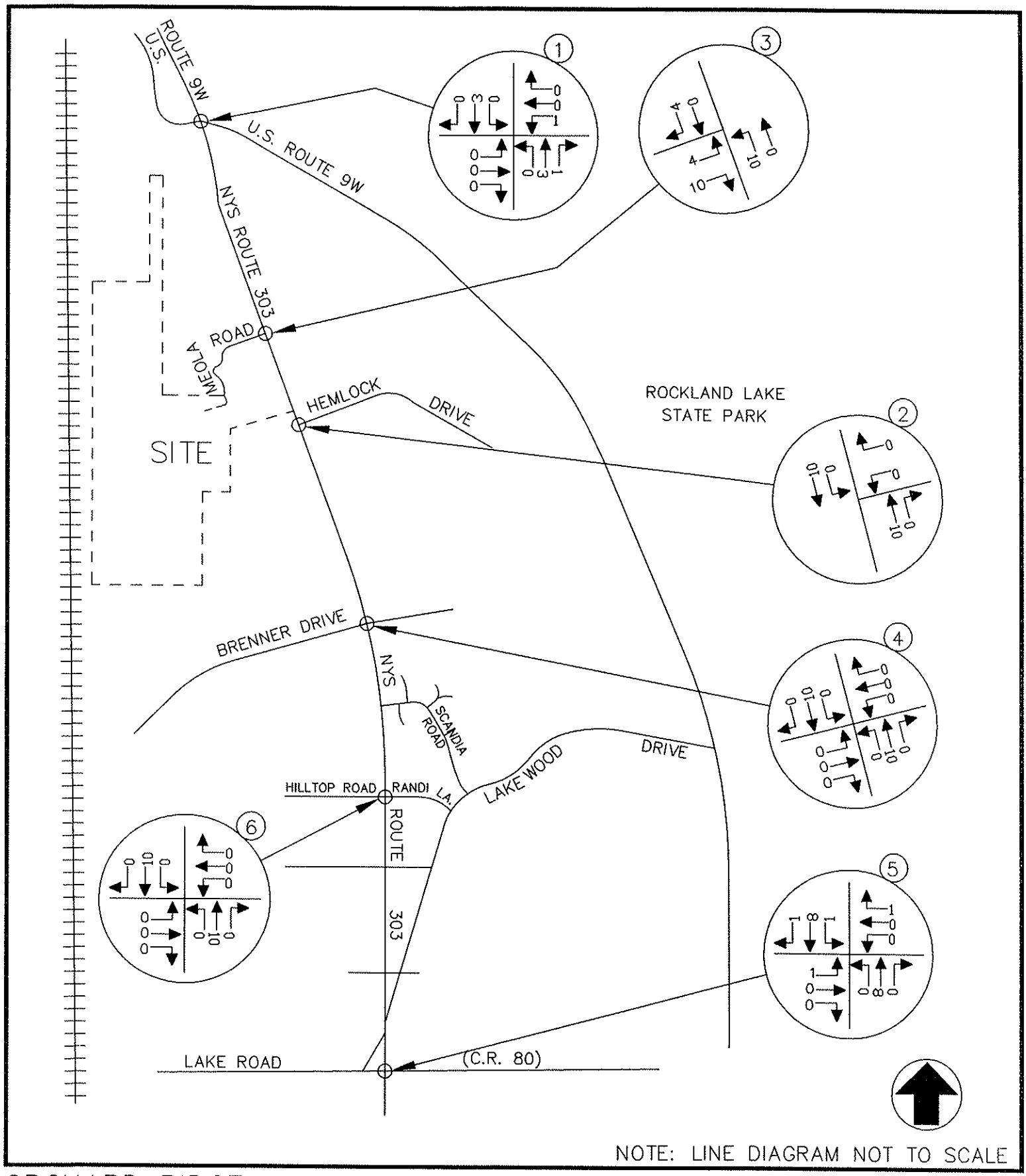

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SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR
(W/COMMERCIAL PARCEL)

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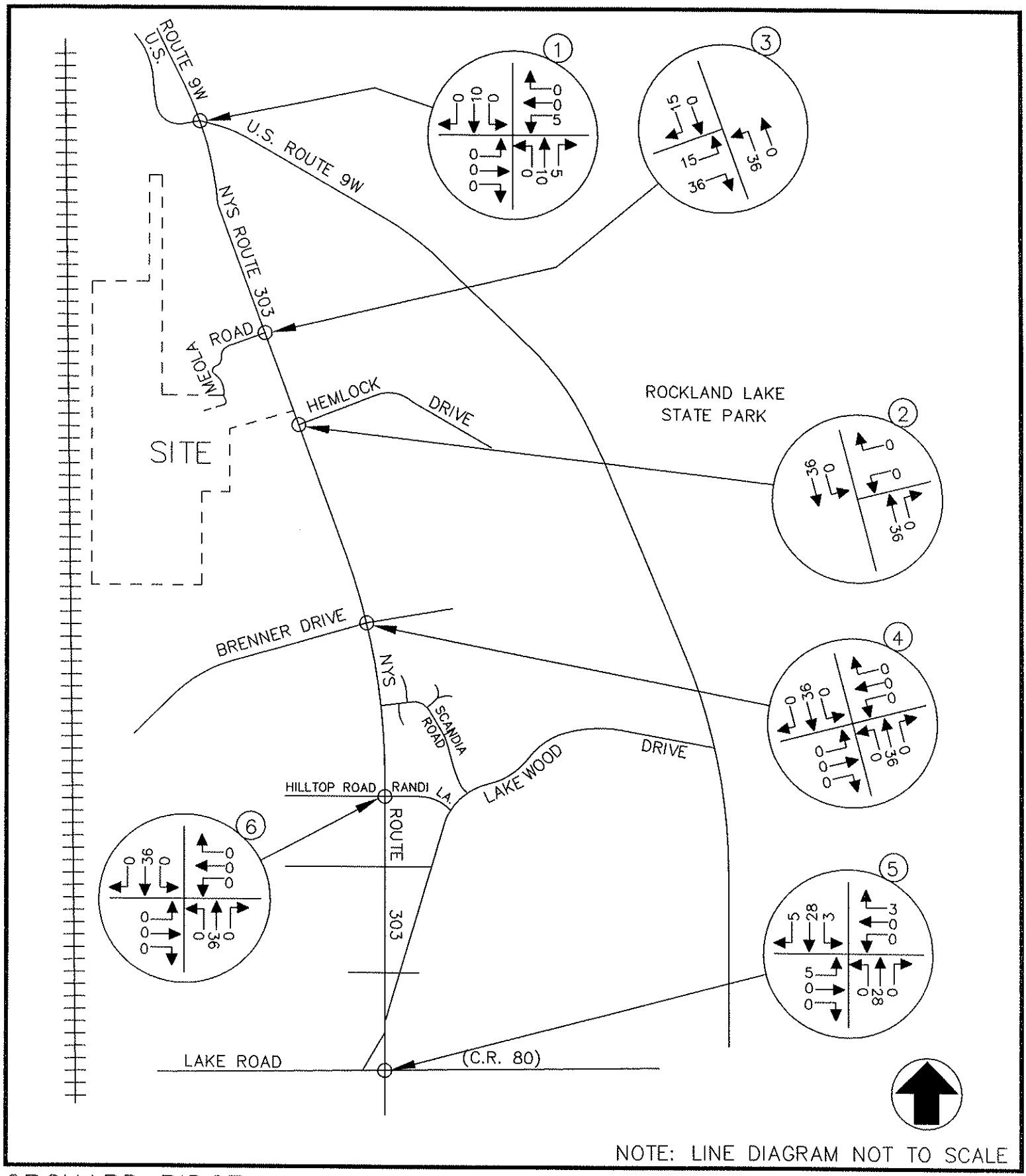
PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 12A

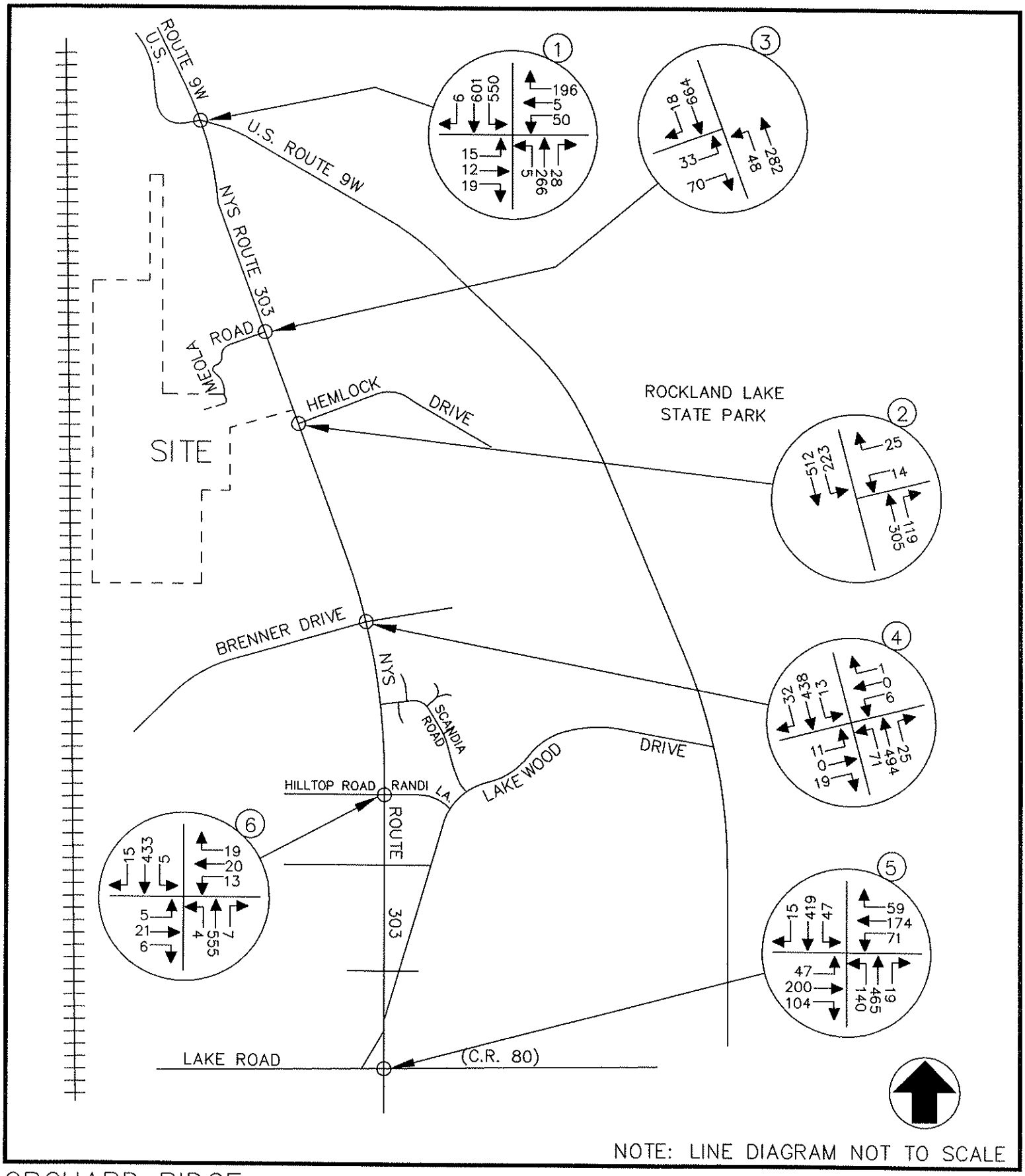


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR
(W/COMMERCIAL PARCEL)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 13A

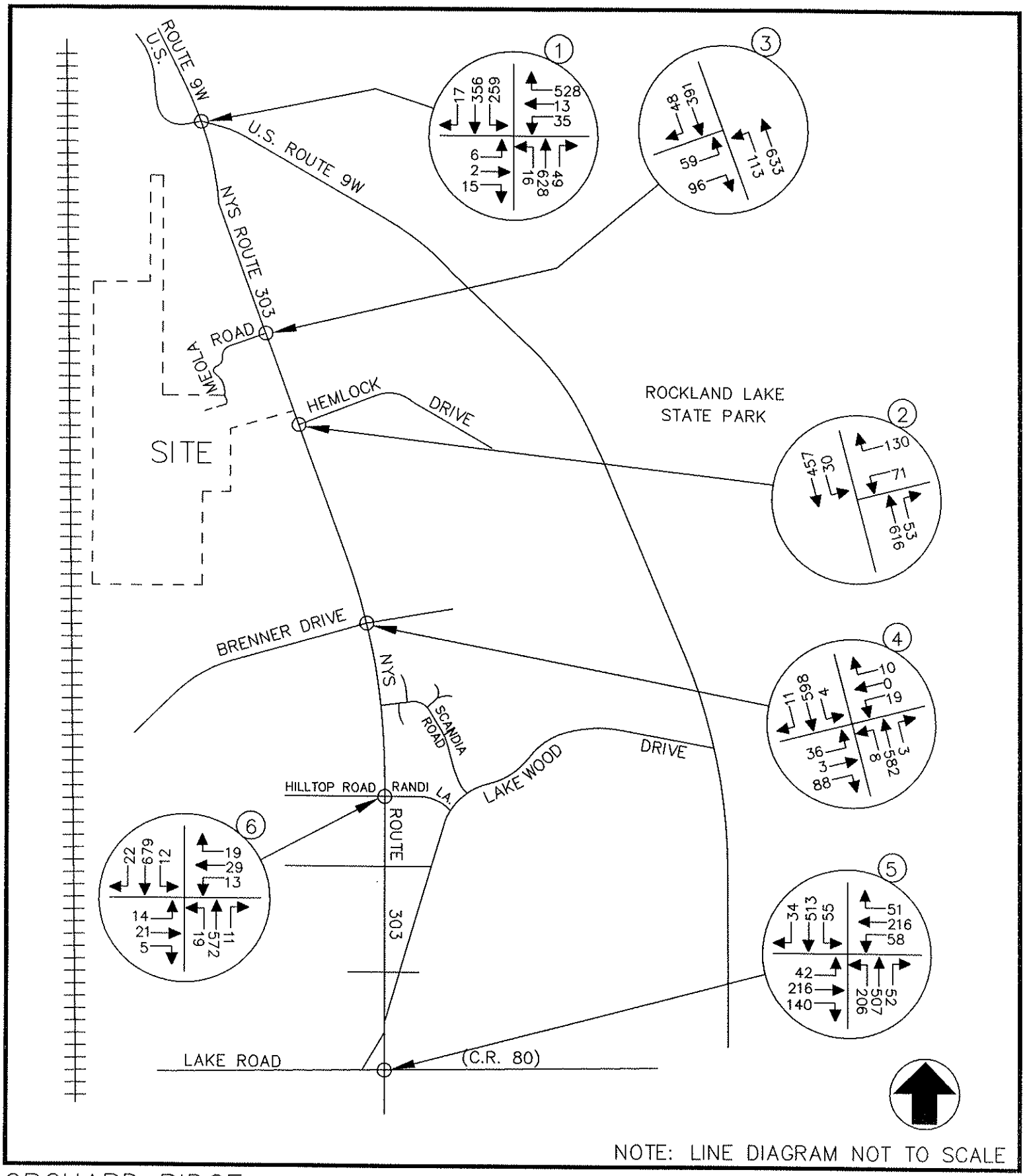


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 COMBINED BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR
(W/COMMERCIAL PARCEL)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 14A



ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 COMBINED BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR
(W/COMMERCIAL PARCEL)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 15A

TABLE NO. 1A

HOURLY TRIP GENERATION RATES (HTGR) AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

ORCHARD RIDGE CLARKSTOWN, NY	ENTRY			EXIT		
	HTGR*	VOLUME	NEW TRIPS	HTGR*	VOLUME	NEW TRIPS
RETAIL (14,000 S.F.)						
PEAK AM HOUR	1.71	24	14	1.71	24	14
PEAK PM HOUR	6.07	85	51	6.07	85	51

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 8TH EDITION, 2008. ITE LAND USE CODE - 820 - SHOPPING CENTER.

2) THE NEW TRIPS SHOWN INCLUDE A CREDIT OF 25% FOR PASS-BY/DIVERTED LINK TRIPS AND A 15% FOR INTERPLAY TRIPS OF 40% NEW TRIPS.

TABLE NO. 2A

LEVEL OF SERVICE SUMMARY TABLE

				2009 EXISTING				2012 NO-BUILD				2012 BUILD			
				AM		PM		AM		PM		AM		PM	
				DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C
1	N.Y.S. ROUTE 303/U.S. ROUTE 9W &	**SIGNALIZED**													
	U.S. ROUTE 9W/HIDDEN VALLEY	NB	L	A[6.6]	0.01	A[4.5]	0.03	A[7.9]	0.02	A[4.6]	0.03	A[8.0]	0.02	A[4.7]	0.03
			TR	B[13.1]	0.34	B[19.0]	0.74	B[13.4]	0.39	C[27.0]	0.87	B[13.6]	0.41	C[28.8]	0.89
		SB	L	C[19.5]	0.83	B[10.5]	0.60	C[31.1]	0.91	C[23.0]	0.77	D[35.5]	0.93	C[25.8]	0.78
			TR	B[18.9]	0.71	B[13.2]	0.42	C[24.0]	0.82	B[13.6]	0.47	C[24.5]	0.83	B[13.7]	0.49
		EB	LTR	C[23.4]	0.16	C[23.7]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09
		WB	LT	C[23.2]	0.13	C[23.9]	0.11	C[23.8]	0.21	C[24.1]	0.14	C[23.9]	0.23	C[24.3]	0.17
			R	B[14.1]	0.32	C[34.6]	0.89	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95
		OVERALL		B[17.8]	-	C[23.7]	-	C[23.4]	-	C[28.4]	-	C[24.9]	-	C[29.3]	-
2	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**													
	HEMLOCK DRIVE	SB	LT	A[8.9]	0.20	A[8.7]	0.03	A[9.2]	0.22	A[9.1]	0.04	A[9.3]	0.23	A[9.4]	0.04
		WB	LR	C[18.0]	0.13	C[19.9]	0.47	C[21.7]	0.16	D[26.8]	0.58	C[24.1]	0.18	E[37.2]	0.69
3	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**													
	MEOLA ROAD	NB	LT	A[8.9]	0.01	A[8.2]	0.01	A[9.3]	0.01	A[8.3]	0.01	A[9.6]	0.06	A[8.8]	0.12
		EB	LR	B[14.7]	0.06	B[13.8]	0.07	C[16.6]	0.08	C[15.2]	0.08	D[26.3]	0.40	F[57.9]	0.76
	WITH IMPROVEMENTS	NB	L	-	-	-	-	-	-	-	-	A[9.6]	0.06	A[8.8]	0.12
		EB	L	-	-	-	-	-	-	-	-	C[18.5]	0.12	D[27.7]	0.29
			R	-	-	-	-	-	-	-	-	C[16.5]	0.20	B[12.6]	0.18
4	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**													
	BRENNER DRIVE/	NB	LTR	A[8.4]	0.07	A[8.3]	0.01	A[8.6]	0.07	A[8.8]	0.01	A[8.7]	0.08	A[8.9]	0.01
	INTERCOS DRIVEWAY	SB	LTR	A[8.2]	0.01	A[8.4]	0.00	A[8.6]	0.01	A[8.6]	0.00	A[8.7]	0.01	A[8.8]	0.00
		EB	LTR	C[15.6]	0.08	C[18.7]	0.34	C[18.8]	0.11	D[26.8]	0.46	C[20.5]	0.12	D[31.3]	0.51
		WB	LTR	C[19.5]	0.03	C[20.7]	0.12	C[24.7]	0.04	D[27.6]	0.17	D[26.7]	0.04	D[31.4]	0.19
5	N.Y.S. ROUTE 303 &	**SIGNALIZED**													
	LAKE ROAD	NB	L	B[14.0]	0.34	B[17.2]	0.51	B[15.0]	0.38	C[22.3]	0.63	B[15.7]	0.40	C[23.6]	0.65
			TR	B[13.5]	0.45	B[15.3]	0.55	B[15.5]	0.57	B[16.6]	0.61	B[15.9]	0.59	B[17.8]	0.66
		SB	LTR	C[25.0]	0.58	C[26.1]	0.62	C[27.4]	0.66	C[33.2]	0.81	C[29.8]	0.73	C[37.1]	0.86
		EB	LT	C[26.3]	0.45	C[26.9]	0.48	C[28.6]	0.54	C[27.9]	0.52	C[29.0]	0.55	C[28.8]	0.55
			R	C[22.7]	0.23	C[23.9]	0.31	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33
		WB	LTR	C[31.6]	0.63	C[31.4]	0.64	D[38.0]	0.75	C[34.7]	0.71	D[38.4]	0.76	C[35.8]	0.73
		OVERALL		C[22.4]	-	C[23.1]	-	C[24.9]	-	C[26.8]	-	C[25.8]	-	C[28.5]	-
6	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**													
	RANDI LANE/HILLTOP ROAD	NB	LTR	A[8.2]	0.00	A[8.7]	0.02	A[8.3]	0.00	A[9.2]	0.02	A[8.4]	0.00	A[9.3]	0.02
		SB	LTR	A[8.3]	0.00	A[8.5]	0.01	A[8.7]	0.01	A[8.7]	0.01	A[8.8]	0.01	A[8.8]	0.01
		EB	LTR	C[21.9]	0.13	D[27.6]	0.20	D[29.3]	0.19	E[41.0]	0.30	D[33.0]	0.21	E[49.2]	0.35
		WB	LTR	C[21.3]	0.20	D[25.6]	0.27	D[29.9]	0.28	E[38.1]	0.39	D[34.0]	0.32	E[45.7]	0.44
7	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**													
	SITE ACCESS DRIVEWAY	NB	LT	-	-	-	-	-	-	-	-	A[9.4]	0.02	A[8.6]	0.06
	(COMMERCIAL PARCEL)	EB	LR	-	-	-	-	-	-	-	-	C[20.1]	0.10	D[29.8]	0.40

NOTES:

THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH AS WELL AS FOR THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTION.

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HEMLOCK DR
Jurisdiction: (W/COMMERCIAL)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		305	119	223	512	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		338	132	247	568	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14		25			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	15		27			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		247		42				
C(m) (vph)		1076		230				
v/c		0.23		0.18				
95% queue length		0.89		0.65				
Control Delay		9.3		24.1				
LOS		A		C				
Approach Delay				24.1				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HEMLOCK DR
Jurisdiction: (W/COMMERCIAL)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		616	53	30	457	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		684	58	33	507	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71		130			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	78		144			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		33		222				
C(m) (vph)		852		324				
v/c		0.04		0.69				
95% queue length		0.12		4.76				
Control Delay		9.4		37.2				
LOS		A		E				
Approach Delay				37.2				
Approach LOS				E				

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction: (W/COMMERCIAL)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	48	282			664	18
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	53	313			737	20
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				33		70
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				36		77
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	53						113	
C(m) (vph)	841						280	
v/c	0.06						0.40	
95% queue length	0.20						1.86	
Control Delay	9.6						26.3	
LOS	A						D	
Approach Delay							26.3	
Approach LOS							D	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction: (W/COMMERCIAL)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	113	633			391	48
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	125	703			434	53
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				59		96
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				65		106
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	125						171	
C(m) (vph)	1061						226	
v/c	0.12						0.76	
95% queue length	0.40						5.28	
Control Delay	8.8						57.9	
LOS	A						F	
Approach Delay							57.9	
Approach LOS							F	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction: (W/COMMERCIAL)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB3 (WITH IMPROVEMENTS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	48	282			664	18
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	53	313			737	20
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				33		70
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				36		77
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	53					36		77
C(m) (vph)	841					302		391
v/c	0.06					0.12		0.20
95% queue length	0.20					0.40		0.72
Control Delay	9.6					18.5		16.5
LOS	A					C		C
Approach Delay							17.1	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction: (W/COMMERCIAL)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB3 (WITH IMPROVEMENTS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	113	633			391	48
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	125	703			434	53
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				59		96
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				65		106
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

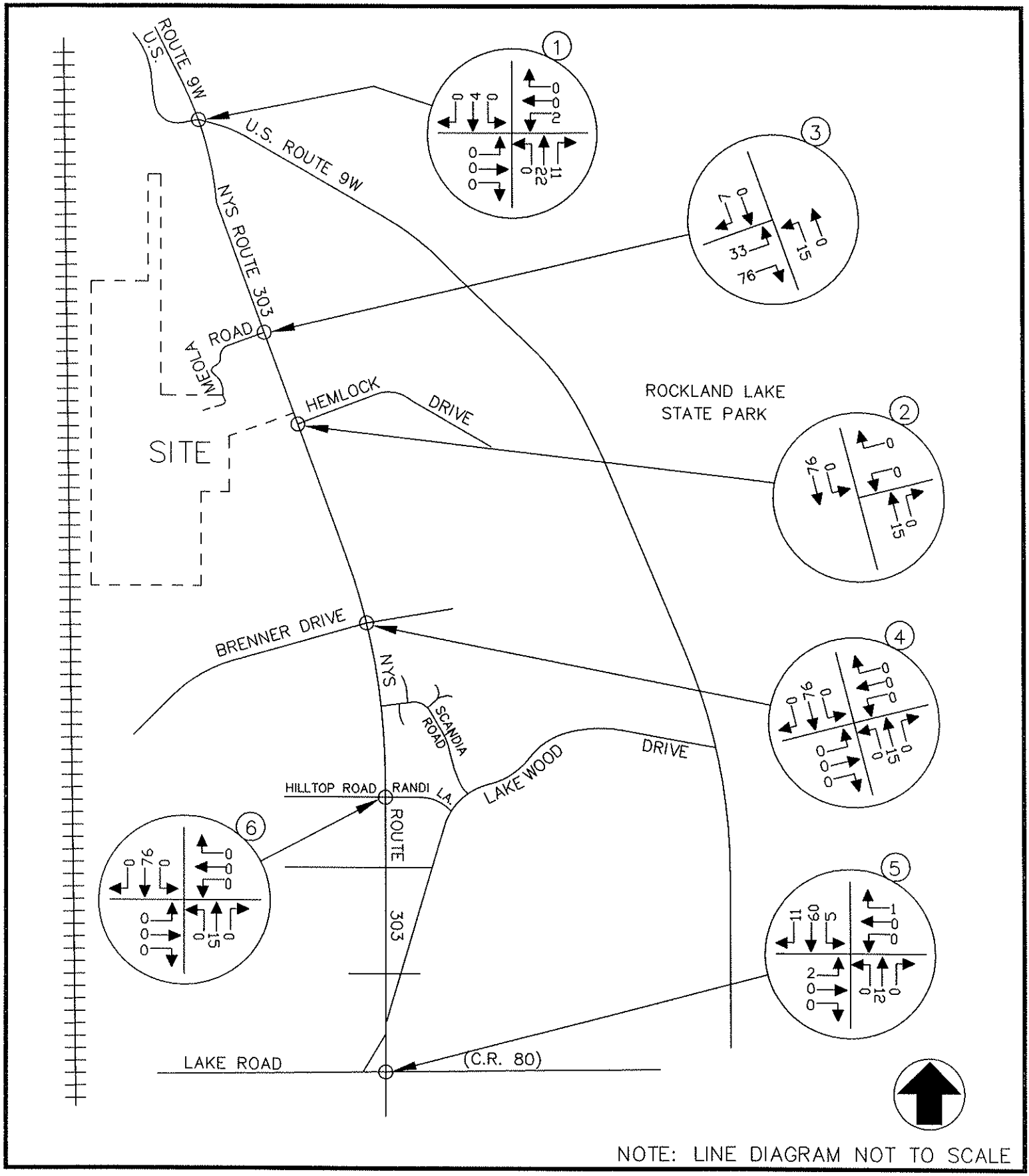
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	125					65		106
C(m) (vph)	1061					223		580
v/c	0.12					0.29		0.18
95% queue length	0.40					1.17		0.66
Control Delay	8.8					27.7		12.6
LOS	A					D		B
Approach Delay							18.3	
Approach LOS							C	

Appendix F

SYNCHRO Analyses
(copies available upon request)

APPENDIX "G"

SENSITIVITY ANALYSIS WITH TOWNHOUSE TRIP RATES

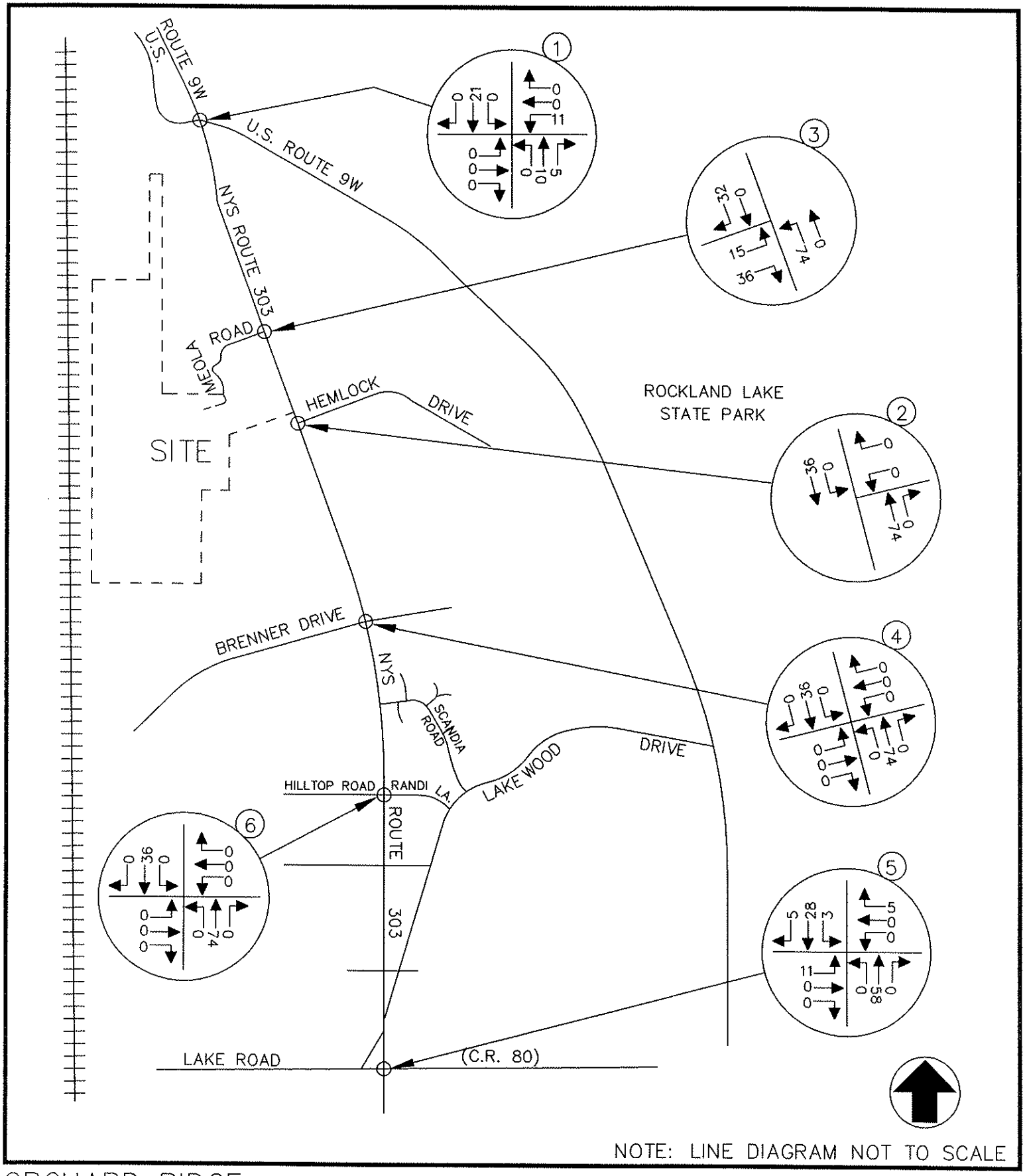


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR
(SENSITIVITY ANALYSIS W/TOWNHOUSE RATES)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 12

