APPENDIX K

TRAFFIC IMPACT STUDY

Nelson & Pope

April 2011

NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

TRAFFIC IMPACT STUDY

NEW FRONTIER

North Amityville

Town of Babylon

April 2011

N & P JOB NO. 09084

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TABLE OF CONTENTS

PURPOSE OF REPORT 1

STUDY METHODOLOGY 4

EXISTING CONDITION 6

Land Use 6
Roadway Conditions 6
Traffic Volume Data 7

ACCIDENT HISTORY 12

LEVEL OF SERVICE DESCRIPTION 15

EXISTING CONDITION ANALYSIS 16

NO BUILD CONDITION 18

Traffic Growth 18
Other Planned Projects 18

PROPOSED DEVELOPMENT 23

Site Access 23
Trip Generation 23
Existing Site Trips 25
Trip Distribution and Assignment 25

TRAFFIC IMPACT ANALYSIS 35

CONCLUSION 38

FIGURES

Figure 1: Area Map 2

Figure 2: Location Map 3

Figure 3: Existing AM Peak Hour Traffic Volumes 9

Figure 4: Existing PM Peak Hour Traffic Volumes 10

Figure 5: Existing Saturday Peak Hour Traffic Volumes 11

Figure 6: 2014 No Build AM Peak Hour Traffic Volumes 20

Figure 7: 2014 No Build PM Peak Hour Traffic Volumes 21

Figure 8: 2014 No Build Saturday Midday Peak Hour Traffic Volumes 22

Figure 9: Site Generated Trip Distribution (Retail) 27

Figure 10: Site Generated Trip Distribution (Residential) 28

Figure 11: Site Generated AM Peak Hour Traffic Volumes 29

Figure 12: Site Generated PM Peak Hour Traffic Volumes 30
Figure 13: Site Generated Saturday Peak Hour Traffic Volumes 31
Figure 14: Build AM Peak Hour Traffic Volumes 32
Figure 15: Build PM Peak Hour Traffic Volumes 33
Figure 16: Build Saturday Peak Hour Traffic Volumes 34

TABLES

Table 1: Intersection Geometry 7
Table 2: Accident Summary by Severity 12
Table 3: Accident Summary by Type of Collision 13
Table 4: Existing Condition LOS Summary 16
Table 5: Other Planned Projects - Site Generated Trips 19
Table 6: Trip Generation (Proposed Project) 24
Table 7: Trip Generation (Existing Use) 25
Table 8: Level of Service Summary for Signalized Intersections 35
Table 9: Level of Service Summary for Signalized Intersections 35

APPENDIX

Appendix A: Existing Traffic Volume
Appendix B: Supplemental Traffic Volume Figures
Appendix C: Trip Generation
Appendix D: Level of Service Definitions
Appendix E: Capacity Analysis/Level of Service Worksheets & Summary Tables

PURPOSE OF REPORT

Nelson & Pope has investigated the potential traffic impacts associated with the proposed application to construct a mixed-use development "New Frontier" to be located on the east side of New York State Route 110 between Brefni Street and Nathalie Avenue in North Amityville, Town of Babylon, Suffolk County, New York. The proposed mixed-use development is comprised of a residential and a commercial component. The commercial portion of the development will contain 45,500 SF of retail space and the residential component will contain 500 apartments. The development will be located on parcels of land designated as District 100, Section 163, Block 01, Lots 54, 55, 56 & 57 and Section 164, Block 02, Lots 2, 5, 9, 10 & 25 on the Suffolk County Tax maps.

The site is currently occupied by a residential development (trailer park). Access to the existing development is currently provided via seven (7) driveways, one (1) signalized driveway opposite Ritter Avenue and six (6) unsignalized driveways on NYS Route 110. Access to the proposed development will be provided via eight (8) driveways. Two (2) driveways are proposed on NYS Route 110, one signalized (opposite Ritter Avenue) and one unsignalized (north of Ritter Avenue). The remaining unsignalized driveways will be located on Brefni Street, Nathalie Avenue and Geraldine Avenue (4 locations). The driveways on Geraldine Avenue will be located opposite Benburb Street, Glenmalure Street, The Boulevard & opposite the southern terminus of Geraldine Avenue.

This report summarizes the results of a detailed investigation of the traffic impacts of proposed development by reviewing the area's existing roadway characteristics and traffic conditions, estimating the vehicular volume and pattern that the proposed development will generate during peak hours, and analyzing the effect of the additional volume on the surrounding roadway network.