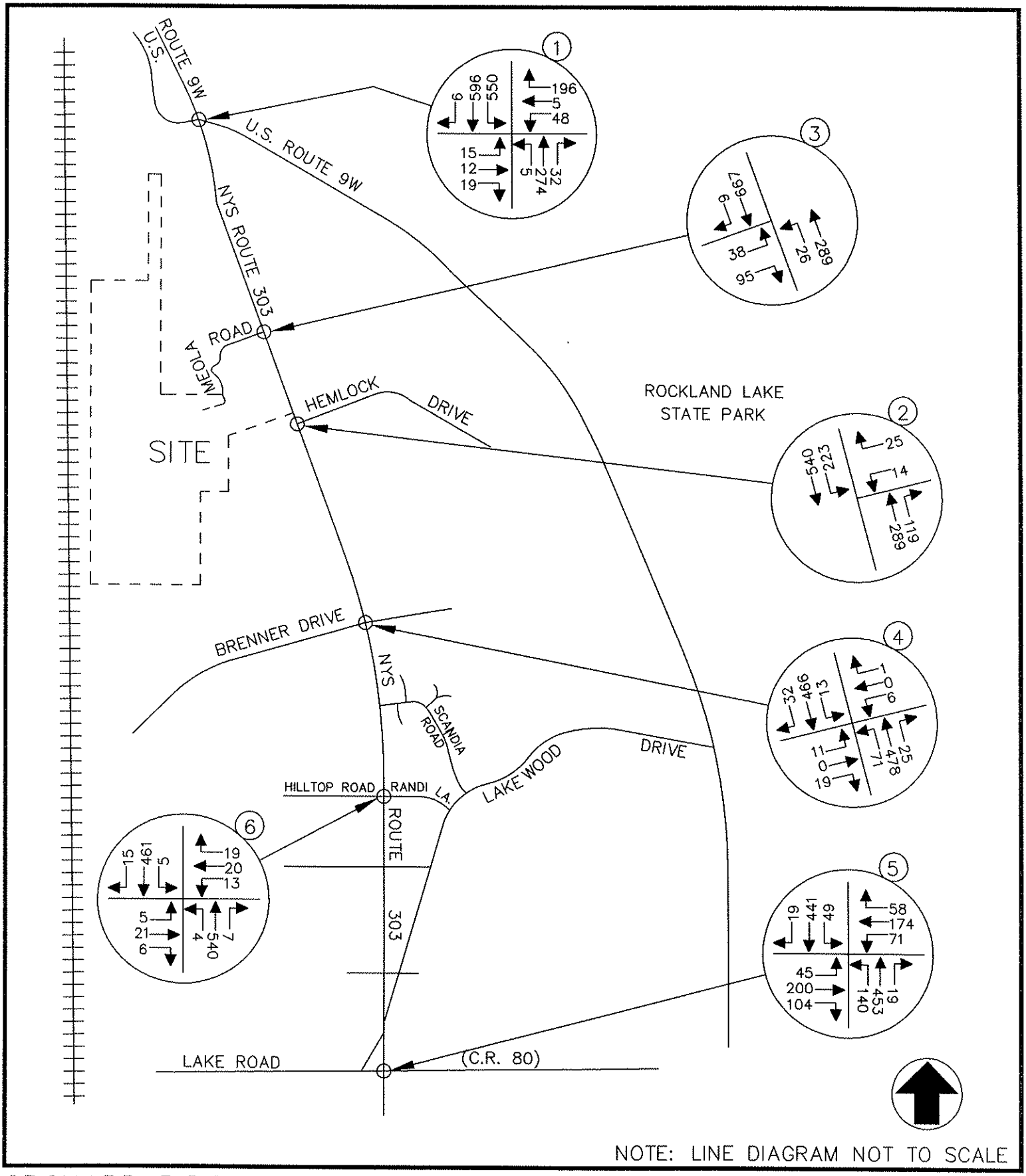


ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR
(SENSITIVITY ANALYSIS W/TOWNHOUSE RATES)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 13



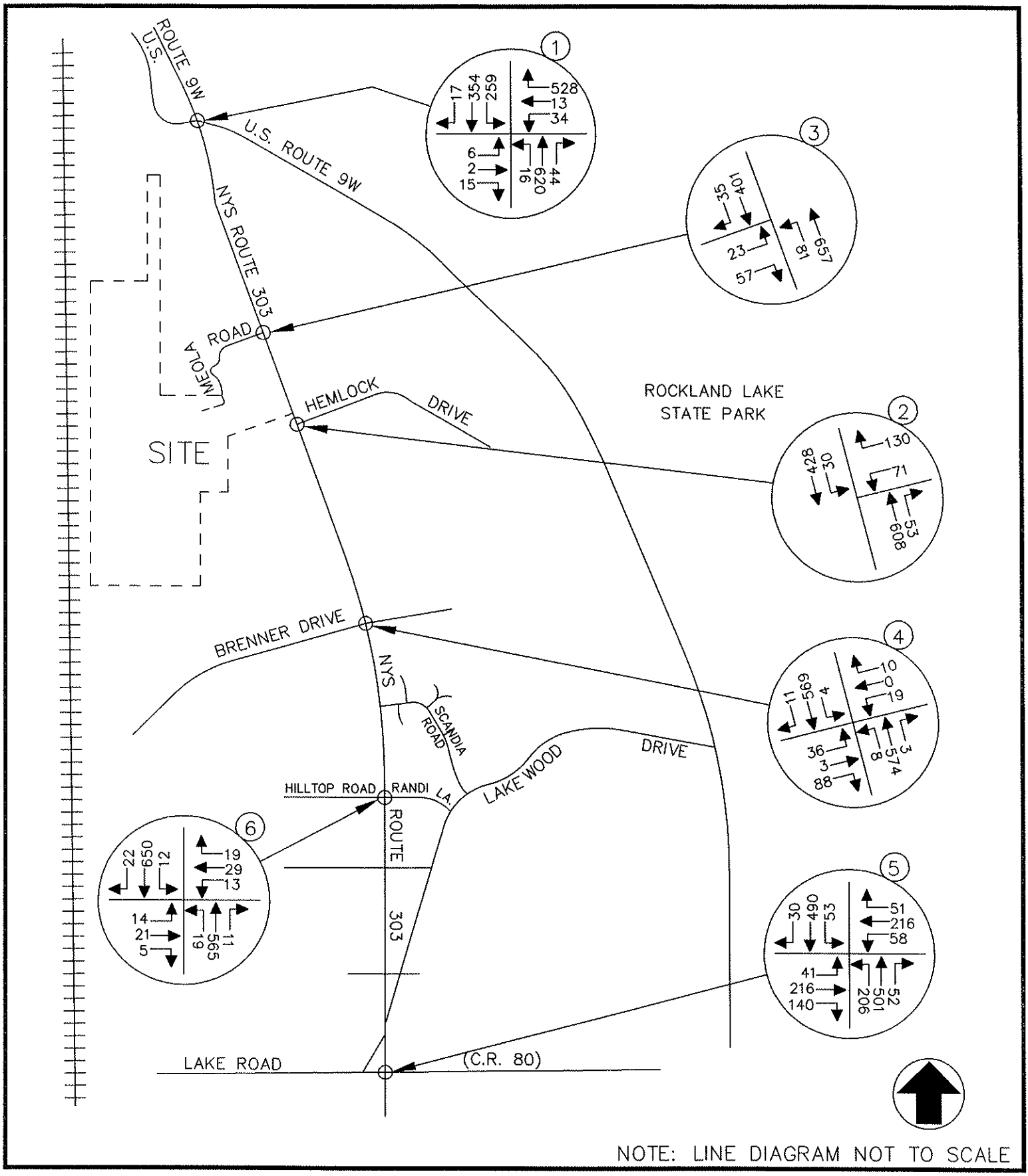
NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

2012 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR
(SENSITIVITY ANALYSIS W/TOWNHOUSE RATES)

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 14



NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR
(SENSITIVITY ANALYSIS W/TOWNHOUSE RATES)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: SEPTEMBER 2011 FIG. NO. 15

TABLE NO. 1-SA

HOURLY TRIP GENERATION RATES (HTGR) AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES (SENSITIVITY ANALYSIS WITH TOWNHOUSE TRIP RATES)

ORCHARD RIDGE CLARKSTOWN, NY	ENTRY		EXIT	
	HTGR*	VOLUME	HTGR*	VOLUME
TOWNHOUSE (320 DWELLING UNITS)				
PEAK AM HOUR	0.07	22	0.34	109
PEAK PM HOUR	0.33	105	0.16	51

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 8TH EDITION, 2008. ITE LAND USE CODE - 230 - TOWNHOUSE.

TABLE NO. 2-SA

LEVEL OF SERVICE SUMMARY TABLE
(SENSITIVITY ANALYSIS WITH TOWNHOUSE TRIP RATES)

					2009 EXISTING				2012 NO-BUILD				2012 BUILD				WITH TOWNHOUSE RATES ONLY 2012 BUILD			
					AM		PM		AM		PM		AM		PM		AM		PM	
					DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C
1	N.Y.S. ROUTE 303/U.S. ROUTE 9W & U.S. ROUTE 9W/HIDDEN VALLEY	**SIGNALIZED**																		
		NB	L		A[6.6]	0.01	A[4.5]	0.03	A[7.9]	0.02	A[4.6]	0.03	A[8.0]	0.02	A[4.7]	0.03	A[8.0]	0.02	A[4.8]	0.03
			TR		B[13.1]	0.34	B[19.0]	0.74	B[13.4]	0.39	C[27.0]	0.87	B[13.6]	0.41	C[28.8]	0.89	B[13.8]	0.44	C[29.3]	0.89
		SB	L		C[19.5]	0.83	B[10.5]	0.60	C[31.1]	0.91	C[23.0]	0.77	D[35.5]	0.93	C[25.8]	0.78	D[41.0]	0.96	C[26.5]	0.79
			TR		B[18.9]	0.71	B[13.2]	0.42	C[24.0]	0.82	B[13.6]	0.47	C[24.5]	0.83	B[13.7]	0.49	C[24.3]	0.83	B[13.8]	0.50
		EB	LTR		C[23.4]	0.16	C[23.7]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09
		WB	LT		C[23.2]	0.13	C[23.9]	0.11	C[23.8]	0.21	C[24.1]	0.14	C[23.9]	0.23	C[24.3]	0.17	C[23.9]	0.22	C[24.4]	0.19
			R		B[14.1]	0.32	C[34.6]	0.89	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95
		OVERALL			B[17.8]	-	C[23.7]	-	C[23.4]	-	C[28.4]	-	C[24.9]	-	C[29.3]	-	C[26.5]	-	C[29.5]	-
2	N.Y.S. ROUTE 303 & HEMLOCK DRIVE	**UNSIGNALIZED**																		
		SB	LT		A[8.9]	0.20	A[8.7]	0.03	A[9.2]	0.22	A[9.1]	0.04	A[9.3]	0.23	A[9.2]	0.04	A[9.3]	0.23	A[9.4]	0.04
		WB	LR		C[18.0]	0.13	C[19.9]	0.47	C[21.7]	0.16	D[26.8]	0.58	C[23.5]	0.18	D[31.5]	0.63	C[24.3]	0.18	D[34.5]	0.66
3	N.Y.S. ROUTE 303 & MEOLA ROAD	**UNSIGNALIZED**																		
		NB	LT		A[8.9]	0.01	A[8.2]	0.01	A[9.3]	0.01	A[8.3]	0.01	A[9.3]	0.01	A[8.4]	0.01	A[9.4]	0.03	A[8.7]	0.08
		EB	LR		B[14.7]	0.06	B[13.8]	0.07	C[16.6]	0.08	C[15.2]	0.08	C[16.9]	0.08	C[15.6]	0.08	D[27.9]	0.49	C[23.4]	0.31
	WITH IMPROVEMENTS	NB	L		-	-	-	-	-	-	-	-	A[9.4]	0.04	A[8.5]	0.05	A[9.4]	0.03	A[8.7]	0.08
		EB	L		-	-	-	-	-	-	-	-	C[17.5]	0.08	C[19.9]	0.08	C[18.1]	0.13	C[21.7]	0.10
			R		-	-	-	-	-	-	-	-	C[16.0]	0.16	B[11.8]	0.10	C[17.4]	0.27	B[12.0]	0.11
4	N.Y.S. ROUTE 303 & BRENNER DRIVE/ INTERCOS DRIVEWAY	**UNSIGNALIZED**																		
		NB	LTR		A[8.4]	0.07	A[8.3]	0.01	A[8.6]	0.07	A[8.8]	0.01	A[8.7]	0.08	A[8.9]	0.01	A[8.9]	0.08	A[8.9]	0.01
		SB	LTR		A[8.2]	0.01	A[8.4]	0.00	A[8.6]	0.01	A[8.6]	0.00	A[8.7]	0.01	A[8.8]	0.00	A[8.7]	0.01	A[8.9]	0.00
		EB	LTR		C[15.6]	0.08	C[18.7]	0.34	C[18.8]	0.11	D[26.8]	0.46	C[20.5]	0.12	D[31.3]	0.51	C[21.6]	0.13	D[33.3]	0.53
		WB	LTR		C[19.5]	0.03	C[20.7]	0.12	C[24.7]	0.04	D[27.6]	0.17	D[26.7]	0.04	D[31.4]	0.19	D[27.9]	0.04	D[33.3]	0.20
5	N.Y.S. ROUTE 303 & LAKE ROAD	**SIGNALIZED**																		
		NB	L		B[14.0]	0.34	B[17.2]	0.51	B[15.0]	0.38	C[22.3]	0.63	B[15.7]	0.40	C[23.6]	0.65	B[16.4]	0.41	C[23.8]	0.66
			TR		B[13.5]	0.45	B[15.3]	0.55	B[15.5]	0.57	B[16.6]	0.61	B[15.9]	0.59	B[17.8]	0.66	B[15.8]	0.58	B[18.6]	0.69
		SB	LTR		C[25.0]	0.58	C[26.1]	0.62	C[27.4]	0.66	C[33.2]	0.81	C[29.8]	0.73	C[37.1]	0.86	C[32.6]	0.78	D[38.5]	0.87
		EB	LT		C[26.3]	0.45	C[26.9]	0.48	C[28.6]	0.54	C[27.9]	0.52	C[29.0]	0.55	C[28.8]	0.55	C[28.9]	0.55	C[29.5]	0.57
			R		C[22.7]	0.23	C[23.9]	0.31	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33
		WB	LTR		C[31.6]	0.63	C[31.4]	0.64	D[38.0]	0.75	C[34.7]	0.71	D[38.4]	0.76	C[35.8]	0.73	D[38.4]	0.76	D[36.7]	0.75
		OVERALL			C[22.4]	-	C[23.1]	-	C[24.9]	-	C[26.8]	-	C[25.8]	-	C[28.5]	-	C[26.8]	-	C[29.3]	-
6	N.Y.S. ROUTE 303 & RANDI LANE/HILLTOP ROAD	**UNSIGNALIZED**																		
		NB	LTR		A[8.2]	0.00	A[8.7]	0.02	A[8.3]	0.00	A[9.2]	0.02	A[8.4]	0.00	A[9.3]	0.02	A[8.5]	0.00	A[9.3]	0.02
		SB	LTR		A[8.3]	0.00	A[8.5]	0.01	A[8.7]	0.01	A[8.7]	0.01	A[8.8]	0.01	A[8.8]	0.01	A[8.8]	0.01	A[8.9]	0.01
		EB	LTR		C[21.9]	0.13	D[27.6]	0.20	D[29.3]	0.19	E[41.0]	0.30	D[33.0]	0.21	E[49.2]	0.35	E[35.4]	0.22	E[49.8]	0.35
		WB	LTR		C[21.3]	0.20	D[25.6]	0.27	D[29.9]	0.28	E[38.1]	0.39	D[34.0]	0.32	E[45.7]	0.44	E[36.5]	0.34	E[49.0]	0.46

NOTES:

THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS. C [16.2], FOR EACH KEY APPROACH AS WELL AS FOR THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTION.

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: JULY 2010
Period: PEAK AM HOUR
Project ID: 1560AMB1 (SENSITIVITY ANALYSIS)
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES
N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	15	12	19	48	5	196	5	274	32	550	596	6
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	14.0						10.0	31.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	304	1521	0.17	0.20	23.4	C	23.4	C
Westbound								
LT	266	1331	0.22	0.20	23.9	C	16.3	B
R	643	1553	0.34	0.41	14.3	B		
Northbound								
L	379	1702	0.02	0.66	8.0	A		
TR	781	1763	0.44	0.44	13.8	B	13.7	B
Southbound								
L	639	1736	0.96	0.66	41.0	D		
TR	808	1825	0.83	0.44	24.3	C	32.3	C

Intersection Delay = 26.5 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: JULY 2010
Period: PEAK PM HOUR
Project ID: 1560PMB1 (SENSITIVITY ANALYSIS)
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES
N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	6	2	15	34	13	528	16	620	44	259	354	17
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			13			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	13.0						10.0	32.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	282	1516	0.09	0.19	23.8	C	23.8	C
Westbound								
LT	269	1448	0.19	0.19	24.4	C	42.1	D
R	621	1553	0.95	0.40	43.7	D		
Northbound								
L	586	1702	0.03	0.67	4.8	A		
TR	813	1779	0.89	0.46	29.3	C	28.7	C
Southbound								
L	365	1736	0.79	0.67	26.5	C		
TR	830	1815	0.50	0.46	13.8	B	19.0	B

Intersection Delay = 29.5 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB2 (SENSITIVITY ANALYSIS)
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		289	119	223	540	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		321	132	247	600	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14		25			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	15		27			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes		0	0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		247		42				
C(m) (vph)		1092		228				
v/c		0.23		0.18				
95% queue length		0.87		0.66				
Control Delay		9.3		24.3				
LOS		A		C				
Approach Delay				24.3				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB2 (SENSITIVITY ANALYSIS)
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		608	53	30	428	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		675	58	33	475	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71		130			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	78		144			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		33		222				
C(m) (vph)		858		335				
v/c		0.04		0.66				
95% queue length		0.12		4.48				
Control Delay		9.4		34.5				
LOS		A		D				
Approach Delay				34.5				
Approach LOS				D				

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB3 (SENSITIVITY ANALYSIS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	26	289			667	9
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	28	321			741	10
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				38		95
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				42		105
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	28						147	
C(m) (vph)	845						301	
v/c	0.03						0.49	
95% queue length	0.10						2.53	
Control Delay	9.4						27.9	
LOS	A						D	
Approach Delay							27.9	
Approach LOS							D	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB3 (SENSITIVITY ANALYSIS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	81	657			401	35
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	90	730			445	38
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				23		57
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				25		63
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	90						88	
C(m) (vph)	1064						283	
v/c	0.08						0.31	
95% queue length	0.28						1.29	
Control Delay	8.7						23.4	
LOS	A						C	
Approach Delay							23.4	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB3 (SENSITIVITY ANALYSIS) (WITH IMPROVEMENTS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	26	289			667	0
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	28	321			741	0
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				38		95
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				42		105
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		/
Lanes				1	1	
Configuration				L	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	28					42		105
C(m) (vph)	852					317		395
v/c	0.03					0.13		0.27
95% queue length	0.10					0.45		1.06
Control Delay	9.4					18.1		17.4
LOS	A					C		C
Approach Delay							17.6	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: SEPTEMBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB3 (SENSITIVITY ANALYSIS) (WITH IMPROVEMENTS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	81	657			401	35
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	90	730			445	38
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				23		57
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				25		63
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	90					25		63
C(m) (vph)	1064					240		577
v/c	0.08					0.10		0.11
95% queue length	0.28					0.34		0.37
Control Delay	8.7					21.7		12.0
LOS	A					C		B
Approach Delay							14.8	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB4 (SENSITIVITY ANALYSIS)
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	71	478	25	13	466	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	531	27	14	517	35
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	1	11	0	19
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	6	0	1	12	0	21
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	78	14		7			33	
C(m) (vph)	1003	998		164			250	
v/c	0.08	0.01		0.04			0.13	
95% queue length	0.25	0.04		0.13			0.45	
Control Delay	8.9	8.7		27.9			21.6	
LOS	A	A		D			C	
Approach Delay				27.9			21.6	
Approach LOS				D			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB4 (SENSITIVITY ANALYSIS)
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	8	574	3	4	569	11
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	8	637	3	4	632	12
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	19	0	10	36	3	88
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	0	11	40	3	97
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	8	4		32			140	
C(m) (vph)	927	930		159			263	
v/c	0.01	0.00		0.20			0.53	
95% queue length	0.03	0.01		0.72			2.88	
Control Delay	8.9	8.9		33.3			33.3	
LOS	A	A		D			D	
Approach Delay				33.3			33.3	
Approach LOS				D			D	

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: JULY 2010
Period: PEAK AM HOUR
Project ID: 1560AMB5 (SENSITIVITY ANALYSIS)
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES
N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	45	200	104	71	174	58	140	453	19	49	441	19
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						10.0	35.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	494	1483	0.55	0.33	28.9	C	27.1	C
R	479	1436	0.24	0.33	23.0	C		
Westbound								
LTR	442	1327	0.76	0.33	38.4	D	38.4	D
Northbound								
L	378	1555	0.41	0.56	16.4	B		
TR	904	1627	0.58	0.56	15.8	B	15.9	B
Southbound								
LTR	720	1852	0.78	0.39	32.6	C	32.6	C

Intersection Delay = 26.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: JULY 2010
Period: PEAK PM HOUR
Project ID: 1560PMB5 (SENSITIVITY ANALYSIS)
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES
N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	41	216	140	58	216	51	206	501	52	53	490	30
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						9.0	36.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	499	1496	0.57	0.33	29.5	C	27.6	C
R	479	1436	0.33	0.33	24.2	C		
Westbound								
LTR	484	1453	0.75	0.33	36.7	D	36.7	D
Northbound								
L	348	1555	0.66	0.56	23.8	C		
TR	897	1614	0.69	0.56	18.6	B	20.0+	C
Southbound								
LTR	729	1822	0.87	0.40	38.5	D	38.5	D

Intersection Delay = 29.3 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB6 (SENSITIVITY ANALYSIS)
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	540	7	5	461	15
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	4	600	7	5	512	16
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	20	19	5	21	6
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	22	21	5	23	6
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	4	5		57			34	
C(m) (vph)	1024	957		170			152	
v/c	0.00	0.01		0.34			0.22	
95% queue length	0.01	0.02		1.38			0.82	
Control Delay	8.5	8.8		36.5			35.4	
LOS	A	A		E			E	
Approach Delay				36.5			35.4	
Approach LOS				E			E	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB6 (SENSITIVITY ANALYSIS)
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	19	565	11	12	650	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	627	12	13	722	24
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

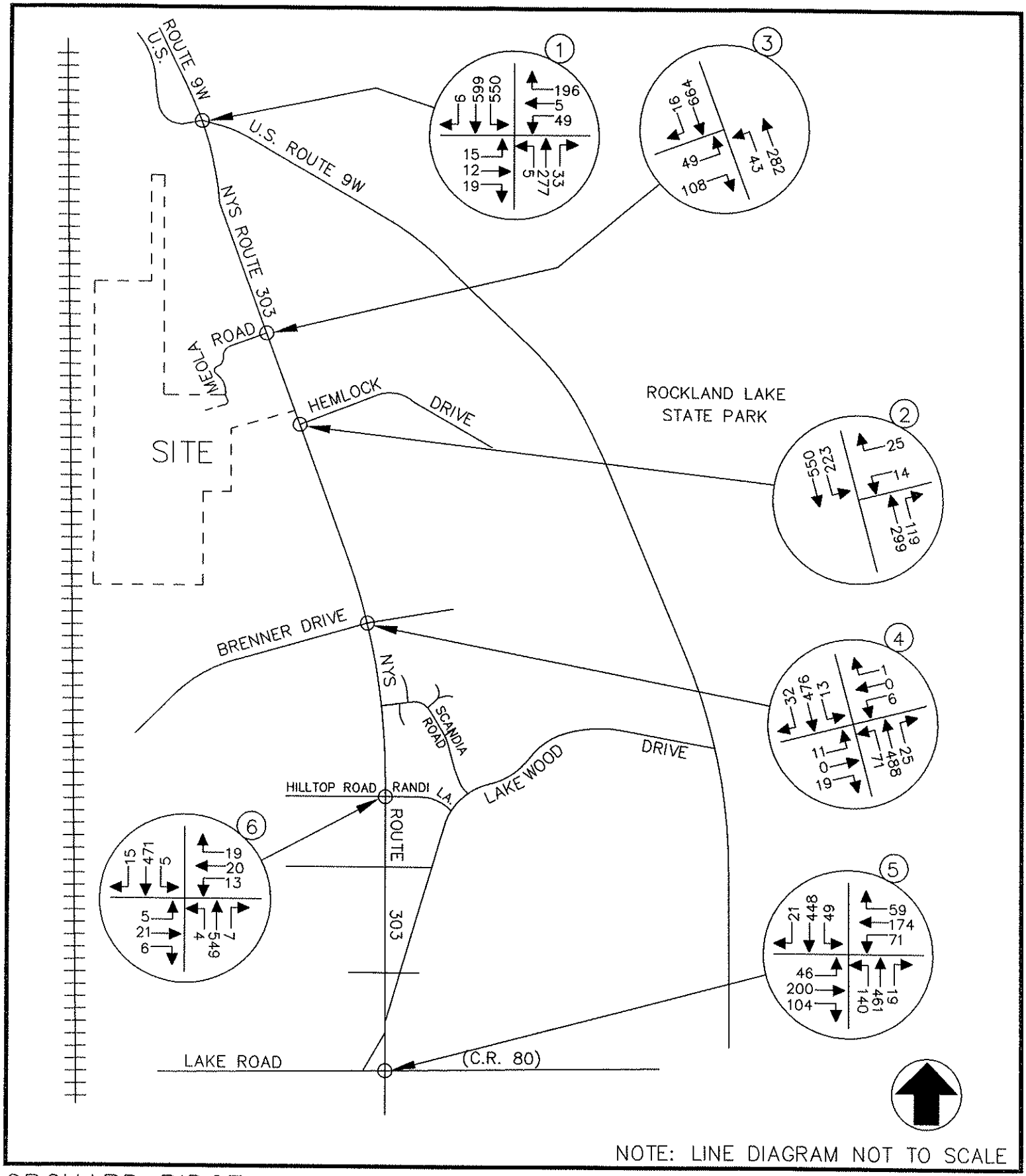
Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	29	19	14	21	5
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	32	21	15	23	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	21	13		67			43	
C(m) (vph)	849	931		146			122	
v/c	0.02	0.01		0.46			0.35	
95% queue length	0.08	0.04		2.10			1.43	
Control Delay	9.3	8.9		49.0			49.8	
LOS	A	A		E			E	
Approach Delay				49.0			49.8	
Approach LOS				E			E	

APPENDIX H

MAXIMUM IMPACT SCENARIO



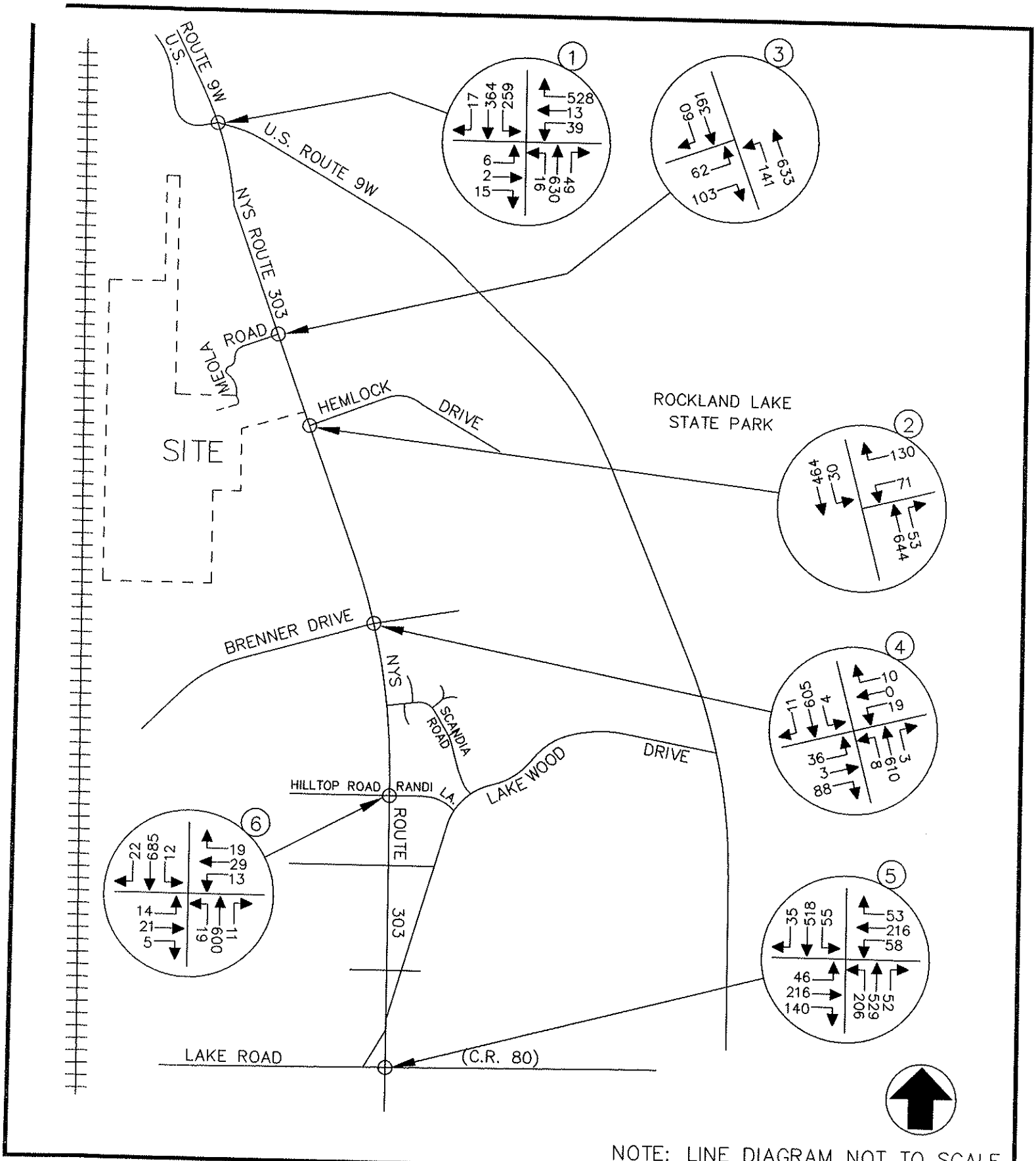
ORCHARD RIDGE

TOWN OF CLARKSTOWN, NEW YORK

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

2012 COMBINED BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR
(W/COMMERCIAL PARCEL & TOWNHOUSE RATES)

PROJECT NO. 1560 DATE: OCTOBER 2011 FIG. NO. 14B



NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

2012 COMBINED BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR
(W/COMMERCIAL PARCEL & TOWNHOUSE RATES)

PROJECT NO. 1560 DATE: OCTOBER 2011 FIG. NO. 15B

TABLE NO. 2-SB

LEVEL OF SERVICE SUMMARY TABLE
(COMMERCIAL & TOWNHOUSE TRIP RATES)

				2009 EXISTING				2012 NO-BUILD				2012 BUILD				COMMERCIAL & TOWNHOUSE RATES 2012 BUILD			
				AM		PM		AM		PM		AM		PM		AM		PM	
				DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C
1	N.Y.S. ROUTE 303/U.S. ROUTE 9W & U.S. ROUTE 9W/HIDDEN VALLEY	**SIGNALIZED**																	
		NB	L	A[6.6]	0.01	A[4.5]	0.03	A[7.9]	0.02	A[4.6]	0.03	A[8.0]	0.02	A[4.7]	0.03	A[8.1]	0.02	A[4.8]	0.03
			TR	B[13.1]	0.34	B[19.0]	0.74	B[13.4]	0.39	C[27.0]	0.87	B[13.6]	0.41	C[28.8]	0.89	B[13.9]	0.44	C[32.1]	0.91
		SB	L	C[19.5]	0.83	B[10.5]	0.60	C[31.1]	0.91	C[23.0]	0.77	D[35.5]	0.93	C[25.8]	0.78	D[42.6]	0.96	C[30.9]	0.82
			TR	B[18.9]	0.71	B[13.2]	0.42	C[24.0]	0.82	B[13.6]	0.47	C[24.5]	0.83	B[13.7]	0.49	C[24.7]	0.83	B[14.0]	0.51
		EB	LTR	C[23.4]	0.16	C[23.7]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09
		WB	LT	C[23.2]	0.13	C[23.9]	0.11	C[23.8]	0.21	C[24.1]	0.14	C[23.9]	0.23	C[24.3]	0.17	C[23.9]	0.23	C[24.6]	0.22
			R	B[14.1]	0.32	C[34.6]	0.89	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95
		OVERALL		B[17.8]	-	C[23.7]	-	C[23.4]	-	C[28.4]	-	C[24.9]	-	C[29.3]	-	C[27.1]	-	C[31.0]	-
2	N.Y.S. ROUTE 303 & HEMLOCK DRIVE	**UNSIGNALIZED**																	
		SB	LT	A[8.9]	0.20	A[8.7]	0.03	A[9.2]	0.22	A[9.1]	0.04	A[9.3]	0.23	A[9.2]	0.04	A[9.3]	0.23	A[9.5]	0.04
		WB	LR	C[18.0]	0.13	C[19.9]	0.47	C[21.7]	0.16	D[26.8]	0.58	C[23.5]	0.18	D[31.5]	0.63	C[25.0]	0.19	E[41.2]	0.72
3	N.Y.S. ROUTE 303 & MEOLA ROAD	**UNSIGNALIZED**																	
		NB	LT	A[8.9]	0.01	A[8.2]	0.01	A[9.3]	0.01	A[8.3]	0.01	A[9.3]	0.01	A[8.4]	0.01	A[9.6]	0.06	A[9.0]	0.15
		EB	LR	B[14.7]	0.06	B[13.8]	0.07	C[16.6]	0.08	C[15.2]	0.08	C[16.9]	0.08	C[15.6]	0.08	E[36.3]	0.62	F[86.0]	0.89
	WITH IMPROVEMENTS	NB	L	-	-	-	-	-	-	-	-	A[9.4]	0.04	A[8.5]	0.05	A[9.5]	0.06	A[9.0]	0.15
		EB	L	-	-	-	-	-	-	-	-	C[17.5]	0.08	C[19.9]	0.08	C[19.3]	0.18	D[31.6]	0.34
			R	-	-	-	-	-	-	-	-	C[16.0]	0.16	B[11.8]	0.10	C[18.2]	0.31	B[12.8]	0.20
4	N.Y.S. ROUTE 303 & BRENNER DRIVE/ INTERCOS DRIVEWAY	**UNSIGNALIZED**																	
		NB	LTR	A[8.4]	0.07	A[8.3]	0.01	A[8.6]	0.07	A[8.8]	0.01	A[8.7]	0.08	A[8.9]	0.01	A[8.9]	0.08	A[9.1]	0.01
		SB	LTR	A[8.2]	0.01	A[8.4]	0.00	A[8.6]	0.01	A[8.6]	0.00	A[8.7]	0.01	A[8.8]	0.00	A[8.7]	0.01	A[9.0]	0.00
		EB	LTR	C[15.6]	0.08	C[18.7]	0.34	C[18.8]	0.11	D[26.8]	0.46	C[20.5]	0.12	D[31.3]	0.51	C[22.2]	0.14	E[39.7]	0.59
		WB	LTR	C[19.5]	0.03	C[20.7]	0.12	C[24.7]	0.04	D[27.6]	0.17	D[26.7]	0.04	D[31.4]	0.19	D[28.8]	0.04	E[38.2]	0.23
5	N.Y.S. ROUTE 303 & LAKE ROAD	**SIGNALIZED**																	
		NB	L	B[14.0]	0.34	B[17.2]	0.51	B[15.0]	0.38	C[22.3]	0.63	B[15.7]	0.40	C[23.6]	0.65	B[16.6]	0.42	C[25.7]	0.68
			TR	B[13.5]	0.45	B[15.3]	0.55	B[15.5]	0.57	B[16.6]	0.61	B[15.9]	0.59	B[17.8]	0.66	B[16.0]	0.59	B[19.8]	0.72
		SB	LTR	C[25.0]	0.58	C[26.1]	0.62	C[27.4]	0.66	C[33.2]	0.81	C[29.8]	0.73	C[37.1]	0.86	C[33.4]	0.80	D[46.1]	0.93
		EB	LT	C[26.3]	0.45	C[26.9]	0.48	C[28.6]	0.54	C[27.9]	0.52	C[29.0]	0.55	C[28.8]	0.55	C[29.0]	0.55	C[30.3]	0.60
			R	C[22.7]	0.23	C[23.9]	0.31	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33
		WB	LTR	C[31.6]	0.63	C[31.4]	0.64	D[38.0]	0.75	C[34.7]	0.71	D[38.4]	0.76	C[35.8]	0.73	D[38.7]	0.76	D[37.3]	0.76
		OVERALL		C[22.4]	-	C[23.1]	-	C[24.9]	-	C[26.8]	-	C[25.8]	-	C[28.5]	-	C[27.1]	-	C[32.2]	-
6	N.Y.S. ROUTE 303 & RANDI LANE/HILLTOP ROAD	**UNSIGNALIZED**																	
		NB	LTR	A[8.2]	0.00	A[8.7]	0.02	A[8.3]	0.00	A[9.2]	0.02	A[8.4]	0.00	A[9.3]	0.02	A[8.6]	0.00	A[9.3]	0.02
		SB	LTR	A[8.3]	0.00	A[8.5]	0.01	A[8.7]	0.01	A[8.7]	0.01	A[8.8]	0.01	A[8.8]	0.01	A[8.8]	0.01	A[8.9]	0.01
		EB	LTR	C[21.9]	0.13	D[27.6]	0.20	D[29.3]	0.19	E[41.0]	0.30	D[33.0]	0.21	E[49.2]	0.35	E[37.0]	0.23	E[49.8]	0.34
		WB	LTR	C[21.3]	0.20	D[25.6]	0.27	D[29.9]	0.28	E[38.1]	0.39	D[34.0]	0.32	E[45.7]	0.44	E[38.2]	0.35	E[46.2]	0.43

NOTES

THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH AS WELL AS FOR THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTION.

HCS+: Signalized Intersections Release 5.5

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2011
Period: PEAK AM HOUR
Project ID: 1560AMB1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd: (COMMERCIAL & TOWNHOUSE RATES)
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	15	12	19	49	5	196	5	277	33	550	599	6
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left	A				SB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	A			
Green		14.0						10.0	31.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	304	1520	0.17	0.20	23.4	C	23.4	C
Westbound								
LT	266	1328	0.23	0.20	23.9	C	16.4	B
R	643	1553	0.34	0.41	14.3	B		
Northbound								
L	376	1702	0.02	0.66	8.1	A		
TR	781	1763	0.44	0.44	13.9	B	13.8	B
Southbound								
L	635	1736	0.96	0.66	42.6	D		
TR	808	1825	0.83	0.44	24.7	C	33.2	C

Intersection Delay = 27.1 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.5

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2011
Period: PEAK PM HOUR
Project ID: 1560PMB1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd: (COMMERCIAL & TOWNHOUSE RATES)
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	6	2	15	39	13	528	16	630	49	259	364	17
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			13			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left	A				SB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	A			
Green		13.0						10.0	32.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	281	1514	0.09	0.19	23.8	C	23.8	C
Westbound								
LT	265	1427	0.22	0.19	24.6	C	42.0	D
R	621	1553	0.95	0.40	43.7	D		
Northbound								
L	577	1702	0.03	0.67	4.8	A		
TR	812	1777	0.91	0.46	32.1	C	31.5	C
Southbound								
L	353	1736	0.82	0.67	30.9	C		
TR	830	1815	0.51	0.46	14.0	B	20.8	C

Intersection Delay = 31.0 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & HEMLOCK DRIVE
Jurisdiction: (COMMERCIAL & TOWNHOUSE RATES)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		299	119	223	550	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		332	132	247	611	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14		25			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	15		27			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		247		42				
C(m) (vph)		1082		222				
v/c		0.23		0.19				
95% queue length		0.88		0.68				
Control Delay		9.3		25.0-				
LOS		A		C				
Approach Delay				25.0-				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HEMLOCK DR
Jurisdiction: (COMMERCIAL & TOWNHOUSE RATES)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		644	53	30	464	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		715	58	33	515	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0		0	1
Configuration			TR		LT	
Upstream Signal?		No				No

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71		130			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	78		144			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes		0	0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		33		222				
C(m) (vph)		829		310				
v/c		0.04		0.72				
95% queue length		0.12		5.15				
Control Delay		9.5		41.2				
LOS		A		E				
Approach Delay				41.2				
Approach LOS				E				

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction: (COMMERCIAL & TOWNHOUSE RATES)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	48	282			664	16
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	53	313			737	17
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				49		108
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				54		120
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	53						174	
C(m) (vph)	843						282	
v/c	0.06						0.62	
95% queue length	0.20						3.78	
Control Delay	9.6						36.3	
LOS	A						E	
Approach Delay							36.3	
Approach LOS							E	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction: (COMMERCIAL & TOWNHOUSE RATES)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	141	633			391	60
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	156	703			434	66
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				62		103
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				68		114
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/		No	/
Lanes				0	0	
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	156						182	
C(m) (vph)	1049						204	
v/c	0.15						0.89	
95% queue length	0.52						7.00	
Control Delay	9.0						86.0	
LOS	A						F	
Approach Delay							86.0	
Approach LOS							F	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction: (COMMERCIAL & TOWNHOUSE RATES)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB3 (WITH IMPROVEMENTS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	43	282			664	16
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	47	313			737	17
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				49		108
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				54		120
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/			/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	47					54		120
C(m) (vph)	843					306		392
v/c	0.06					0.18		0.31
95% queue length	0.18					0.63		1.28
Control Delay	9.5					19.3		18.2
LOS	A					C		C
Approach Delay							18.5	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction: (COMMERCIAL & TOWNHOUSE RATES)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB3 (WITH IMPROVEMENTS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	141	633			391	60
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	156	703			434	66
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1			1	0
Configuration	L	T				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				62		103
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				68		114
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/			/
Lanes				1	1	
Configuration				L	R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	156					68		114
C(m) (vph)	1049					202		575
v/c	0.15					0.34		0.20
95% queue length	0.52					1.40		0.73
Control Delay	9.0					31.6		12.8
LOS	A					D		B
Approach Delay							19.8	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction: (COMMERCIAL & TOWNHOUSE RATES)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	71	488	25	13	476	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	542	27	14	528	35
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	1	11	0	19
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	6	0	1	12	0	21
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	78	14		7			33	
C(m) (vph)	994	989		158			242	
v/c	0.08	0.01		0.04			0.14	
95% queue length	0.25	0.04		0.14			0.47	
Control Delay	8.9	8.7		28.8			22.2	
LOS	A	A		D			C	
Approach Delay				28.8			22.2	
Approach LOS				D			C	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction: (COMMERCIAL & TOWNHOUSE RATES)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	8	610	3	4	605	11
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	8	677	3	4	672	12
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	19	0	10	36	3	88
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	0	11	40	3	97
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	8	4		32			140	
C(m) (vph)	895	898		140			238	
v/c	0.01	0.00		0.23			0.59	
95% queue length	0.03	0.01		0.84			3.36	
Control Delay	9.1	9.0		38.2			39.7	
LOS	A	A		E			E	
Approach Delay				38.2			39.7	
Approach LOS				E			E	

HCS+: Signalized Intersections Release 5.5

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2011
Period: PEAK AM HOUR
Project ID: 1560AMB5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd: (COMMERCIAL & TOWNHOUSE RATES)
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	46	200	104	71	174	59	140	461	19	49	448	21
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						10.0	35.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	492	1476	0.55	0.33	29.0	C	27.2	C
R	479	1436	0.24	0.33	23.0	C		
Westbound								
LTR	442	1325	0.76	0.33	38.7	D	38.7	D
Northbound								
L	374	1555	0.42	0.56	16.6	B		
TR	904	1627	0.59	0.56	16.0	B	16.2	B
Southbound								
LTR	720	1851	0.80	0.39	33.4	C	33.4	C

Intersection Delay = 27.1 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.5

Analyst: R.H.
Agency: JCE
Date: OCTOBER 2011
Period: PEAK PM HOUR
Project ID: 1560PMB5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd: (COMMERCIAL & TOWNHOUSE RATES)
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	46	216	140	58	216	53	206	529	52	55	518	35
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						9.0	36.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	488	1463	0.60	0.33	30.3	C	28.2	C
R	479	1436	0.33	0.33	24.2	C		
Westbound								
LTR	480	1440	0.76	0.33	37.3	D	37.3	D
Northbound								
L	335	1555	0.68	0.56	25.7	C		
TR	897	1615	0.72	0.56	19.8	B	21.3	C
Southbound								
LTR	726	1814	0.93	0.40	46.1	D	46.1	D

Intersection Delay = 32.2 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2011
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction: (COMMERCIAL & TOWNHOUSE RATES)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	549	7	5	471	15
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	4	610	7	5	523	16
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	20	19	5	21	6
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	22	21	5	23	6
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	4	5		57			34	
C(m) (vph)	1014	949		164			146	
v/c	0.00	0.01		0.35			0.23	
95% queue length	0.01	0.02		1.44			0.86	
Control Delay	8.6	8.8		38.2			37.0	
LOS	A	A		E			E	
Approach Delay				38.2			37.0	
Approach LOS				E			E	

HCS+: Unsignalized Intersections Release 5.5

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: OCTOBER 2011
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction: (COMMERCIAL & TOWNHOUSE RATES)
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	19	600	11	12	685	22
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	20	631	11	12	721	23
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	29	19	14	21	5
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	13	30	20	14	22	5
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	20	12		63			41	
C(m) (vph)	864	943		148			120	
v/c	0.02	0.01		0.43			0.34	
95% queue length	0.07	0.04		1.89			1.37	
Control Delay	9.3	8.9		46.2			49.8	
LOS	A	A		E			E	
Approach Delay				46.2			49.8	
Approach LOS				E			E	

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TRAFFIC IMPACT STUDY

****

ORCHARD RIDGE

NYS ROUTE 303 OPPOSITE HEMLOCK DRIVE

TOWN OF CLARKSTOWN, NEW YORK

JOB NO. 1560

FEBRUARY 26, 2009

REVISED JULY 28, 2010

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SECTION I

INTRODUCTION

A. PROJECT DESCRIPTION AND LOCATION (Figure No. 1)

Orchard Ridge is a proposed 320 dwelling unit adult housing development which is proposed on property located on the west side of NYS Route 303 between Brenner Drive and U.S. Route 9W opposite Hemlock Drive in the Town of Clarkstown, New York. The site location is shown on Figure No. 1. Access to the site will be provided via a driveway connection to Route 303 opposite Hemlock Drive and a secondary driveway connection to Meola Road. In addition, there is also a small commercially zoned parcel located south of Meola Road. While there are no current plans for this development, a separate evaluation of this is provided in Section III-I of this report.

A design year of 2012 has been utilized in this analysis in order to evaluate traffic conditions associated with the development of this site.

B. SCOPE OF STUDY

This study was prepared to identify current traffic conditions and to evaluate the potential traffic impacts of the proposed development on the surrounding roadway network.

Traffic counts were collected in the area by representatives of John Collins Engineers, P.C. during February 2009 and June 2009. These count data were also compared to information obtained from the New York State Department of Transportation (NYSDOT) and previous data collected by our office along the corridor. Together this information was utilized to establish the existing traffic conditions for the surrounding roadway system.

The Existing Traffic Volumes were projected to the future Design Year to account for normal background traffic growth in the area to develop the Year 2012 No-Build Traffic Volumes.

Estimates of traffic associated with the proposed Orchard Ridge development were made and added to the Year 2012 No-Build Traffic Volumes to obtain the Year 2012 Build Traffic Volumes.

Capacity analyses were then completed at each of the study intersections utilizing the Existing, No-Build, and Build Traffic Volumes in order to determine Levels of Service and operating conditions. Based on the results of the analyses, recommendations for improvements to serve future traffic conditions were then made.

SECTION II

EXISTING ROADWAY AND TRAFFIC CONDITIONS

A. DESCRIPTION OF EXISTING ROADWAY NETWORK

As indicated previously, the site is located along the west side of NYS Route 303. A description of this and other area roadways is provided below:

1. NYS Route 303 - is generally a two lane roadway with paved shoulders. The roadway originates at the New Jersey State Line in the Town of Orangetown and continues in a northerly direction intersecting with the NYS Thruway and continuing through the Town of Clarkstown. It terminates at a signalized intersection with U.S. Route 9W. In the immediate vicinity of the site, the roadway has a posted speed limit of 45mph south of the site and an unposted 55mph north of the site and there are southbound passing zones both north and south of the site.

2. U.S Route 9W - is a major north/south roadway which traverses throughout Rockland County and into Orange County. In the vicinity of the site it consists of one lane per direction and it has signalized intersections with NYS Route 303 and NYS Route 304.

3. Lake Road (CR 80) – intersects with NYS Route 303 south of this site at a signalized intersection. This roadway generally consists of one lane per direction and has a posted speed limit of 30mph.

4. Other Roadways

Brenner Lane is an existing roadway which provides access to an existing industrial park, located south of the site. Hemlock Drive is an existing roadway which intersects with Route 303 as a "T" intersection opposite the site.

B. YEAR 2009 EXISTING TRAFFIC VOLUMES (Figures No. 2 and 3)

Detailed turning movement traffic counts were collected by representatives of John Collins Engineers, P.C. during the weekday morning and afternoon peak hours at the following locations which include those requested to be studied by the NYSDOT:

- U.S. Route 9W and NYS Route 303
- NYS Route 303 and Hemlock Drive
- NYS Route 303 and Brenner Drive
- NYS Route 303 and Lake Road (C.R. 80)
- NYS Route 303 and Meola Road
- NYS Route 303 and Randi Lane/Hilltop Road

The actual counts were collected between 6:45AM - 9:15AM and 3:45PM - 6:15PM on February 10th, 11th, and June 17 and 18, 2009. In addition, available traffic count data from previous studies prepared by our office and from the New York State Department of Transportation was also referenced for the NYS Route 303 corridor. Based upon a review of the Existing Traffic Volumes, the peak hours were determined to occur as follows:

Weekday Peak AM Highway Hour -- 7:30 AM - 8:30 AM

Weekday Peak PM Highway Hour -- 4:30 PM - 5:30 PM

The resulting 2009 Existing Traffic Volumes for each of the intersections are identified on Figures No. 2 and 3.

SECTION III

EVALUATION OF FUTURE TRAFFIC CONDITIONS

A. YEAR 2012 PROJECTED TRAFFIC VOLUMES (Figures No. 4 and 5)

The Existing Traffic Volumes were projected to a 2012 Design Year utilizing a growth of 2% per year to account for background traffic growth in the area. The 2012 Projected Traffic Volumes are shown on Figures No. 4 and 5 for the Weekday Peak AM and Peak PM Hours, respectively.

B. OTHER DEVELOPMENT TRAFFIC VOLUMES (Figures No. 6 and 7)

Other specific planned area development traffic volumes were also added to the roadway system and included the traffic from the Kohl Industrial development and Hemlock Drive development. The traffic for these developments are shown on Figures No. 6 and 7 for the AM and PM Peak Hours.

C. YEAR 2012 NO-BUILD TRAFFIC VOLUMES (Figures No. 8 and 9)

The 2012 No-Build Traffic Volumes were obtained by adding the Other Development Traffic Volumes to the 2012 Projected Traffic Volumes. The resulting volumes are shown on Figures No. 8 and 9 for the Weekday Peak AM and Peak PM Hours, respectively.

D. SITE-GENERATED TRAFFIC VOLUMES (Table No. 1)

Based on information published by the Institute of Transportation Engineers (ITE) as contained in their report entitled, "Trip Generation", 8th Edition, 2008, estimates of the peak hour traffic volumes were computed for the proposed site. The resulting Site Generated Traffic Volumes are shown on Table No. 1. Appendix "G" of this report contains an evaluation of conditions using the trip generation rates for a non-age restricted Townhouse development as a sensitivity analysis.

E. ARRIVAL AND DEPARTURE DISTRIBUTIONS (Figures No. 10 and 11)

Based upon a review of the Existing Traffic Volumes, arrival and departure distributions were developed to assign the site generated traffic volumes to the roadway network and adjacent intersections. These distributions are shown on Figures No. 10 and 11.

F. YEAR 2012 BUILD TRAFFIC VOLUMES (Figures No. 12, 13, 14 and 15)

These Site Generated Traffic Volumes shown on Table No. 1 were assigned to the roadway network utilizing the above referenced arrival and departure distributions. The resulting Site Generated Traffic Volumes for the Weekday AM and PM Peak Hours are shown on Figures 12 and 13, respectively.

These Site Generated Traffic Volumes were then combined with the Design Year No-Build Traffic Volumes to obtain the Build Traffic Volumes, which are shown on Figures No. 14 and 15.

G. DESCRIPTION OF ANALYSIS PROCEDURES

In order to determine existing and future traffic operating conditions at the study area intersections, it was necessary to perform capacity analyses. The following is a brief description of the analysis method utilized in this report:

- Signalized Intersection Capacity Analysis

  The capacity analysis for a signalized intersection was performed in accordance with the procedures described in the 2000 Highway Capacity Manual, published by the Transportation Research Board. The terminology used in identifying traffic flow conditions is Levels of Service. A Level of Service "A" represents the best condition and a Level of Service "F" represents the worst condition. A Level of Service "C" is generally used as a design standard while a Level of Service "D" is acceptable during peak periods. A Level of Service "E" represents an operation near capacity. In order to identify an intersection's Level of Service, the average amount of vehicle delay is computed for each approach to the intersection as well as for the overall intersection.

- Unsignalized Intersection Capacity Analysis

  The unsignalized intersection capacity analysis method utilized in this report was also performed in accordance with the procedures described in the 2000 Highway Capacity Manual. The procedure is based on total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the

stop line. The average total delay for any particular critical movement is a function of the service rate or capacity of the approach and the degree of saturation. In order to identify the Level of Service, the average amount of vehicle delay is computed for each critical movement to the intersection.

Additional information concerning signalized and unsignalized Levels of Service can be found in Appendix "D" of this report.

H. RESULTS OF ANALYSIS AND RECOMMENDATIONS (Table No. 2)

Utilizing the procedures described above, a capacity analysis was conducted at each of the intersections for each of the peak periods utilizing the Existing, No-Build and Build Traffic Volumes. The results of the capacity analysis including the average vehicle delays, v/c ratios and Levels of Service by lane group are summarized in Table No. 2. A description of each of the intersections is presented below:

1. NYS Route 303 and U.S. Route 9W

U.S. Route 9W intersects with NYS Route 303 at a signalized full movement intersection. The northbound approach consists of separate left and a through/right turn lane (with the right turn channelized) while the southbound approach consists of a separate left and a through/right turn lane. The Route 9W westbound approach consists of a left/through and separate right turn lane and the eastbound approach consists of one lane exiting the residential access drive.

Capacity analysis conducted at this intersection indicates that the intersection currently experiences an overall Level of Service "C" or better under existing conditions.

This intersection was re-analyzed under future No-Build and Build conditions. A review of the analysis indicates that an overall Level of Service "C" will be maintained at the intersection during peak periods.

2. NYS Route 303 and Hemlock Drive/Site Access

Hemlock Drive intersects with NYS Route 303 at a "T" intersection. All approaches to the intersection consist of one lane. The site access driveway will be across from Hemlock Drive, making it a four-way intersection.

Capacity analysis conducted at this intersection indicates that on the Hemlock Drive approach, a Level of Service "C" is experienced for exiting traffic during the AM and PM Peak Hours. These Levels of Service under the No-Build and Build conditions are "F". Under the Build scenario, the intersection will need a separate left turn lane on Route 303 at the access.

3. NYS Route 303 and Meola Road

Orchard Ridge has two access drives into the site. One driveway is through Hemlock Drive and the other is through Meola Road. Meola Road is also an access to Congers

Colonial Plaza. Meola Road intersects with NYS Route 303 at a "T" intersection. All approaches to the intersection consist of one lane.

The capacity analysis for the existing traffic conditions during the AM and PM Peak Hours for the Meola Road approach indicates a Level of Service "B."

The capacity analysis conducted at this intersection utilizing the future No-Build and Build Traffic Volumes indicates that Levels of Service "C" or better will be obtained at Meola Road.

4. NYS Route 303 and Brenner Drive/Intercos Drive

This intersection is a four-way intersection which includes Brenner Drive on the eastbound approach and Intercos Drive on the westbound approach. All approaches consist of one lane and traffic is controlled by "stop" signs on the side road approaches.

Capacity analysis conducted at this intersection indicates that Levels of Service "C" or better are currently experienced at this intersection.

The capacity analysis was recomputed utilizing the 2012 No-Build and 2012 Build Traffic Volumes. A review of this analysis indicates Level of Service "D" or better will be experienced on the side road approaches.

5. NYS Route 303 and Lake Road (CR 80)

Lake Road intersects with NYS Route 303 at a signalized four-way intersection. The Lake Road eastbound approach widens at the intersection to provide a right turn lane. Also, on the NYS Route 303 northbound approach, there is a wide shoulder lane which is used as a bypass lane. The intersection currently operates at an overall Level of Service "C" or better during peak periods.

The analysis was recomputed for future No-Build and Build conditions. The analysis indicated that some signal timing modifications will be required to accommodate future traffic volumes with or without the proposed development. With these signal modifications, an overall Level of Service "C" will be experienced during both the AM and PM Peak Hours for both the No-Build and Build conditions.

6. NYS Route 303 and Randi Lane/Hilltop Road

Randi Lane/Hilltop Road intersect with NYS Route 303 at an unsignalized four-way intersection. Hilltop Road is located on the west approach of NYS Route 303 and Randi Lane on the east approach. All approaches consist of one lane and traffic is controlled by "stop" signs on the side road approaches. The exiting capacity analysis conducted at this intersection indicates that Levels of Service "D" or better are experienced. The capacity analysis was computed utilizing the 2012 No-Build and 2012 Build Traffic Volumes. A review of this analysis indicates a Level of Service "E" will be experienced on the side road approaches.

I. CONSIDERATION OF POTENTIAL COMMERICAL PARCEL

North of the proposed residential access and south of Meola Road, there is a separate parcel which is zoned for commercial development. While there are no current plans for the development of this parcel, a separate evaluation of the potential impact of this development as an approximately 14,000 s.f. retail development was completed and is contained in Appendix "E". As can be seen from a review of this analysis as presented in Table No. 2A, with the completion of the improvements planned for this residential portion of the project, similar Levels of Service will be experienced at the intersections analyzed.