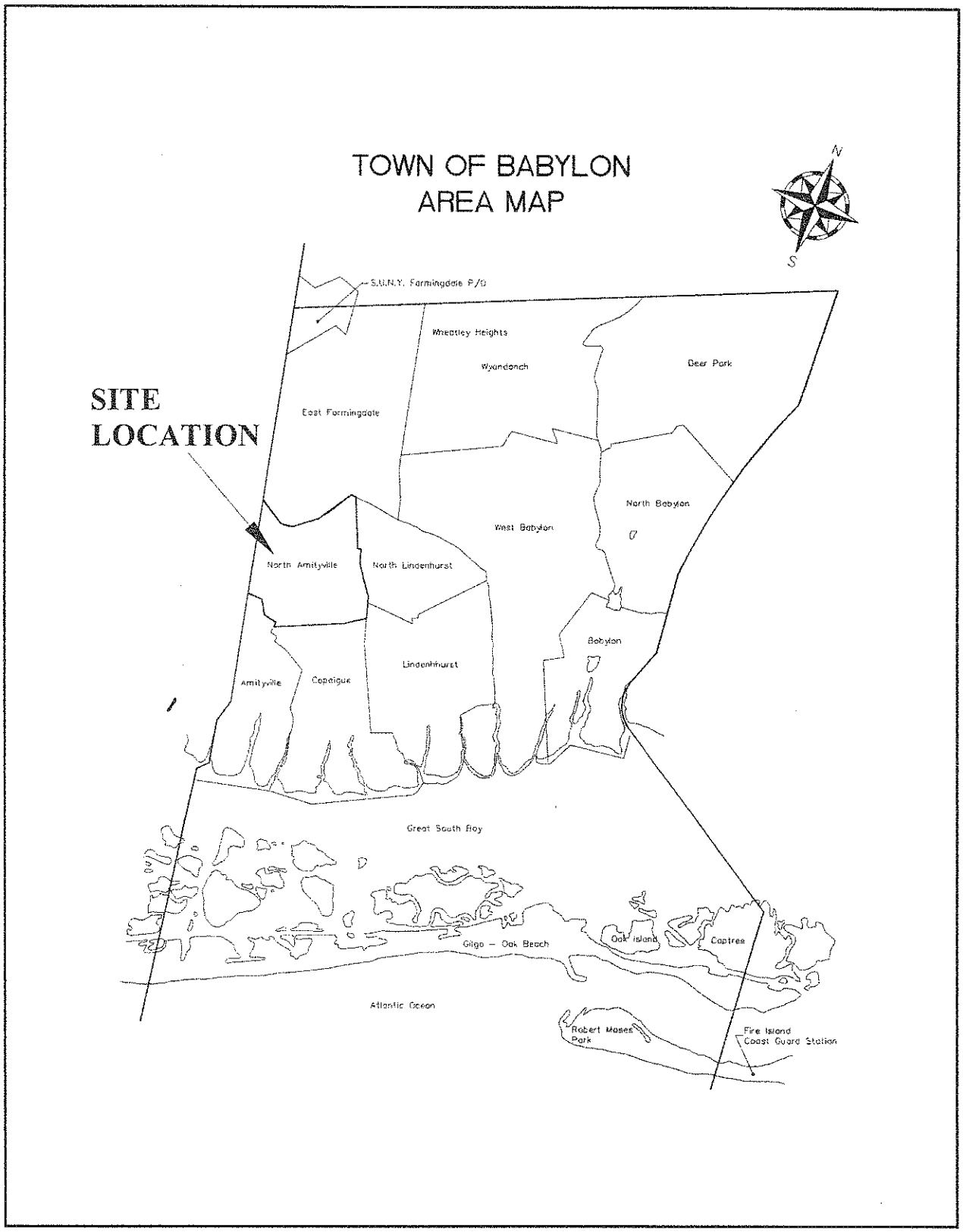
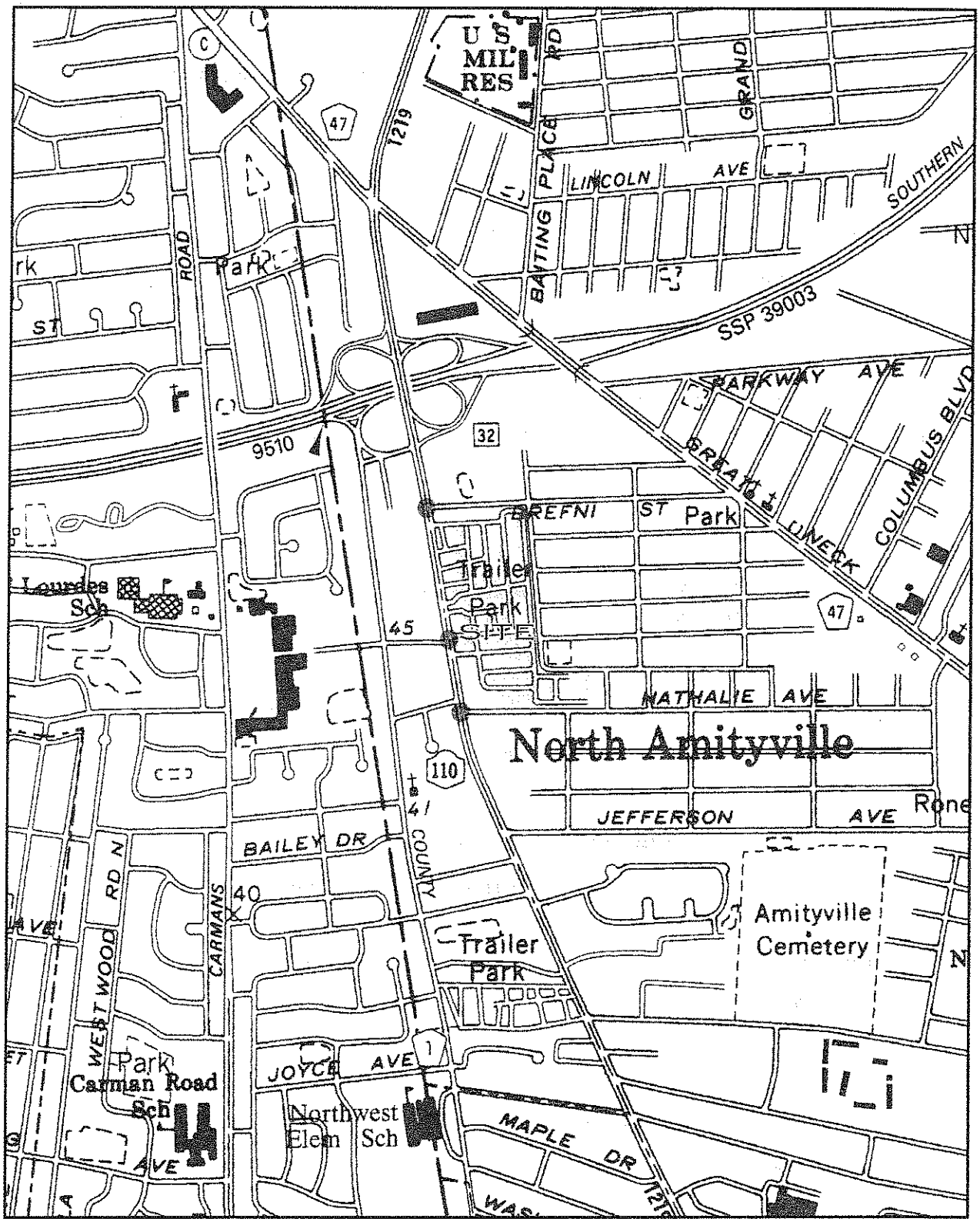


Figure 1: Area Map



SOURCE: USGS AMITYVILLE 1991

● STUDY INTERSECTIONS

Figure 2: Location Map

STUDY METHODOLOGY

The study assesses the traffic impacts associated with the proposed development and identifies appropriate mitigation, if necessary. In executing the scope of work, the following steps were undertaken.

- A detailed field inspection was conducted to obtain an inventory of existing roadway geometry, location/geometry of existing driveways and intersections along with signing, signal timings, phasing and cycle lengths.