J. SUMMARY AND CONCLUSIONS

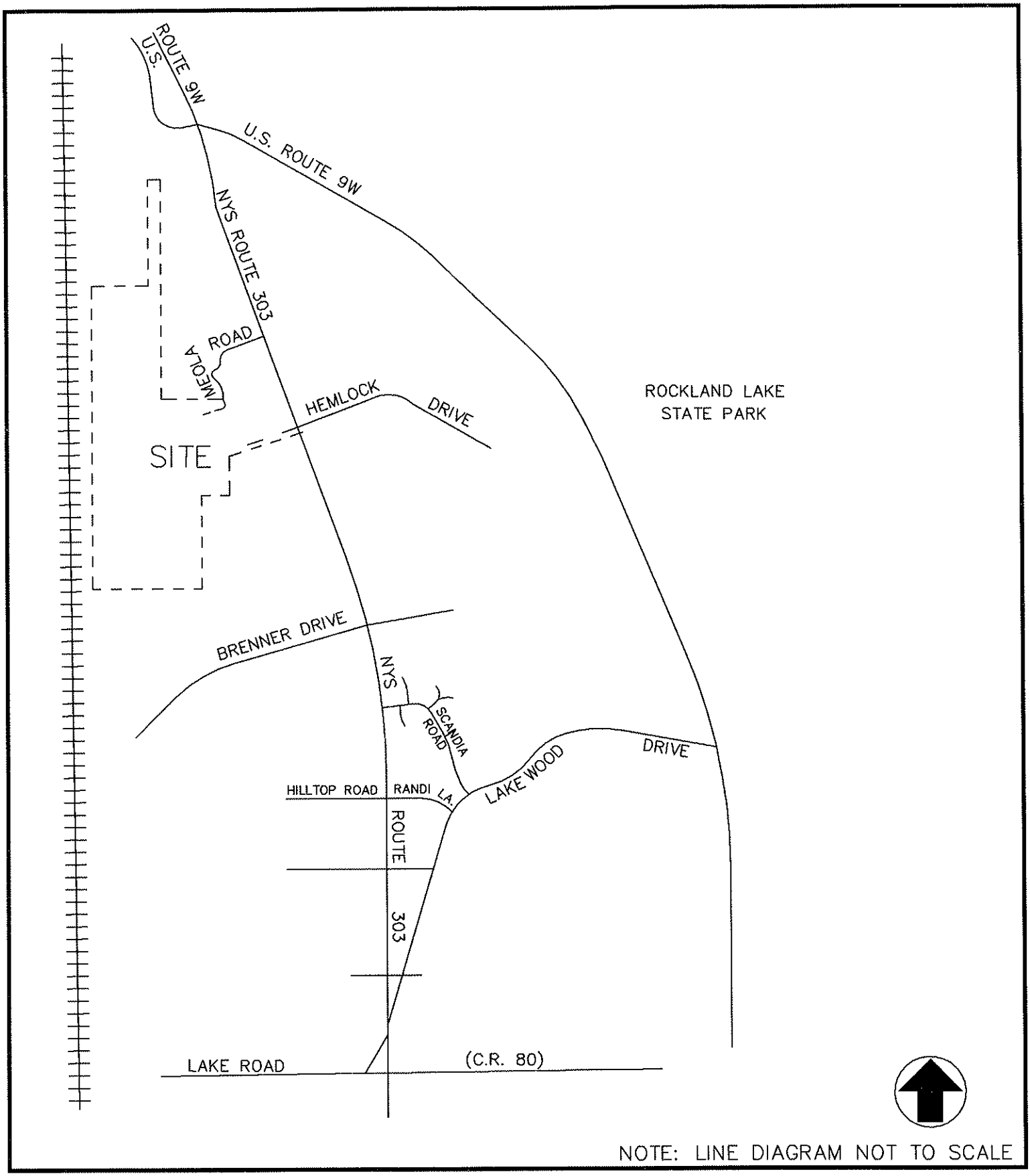
Based on the analyses contained herein, the additional traffic generated by the Orchard Ridge Site will not result in a significant negative impact on the surrounding intersections assuming that the above improvements are implemented. The final design of the access will be reviewed with NYSDOT as part of the Highway Work Permit Process.

Respectfully submitted,
JOHN COLLINS ENGINEERS, P.C.

Philip J. Grealy, Ph.D., P.E.

Appendix A

Figures



ORCHARD RIDGE

SITE LOCATION MAP

TOWN OF CLARKSTOWN, NEW YORK

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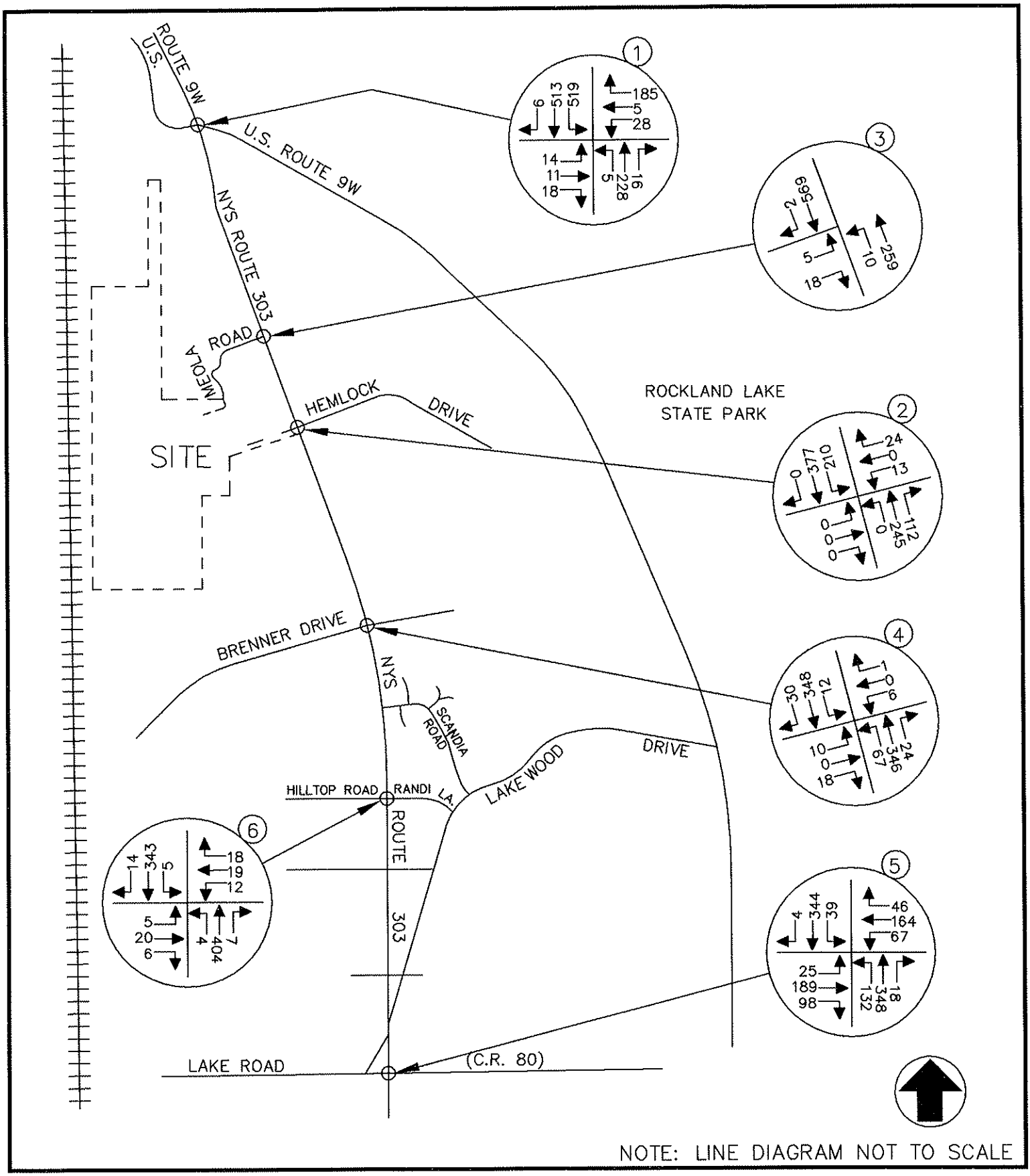
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: JUNE 2009

FIG. NO.1



NOTE: LINE DIAGRAM NOT TO SCALE

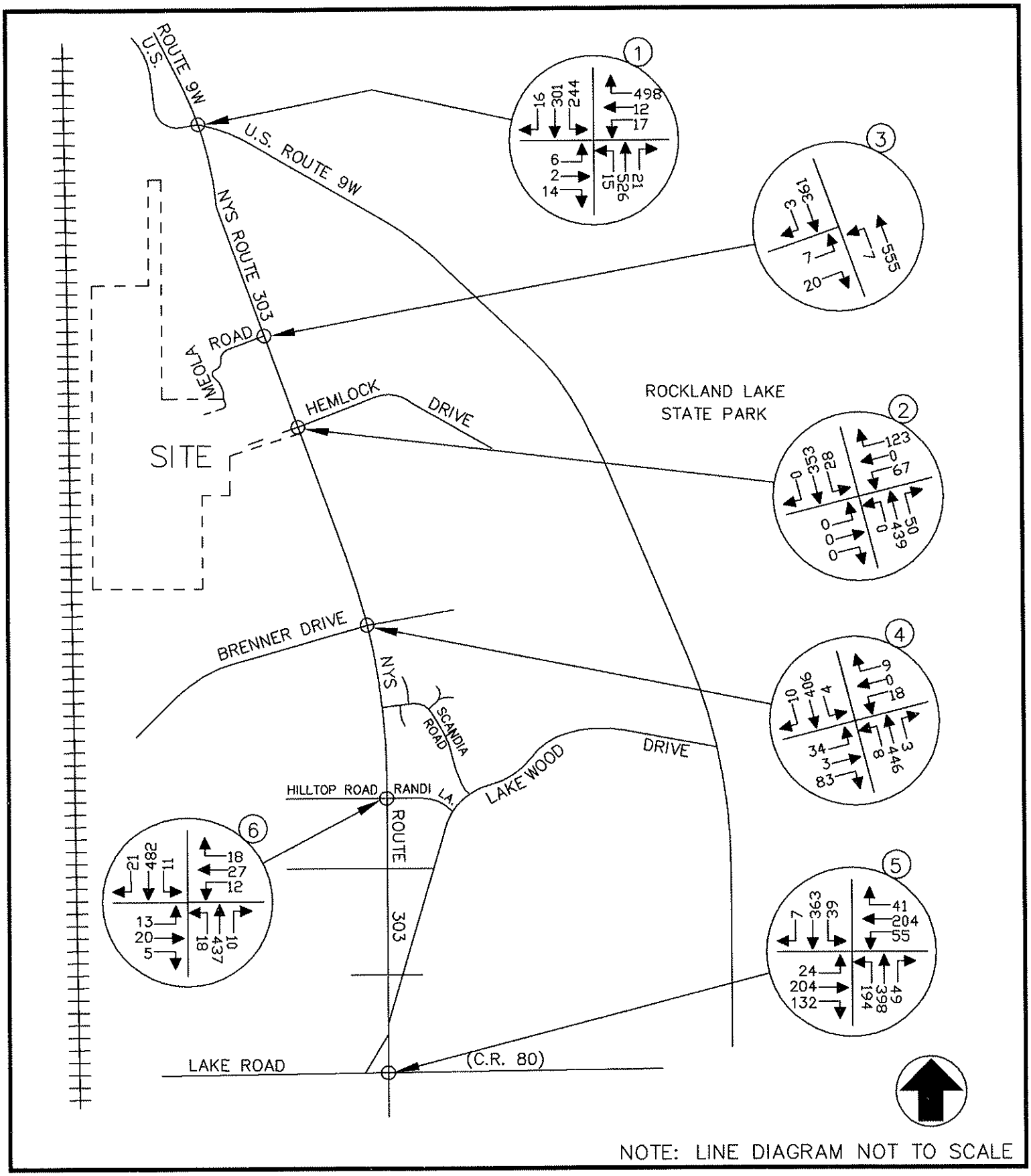
ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2009 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: JUNE 2009

FIG. NO. 2



ORCHARD RIDGE

TOWN OF CLARKSTOWN, NEW YORK

2009 EXISTING TRAFFIC VOLUMES

WEEKDAY PEAK PM HOUR

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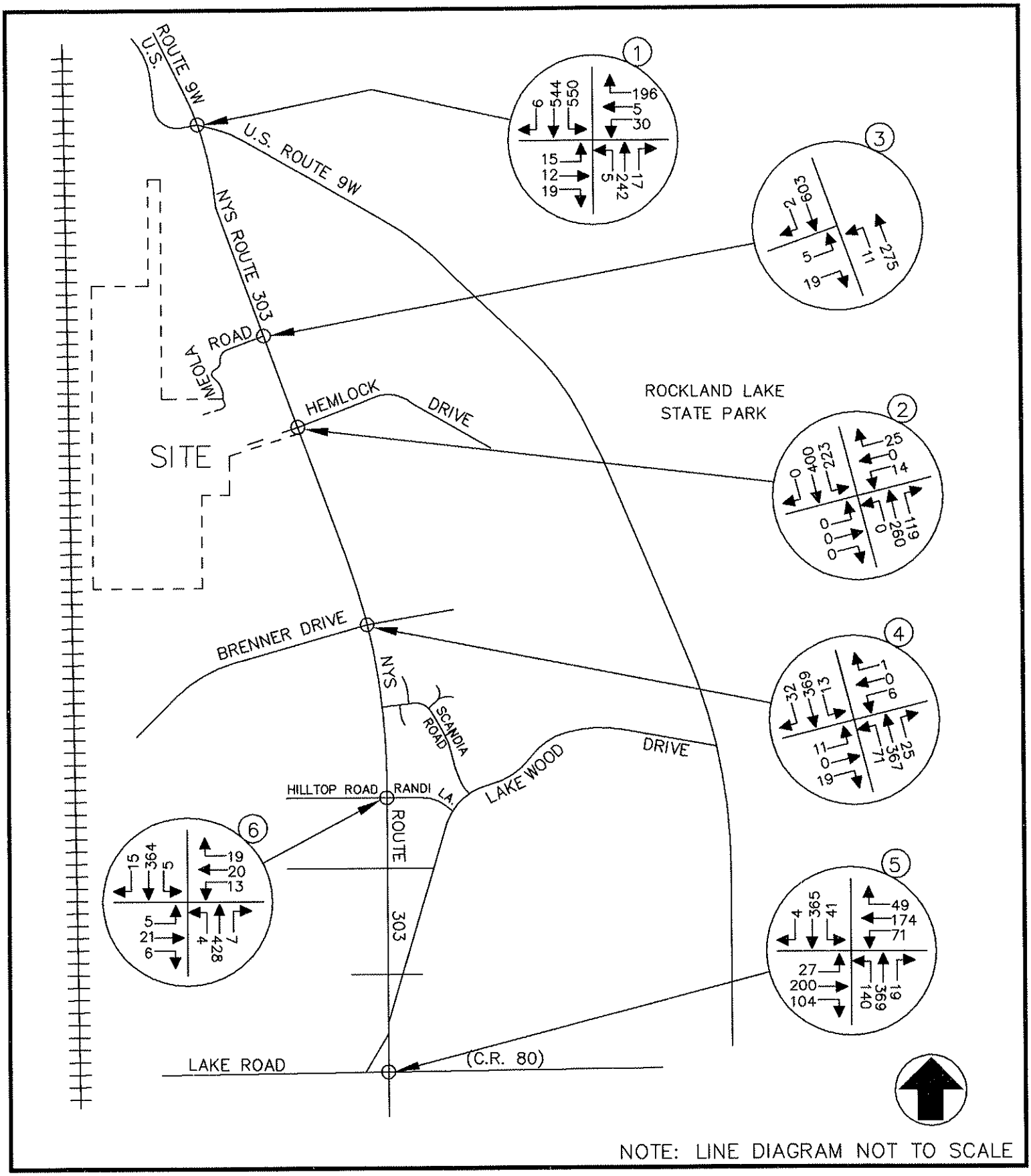
FIG. NO. 3



ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

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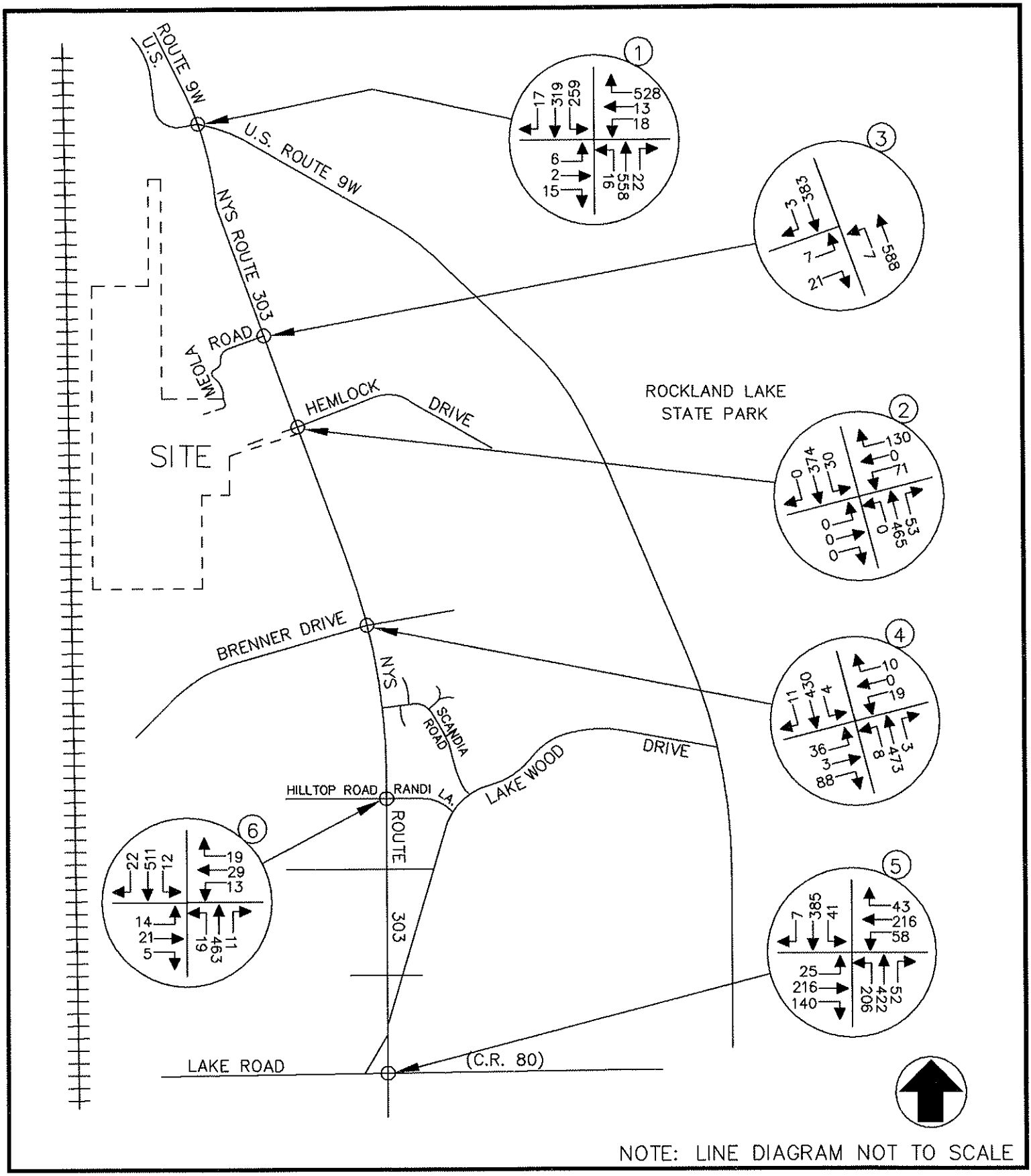
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: JUNE 2009

FIG. NO.4



ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

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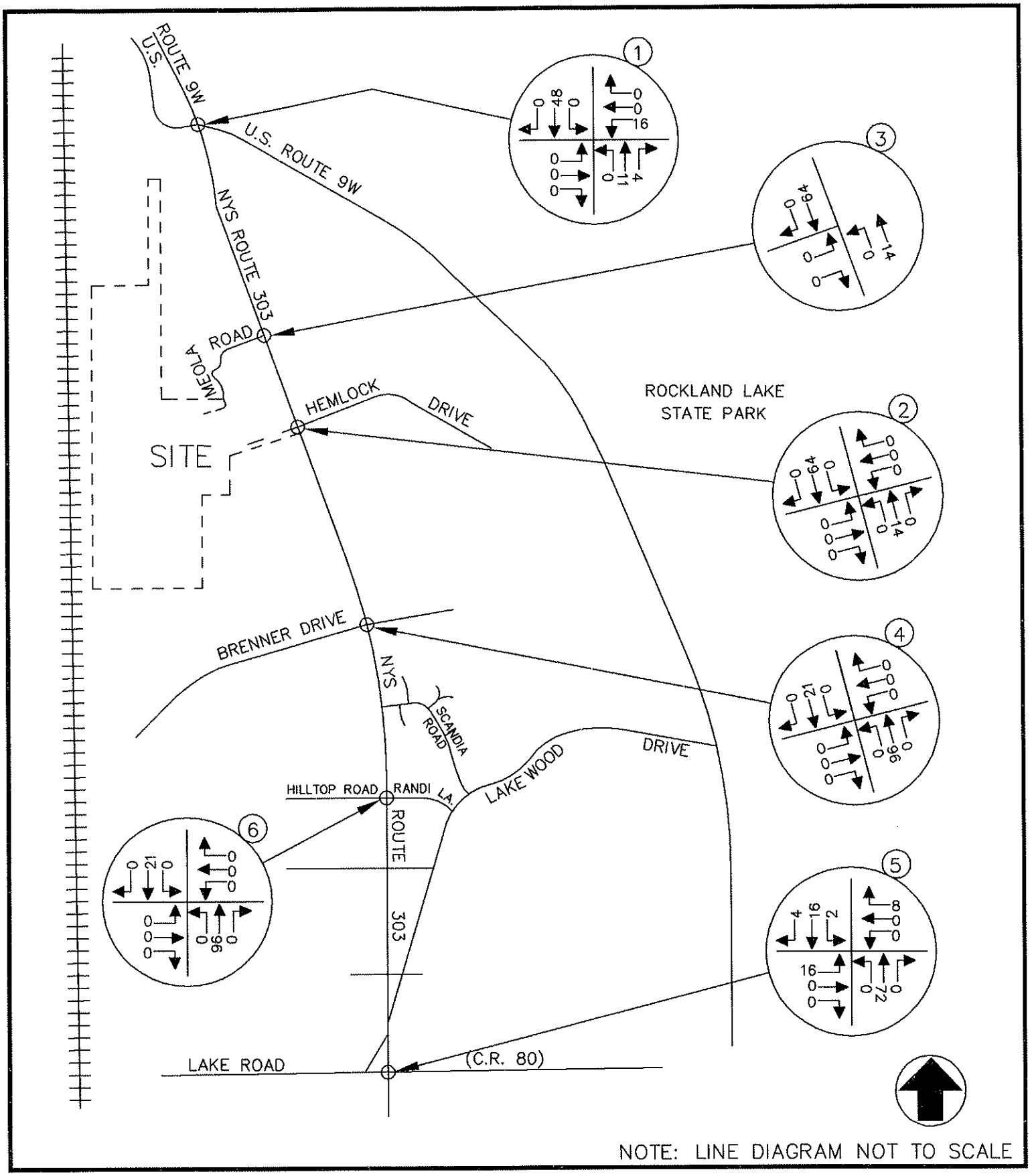
FIG. NO. 5



ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

OTHER DEVELOPMENT TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

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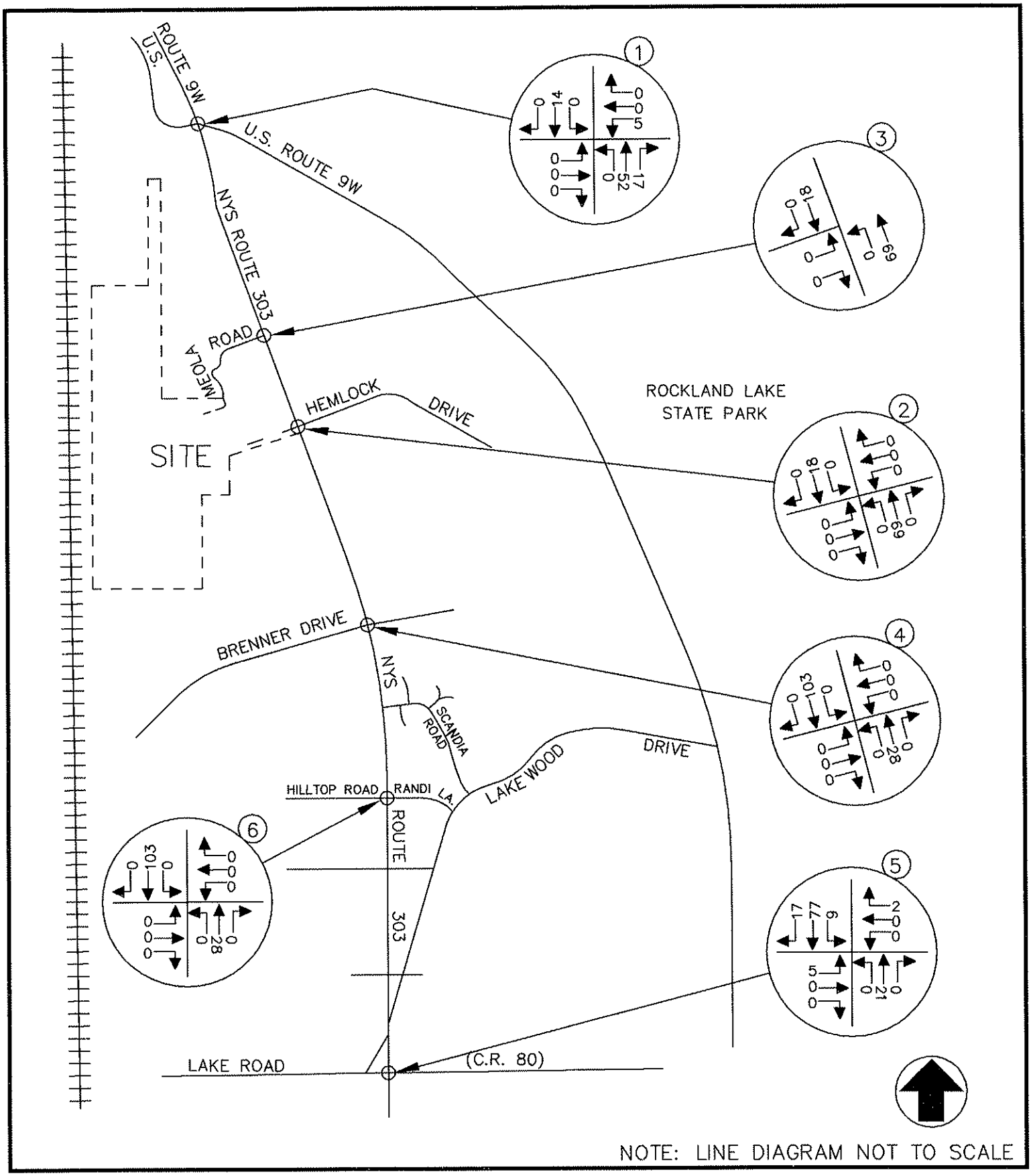
FIG. NO. 6



ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

OTHER DEVELOPMENT TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

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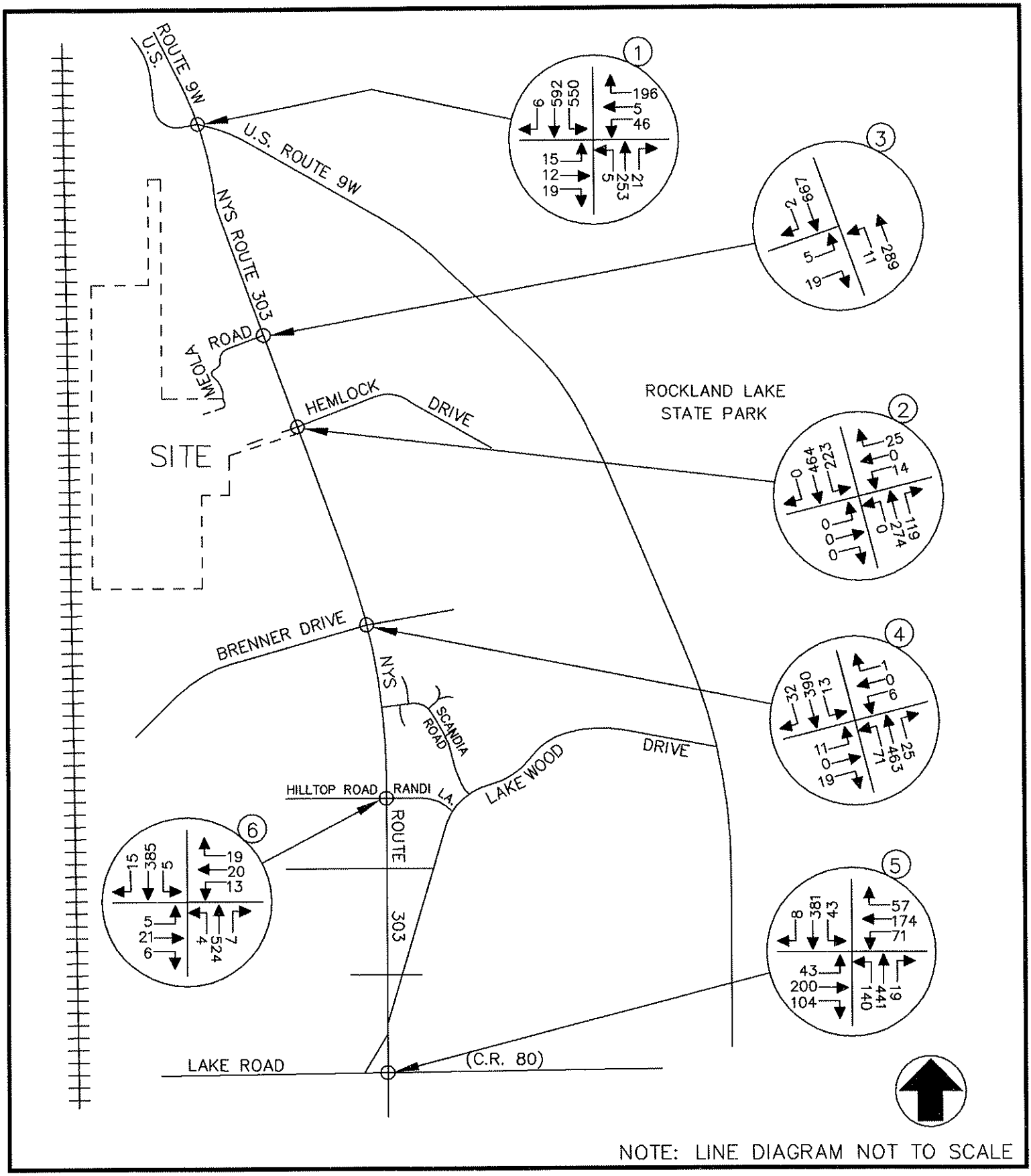
FIG. NO.7



NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

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HAWTHORNE , NEW YORK

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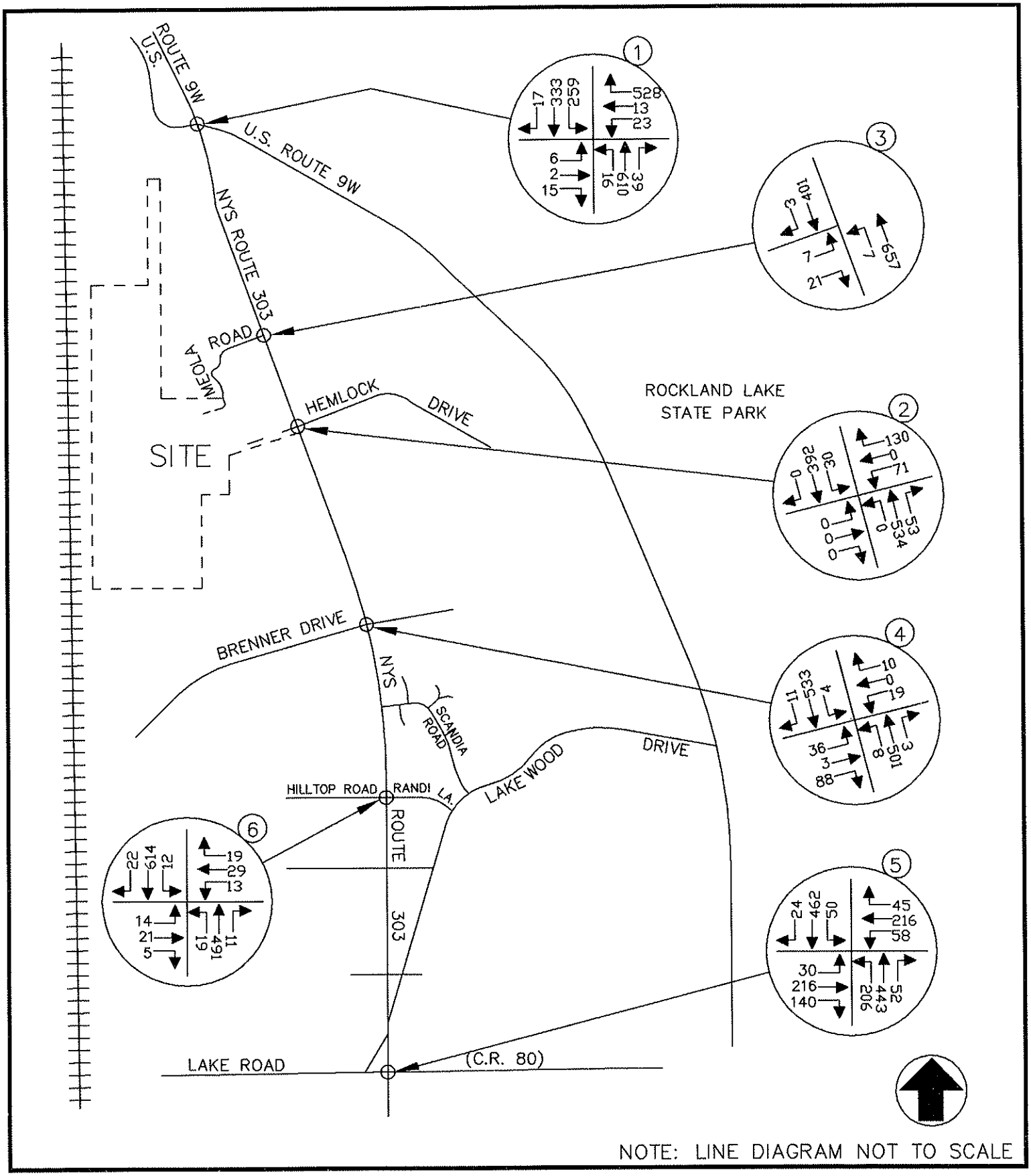
FIG. NO. 8



ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

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HAWTHORNE , NEW YORK

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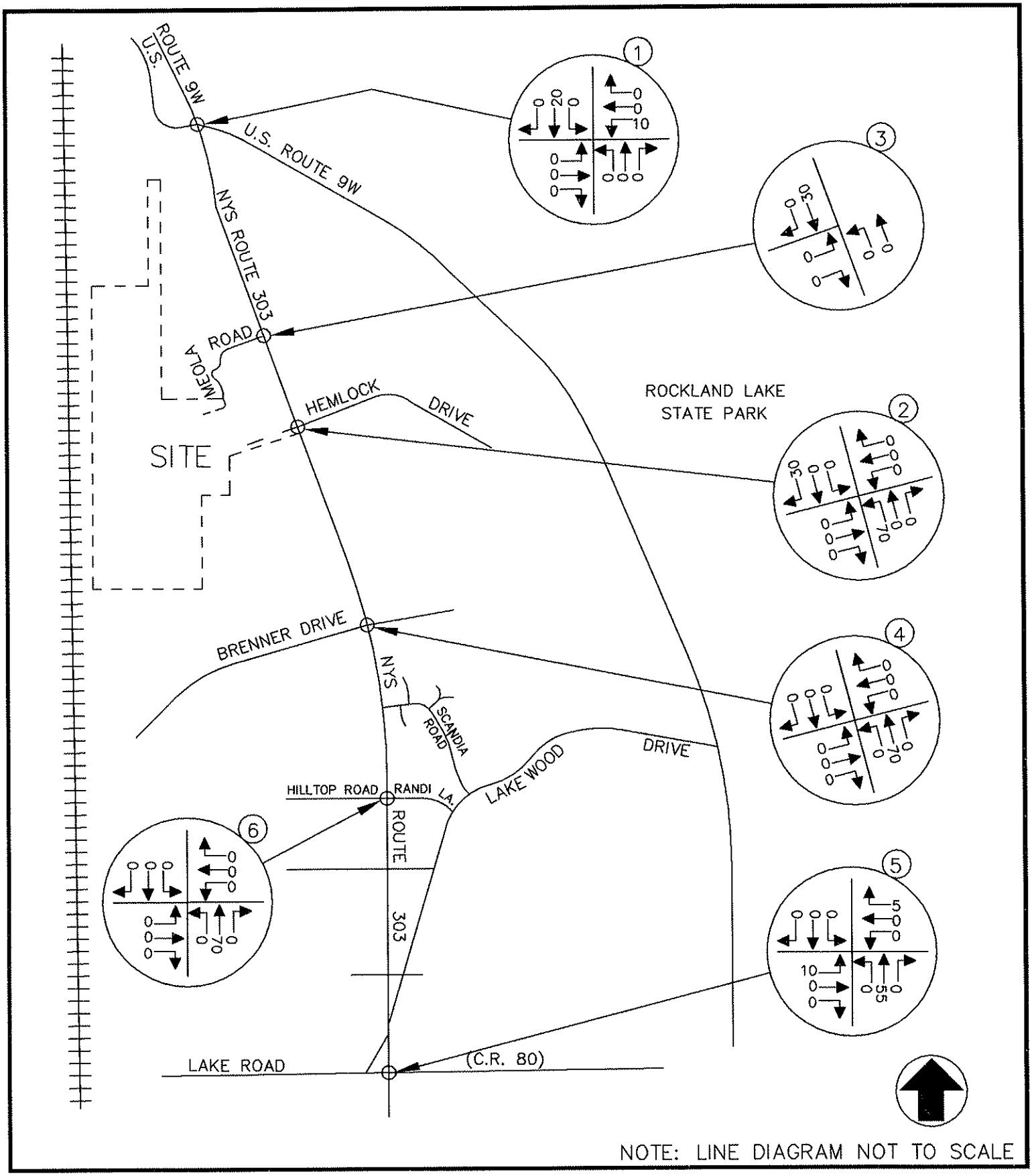
FIG. NO. 9



ORCHARD RIDGE

TOWN OF CLARKSTOWN, NEW YORK

ARRIVAL DISTRIBUTION

(ALL VALUES EXPRESSED AS A %)

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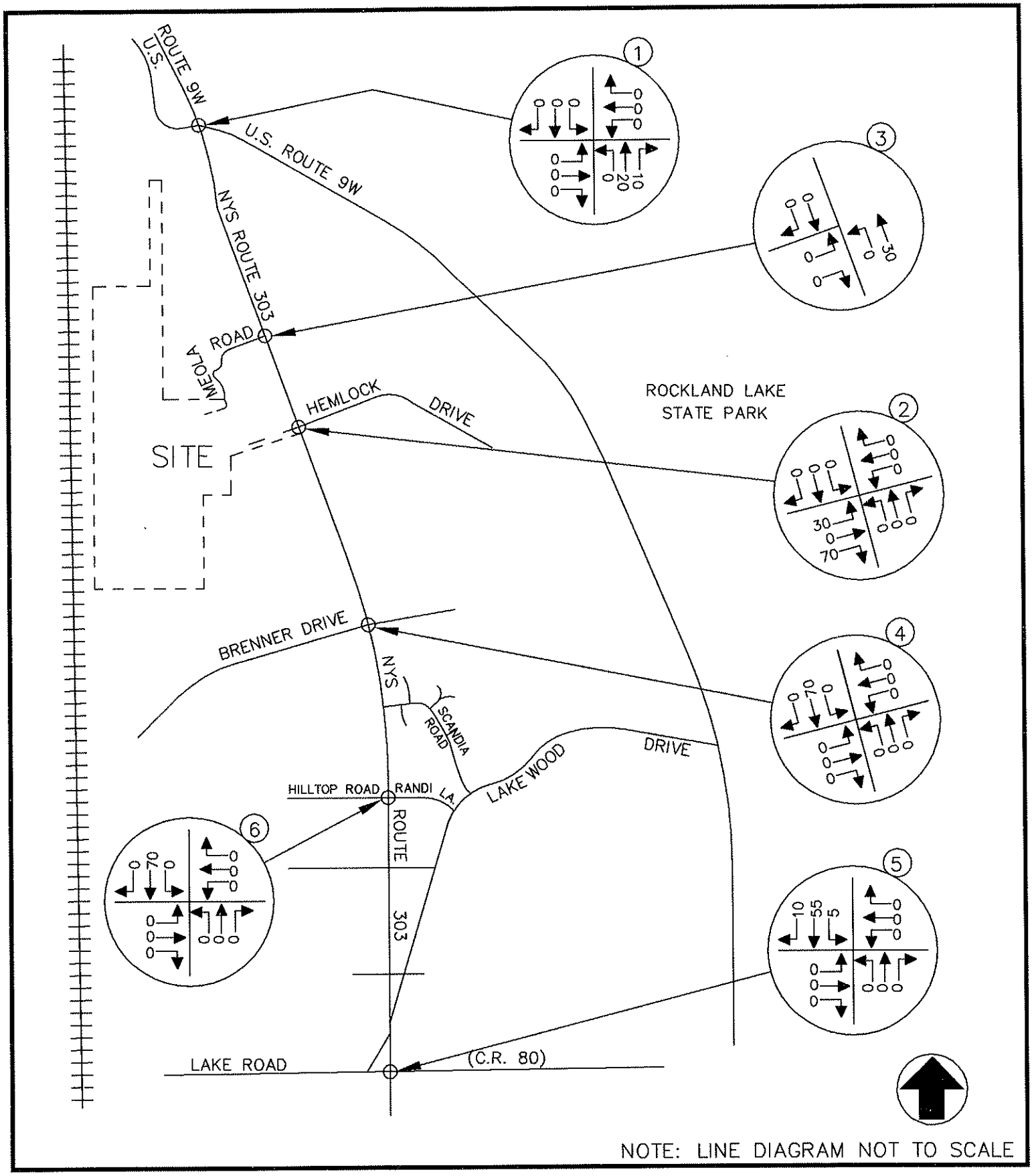
FIG. NO. 10



ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

DEPARTURE DISTRIBUTION
(ALL VALUES EXPRESSED AS A %)

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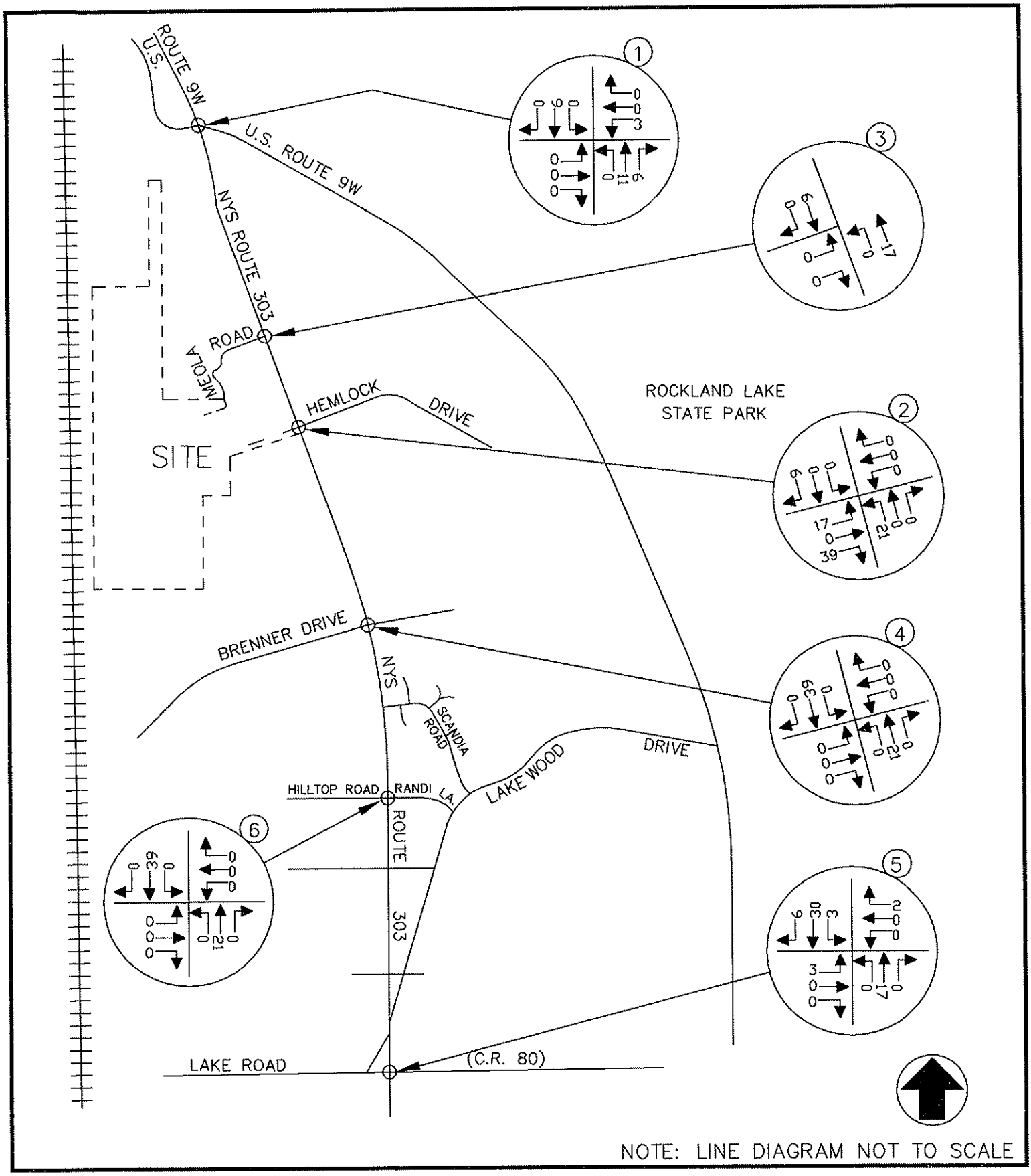
FIG. NO. 11



ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

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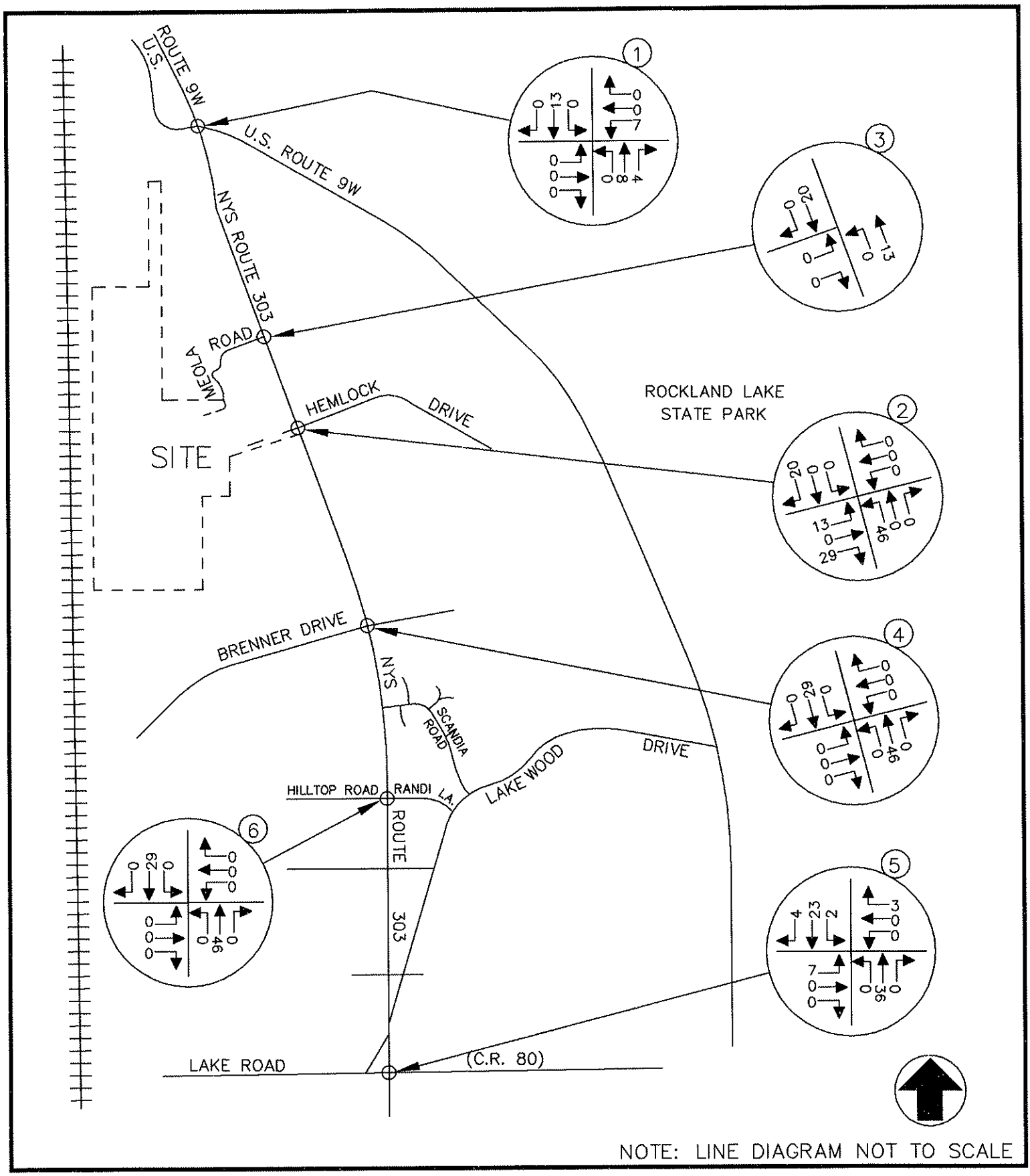
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: JUNE 2009

FIG. NO. 12



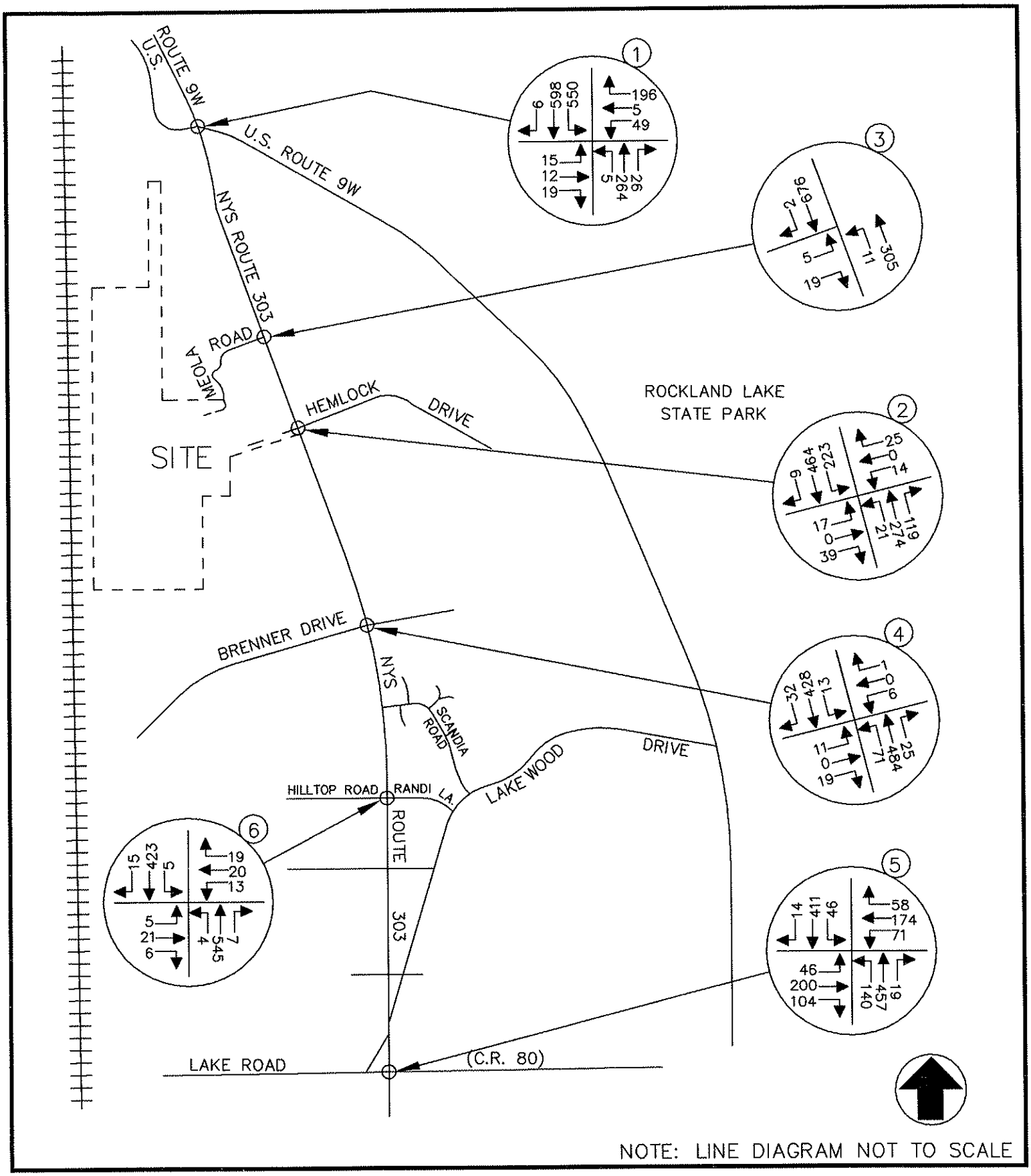
ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: JUNE 2009

FIG. NO. 13



ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOHN COLLINS ENGINEERS, P.C.
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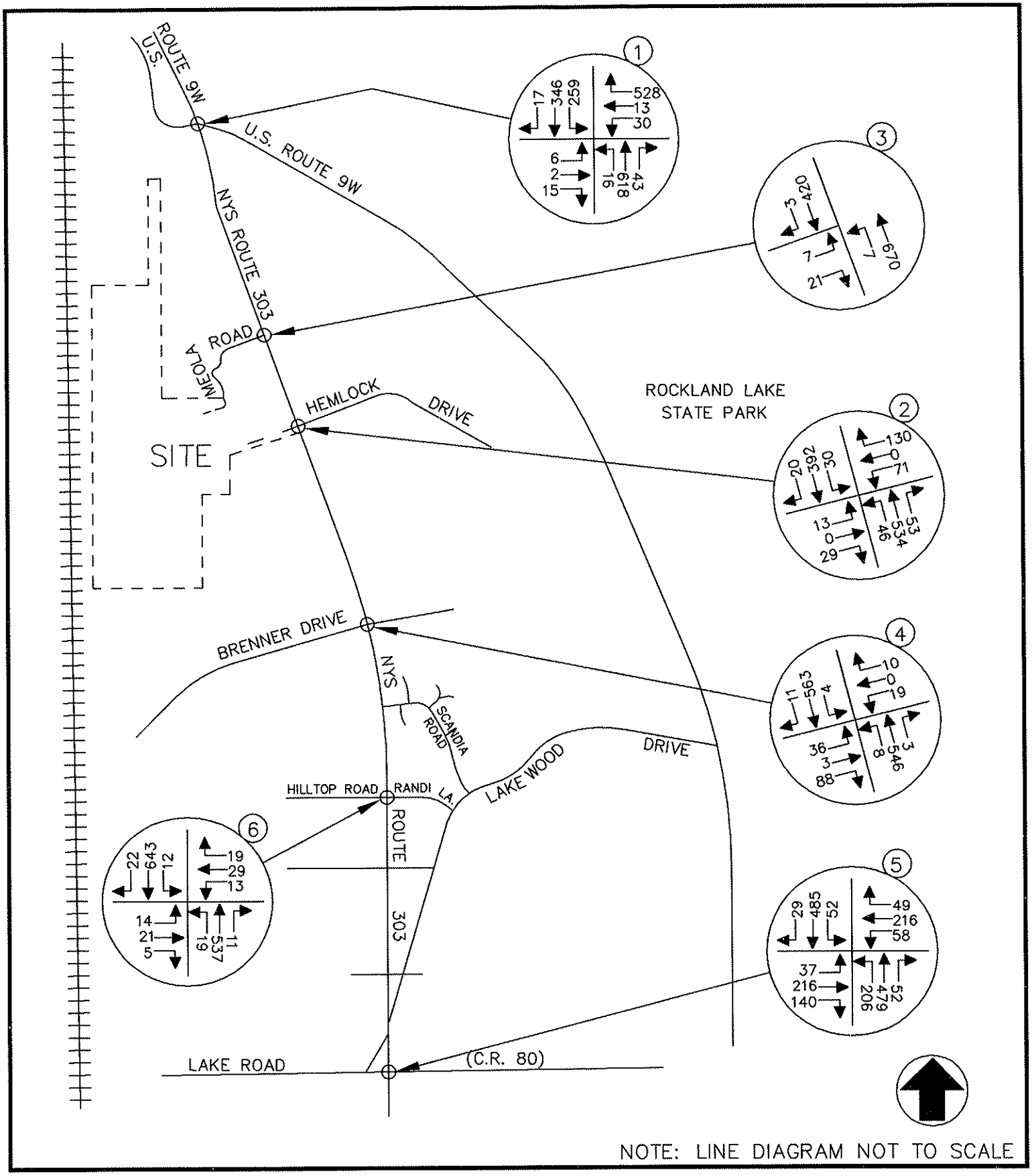
FIG. NO. 14



NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

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HAWTHORNE , NEW YORK

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FIG. NO. 15

Appendix B

Tables

TABLE NO. 1

HOURLY TRIP GENERATION RATES (HTGR) AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

ORCHARD RIDGE CLARKSTOWN, NY	ENTRY		EXIT	
	HTGR*	VOLUME	HTGR*	VOLUME
SENIOR HOUSING (DETACHED) (320 DWELLING UNITS)				
PEAK AM HOUR	0.09	30	0.17	55
PEAK PM HOUR	0.20	65	0.13	42

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 8TH EDITION, 2008. ITE LAND USE CODE - 252 - SENIOR HOUSING.

TABLE NO. 2

LEVEL OF SERVICE SUMMARY TABLE

				2009 EXISTING				2012 NO-BUILD				2012 BUILD			
				AM		PM		AM		PM		AM		PM	
				DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C
1	N.Y.S. ROUTE 303/U.S. ROUTE 9W & U.S. ROUTE 9W/HIDDEN VALLEY	SIGNALIZED													
		NB	L	A[6.6]	0.01	A[4.5]	0.03	A[7.9]	0.02	A[4.6]	0.03	A[8.0]	0.02	A[4.7]	0.03
			TR	B[13.1]	0.34	B[19.0]	0.74	B[13.4]	0.39	C[27.0]	0.87	B[13.6]	0.41	C[28.8]	0.89
		SB	L	C[19.5]	0.83	B[10.5]	0.60	C[31.1]	0.91	C[23.0]	0.77	D[35.5]	0.93	C[25.8]	0.78
			TR	B[18.9]	0.71	B[13.2]	0.42	C[24.0]	0.82	B[13.6]	0.47	C[24.5]	0.83	B[13.7]	0.49
		EB	LTR	C[23.4]	0.16	C[23.7]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09
		WB	LT	C[23.2]	0.13	C[23.9]	0.11	C[23.8]	0.21	C[24.1]	0.14	C[23.9]	0.23	C[24.3]	0.17
			R	B[14.1]	0.32	C[34.6]	0.89	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95
		OVERALL		B[17.8]	-	C[23.7]	-	C[23.4]	-	C[28.4]	-	C[24.9]	-	C[29.3]	-
2	N.Y.S. ROUTE 303 & HEMLOCK DRIVE/SITE ACCESS	UNSIGNALIZED													
		NB	LTR	-	-	-	-	-	-	-	-	A[8.6]	0.02	A[8.5]	0.05
		SB	LTR	A[8.9]	0.20	A[8.7]	0.03	A[9.2]	0.22	A[9.1]	0.04	A[9.2]	0.22	A[9.1]	0.04
		EB	LTR	C[18.0]	0.13	C[19.9]	0.47	C[21.7]	0.16	D[26.8]	0.58	D[31.8]	0.31	D[26.8]	0.22
		WB	LTR	-	-	-	-	-	-	-	-	D[33.2]	0.25	F[81.8]	0.92
	WITH IMPROVEMENTS	NB	LTR	-	-	-	-	-	-	-	-	A[8.6]	0.02	A[8.5]	0.05
		SB	LTR	-	-	-	-	A[9.2]	0.22	A[9.1]	0.04	A[9.2]	0.22	A[9.1]	0.04
		EB	LTR	-	-	-	-	C[15.5]	0.11	C[19.4]	0.47	C[19.2]	0.19	C[17.1]	0.13
		WB	LTR	-	-	-	-	-	-	-	-	C[19.3]	0.14	D[29.7]	0.61
3	N.Y.S. ROUTE 303 & MEOLA ROAD	UNSIGNALIZED													
		NB	LT	A[8.9]	0.01	A[8.2]	0.01	A[9.3]	0.01	A[8.3]	0.01	A[9.3]	0.01	A[8.4]	0.01
		EB	LR	B[14.7]	0.06	B[13.8]	0.07	C[16.6]	0.08	C[15.2]	0.08	C[16.9]	0.08	C[15.6]	0.08
4	N.Y.S. ROUTE 303 & BRENNER DRIVE/ INTERCOS DRIVEWAY	UNSIGNALIZED													
		NB	LTR	A[8.4]	0.07	A[8.3]	0.01	A[8.6]	0.07	A[8.8]	0.01	A[8.7]	0.08	A[8.9]	0.01
		SB	LTR	A[8.2]	0.01	A[8.4]	0.00	A[8.6]	0.01	A[8.6]	0.00	A[8.7]	0.01	A[8.8]	0.00
		EB	LTR	C[15.6]	0.08	C[18.7]	0.34	C[18.8]	0.11	D[26.8]	0.46	C[20.5]	0.12	D[31.3]	0.51
		WB	LTR	C[19.5]	0.03	C[20.7]	0.12	C[24.7]	0.04	D[27.6]	0.17	D[26.7]	0.04	D[31.4]	0.19
5	N.Y.S. ROUTE 303 & LAKE ROAD	SIGNALIZED													
		NB	L	B[14.0]	0.34	B[17.2]	0.51	B[15.0]	0.38	C[22.3]	0.63	B[15.7]	0.40	C[23.6]	0.65
			TR	B[13.5]	0.45	B[15.3]	0.55	B[15.5]	0.57	B[16.6]	0.61	B[15.9]	0.59	B[17.8]	0.66
		SB	LTR	C[25.0]	0.58	C[26.1]	0.62	C[27.4]	0.66	C[33.2]	0.81	C[29.8]	0.73	C[37.1]	0.86
		EB	LT	C[26.3]	0.45	C[26.9]	0.48	C[28.6]	0.54	C[27.9]	0.52	C[29.0]	0.55	C[28.8]	0.55
			R	C[22.7]	0.23	C[23.9]	0.31	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33
		WB	LTR	C[31.6]	0.63	C[31.4]	0.64	D[38.0]	0.75	C[34.7]	0.71	D[38.4]	0.76	C[35.8]	0.73
		OVERALL		C[22.4]	-	C[23.1]	-	C[24.9]	-	C[26.8]	-	C[25.8]	-	C[28.5]	-
6	N.Y.S. ROUTE 303 & RANDI LANE/HILLTOP ROAD	UNSIGNALIZED													
		NB	LTR	A[8.2]	0.00	A[8.7]	0.02	A[8.3]	0.00	A[9.2]	0.02	A[8.4]	0.00	A[9.3]	0.02
		SB	LTR	A[8.3]	0.00	A[8.5]	0.01	A[8.7]	0.01	A[8.7]	0.01	A[8.8]	0.01	A[8.8]	0.01
		EB	LTR	C[21.9]	0.13	D[27.6]	0.20	D[29.3]	0.19	E[41.0]	0.30	D[33.0]	0.21	E[49.2]	0.35
		WB	LTR	C[21.3]	0.20	D[25.6]	0.27	D[29.9]	0.28	E[38.1]	0.39	D[34.0]	0.32	E[45.7]	0.44

NOTES:

THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH AS WELL AS FOR THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTION.

Appendix C

Capacity Analysis

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMEX1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2009 EXISTING TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	14	11	18	28	5	185	5	228	16	519	513	6
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	14.0						10.0	31.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	306	1532	0.16	0.20	23.4	C	23.4	C
Westbound								
LT	284	1418	0.13	0.20	23.2	C	15.5	B
R	643	1553	0.32	0.41	14.1	B		
Northbound								
L	445	1702	0.01	0.66	6.6	A		
TR	786	1774	0.34	0.44	13.1	B	12.9	B
Southbound								
L	698	1736	0.83	0.66	19.5	B		
TR	808	1824	0.71	0.44	18.9	B	19.2	B

Intersection Delay = 17.8 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMEX1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2009 EXISTING TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	6	2	14	17	12	498	15	526	21	244	301	16
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			7			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A	A		
Thru	A				Thru		A		
Right	A				Right		A		
Peds					Peds				
WB Left	A				SB Left	A	A		
Thru	A				Thru		A		
Right	A				Right		A		
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right	A			
Green	13.0					10.0	32.0		
Yellow	3.0					3.0	3.0		
All Red	2.0					2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	282	1521	0.09	0.19	23.7	C	23.7	C
Westbound								
LT	289	1557	0.11	0.19	23.9	C	34.0	C
R	621	1553	0.89	0.40	34.6	C		
Northbound								
L	634	1702	0.03	0.67	4.5	A		
TR	816	1784	0.74	0.46	19.0	B	18.6	B
Southbound								
L	454	1736	0.60	0.67	10.5	B		
TR	829	1814	0.42	0.46	13.2	B	12.0	B

Intersection Delay = 21.3 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMNB1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 NO-BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	15	12	19	46	5	196	5	253	21	550	592	6
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	14.0						10.0	31.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	304	1522	0.17	0.20	23.4	C	23.4	C
Westbound								
LT	267	1337	0.21	0.20	23.8	C	16.3	B
R	643	1553	0.34	0.41	14.3	B		
Northbound								
L	382	1702	0.02	0.66	7.9	A		
TR	784	1771	0.39	0.44	13.4	B	13.3	B
Southbound								
L	669	1736	0.91	0.66	31.1	C		
TR	808	1825	0.82	0.44	24.0	C	27.4	C

Intersection Delay = 23.4 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMNB1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 NO-BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	6	2	15	23	13	528	16	610	39	259	333	17
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			13			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	13.0						10.0	32.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	282	1519	0.09	0.19	23.8	C	23.8	C
Westbound								
LT	281	1512	0.14	0.19	24.1	C	42.5	D
R	621	1553	0.95	0.40	43.7	D		
Northbound								
L	604	1702	0.03	0.67	4.6	A		
TR	814	1780	0.87	0.46	27.0	C	26.5	C
Southbound								
L	376	1736	0.77	0.67	23.0	C		
TR	829	1814	0.47	0.46	13.6	B	17.6	B

Intersection Delay = 28.4 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMB1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	15	12	19	49	5	196	5	264	26	550	598	6
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left	A				SB	Left	A	A		
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	A			
Green		14.0						10.0	31.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	304	1520	0.17	0.20	23.4	C	23.4	C
Westbound								
LT	266	1328	0.23	0.20	23.9	C	16.4	B
R	643	1553	0.34	0.41	14.3	B		
Northbound								
L	377	1702	0.02	0.66	8.0	A		
TR	783	1767	0.41	0.44	13.6	B	13.5	B
Southbound								
L	654	1736	0.93	0.66	35.5	D		
TR	808	1825	0.83	0.44	24.5	C	29.8	C

Intersection Delay = 24.9 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMB1
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	6	2	15	30	13	528	16	618	43	259	346	17
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			13			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	13.0						10.0	32.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	282	1517	0.09	0.19	23.8	C	23.8	C
Westbound								
LT	273	1472	0.17	0.19	24.3	C	42.3	D
R	621	1553	0.95	0.40	43.7	D		
Northbound								
L	593	1702	0.03	0.67	4.7	A		
TR	813	1779	0.89	0.46	28.8	C	28.3	C
Southbound								
L	367	1736	0.78	0.67	25.8	C		
TR	830	1815	0.49	0.46	13.7	B	18.8	B

Intersection Delay = 29.3 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & HEMLOCK DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560AMEX2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		245	112	210	377	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		272	124	233	418	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13		24			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	14		26			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		233		40				
C(m) (vph)		1146		317				
v/c		0.20		0.13				
95% queue length		0.76		0.43				
Control Delay		8.9		18.0				
LOS		A		C				
Approach Delay				18.0				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & HEMLOCK DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560PMEX2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		439	50	28	353	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		487	55	31	392	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	67		123			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	74		136			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		31		210				
C(m) (vph)		1012		448				
v/c		0.03		0.47				
95% queue length		0.09		2.45				
Control Delay		8.7		19.9				
LOS		A		C				
Approach Delay				19.9				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & HEMLOCK DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560AMNB2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		274	119	223	464	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		304	132	247	515	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14		25			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	15		27			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		247		42				
C(m) (vph)		1108		257				
v/c		0.22		0.16				
95% queue length		0.85		0.57				
Control Delay		9.2		21.7				
LOS		A		C				
Approach Delay				21.7				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & HEMLOCK DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560PMNB2
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		534	53	30	392	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		593	58	33	435	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71		130			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	78		144			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		33		222				
C(m) (vph)		921		381				
v/c		0.04		0.58				
95% queue length		0.11		3.55				
Control Delay		9.1		26.8				
LOS		A		D				
Approach Delay				26.8				
Approach LOS				D				

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB2
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	21	274	119	223	464	9
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	23	304	132	247	515	10
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14	0	25	17	0	39
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	15	0	27	18	0	43
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	23	247		42			61	
C(m) (vph)	1027	1108		169			194	
v/c	0.02	0.22		0.25			0.31	
95% queue length	0.07	0.85		0.94			1.28	
Control Delay	8.6	9.2		33.2			31.8	
LOS	A	A		D			D	
Approach Delay				33.2			31.8	
Approach LOS				D			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB2
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	46	534	53	30	392	20
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	51	593	58	33	435	22
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71	0	130	13	0	29
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	0	144	14	0	32
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	51	33		222			46	
C(m) (vph)	1088	921		242			211	
v/c	0.05	0.04		0.92			0.22	
95% queue length	0.15	0.11		7.96			0.80	
Control Delay	8.5	9.1		81.8			26.8	
LOS	A	A		F			D	
Approach Delay				81.8			26.8	
Approach LOS				F			D	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & HEMLOCK DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560AMNB2 (WITH IMPROVEMENTS)
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		274	119	223	464	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		304	132	247	515	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes		1	0	1	1	
Configuration			TR	L	T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14		25			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	15		27			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L		LR				
v (vph)		247		42				
C(m) (vph)		1108		386				
v/c		0.22		0.11				
95% queue length		0.85		0.36				
Control Delay		9.2		15.5				
LOS		A		C				
Approach Delay				15.5				
Approach LOS				C				

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & HEMLOCK DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560PMNB2 (WITH IMPROVEMENTS)
East/West Street: HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		534	53	30	392	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		593	58	33	435	
Percent Heavy Vehicles		--	--	5	--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes		1	0	1	1	
Configuration			TR	L	T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71		130			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	78		144			
Percent Heavy Vehicles	5		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0	0				
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L		LR				
v (vph)		33		222				
C(m) (vph)		921		468				
v/c		0.04		0.47				
95% queue length		0.11		2.50				
Control Delay		9.1		19.4				
LOS		A		C				
Approach Delay				19.4				
Approach LOS				C				

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB2 (WITH IMPROVEMENTS)
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	21	274	119	223	464	9
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	23	304	132	247	515	10
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14	0	25	17	0	39
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	15	0	27	18	0	43
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR			LTR	
v (vph)	23	247		42			61	
C(m) (vph)	1027	1108		294			314	
v/c	0.02	0.22		0.14			0.19	
95% queue length	0.07	0.85		0.49			0.71	
Control Delay	8.6	9.2		19.3			19.2	
LOS	A	A		C			C	
Approach Delay				19.3			19.2	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB2 (WITH IMPROVEMENTS)
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	46	534	53	30	392	20
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	51	593	58	33	435	22
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71	0	130	13	0	29
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	0	144	14	0	32
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR			LTR	
v (vph)	51	33		222			46	
C(m) (vph)	1088	921		361			343	
v/c	0.05	0.04		0.61			0.13	
95% queue length	0.15	0.11		3.91			0.46	
Control Delay	8.5	9.1		29.7			17.1	
LOS	A	A		D			C	
Approach Delay				29.7			17.1	
Approach LOS				D			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560AMEX3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	259			569	2
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	11	287			632	2
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				5		18
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				5		20
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/		No	/
Lanes				0	0	
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	11						25	
C(m) (vph)	935						396	
v/c	0.01						0.06	
95% queue length	0.04						0.20	
Control Delay	8.9						14.7	
LOS	A						B	
Approach Delay							14.7	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560PMEX3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	7	555			361	3
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	7	616			401	3
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				7		20
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				7		22
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	7						29	
C(m) (vph)	1139						439	
v/c	0.01						0.07	
95% queue length	0.02						0.21	
Control Delay	8.2						13.8	
LOS	A						B	
Approach Delay							13.8	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560AMNB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	11	289			667	2
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	12	321			741	2
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				5		19
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				5		21
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/		No	/
Lanes				0	0	
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	12						26	
C(m) (vph)	851						335	
v/c	0.01						0.08	
95% queue length	0.04						0.25	
Control Delay	9.3						16.6	
LOS	A						C	
Approach Delay							16.6	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560PMNB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	7	657			401	3
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	7	730			445	3
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				7		21
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				7		23
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	7						30	
C(m) (vph)	1097						383	
v/c	0.01						0.08	
95% queue length	0.02						0.25	
Control Delay	8.3						15.2	
LOS	A						C	
Approach Delay							15.2	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	11	305			676	2
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	12	338			751	2
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				5		19
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				5		21
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/		No	/
Lanes				0	0	
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	12						26	
C(m) (vph)	844						328	
v/c	0.01						0.08	
95% queue length	0.04						0.26	
Control Delay	9.3						16.9	
LOS	A						C	
Approach Delay							16.9	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB3
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	7	670			420	3
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	7	744			466	3
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				7		21
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				7		23
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	7						30	
C(m) (vph)	1077						368	
v/c	0.01						0.08	
95% queue length	0.02						0.26	
Control Delay	8.4						15.6	
LOS	A						C	
Approach Delay							15.6	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560AMEX4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	67	346	24	12	348	30
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	74	384	26	13	386	33
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	1	10	0	18
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	6	0	1	11	0	20
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	74	13		7			31	
C(m) (vph)	1124	1133		255			371	
v/c	0.07	0.01		0.03			0.08	
95% queue length	0.21	0.03		0.08			0.27	
Control Delay	8.4	8.2		19.5			15.6	
LOS	A	A		C			C	
Approach Delay				19.5			15.6	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560PMEX4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	8	446	3	4	406	10
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	8	495	3	4	451	11
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	18	0	9	34	3	83
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	20	0	10	37	3	92
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	8	4		30			132	
C(m) (vph)	1084	1051		259			394	
v/c	0.01	0.00		0.12			0.34	
95% queue length	0.02	0.01		0.39			1.45	
Control Delay	8.3	8.4		20.7			18.7	
LOS	A	A		C			C	
Approach Delay				20.7			18.7	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560AMNB4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	71	463	25	13	390	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	514	27	14	433	35
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	1	11	0	19
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	6	0	1	12	0	21
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	78	14		7			33	
C(m) (vph)	1078	1013		190			293	
v/c	0.07	0.01		0.04			0.11	
95% queue length	0.23	0.04		0.11			0.38	
Control Delay	8.6	8.6		24.7			18.8	
LOS	A	A		C			C	
Approach Delay				24.7			18.8	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560PMNB4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	8	501	3	4	533	11
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	8	556	3	4	592	12
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	19	0	10	36	3	88
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	0	11	40	3	97
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	8	4		32			140	
C(m) (vph)	959	997		191			302	
v/c	0.01	0.00		0.17			0.46	
95% queue length	0.03	0.01		0.59			2.33	
Control Delay	8.8	8.6		27.6			26.8	
LOS	A	A		D			D	
Approach Delay				27.6			26.8	
Approach LOS				D			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	71	484	25	13	428	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	537	27	14	475	35
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	1	11	0	19
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	6	0	1	12	0	21
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	78	14		7			33	
C(m) (vph)	1040	993		173			265	
v/c	0.08	0.01		0.04			0.12	
95% queue length	0.24	0.04		0.13			0.42	
Control Delay	8.7	8.7		26.7			20.5	
LOS	A	A		D			C	
Approach Delay				26.7			20.5	
Approach LOS				D			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: FEBRUARY 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB4
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	8	546	3	4	563	11
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	8	606	3	4	625	12
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	19	0	10	36	3	88
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	0	11	40	3	97
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	8	4		32			140	
C(m) (vph)	932	955		168			273	
v/c	0.01	0.00		0.19			0.51	
95% queue length	0.03	0.01		0.68			2.71	
Control Delay	8.9	8.8		31.4			31.3	
LOS	A	A		D			D	
Approach Delay				31.4			31.3	
Approach LOS				D			D	

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMEX5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2009 EXISTING TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	25	189	98	67	164	46	132	348	18	39	344	4
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						10.0	35.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	528	1583	0.45	0.33	26.3	C	25.2	C
R	479	1436	0.23	0.33	22.7	C		
Westbound								
LTR	484	1451	0.63	0.33	31.6	C	31.6	C
Northbound								
L	433	1555	0.34	0.56	14.0	B		
TR	903	1625	0.45	0.56	13.5	B	13.6	B
Southbound								
LTR	738	1897	0.58	0.39	25.0	C	25.0	C

Intersection Delay = 22.4 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMEX5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2009 EXISTING TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	24	204	132	55	204	41	194	398	49	39	363	7
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						10.0	35.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	531	1592	0.48	0.33	26.9	C	25.8	C
R	479	1436	0.31	0.33	23.9	C		
Westbound								
LTR	521	1562	0.64	0.33	31.4	C	31.4	C
Northbound								
L	421	1555	0.51	0.56	17.2	B		
TR	894	1610	0.55	0.56	15.3	B	15.9	B
Southbound								
LTR	731	1879	0.62	0.39	26.1	C	26.1	C

Intersection Delay = 23.1 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMNB5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 NO-BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	43	200	104	71	174	57	140	441	19	43	381	8
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	P	P		
Thru	P					Thru	P	P		
Right	P					Right	P	P		
Peds						Peds				
WB Left	P				SB	Left		P		
Thru	P					Thru		P		
Right	P					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						10.0	35.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	498	1495	0.54	0.33	28.6	C	26.9	C
R	479	1436	0.24	0.33	23.0	C		
Westbound								
LTR	444	1332	0.75	0.33	38.0	D	38.0	D
Northbound								
L	411	1555	0.38	0.56	15.0	B		
TR	904	1627	0.57	0.56	15.5	B	15.4	B
Southbound								
LTR	723	1860	0.66	0.39	27.4	C	27.4	C

Intersection Delay = 24.9 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMNB5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 NO-BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	30	216	140	58	216	45	206	443	52	50	462	24
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	P	P		
Thru	P					Thru	P	P		
Right	P					Right	P	P		
Peds						Peds				
WB Left	P				SB	Left		P		
Thru	P					Thru		P		
Right	P					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						9.0	36.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	524	1573	0.52	0.33	27.9	C	26.6	C
R	479	1436	0.33	0.33	24.2	C		
Westbound								
LTR	496	1488	0.71	0.33	34.7	C	34.7	C
Northbound								
L	361	1555	0.63	0.56	22.3	C		
TR	895	1611	0.61	0.56	16.6	B	18.3	B
Southbound								
LTR	738	1844	0.81	0.40	33.2	C	33.2	C

Intersection Delay = 26.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK AM HOUR
Project ID: 1560AMB5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	46	200	104	71	174	58	140	457	19	46	411	14
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						10.0	35.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	492	1477	0.55	0.33	29.0	C	27.2	C
R	479	1436	0.24	0.33	23.0	C		
Westbound								
LTR	442	1325	0.76	0.33	38.4	D	38.4	D
Northbound								
L	393	1555	0.40	0.56	15.7	B		
TR	904	1627	0.59	0.56	15.9	B	15.9	B
Southbound								
LTR	720	1852	0.73	0.39	29.8	C	29.8	C

Intersection Delay = 25.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: FEBRUARY 2009
Period: PEAK PM HOUR
Project ID: 1560PMB5
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES

N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	37	216	140	58	216	49	206	479	52	52	485	29
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						9.0	36.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	509	1528	0.55	0.33	28.8	C	27.2	C
R	479	1436	0.33	0.33	24.2	C		
Westbound								
LTR	489	1466	0.73	0.33	35.8	D	35.8	D
Northbound								
L	350	1555	0.65	0.56	23.6	C		
TR	896	1613	0.66	0.56	17.8	B	19.4	B
Southbound								
LTR	733	1832	0.86	0.40	37.1	D	37.1	D

Intersection Delay = 28.5 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560AMEX6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	404	7	5	343	14
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	4	448	7	5	381	15
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	12	19	18	5	20	6
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	13	21	20	5	22	6
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	4	5		54			33	
C(m) (vph)	1146	1090		274			246	
v/c	0.00	0.00		0.20			0.13	
95% queue length	0.01	0.01		0.72			0.46	
Control Delay	8.2	8.3		21.3			21.9	
LOS	A	A		C			C	
Approach Delay				21.3			21.9	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009 EXISTING TRAFFIC VOLUMES
Project ID: 1560PMEX6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	18	437	10	11	482	21
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	20	485	11	12	535	23
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	12	27	18	13	20	5
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	13	30	20	14	22	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	20	12		63			41	
C(m) (vph)	998	1052		237			200	
v/c	0.02	0.01		0.27			0.20	
95% queue length	0.06	0.03		1.04			0.75	
Control Delay	8.7	8.5		25.6			27.6	
LOS	A	A		D			D	
Approach Delay				25.6			27.6	
Approach LOS				D			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560AMNB6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	524	7	5	385	15
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	4	582	7	5	427	16
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	20	19	5	21	6
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	22	21	5	23	6
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	4	5		57			34	
C(m) (vph)	1101	972		201			182	
v/c	0.00	0.01		0.28			0.19	
95% queue length	0.01	0.02		1.12			0.67	
Control Delay	8.3	8.7		29.9			29.3	
LOS	A	A		D			D	
Approach Delay				29.9			29.3	
Approach LOS				D			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 NO-BUILD TRAFFIC VOLUMES
Project ID: 1560PMNB6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	19	491	11	12	614	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	545	12	13	682	24
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	29	19	14	21	5
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	32	21	15	23	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	21	13		67			43	
C(m) (vph)	878	999		174			142	
v/c	0.02	0.01		0.39			0.30	
95% queue length	0.07	0.04		1.67			1.19	
Control Delay	9.2	8.7		38.1			41.0	
LOS	A	A		E			E	
Approach Delay				38.1			41.0	
Approach LOS				E			E	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	545	7	5	423	15
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	4	605	7	5	470	16
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	20	19	5	21	6
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	22	21	5	23	6
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	4	5		57			34	
C(m) (vph)	1062	953		180			162	
v/c	0.00	0.01		0.32			0.21	
95% queue length	0.01	0.02		1.28			0.76	
Control Delay	8.4	8.8		34.0			33.0	
LOS	A	A		D			D	
Approach Delay				34.0			33.0	
Approach LOS				D			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JUNE 2009
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB6
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	19	537	11	12	643	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	596	12	13	714	24
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	29	19	14	21	5
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	32	21	15	23	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	21	13		67			43	
C(m) (vph)	855	956		153			123	
v/c	0.02	0.01		0.44			0.35	
95% queue length	0.08	0.04		1.97			1.41	
Control Delay	9.3	8.8		45.7			49.2	
LOS	A	A		E			E	
Approach Delay				45.7			49.2	
Approach LOS				E			E	

Appendix D

Level of Service Standards

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a 15-minute analysis period. The criteria are given in Exhibit 16-2 from the 2000 Highway Capacity Manual published by the Transportation Research Board.

EXHIBIT 16-2

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE (LOS)	CONTROL DELAY PER VEHICLE (S/VEH)
A	≤10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

LEVEL OF SERVICE A describes operations with low control delay, up to 10 seconds per vehicle (s/veh). This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.

LEVEL OF SERVICE B describes operations with control delay greater than 10 and up to 20 seconds per vehicle (s/veh). This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with Level of Service "A", causing higher levels of delay.

LEVEL OF SERVICE C describes operations with control delay greater than 20 and up to 35 seconds per vehicle (s/veh). These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LEVEL OF SERVICE D describes operations with control delay greater than 35 and up to 55 seconds per vehicle (s/veh). At Level of Service D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LEVEL OF SERVICE E describes operations with control delay greater than 55 and up to 80 seconds per vehicle (s/veh). This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.

LEVEL OF SERVICE F describes operations with control delay in excess of 80 seconds per vehicle (s/veh). This level is considered unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

The Level of Service (LOS) for unsignalized intersections is determined by the computed or measured control delay and is defined for each minor movement. Control delay is defined as the total elapsed time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. This total elapsed time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to speed of vehicles in queue. Average control delay for any particular minor movement is a function of the capacity of the approach and the degree of saturation. The Level of Service Criteria are given in Exhibit 17-2 from the 2000 Highway Capacity Manual published by the Transportation Research Board.

EXHIBIT 17-2

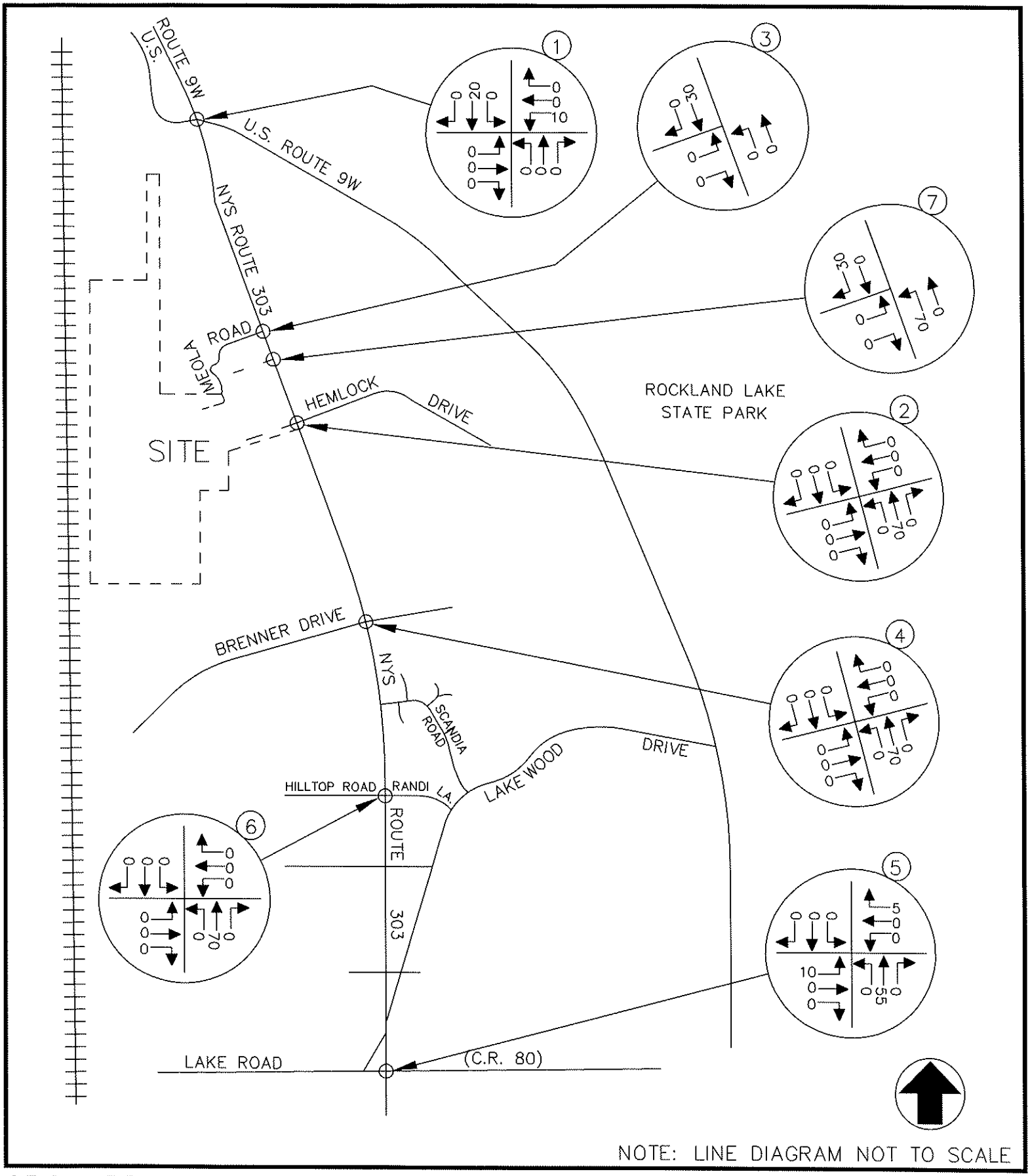
LEVEL OF SERVICE FOR CRITERIA
FOR UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE (LOS)	AVERAGE CONTROL DELAY (S/VEH)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

The Level of Service Criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections.