- Turning movement volume counts were conducted during the weekday AM (7:00 AM to 9:00AM), weekday PM (4:00 PM to 6:00 PM) and Saturday midday (11:00 AM to 2:00 PM) peak periods at the following study intersections.

    - NYS Route 110 at Brefni Street
    - NYS Route 110 at Ritter Avenue/Cheyenne Trail
    - NYS Route 110 at Nathalie Avenue

- Traffic volume counts were also performed at the existing site driveways located on NYS Route 110 during the time periods outlined above.

- Hourly traffic volumes collected along NYS Route 110 in the Hamlet of North Amityville were obtained from the New York State Department of Transportation (NYSDOT).

- Accident data for the study intersections and roadways in the vicinity of the site was obtained from the NYSDOT.

- An Estimated Time of Completion (ETC) year of 2015 (5 years) is anticipated for this project and was utilized for No Build and Build conditions to determine the impacts that may be created by the construction of this project.

- The Town of Babylon Planning Department was contacted to obtain information on other planned projects in the nearby area that may affect the study intersections.

- An annual growth factor of 1.1% obtained form the NYSDOT LITP2000 Study was applied to the existing traffic volumes to estimate the increase in background traffic that would occur in 2015. These traffic volumes will be referred to as the Ambient No Build Volumes (No Build without Other Planned Projects).

- The 2015 No Build Condition volumes were developed by adding the other planned projects traffic to the 2015 Ambient No Build Volumes.

- Estimates of traffic that would be generated by the proposed development were prepared utilizing trip generation data published by the Institute of Transportation Engineers (ITE) publication, *Trip Generation, Eighth Edition*. The site-generated traffic volumes for the proposed project were assigned to the adjacent street system based upon the anticipated directional trip distribution forecasted by Nelson & Pope.

- The 2015 Build Condition volumes for the proposed project were developed by adding the proposed site generated traffic to the 2015 No Build Condition volumes. The traffic volumes associated with the existing use which currently occupies the project site were then subtracted.

- Capacity analyses were performed at the study intersections identified above for the 2010 Existing Condition, 2015 No Build Condition and 2015 Build Condition for the weekday AM, PM and Saturday midday peak hours.

- The results of the analyses for the 2015 No Build Conditions and the 2015 Build Conditions for the proposed project were compared to identify any significant impact associated specifically with the proposed development.

EXISTING CONDITION

Land Use

As previously discussed the proposed residential/commercial development "New Frontier" will be located on the east side of New York State Route 110 between Brefni Street and Nathalie Avenue on parcels District 100, Section 163, Block 01, Lots 54, 55, 56 & 57 and Section 164, Block 02, Lots 2, 5, 9, 10 & 25 on the Suffolk County Tax maps in the Hamlet of North Amityville, Town of Babylon, Suffolk County, New York.

Roadway Conditions

The following is a list of roadways included in the study network surrounding the site. The greatest portion of the traffic generated by the proposed development will be distributed throughout the network. The general descriptions listed here refer only to the sections of the roadways that exist near the site. Their cross-section may vary further away from the site. The Average Annual Daily Traffic (AADT) is listed for each roadway where available in the most recent NYDOT Local Highway Traffic Volumes Report.

NYS Route 110 (Broadway) is a north/south urban principal arterial under the jurisdiction of the NYSDOT. NYS Route 110 provides two northbound and two southbound travel lanes with exclusive turn lanes at key intersections. The section of NYS Route 110, between the Southern State Parkway and Sunrise Highway (NY 27) has an average annual daily traffic (AADT) volume of approximately 42,195 vehicles per day (source: NYSDOT Traffic Volume Report 2007). In the vicinity of the site, NYS Route 110 provides a primarily straight horizontal alignment and a flat vertical alignment. The posted speed limit is 40 miles per hour. The land uses along this roadway in the vicinity of the site are predominantly commercial.

Brefni Street is an east/west local roadway under the jurisdiction of the Town of Babylon, providing one travel lane in each direction. In the vicinity of the site, Brefni Street provides a primarily straight horizontal alignment and a flat vertical alignment. The posted speed limit is 30 miles per hour. The land uses on Brefni Street in the vicinity of the site consist of primarily residential uses.

Nathalie Avenue is an east/west local roadway under the jurisdiction of the Town of Babylon, providing one travel lane in each direction. In the vicinity of the site, Nathalie Avenue provides a primarily straight horizontal alignment and a flat vertical alignment. The posted speed limit is 30 miles per hour. The land uses on Nathalie Avenue in the vicinity of the site consist of primarily residential uses.

Table 1 summarizes the lane configurations and traffic controls at the study intersections.

Table 1: Intersection Geometry

Intersection	Approach	Lane Designation*	Traffic Control
NYS Route 110 at Brefni Street	EB	LTR	Traffic Signal
	WB	LTR	
	SB	L-T-TR	
	NB	L-T-TR	
NYS Route 110 at Ritter Avenue/Cheyenne Trail	EB	L-TR	Traffic Signal
	WB	LTR	
	NB	L-T-TR	
	SB	L-2T-R	
NYS Route 110 at Nathalie Avenue	WB	R	Stop Sign (Nathalie Ave.)
	NB	L-T-TR	
	SB	L-2T	

** L = Left turn lane; T = through lane; R = Right turn lane*

Traffic Volume Data

Weekday turning movement counts were collected at the study intersections on Wednesday June 16, 2010 during the AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak periods. The weekend turning movement counts were collected on Saturday, June 19, 2010 during the Saturday midday peak period (11:00 AM – 2:00 PM). The volume data was tabulated to identify the peak hours at each of the study intersections. In order to perform a conservative analysis the peak hour volumes at each intersection were utilized in this study.

A weekday seasonal adjustment factor of 1.110 for the month of June and a weekend seasonal adjustment factor of 0.947 for the month of June were obtained from NYSDOT. Applying the weekend normalization factor will increase the existing weekend traffic volumes, therefore the weekend counts were normalized to account for seasonal fluctuation. Applying the weekday

normalization factor to the weekday traffic count data would effectively reduce the existing peak hour volumes. Therefore to provide a conservative analysis, the weekday peak hour traffic volumes collected were not normalized. The existing intersection peak hour volumes are shown on Figures 3, 4, and 5 and detailed data are contained in Appendix A.