Appendix E

Consideration of Potential Commercial Parcel



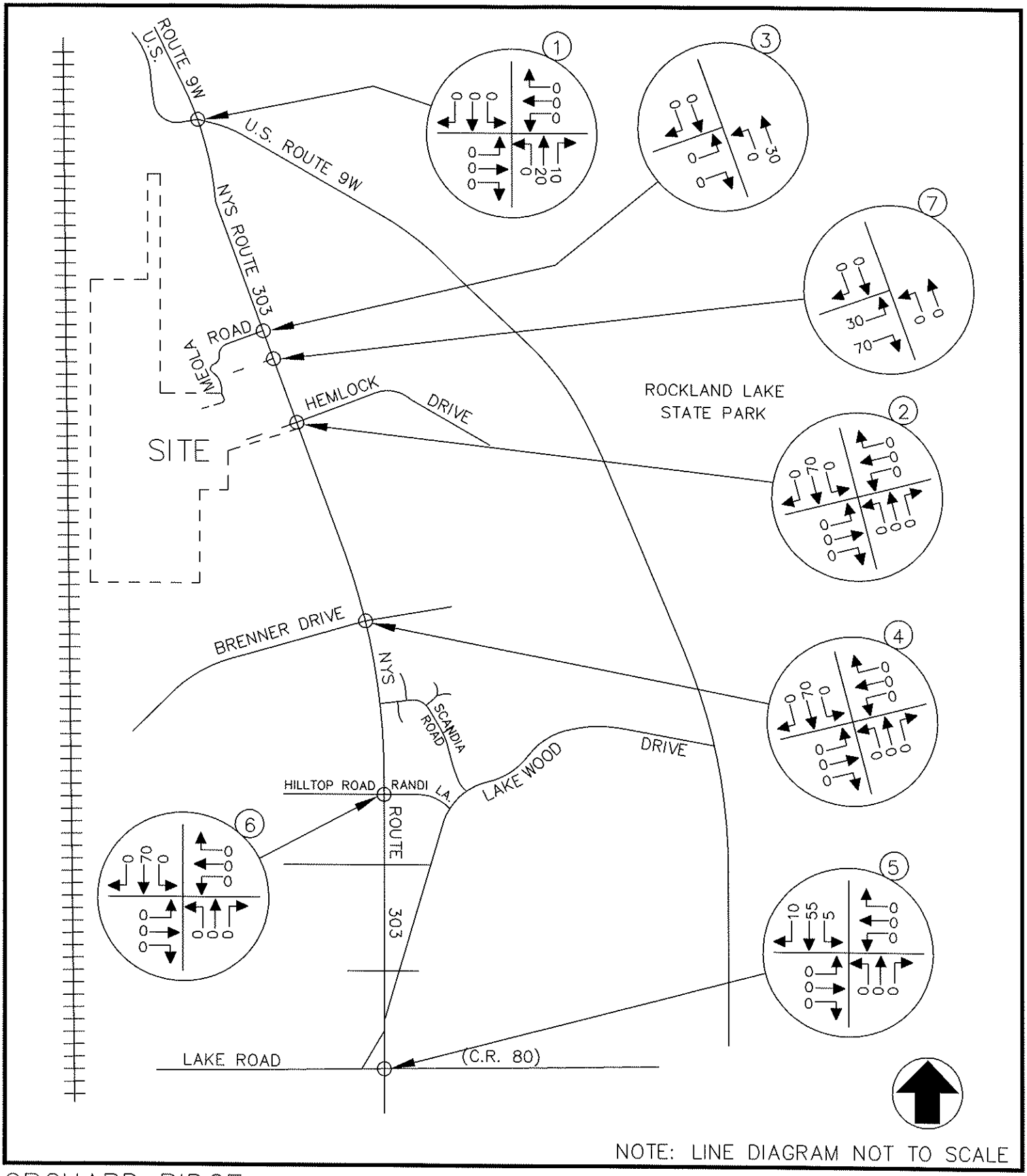
ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

ARRIVAL DISTRIBUTION
(ALL VALUES EXPRESSED AS A %)
(W/COMMERCIAL PARCEL)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: APRIL 2010

FIG. NO. 10A



ORCHARD RIDGE
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(ALL VALUES EXPRESSED AS A %)
(W/COMMERCIAL PARCEL)

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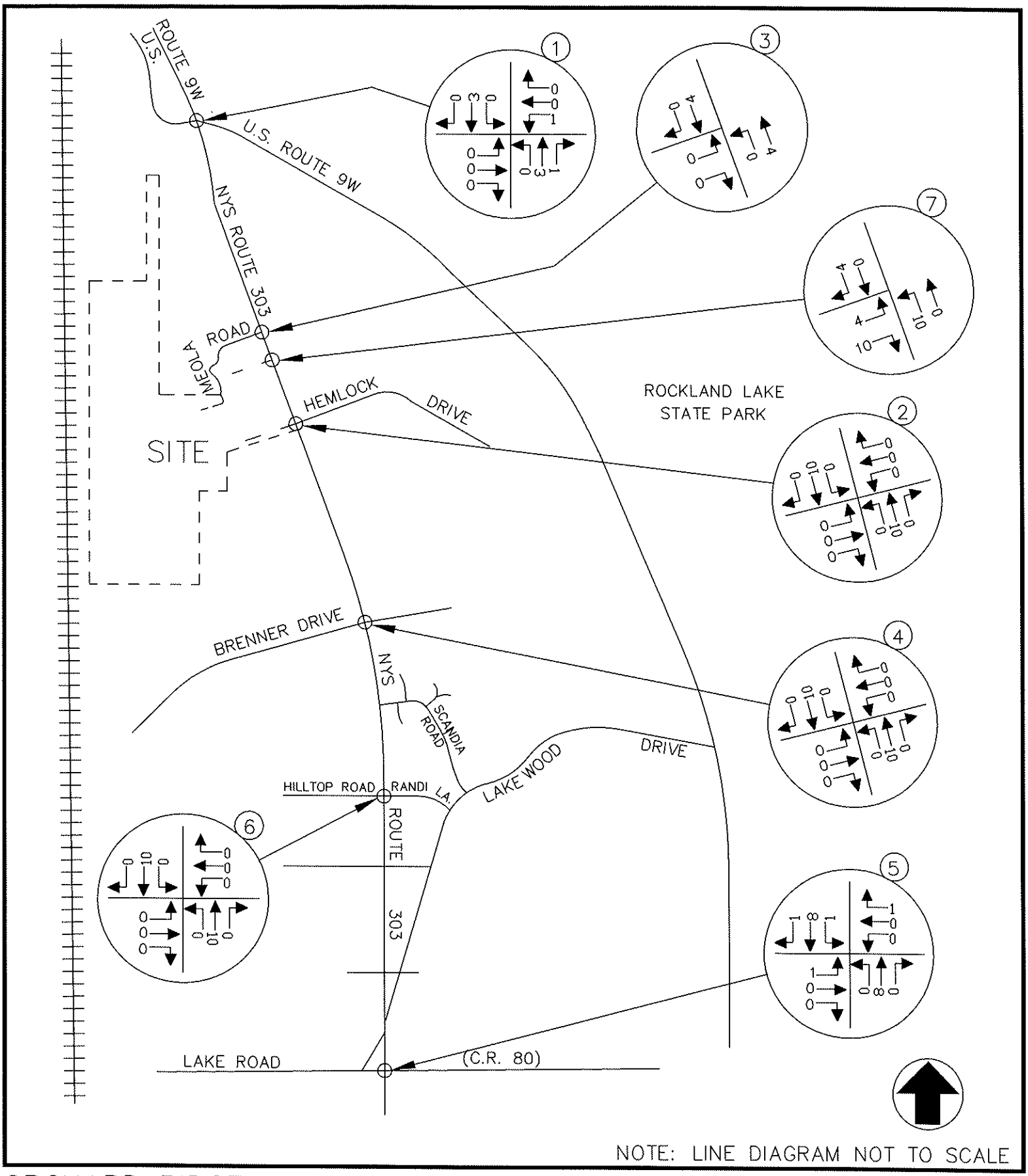
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: APRIL 2010

FIG. NO. 11A



ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR
(W/COMMERCIAL PARCEL)

JOHN COLLINS ENGINEERS, P.C.
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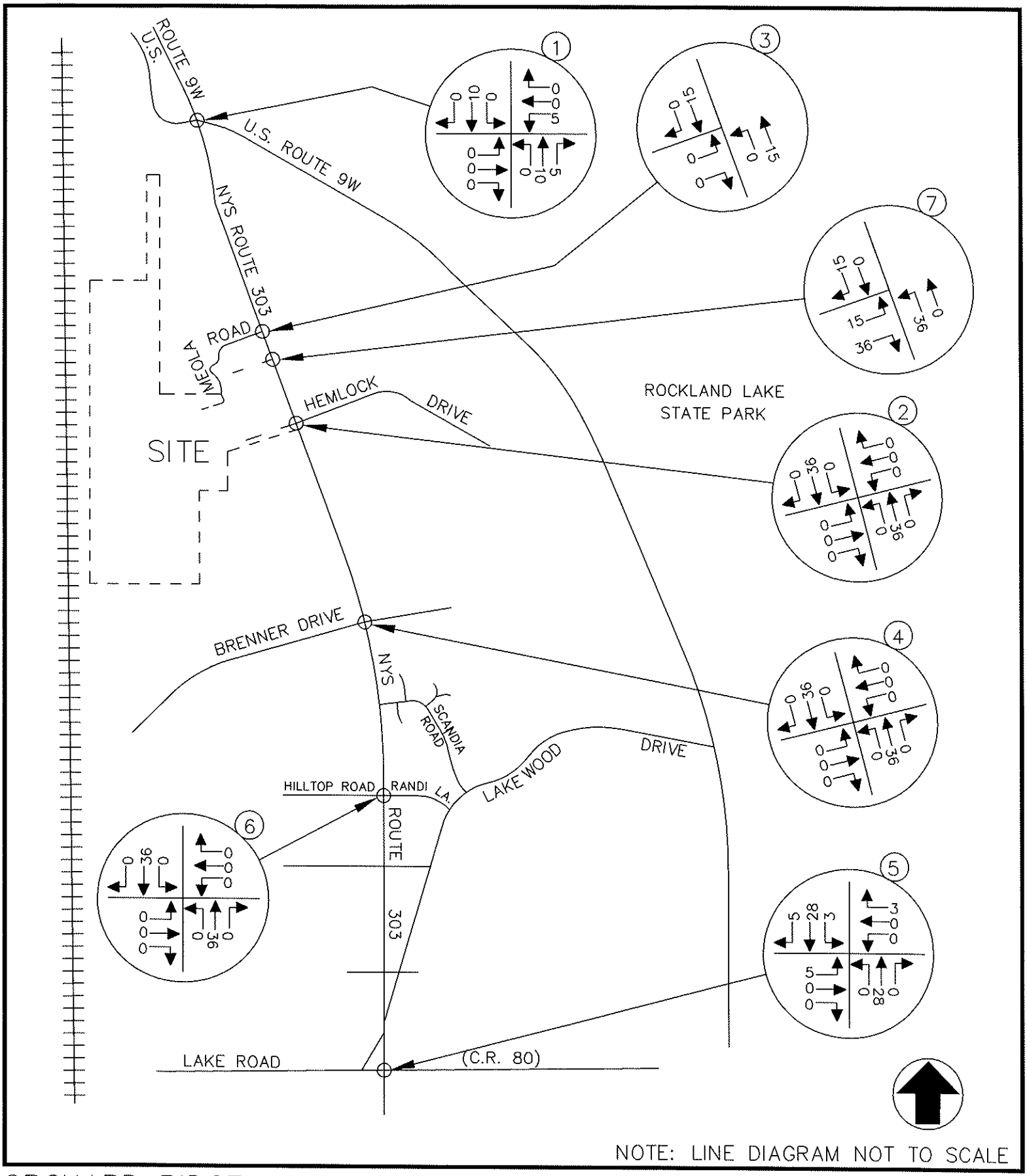
PROJECT NO. 1560 DATE: APRIL 2010

FIG. NO. 12A



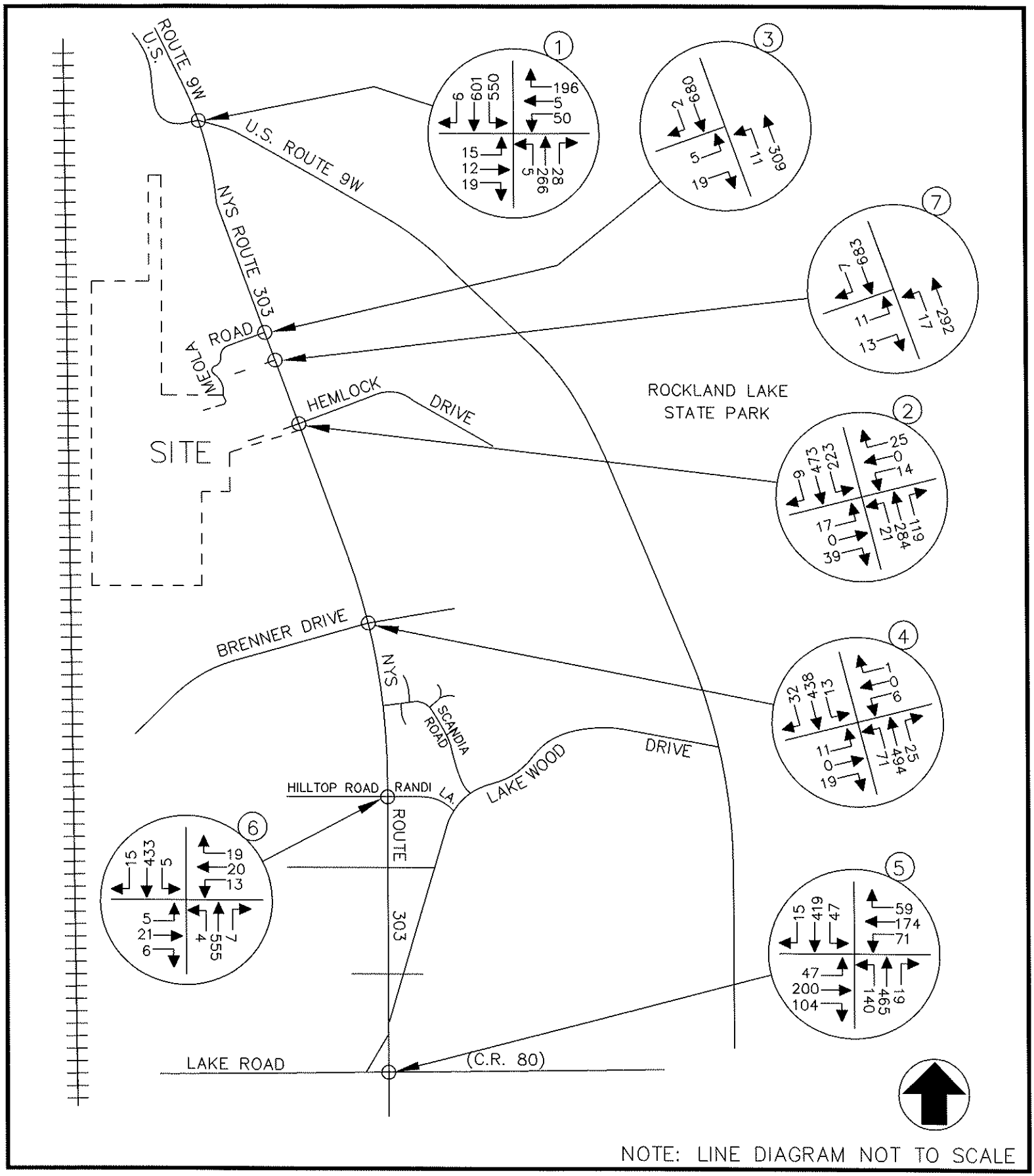
ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR
(W/COMMERCIAL PARCEL)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: APRIL 2010

FIG. NO. 13A



NOTE: LINE DIAGRAM NOT TO SCALE

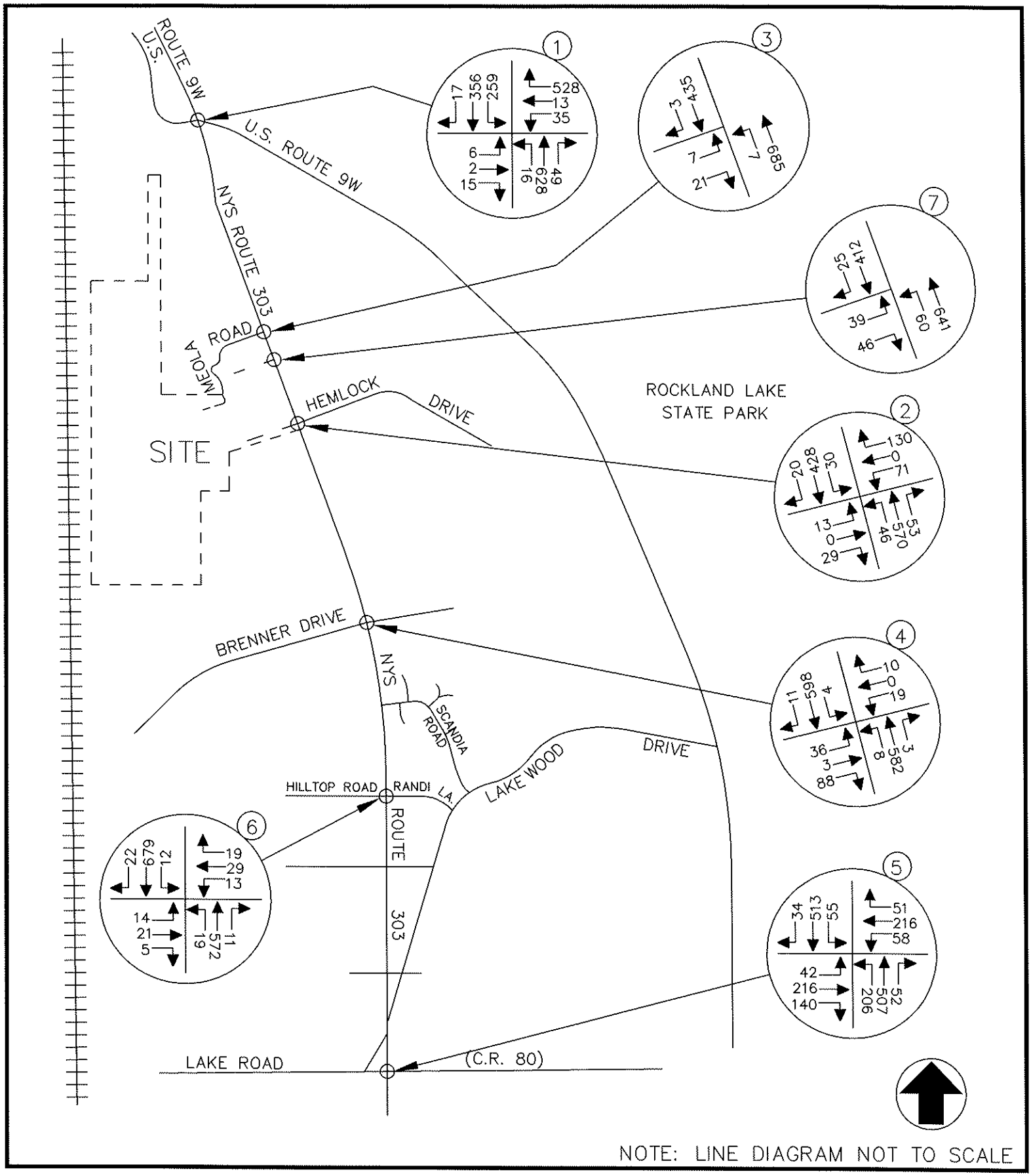
ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 COMBINED BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR
(W/COMMERCIAL PARCEL)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: APRIL 2010

FIG. NO. 14A



NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

2012 COMBINED BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR
(W/COMMERCIAL PARCEL)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: APRIL 2010

FIG. NO. 15A

TABLE NO. 1A

HOURLY TRIP GENERATION RATES (HTGR) AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

ORCHARD RIDGE CLARKSTOWN, NY	ENTRY			EXIT		
	HTGR*	VOLUME	NEW TRIPS	HTGR*	VOLUME	NEW TRIPS
RETAIL (14,000 S.F.)						
PEAK AM HOUR	1.71	24	14	1.71	24	14
PEAK PM HOUR	6.07	85	51	6.07	85	51

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 8TH EDITION, 2008. ITE LAND USE CODE - 820 - SHOPPING CENTER.

2) THE NEW TRIPS SHOWN INCLUDE A CREDIT OF 25% FOR PASS-BY/DIVERTED LINK TRIPS AND A 15% FOR INTERPLAY TRIPS OF 40% NEW TRIPS.

TABLE NO. 2A

LEVEL OF SERVICE SUMMARY TABLE

				2009 EXISTING				2012 NO-BUILD				2012 BUILD			
				AM		PM		AM		PM		AM		PM	
				DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C
1	N.Y.S. ROUTE 303/U.S. ROUTE 9W & U.S. ROUTE 9W/HIDDEN VALLEY	**SIGNALIZED**													
		NB	L	A[6.6]	0.01	A[4.5]	0.03	A[7.9]	0.02	A[4.6]	0.03	A[8.0]	0.02	A[4.7]	0.03
			TR	B[13.1]	0.34	B[19.0]	0.74	B[13.4]	0.39	C[27.0]	0.87	B[13.6]	0.41	C[28.8]	0.89
		SB	L	C[19.5]	0.83	B[10.5]	0.60	C[31.1]	0.91	C[23.0]	0.77	D[35.5]	0.93	C[25.8]	0.78
			TR	B[18.9]	0.71	B[13.2]	0.42	C[24.0]	0.82	B[13.6]	0.47	C[24.5]	0.83	B[13.7]	0.49
		EB	LTR	C[23.4]	0.16	C[23.7]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09
		WB	LT	C[23.2]	0.13	C[23.9]	0.11	C[23.8]	0.21	C[24.1]	0.14	C[23.9]	0.23	C[24.3]	0.17
			R	B[14.1]	0.32	C[34.6]	0.89	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95
		OVERALL		B[17.8]	-	C[23.7]	-	C[23.4]	-	C[28.4]	-	C[24.9]	-	C[29.3]	-
2	N.Y.S. ROUTE 303 & HEMLOCK DRIVE/SITE ACCESS	**UNSIGNALIZED**													
		NB	LTR	-	-	-	-	-	-	-	-	A[8.6]	0.02	A[8.6]	0.05
		SB	LTR	A[8.9]	0.20	A[8.7]	0.03	A[9.2]	0.22	A[9.1]	0.04	A[9.2]	0.22	A[9.2]	0.04
		EB	LTR	C[18.0]	0.13	C[19.9]	0.47	C[21.7]	0.16	D[26.8]	0.58	D[33.3]	0.33	D[30.6]	0.25
		WB	LTR	-	-	-	-	-	-	-	-	D[34.6]	0.26	F[114.3]	1.02
	WITH IMPROVEMENTS	NB	LTR	-	-	-	-	-	-	-	-	A[8.6]	0.02	A[8.6]	0.05
		SB	LTR	-	-	-	-	A[9.2]	0.22	A[9.1]	0.04	A[9.2]	0.22	A[9.2]	0.04
		EB	LTR	-	-	-	-	C[15.5]	0.11	C[19.4]	0.47	C[19.5]	0.20	C[18.2]	0.14
		WB	LTR	-	-	-	-	-	-	-	-	C[19.6]	0.15	D[33.7]	0.65
3	N.Y.S. ROUTE 303 & MEOLA ROAD	**UNSIGNALIZED**													
		NB	LT	A[8.9]	0.01	A[8.2]	0.01	A[9.3]	0.01	A[8.3]	0.01	A[9.3]	0.01	A[8.4]	0.01
		EB	LR	B[14.7]	0.06	B[13.8]	0.07	C[16.6]	0.08	C[15.2]	0.08	C[16.9]	0.08	C[15.6]	0.08
4	N.Y.S. ROUTE 303 & BRENNER DRIVE/ INTERCOS DRIVEWAY	**UNSIGNALIZED**													
		NB	LTR	A[8.4]	0.07	A[8.3]	0.01	A[8.6]	0.07	A[8.8]	0.01	A[8.7]	0.08	A[8.9]	0.01
		SB	LTR	A[8.2]	0.01	A[8.4]	0.00	A[8.6]	0.01	A[8.6]	0.00	A[8.7]	0.01	A[8.8]	0.00
		EB	LTR	C[15.6]	0.08	C[18.7]	0.34	C[18.8]	0.11	D[26.8]	0.46	C[20.5]	0.12	D[31.3]	0.51
		WB	LTR	C[19.5]	0.03	C[20.7]	0.12	C[24.7]	0.04	D[27.6]	0.17	D[26.7]	0.04	D[31.4]	0.19
5	N.Y.S. ROUTE 303 & LAKE ROAD	**SIGNALIZED**													
		NB	L	B[14.0]	0.34	B[17.2]	0.51	B[15.0]	0.38	C[22.3]	0.63	B[15.7]	0.40	C[23.6]	0.65
			TR	B[13.5]	0.45	B[15.3]	0.55	B[15.5]	0.57	B[16.6]	0.61	B[15.9]	0.59	B[17.8]	0.66
		SB	LTR	C[25.0]	0.58	C[26.1]	0.62	C[27.4]	0.66	C[33.2]	0.81	C[29.8]	0.73	C[37.1]	0.86
		EB	LT	C[26.3]	0.45	C[26.9]	0.48	C[28.6]	0.54	C[27.9]	0.52	C[29.0]	0.55	C[28.8]	0.55
			R	C[22.7]	0.23	C[23.9]	0.31	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33
		WB	LTR	C[31.6]	0.63	C[31.4]	0.64	D[38.0]	0.75	C[34.7]	0.71	D[38.4]	0.76	C[35.8]	0.73
		OVERALL		C[22.4]	-	C[23.1]	-	C[24.9]	-	C[26.8]	-	C[25.8]	-	C[28.5]	-
6	N.Y.S. ROUTE 303 & RANDI LANE/HILLTOP ROAD	**UNSIGNALIZED**													
		NB	LTR	A[8.2]	0.00	A[8.7]	0.02	A[8.3]	0.00	A[9.2]	0.02	A[8.4]	0.00	A[9.3]	0.02
		SB	LTR	A[8.3]	0.00	A[8.5]	0.01	A[8.7]	0.01	A[8.7]	0.01	A[8.8]	0.01	A[8.8]	0.01
		EB	LTR	C[21.9]	0.13	D[27.6]	0.20	D[29.3]	0.19	E[41.0]	0.30	D[33.0]	0.21	E[49.2]	0.35
		WB	LTR	C[21.3]	0.20	D[25.6]	0.27	D[29.9]	0.28	E[38.1]	0.39	D[34.0]	0.32	E[45.7]	0.44
7	N.Y.S. ROUTE 303 & SITE ACCESS DRIVEWAY (COMMERCIAL PARCEL)	**UNSIGNALIZED**													
		NB	LT	-	-	-	-	-	-	-	-	A[9.4]	0.02	A[8.6]	0.06
		EB	LR	-	-	-	-	-	-	-	-	C[20.1]	0.10	D[29.8]	0.40

NOTES:

THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS. C [16.2], FOR EACH KEY APPROACH AS WELL AS FOR THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTION.

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: APRIL 2010
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB2
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	21	284	119	223	473	9
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	23	315	132	247	525	10
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14	0	25	17	0	39
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	15	0	27	18	0	43
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	23	247		42			61	
C(m) (vph)	1018	1098		163			187	
v/c	0.02	0.22		0.26			0.33	
95% queue length	0.07	0.86		0.98			1.34	
Control Delay	8.6	9.2		34.6			33.3	
LOS	A	A		D			D	
Approach Delay				34.6			33.3	
Approach LOS				D			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: APRIL 2010
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB2
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	46	570	53	30	428	20
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	51	633	58	33	475	22
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71	0	130	13	0	29
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	0	144	14	0	32
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	51	33		222			46	
C(m) (vph)	1052	890		217			186	
v/c	0.05	0.04		1.02			0.25	
95% queue length	0.15	0.12		9.44			0.94	
Control Delay	8.6	9.2		114.3			30.6	
LOS	A	A		F			D	
Approach Delay				114.3			30.6	
Approach LOS				F			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: APRIL 2010
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB2 (WITH IMPROVEMENTS)
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	21	284	119	223	473	9
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	23	315	132	247	525	10
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14	0	25	17	0	39
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	15	0	27	18	0	43
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR			LTR	
v (vph)	23	247		42			61	
C(m) (vph)	1018	1098		288			309	
v/c	0.02	0.22		0.15			0.20	
95% queue length	0.07	0.86		0.50			0.72	
Control Delay	8.6	9.2		19.6			19.5	
LOS	A	A		C			C	
Approach Delay				19.6			19.5	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: APRIL 2010
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB2 (WITH IMPROVEMENTS)
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	46	570	53	30	428	20
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	51	633	58	33	475	22
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71	0	130	13	0	29
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	0	144	14	0	32
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR			LTR	
v (vph)	51	33		222			46	
C(m) (vph)	1052	890		339			318	
v/c	0.05	0.04		0.65			0.14	
95% queue length	0.15	0.12		4.38			0.50	
Control Delay	8.6	9.2		33.7			18.2	
LOS	A	A		D			C	
Approach Delay				33.7			18.2	
Approach LOS				D			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: APRIL 2010
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & SITE ACCESS
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB7
East/West Street: SITE ACCESS DRIVEWAY
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	17	292			683	7
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	18	324			758	7
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				11		13
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				12		14
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	18						26	
C(m) (vph)	835						264	
v/c	0.02						0.10	
95% queue length	0.07						0.32	
Control Delay	9.4						20.1	
LOS	A						C	
Approach Delay							20.1	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: APRIL 2010
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & SITE ACCESS
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB7
East/West Street: SITE ACCESS DRIVEWAY
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	60	641			412	25
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	66	712			457	27
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				39		46
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				43		51
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes					0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

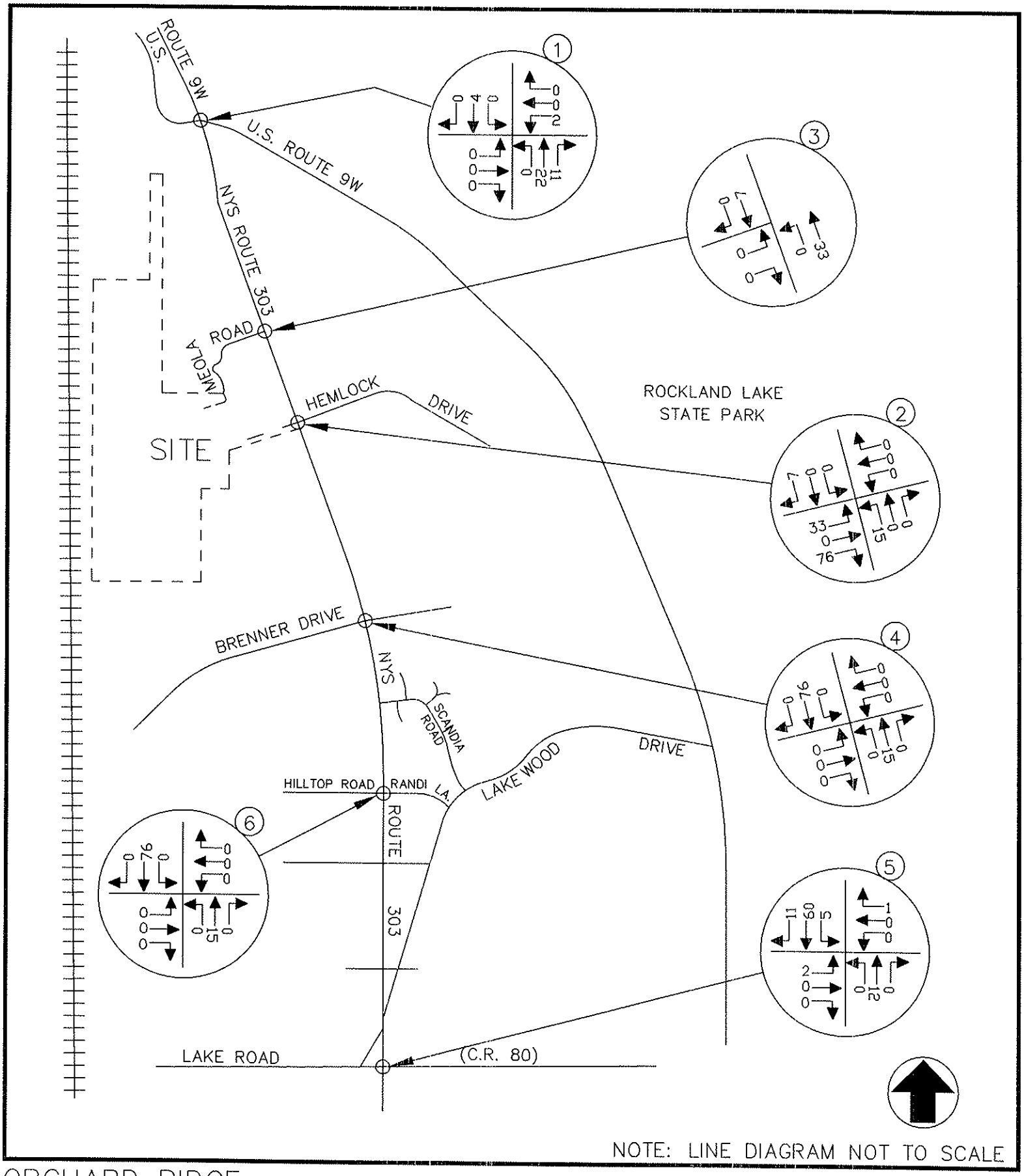
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	66						94	
C(m) (vph)	1063						237	
v/c	0.06						0.40	
95% queue length	0.20						1.79	
Control Delay	8.6						29.8	
LOS	A						D	
Approach Delay							29.8	
Approach LOS							D	

Appendix F

SYNCHRO Analyses
(copies available upon request)

APPENDIX "G"

SENSITIVITY ANALYSIS WITH TOWNHOUSE TRIP RATES



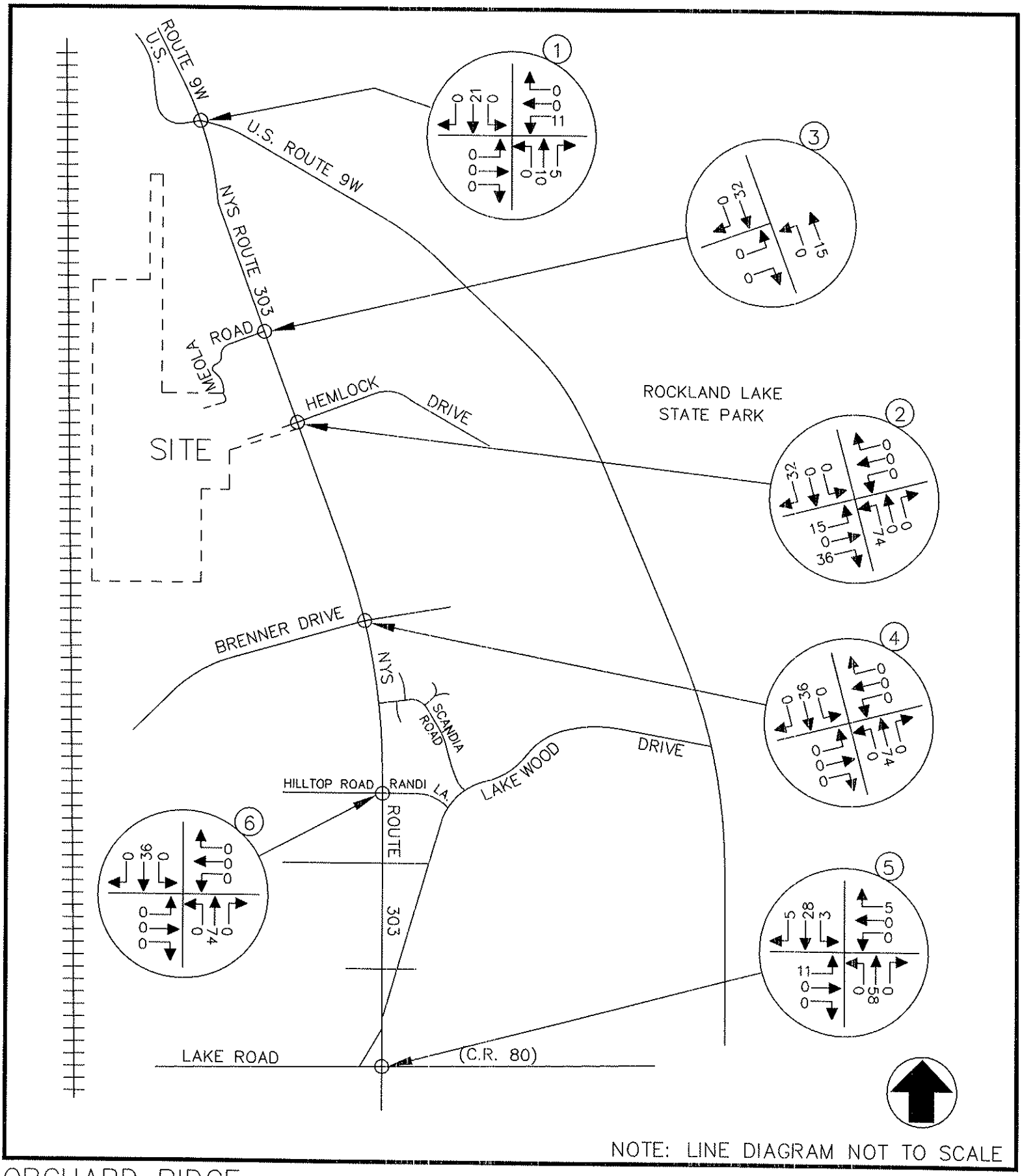
ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR
(SENSITIVITY ANALYSIS W/TOWNHOUSE RATES)

PROJECT NO. 1560 DATE: JULY 2010

FIG. NO. 12



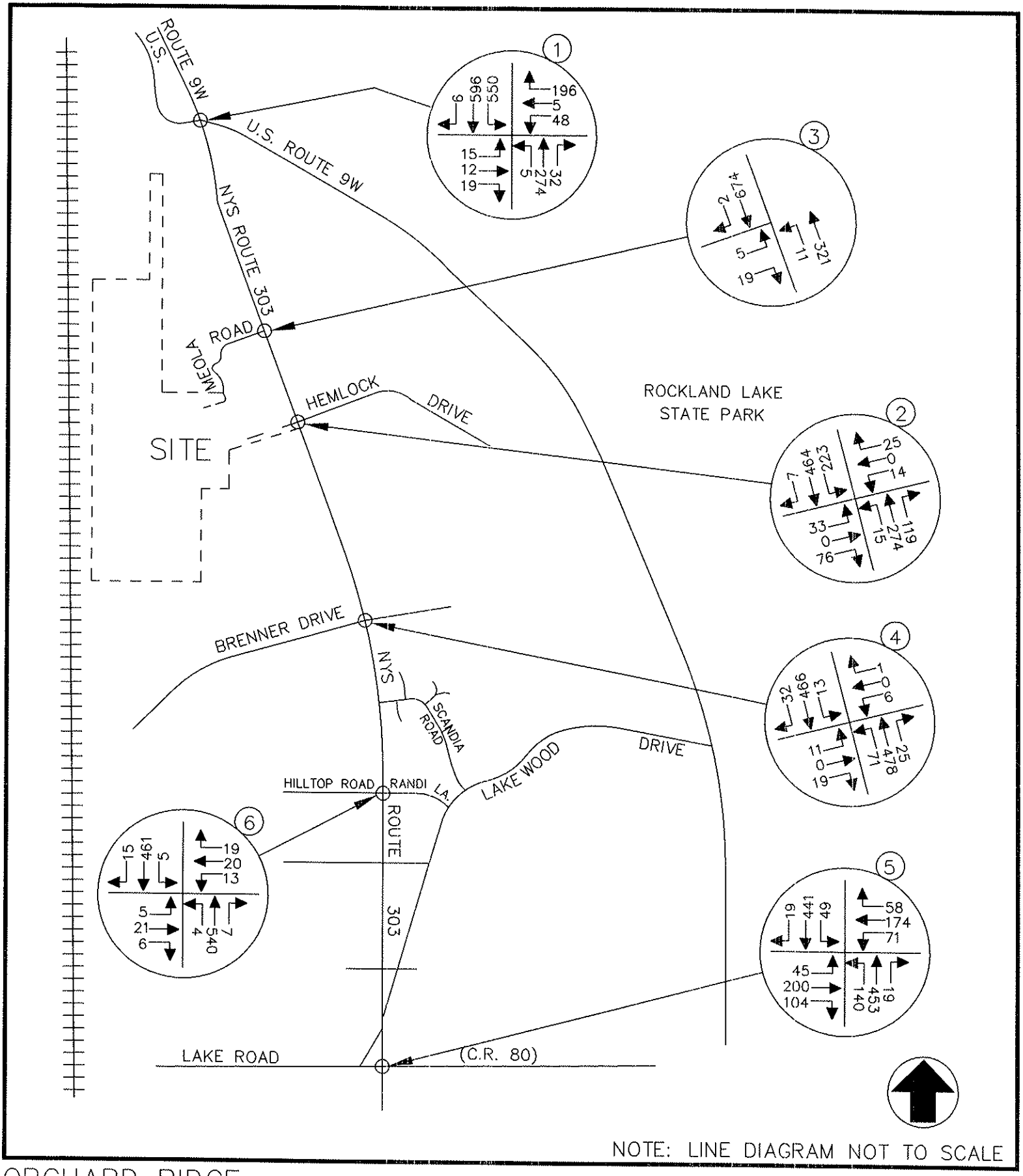
ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR
(SENSITIVITY ANALYSIS W/TOWNHOUSE RATES)

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

PROJECT NO. 1560 DATE: JULY 2010

FIG. NO. 13



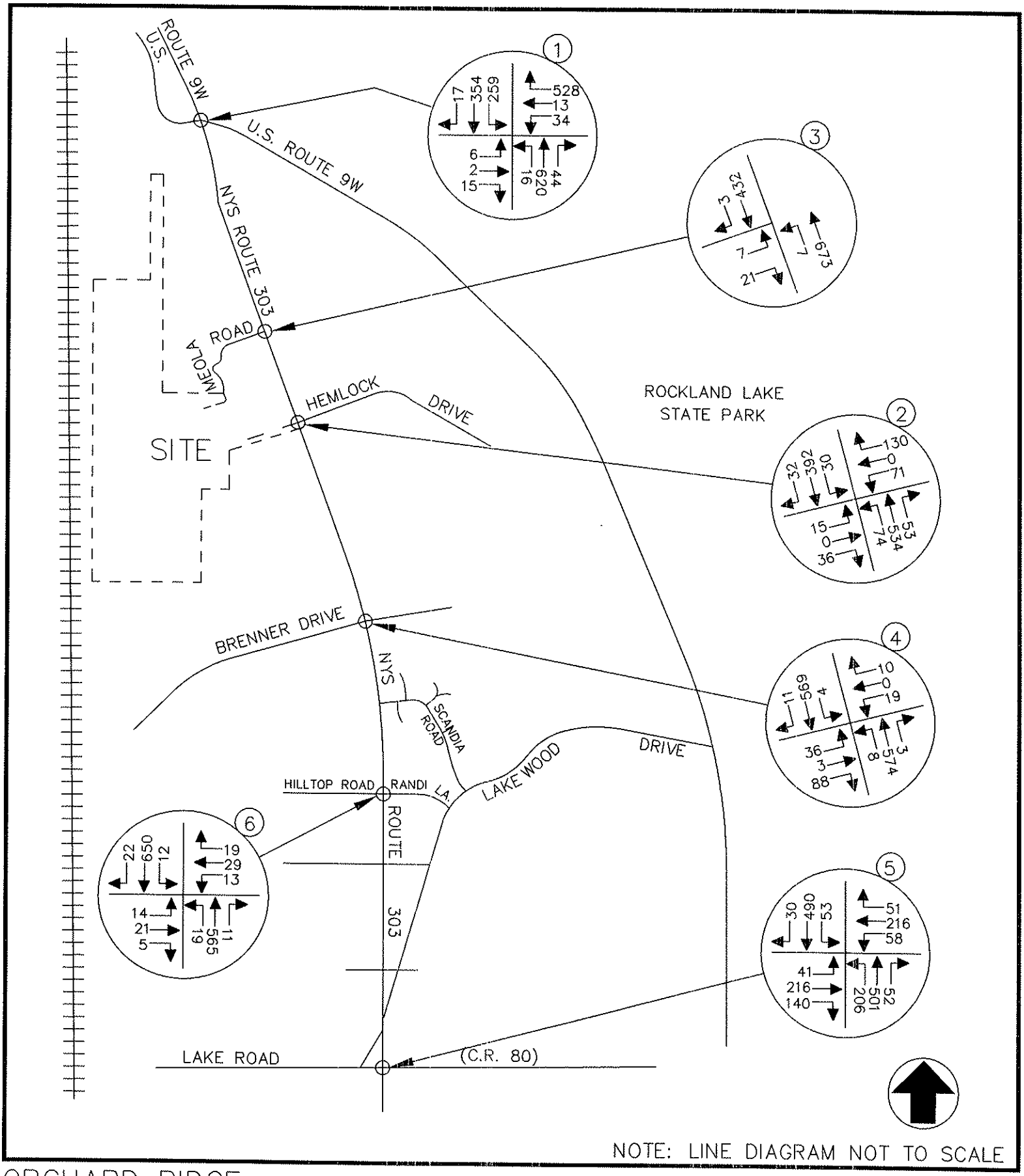
ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

2012 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR
(SENSITIVITY ANALYSIS W/TOWNHOUSE RATES)

PROJECT NO. 1560 DATE: JULY 2010

FIG. NO. 14



NOTE: LINE DIAGRAM NOT TO SCALE

ORCHARD RIDGE
TOWN OF CLARKSTOWN, NEW YORK

JOHN COLLINS ENGINEERS, P.C.
HAWTHORNE , NEW YORK

2012 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR
(SENSITIVITY ANALYSIS W/TOWNHOUSE RATES)

PROJECT NO. 1560 DATE: JULY 2010

FIG. NO. 15

TABLE NO. 1-SA

HOURLY TRIP GENERATION RATES (HTGR) AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES (SENSITIVITY ANALYSIS WITH TOWNHOUSE TRIP RATES)

ORCHARD RIDGE CLARKSTOWN, NY	ENTRY		EXIT	
	HTGR*	VOLUME	HTGR*	VOLUME
TOWNHOUSE (320 DWELLING UNITS)				
PEAK AM HOUR	0.07	22	0.34	109
PEAK PM HOUR	0.33	105	0.16	51

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 8TH EDITION, 2008. ITE LAND USE CODE - 230 - TOWNHOUSE.

TABLE NO. 2-SA

LEVEL OF SERVICE SUMMARY TABLE
(SENSITIVITY ANALYSIS WITH TOWNHOUSE TRIP RATES)

					2009 EXISTING				2012 NO-BUILD				2012 BUILD				WITH TOWNHOUSE RATES ONLY 2012 BUILD			
					AM		PM		AM		PM		AM		PM		AM		PM	
					DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C	DELAY	V/C
1	N.Y.S. ROUTE 303/U.S. ROUTE 9W &	**SIGNALIZED**																		
	U.S. ROUTE 9W/HIDDEN VALLEY	NB	L		A[6.6]	0.01	A[4.5]	0.03	A[7.9]	0.02	A[4.6]	0.03	A[8.0]	0.02	A[4.7]	0.03	A[8.0]	0.02	A[4.8]	0.03
			TR		B[13.1]	0.34	B[19.0]	0.74	B[13.4]	0.39	C[27.0]	0.87	B[13.6]	0.41	C[28.8]	0.89	B[13.8]	0.44	C[29.3]	0.89
		SB	L		C[19.5]	0.83	B[10.5]	0.60	C[31.1]	0.91	C[23.0]	0.77	D[35.5]	0.93	C[25.8]	0.78	D[41.0]	0.96	C[26.5]	0.79
			TR		B[18.9]	0.71	B[13.2]	0.42	C[24.0]	0.82	B[13.6]	0.47	C[24.5]	0.83	B[13.7]	0.49	C[24.3]	0.83	B[13.8]	0.50
		EB	LTR		C[23.4]	0.16	C[23.7]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09	C[23.4]	0.17	C[23.8]	0.09
		WB	LT		C[23.2]	0.13	C[23.9]	0.11	C[23.8]	0.21	C[24.1]	0.14	C[23.9]	0.23	C[24.3]	0.17	C[23.9]	0.22	C[24.4]	0.19
			R		B[14.1]	0.32	C[34.6]	0.89	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95	B[14.3]	0.34	D[43.7]	0.95
		OVERALL			B[17.8]	-	C[23.7]	-	C[23.4]	-	C[28.4]	-	C[24.9]	-	C[29.3]	-	C[26.5]	-	C[29.5]	-
2	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**																		
	HEMLOCK DRIVE/SITE ACCESS	NB	LTR		-	-	-	-	-	-	-	-	A[8.6]	0.02	A[8.5]	0.05	A[8.6]	0.02	A[8.6]	0.08
		SB	LTR		A[8.9]	0.20	A[8.7]	0.03	A[9.2]	0.22	A[9.1]	0.04	A[9.2]	0.22	A[9.1]	0.04	A[9.2]	0.22	A[9.1]	0.04
		EB	LTR		C[18.0]	0.13	C[19.9]	0.47	C[21.7]	0.16	D[26.8]	0.58	D[31.8]	0.31	D[26.8]	0.22	E[48.2]	0.61	D[30.2]	0.28
		WB	LTR		-	-	-	-	-	-	-	-	D[33.2]	0.25	F[81.8]	0.92	E[36.1]	0.27	F[115.9]	1.03
	WITH IMPROVEMENTS	NB	LTR		-	-	-	-	-	-	-	-	A[8.6]	0.02	A[8.5]	0.05	A[8.6]	0.02	A[8.6]	0.08
		SB	LTR		-	-	-	-	A[9.2]	0.22	A[9.1]	0.04	A[9.2]	0.22	A[9.1]	0.04	A[9.2]	0.22	A[9.1]	0.04
		EB	LTR		-	-	-	-	C[15.5]	0.11	C[19.4]	0.47	C[19.2]	0.19	C[17.1]	0.13	C[23.2]	0.38	C[18.2]	0.17
		WB	LTR		-	-	-	-	-	-	-	-	C[19.3]	0.14	D[29.7]	0.61	C[20.1]	0.15	D[33.7]	0.65
3	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**																		
	MEOLA ROAD	NB	LT		A[8.9]	0.01	A[8.2]	0.01	A[9.3]	0.01	A[8.3]	0.01	A[9.3]	0.01	A[8.4]	0.01	A[9.3]	0.01	A[8.4]	0.01
		EB	LR		B[14.7]	0.06	B[13.8]	0.07	C[16.6]	0.08	C[15.2]	0.08	C[16.9]	0.08	C[15.6]	0.08	C[17.0]	0.08	C[15.9]	0.08
4	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**																		
	BRENNER DRIVE/	NB	LTR		A[8.4]	0.07	A[8.3]	0.01	A[8.6]	0.07	A[8.8]	0.01	A[8.7]	0.08	A[8.9]	0.01	A[8.9]	0.08	A[8.9]	0.01
	INTERCOS DRIVEWAY	SB	LTR		A[8.2]	0.01	A[8.4]	0.00	A[8.6]	0.01	A[8.6]	0.00	A[8.7]	0.01	A[8.8]	0.00	A[8.7]	0.01	A[8.9]	0.00
		EB	LTR		C[15.6]	0.08	C[18.7]	0.34	C[18.8]	0.11	D[26.8]	0.46	C[20.5]	0.12	D[31.3]	0.51	C[21.6]	0.13	D[33.3]	0.53
		WB	LTR		C[19.5]	0.03	C[20.7]	0.12	C[24.7]	0.04	D[27.6]	0.17	D[26.7]	0.04	D[31.4]	0.19	D[27.9]	0.04	D[33.3]	0.20
5	N.Y.S. ROUTE 303 &	**SIGNALIZED**																		
	LAKE ROAD	NB	L		B[14.0]	0.34	B[17.2]	0.51	B[15.0]	0.38	C[22.3]	0.63	B[15.7]	0.40	C[23.6]	0.65	B[16.4]	0.41	C[23.8]	0.66
			TR		B[13.5]	0.45	B[15.3]	0.55	B[15.5]	0.57	B[16.6]	0.61	B[15.9]	0.59	B[17.8]	0.66	B[15.8]	0.58	B[18.6]	0.69
		SB	LTR		C[25.0]	0.58	C[26.1]	0.62	C[27.4]	0.66	C[33.2]	0.81	C[29.8]	0.73	C[37.1]	0.86	C[32.6]	0.78	D[38.5]	0.87
		EB	LT		C[26.3]	0.45	C[26.9]	0.48	C[28.6]	0.54	C[27.9]	0.52	C[29.0]	0.55	C[28.8]	0.55	C[28.9]	0.55	C[29.5]	0.57
			R		C[22.7]	0.23	C[23.9]	0.31	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33	C[23.0]	0.24	C[24.2]	0.33
		WB	LTR		C[31.6]	0.63	C[31.4]	0.64	D[38.0]	0.75	C[34.7]	0.71	D[38.4]	0.76	C[35.8]	0.73	D[38.4]	0.76	D[36.7]	0.75
		OVERALL			C[22.4]	-	C[23.1]	-	C[24.9]	-	C[26.8]	-	C[25.8]	-	C[28.5]	-	C[26.8]	-	C[29.3]	-
6	N.Y.S. ROUTE 303 &	**UNSIGNALIZED**																		
	RANDI LANE/HILLTOP ROAD	NB	LTR		A[8.2]	0.00	A[8.7]	0.02	A[8.3]	0.00	A[9.2]	0.02	A[8.4]	0.00	A[9.3]	0.02	A[8.5]	0.00	A[9.3]	0.02
		SB	LTR		A[8.3]	0.00	A[8.5]	0.01	A[8.7]	0.01	A[8.7]	0.01	A[8.8]	0.01	A[8.8]	0.01	A[8.8]	0.01	A[8.9]	0.01
		EB	LTR		C[21.9]	0.13	D[27.6]	0.20	D[29.3]	0.19	E[41.0]	0.30	D[33.0]	0.21	E[49.2]	0.35	E[35.4]	0.22	E[49.8]	0.35
		WB	LTR		C[21.3]	0.20	D[25.6]	0.27	D[29.9]	0.28	E[38.1]	0.39	D[34.0]	0.32	E[45.7]	0.44	E[36.5]	0.34	E[49.0]	0.46

NOTES:

THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH AS WELL AS FOR THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTION.

JOB NO. 1560

7/27/2010

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: JULY 2010
Period: PEAK AM HOUR
Project ID: 1560AMB1 (SENSITIVITY ANALYSIS)
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES
N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	15	12	19	48	5	196	5	274	32	550	596	6
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	14.0						10.0	31.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	304	1521	0.17	0.20	23.4	C	23.4	C
Westbound								
LT	266	1331	0.22	0.20	23.9	C	16.3	B
R	643	1553	0.34	0.41	14.3	B		
Northbound								
L	379	1702	0.02	0.66	8.0	A		
TR	781	1763	0.44	0.44	13.8	B	13.7	B
Southbound								
L	639	1736	0.96	0.66	41.0	D		
TR	808	1825	0.83	0.44	24.3	C	32.3	C

Intersection Delay = 26.5 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: JULY 2010
Period: PEAK PM HOUR
Project ID: 1560PMB1 (SENSITIVITY ANALYSIS)
E/W St: U.S. ROUTE 9W

Inter.: NYS ROUTE 303 & U.S. ROUTE 9W
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES
N/S St: NYS ROUTE 303/U.S. ROUTE 9W

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	1	1	1	0	1	1	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	6	2	15	34	13	528	16	620	44	259	354	17
Lane Width		12.0			12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0			13			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	13.0						10.0	32.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	282	1516	0.09	0.19	23.8	C	23.8	C
Westbound								
LT	269	1448	0.19	0.19	24.4	C	42.1	D
R	621	1553	0.95	0.40	43.7	D		
Northbound								
L	586	1702	0.03	0.67	4.8	A		
TR	813	1779	0.89	0.46	29.3	C	28.7	C
Southbound								
L	365	1736	0.79	0.67	26.5	C		
TR	830	1815	0.50	0.46	13.8	B	19.0	B

Intersection Delay = 29.5 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB2 (SENSITIVITY ANALYSIS)
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	15	274	119	223	464	7
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	16	304	132	247	515	7
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14	0	25	33	0	76
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	15	0	27	36	0	84
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	16	247		42			120	
C(m) (vph)	1029	1108		157			197	
v/c	0.02	0.22		0.27			0.61	
95% queue length	0.05	0.85		1.02			3.44	
Control Delay	8.6	9.2		36.1			48.2	
LOS	A	A		E			E	
Approach Delay				36.1			48.2	
Approach LOS				E			E	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB2 (SENSITIVITY ANALYSIS)
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	74	534	53	30	392	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	82	593	58	33	435	35
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71	0	130	15	0	36
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	0	144	16	0	40
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	82	33		222			56	
C(m) (vph)	1076	921		216			198	
v/c	0.08	0.04		1.03			0.28	
95% queue length	0.25	0.11		9.51			1.11	
Control Delay	8.6	9.1		115.9			30.2	
LOS	A	A		F			D	
Approach Delay				115.9			30.2	
Approach LOS				F			D	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB2 (WITH IMPROVEMENTS) (SENSITIVITY ANALYSIS)
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	15	274	119	223	464	7
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	16	304	132	247	515	7
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14	0	25	33	0	76
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	15	0	27	36	0	84
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR			LTR	
v (vph)	16	247		42			120	
C(m) (vph)	1029	1108		280			316	
v/c	0.02	0.22		0.15			0.38	
95% queue length	0.05	0.85		0.52			1.72	
Control Delay	8.6	9.2		20.1			23.2	
LOS	A	A		C			C	
Approach Delay				20.1			23.2	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & SITE/HEMLOCK DR
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB2 (WITH IMPROVEMENTS) (SENSITIVITY ANALYSIS)
East/West Street: SITE ACCESS/HEMLOCK DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	74	534	53	30	392	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	82	593	58	33	435	35
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	TWLTL			/ 1		
RT Channelized?						
Lanes	1	1	0	1	1	0
Configuration	L	TR		L	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	71	0	130	15	0	36
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	0	144	16	0	40
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	L		LTR			LTR	
v (vph)	82	33		222			56	
C(m) (vph)	1076	921		339			329	
v/c	0.08	0.04		0.65			0.17	
95% queue length	0.25	0.11		4.38			0.60	
Control Delay	8.6	9.1		33.7			18.2	
LOS	A	A		D			C	
Approach Delay				33.7			18.2	
Approach LOS				D			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB3 (SENSITIVITY ANALYSIS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	11	321			674	2
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	12	356			748	2
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				5		19
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				5		21
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	12						26	
C(m) (vph)	846						326	
v/c	0.01						0.08	
95% queue length	0.04						0.26	
Control Delay	9.3						17.0	
LOS	A						C	
Approach Delay							17.0	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & MEOLA ROAD
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB3 (SENSITIVITY ANALYSIS)
East/West Street: MEOLA ROAD
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	7	673			432	3
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	7	747			480	3
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				7		21
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				7		23
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			2	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	7						30	
C(m) (vph)	1064						359	
v/c	0.01						0.08	
95% queue length	0.02						0.27	
Control Delay	8.4						15.9	
LOS	A						C	
Approach Delay							15.9	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK AM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB4 (SENSITIVITY ANALYSIS)
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	71	478	25	13	466	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	531	27	14	517	35
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	1	11	0	19
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	6	0	1	12	0	21
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	78	14		7			33	
C(m) (vph)	1003	998		164			250	
v/c	0.08	0.01		0.04			0.13	
95% queue length	0.25	0.04		0.13			0.45	
Control Delay	8.9	8.7		27.9			21.6	
LOS	A	A		D			C	
Approach Delay				27.9			21.6	
Approach LOS				D			C	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK PM HOUR
Intersection: NYS ROUTE 303 & BRENNER DRIVE
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB4 (SENSITIVITY ANALYSIS)
East/West Street: BRENNER DRIVE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	8	574	3	4	569	11
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	8	637	3	4	632	12
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	19	0	10	36	3	88
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	0	11	40	3	97
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	8	4		32			140	
C(m) (vph)	927	930		159			263	
v/c	0.01	0.00		0.20			0.53	
95% queue length	0.03	0.01		0.72			2.88	
Control Delay	8.9	8.9		33.3			33.3	
LOS	A	A		D			D	
Approach Delay				33.3			33.3	
Approach LOS				D			D	

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: JULY 2010
Period: PEAK AM HOUR
Project ID: 1560AMB5 (SENSITIVITY ANALYSIS)
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES
N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	45	200	104	71	174	58	140	453	19	49	441	19
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	P	P		
Thru	P					Thru	P	P		
Right	P					Right	P	P		
Peds						Peds				
WB Left	P				SB	Left		P		
Thru	P					Thru		P		
Right	P					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						10.0	35.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	494	1483	0.55	0.33	28.9	C	27.1	C
R	479	1436	0.24	0.33	23.0	C		
Westbound								
LTR	442	1327	0.76	0.33	38.4	D	38.4	D
Northbound								
L	378	1555	0.41	0.56	16.4	B		
TR	904	1627	0.58	0.56	15.8	B	15.9	B
Southbound								
LTR	720	1852	0.78	0.39	32.6	C	32.6	C

Intersection Delay = 26.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.3

Analyst: R.H.
Agency: JCE
Date: JULY 2010
Period: PEAK PM HOUR
Project ID: 1560PMB5 (SENSITIVITY ANALYSIS)
E/W St: LAKE ROAD

Inter.: NYS ROUTE 303 & LAKE ROAD
Area Type: All other areas
Jurisd:
Year : 2012 BUILD TRAFFIC VOLUMES
N/S St: NYS ROUTE 303

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	1	1	0	0	1	0
LGConfig		LT	R		LTR		L	TR			LTR	
Volume	41	216	140	58	216	51	206	501	52	53	490	30
Lane Width		10.0	10.0		16.0		9.0	9.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P	P		
	Thru	P					Thru	P	P		
	Right	P					Right	P	P		
	Peds						Peds				
WB	Left	P				SB	Left		P		
	Thru	P					Thru		P		
	Right	P					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						9.0	36.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						2.0	2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	499	1496	0.57	0.33	29.5	C	27.6	C
R	479	1436	0.33	0.33	24.2	C		
Westbound								
LTR	484	1453	0.75	0.33	36.7	D	36.7	D
Northbound								
L	348	1555	0.66	0.56	23.8	C		
TR	897	1614	0.69	0.56	18.6	B	20.0+	C
Southbound								
LTR	729	1822	0.87	0.40	38.5	D	38.5	D

Intersection Delay = 29.3 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK AM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560AMB6 (SENSITIVITY ANALYSIS)
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	540	7	5	461	15
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	4	600	7	5	512	16
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	20	19	5	21	6
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	22	21	5	23	6
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	4	5		57			34	
C(m) (vph)	1024	957		170			152	
v/c	0.00	0.01		0.34			0.22	
95% queue length	0.01	0.02		1.38			0.82	
Control Delay	8.5	8.8		36.5			35.4	
LOS	A	A		E			E	
Approach Delay				36.5			35.4	
Approach LOS				E			E	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: R.H.
Agency/Co.: JCE
Date Performed: JULY 2010
Analysis Time Period: PEAK PM HOUR
Intersection: NYS RTE 303 & HILLTOP RD/RANDI
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2012 BUILD TRAFFIC VOLUMES
Project ID: 1560PMB6 (SENSITIVITY ANALYSIS)
East/West Street: HILLTOP ROAD/RANDI LANE
North/South Street: NYS ROUTE 303
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	19	565	11	12	650	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	627	12	13	722	24
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	29	19	14	21	5
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	32	21	15	23	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		5			5	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	21	13		67			43	
C(m) (vph)	849	931		146			122	
v/c	0.02	0.01		0.46			0.35	
95% queue length	0.08	0.04		2.10			1.43	
Control Delay	9.3	8.9		49.0			49.8	
LOS	A	A		E			E	
Approach Delay				49.0			49.8	
Approach LOS				E			E	