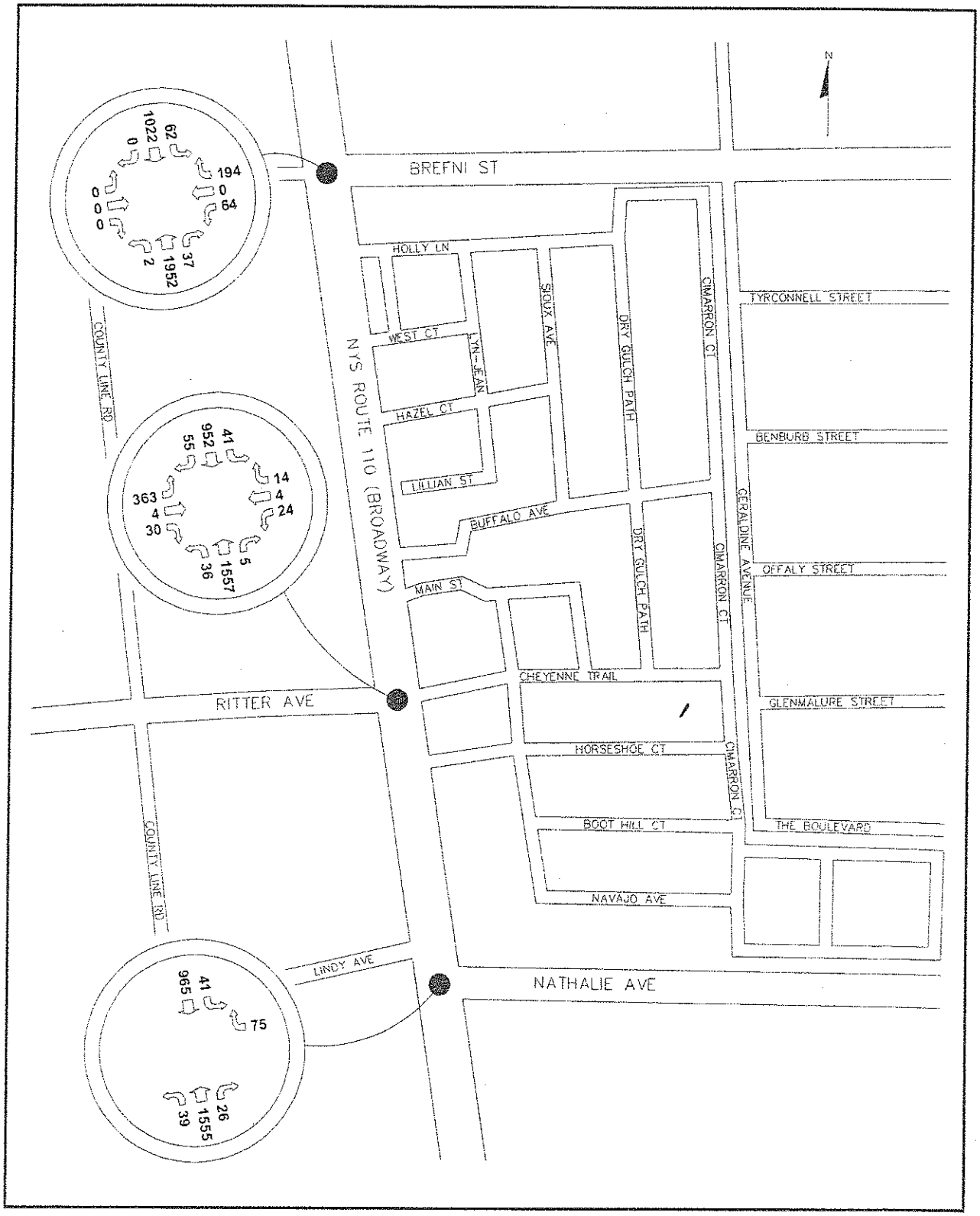


Figure 3: Existing AM Peak Hour Traffic Volumes

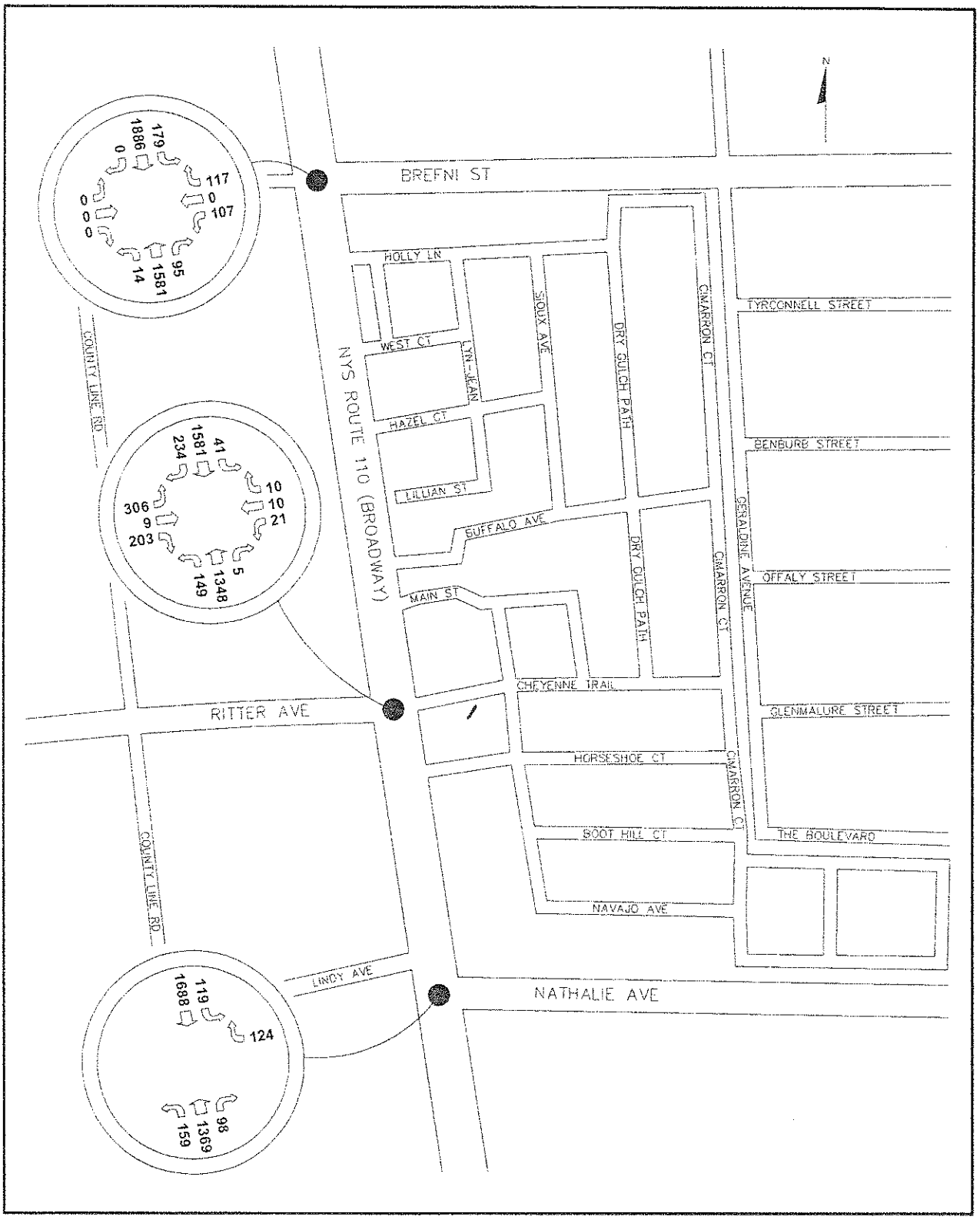


Figure 4: Existing PM Peak Hour Traffic Volumes

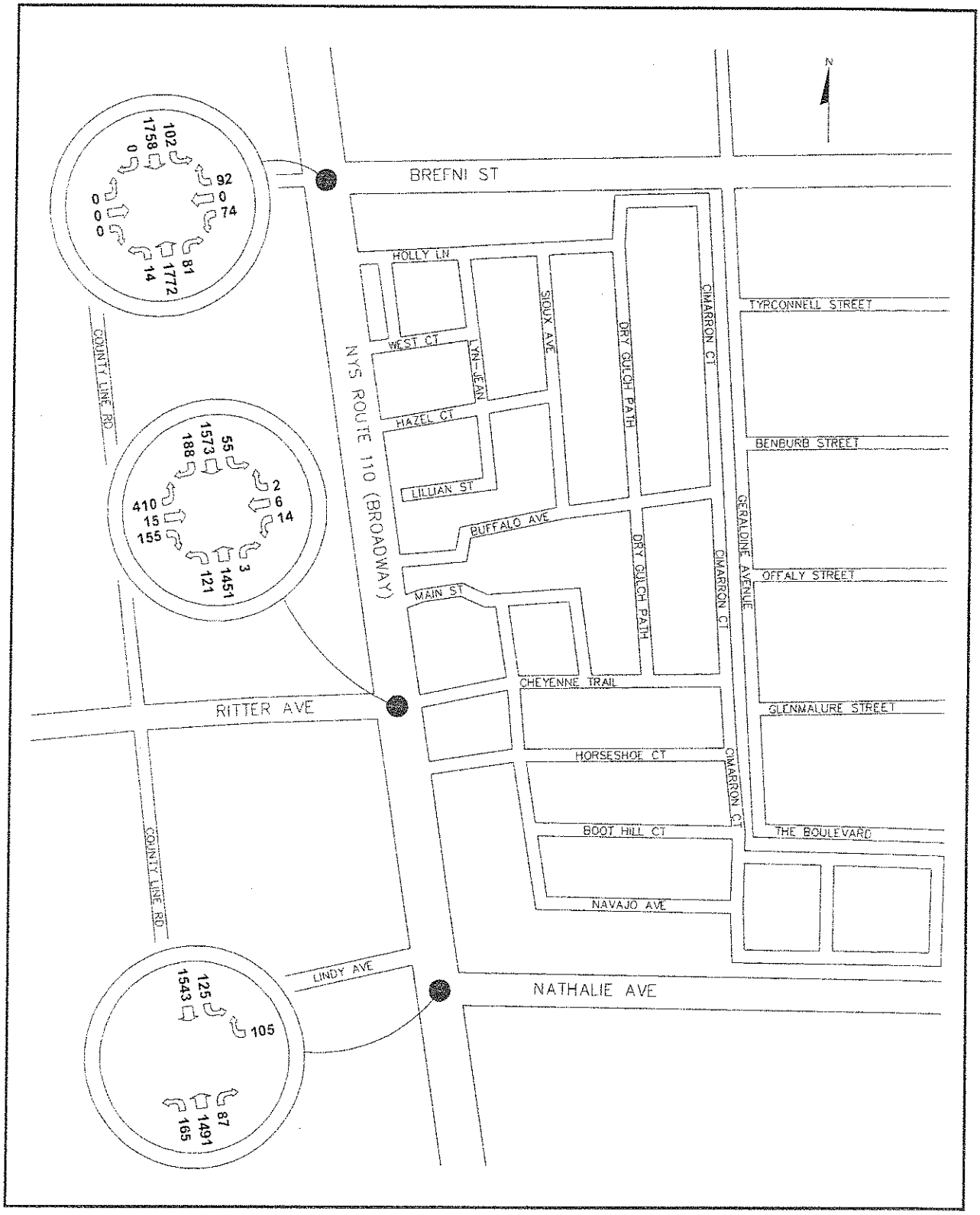


Figure 5: Existing Saturday Peak Hour Traffic Volumes

Accident History

Accident data for the sections of roadways and intersections in the vicinity of the site were obtained from the NYSDOT. The most recent data available was from March 2007 to February 2010 (3 year period). The data was reviewed and summarized in the following tables.

Table 2: Accident Summary by Severity

Location	Accident Severity			
	Fatality	Injury	Property Damage	TOTAL
Brefni Street at NYS 110	-	12	9	21
NYS 110 between Brefni Street and Holly Lane	-	2	4	6
Holly Lane at NYS 110	-	1	1	2
NYS 110 between Holly Lane and West Court	-	10	6	16
West Court at NYS 110	-	-	-	0
NYS 110 between West Court and Hazel Court	-	-	-	0
Hazel Court at NYS 110	-	-	-	0
NYS 110 between Hazel Court and Lillian Street	-	3	2	5
Lillian Street at NYS 110	-	1	2	3
NYS 110 between Lillian Street and Buffalo Avenue	-	5	4	9
Buffalo Avenue at NYS 110	-	-	-	0
NYS 110 between Buffalo Avenue and Main Street	-	-	1	1
Main Street at NYS 110	-	6	4	10
NYS 110 between Main Street and Cheyenne Street/Ritter Avenue	-	1	-	1
Cheyenne Street at NYS 110	-	-	-	0
Ritter Avenue at NYS 110	-	6	12	18
NYS 110 between Ritter Avenue/Cheyenne Street and Horseshoe Court	-	-	-	0
Horseshoe Court at NYS 110	-	-	-	0
NYS 110 between Horseshoe Court and Lindy Avenue	-	-	1	1
Lindy Avenue at NYS 110	-	3	1	4
NYS 110 between Lindy Avenue and Nathalie Avenue	-	2	1	3
Nathalie Avenue at NYS 110	-	7	4	11
Total	0 *0%*	59 *53%*	52 *47%*	111 *100%*

Table 3: Accident Summary by Type of Collision

Location	Accident Type										
	Right Angle	Rear End	Head On	Left Turn	Right Turn	Fixed Object	Ped/ Bicycle	Overtk	Parked Vehicle	Other/ Unknown	Total
Brefni Street at NYS 110	1	12	-	1	-	1	-	1	-	5	21
NYS 110 between Brefni Street and Holly Lane	-	2	-	1	1	-	-	1	-	1	6
Holly Lane at NYS 110	1	1	-	-	-	-	-	-	-	-	2
NYS 110 between Holly Lane and West Court	-	11	-	-	-	-	-	2	1	2	16
West Court at NYS 110	-	-	-	-	-	-	-	-	-	-	0
NYS 110 between West Court and Hazel Court	-	-	-	-	-	-	-	-	-	-	0
Hazel Court at NYS 110	-	-	-	-	-	-	-	-	-	-	0
NYS 110 between Hazel Court and Lillian Street	-	3	-	1	-	-	-	-	-	1	5
Lillian Street at NYS 110	-	-	-	1	-	-	-	-	1	1	3
NYS 110 between Lillian Street and Buffalo Avenue	1	2	-	2	1	-	-	1	-	2	9
Buffalo Avenue at NYS 110	-	-	-	-	-	-	-	-	-	-	0
NYS 110 between Buffalo Avenue and Main Street	-	1	-	-	-	-	-	-	-	-	1
Main Street at NYS 110	1	5	-	-	-	-	1	1	-	2	10
NYS 110 between Main Street and Cheyenne Street/Ritter Avenue	-	-	-	-	-	-	-	-	-	1	1
Cheyenne Street at NYS 110	-	-	-	-	-	-	-	-	-	-	0
Ritter Avenue at NYS 110	2	11	-	1	-	-	1	1	-	2	18
NYS 110 between Ritter Avenue/Cheyenne Street and Horseshoe Court	-	-	-	-	-	-	-	-	-	-	0
Horseshoe Court at NYS 110	-	-	-	-	-	-	-	-	-	-	0
NYS 110 between Horseshoe Court and Lindy Avenue	-	1	-	-	-	-	-	-	-	-	1
Lindy Avenue at NYS 110	-	-	-	1	-	1	-	-	-	2	4
NYS 110 between Lindy Avenue and Nathalie Avenue	2	1	-	-	-	-	-	-	-	-	3
Nathalie Avenue at NYS 110	1	1	-	3	1	1	1	1	-	2	11
Total	9 *8%*	51 *46%*	0 *0%*	11 *10%*	3 *3%*	3 *3%*	3 *3%*	8 *7%*	2 *1%*	21 *19%*	111 *100%*

Table 2 indicates a total of 111 accidents occurred at or in the vicinity of study intersections during the analysis period none of which resulted in a fatality. The majority of accidents, 53%,

involved injury. The location with the greatest number of accidents is the intersection of NYS Route 110 at Brefni Street with a total of 21 accidents.

A review of Table 3 indicates that a plurality of the accidents (46%) involved rear-end accidents. The majority of rear-end accidents (12) occurred at the intersection of Brefni Street at NYS Route 110. The intersection of Ritter Avenue/Cheyenne Trail at NYS Route 110 and the roadway segment of NYS Route 110 between Holly Lane and West Court both had eleven (11) rear end accidents.

LEVEL OF SERVICE DESCRIPTION

Level of service and capacity analyses for the study intersections were performed using Highway Capacity Software *(HCS+) Release 5.24,* prepared by the Federal Highway Administration. HCS+ is a series of computer programs strictly adhering to the guidelines set forth in *Highway Capacity Manual 2000 (HCM2000). HCM2000* contains procedures and methodologies for estimating capacity and determining level of service for many transportation facilities and modes including signalized and unsignalized intersections.

An intersection's level of service (LOS) describes its quality of traffic flow. It ranges in grade from LOS "A" (relatively congestion-free) to LOS "F" (very congested). The level of service definition, as well as the threshold values for each level, varies according to whether the intersection is controlled by a signal or a stop sign. A brief description is given here and a more detailed definition is found in Appendix D.

The capacity of a signalized intersection is evaluated in terms of the ratio of demand flow rate to capacity (V/C ratio). The capacity for each approach represents the maximum rate of flow (for the subject approach) which may pass through the intersection under prevailing traffic, roadway and signal conditions. The level of service of a signalized intersection is evaluated on the basis of average control-delay measured in seconds per vehicle (sec/veh). The control-delay is calculated using an equation that combines the stopped-delay with the vehicle acceleration/deceleration delay that is caused by the signalized intersection.

The flow at a two-way stop controlled (TWSC) intersection is gauged in terms of LOS and capacity. The capacity of a controlled leg is based on the distribution of gaps in the major street traffic, driver judgment in selecting a gap, and the follow-up time required by each driver in a queue. The LOS for a TWSC intersection is determined by the control-delay, and is defined for each movement rather than for the overall intersection. As with signalized intersections, HCS quantifies only the average control-delay, which is a function of the approach and the degree of saturation for any particular minor movement.

EXISTING CONDITION ANALYSIS

The 2010 existing peak hour traffic volumes depicted in Figures 3, 4 and 5 were used to determine the existing capacity and LOS of the study intersections. Table 4 contains the LOS summary for the Existing Condition calculated through the HCS software described previously. The detailed analysis worksheets are in Appendix E.

Table 4: Existing Condition LOS Summary

Location (Signalized Intersections)	AM Peak Hour		PM Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
NYS Route 110 at Brefni Street	C	23.0	C	26.9	B	16.8
NYS Route 110 at Ritter Avenue/Cheyenne Trail	D	45.8	C	32.3	D	45.8

Location (Unsignalized Intersections)	Approach	Movement	AM Peak Hour		PM Peak Hour		Saturday Midday Peak Hour	
			LOS	Delay	LOS	Delay	LOS	Delay
NYS Route 110 at Nathalie Avenue	NB	L	B	11.3	C	24.3	C	21.2
	SB	L	C	15.6	C	17.3	C	18.0
	WB	R	C	18.9	C	19.7	C	18.2

NYS Route 110 at Brefni Street

The signalized intersection of NYS Route 110 and Brefni Street currently operates at LOS C during the weekday AM and PM peak hours and at LOS B during the Saturday midday peak hour.

NYS Route 110 at Ritter Avenue/Cheyenne Trail

The signalized intersection of NYS Route 110 and Ritter Avenue/Cheyenne Trail currently operates at LOS D during the weekday AM and Saturday midday peak hours and at LOS C during the weekday PM peak hour.

NYS Route 110 at Nathalie Avenue

Nathalie Avenue intersects NYS Route 110 to form a stop-controlled T-intersection. Currently the stop-controlled westbound approach of Nathalie Avenue operates at LOS C during the weekday AM, PM and Saturday midday peak hours. The southbound left-turn movement on NYS Route 110 operates at LOS C during the weekday AM, PM and Saturday midday peak hours. The northbound left-turn movement on NYS Route 110 operates at LOS B during the weekday AM peak hour and at LOS C during the weekday PM and Saturday midday peak hours.

NO BUILD CONDITION

The No Build Condition represents traffic conditions expected at the study intersections in the future year 2015 without the construction of the proposed project.

Traffic Growth

A 1.1% annual growth factor was obtained from the NYSDOT. The existing traffic volumes were increased by this factor for a period of 5 years to project volumes to the year 2015.

Other Planned Projects

Other Planned Projects is a term that refers to developments located near the project site that are currently under construction or in the planning stages. Traffic generated by these projects may significantly influence the operations of the study intersections and would not be represented in the collected field data. The Town of Babylon was contacted to obtain information on any planned projects in the area. As advised by the Town, the following proposed planned projects were included:

- An existing 2,297 SF Taco Bell/Pizza Hut co-brand restaurant located on the northwest corner of NYS Route 110 and Ritter Avenue will be replaced by a new 3,135 SF Taco Bell/Pizza Hut restaurant (838 SF increase).
- A 7,500 SF medical office to be located on the west side of NYS Route 110 between Ritter Avenue and Lindy Avenue.
- A 24,000 SF office building to be located on the west side of NYS Route 110 opposite Brefni Street.

Trip generation estimates for the Taco Bell/Pizza Hut co-brand restaurant was taken from the traffic impact study prepared by Atlantic Traffic & Design Engineers, Inc. in May 2009. The trip generation estimates for the medical office and office building were prepared utilizing data contained in the Institute of Transportation Engineers' publication, *Trip Generation, Eighth Edition.* As shown in the table below, the combined trips attributed to the three (3) other planned projects will be 77 trips during the AM peak hour, 164 trips during the PM peak hour and 176

trips during the Saturday peak hour. The other planned project traffic was combined with the ambient growth volumes at each of the study intersections during each peak hour to develop the No Build volumes. The No Build condition volumes for the weekday AM, weekday PM and Saturday midday peak hours are illustrated in Figures 6, 7 and 8. Figures depicting the other planned project traffic volumes are located in Appendix B.

Table 5: Other Planned Projects - Site Generated Trips

Planned Projects	Peak Hour	Peak Hour Trips		
		Enter	Exit	Total
3,135 SF Taco Bell/Pizza Hut	Weekday AM	-	-	-
	Weekday PM	15	17	32
	Saturday Midday	79	58	137
7,500 SF Medical Office	Weekday AM	13	4	17
	Weekday PM	7	19	26
	Saturday Midday	15	12	27
24,000 SF Office Building	Weekday AM	53	7	60
	Weekday PM	18	88	106
	Saturday Midday	6	6	12
Total	**Weekday AM**	**66**	**11**	**77**
	Weekday PM	**40**	**124**	**164**
	Saturday midday	**100**	**76**	**176**

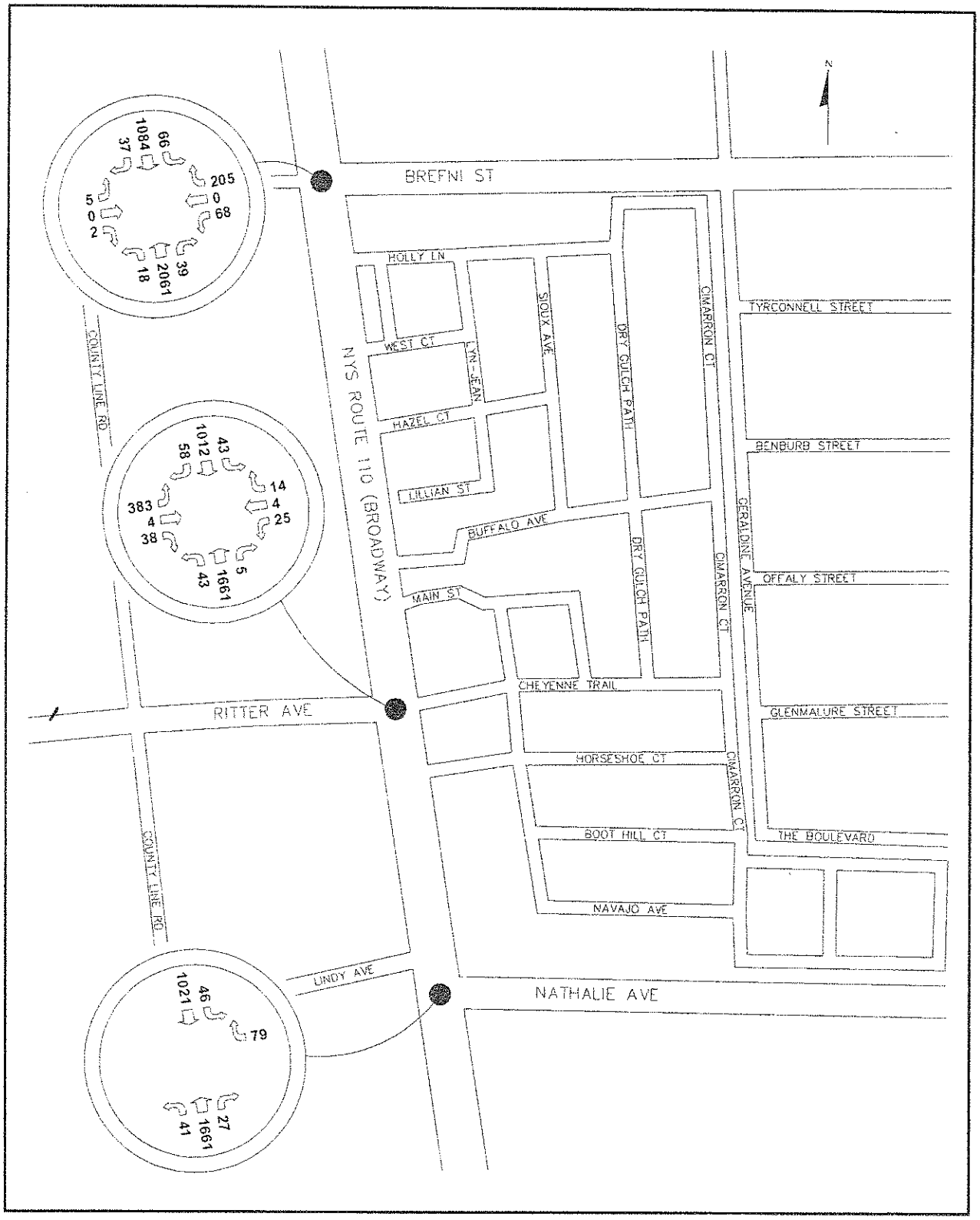


Figure 6: 2015 No Build AM Peak Hour Traffic Volumes

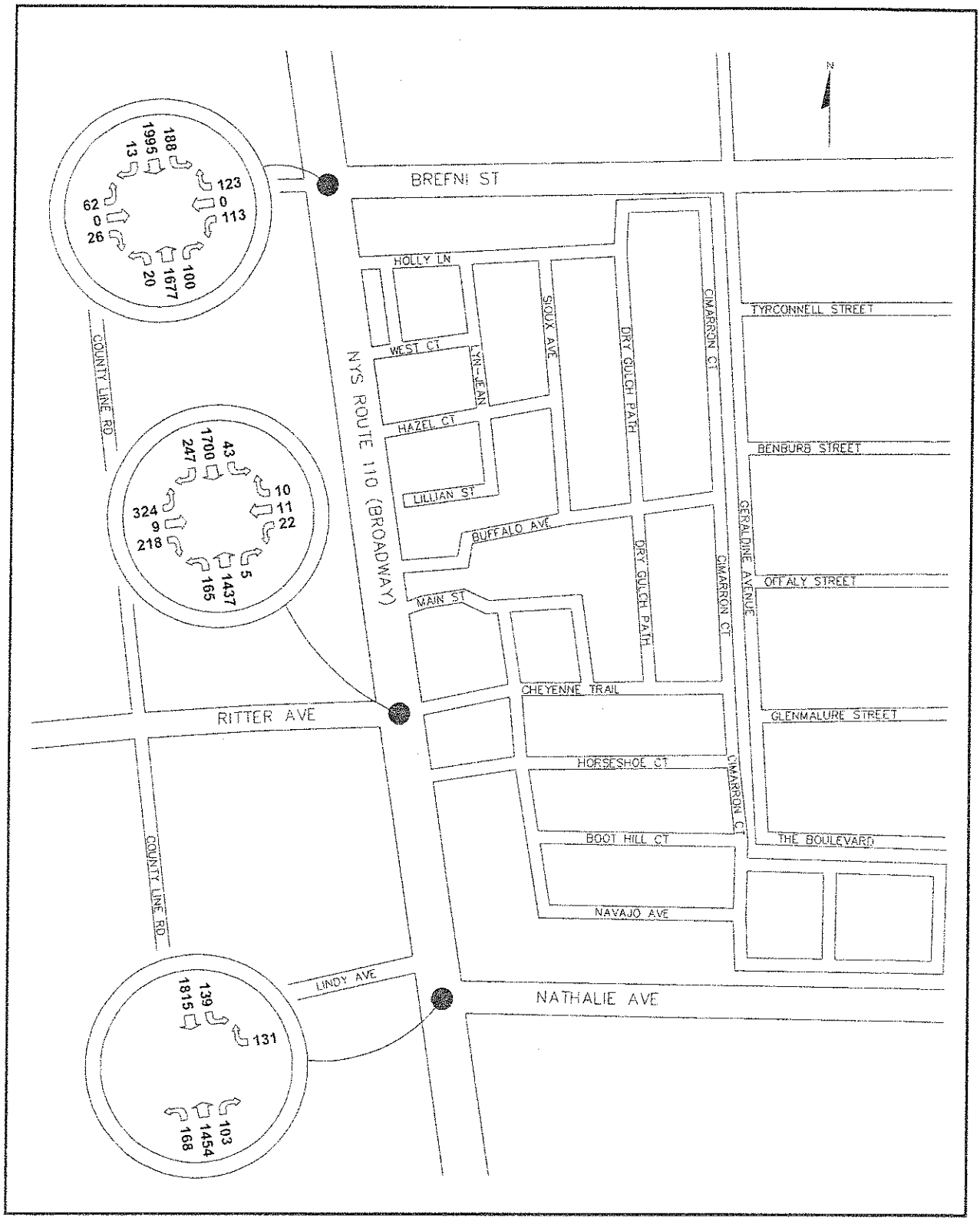


Figure 7: 2015 No Build PM Peak Hour Traffic Volumes

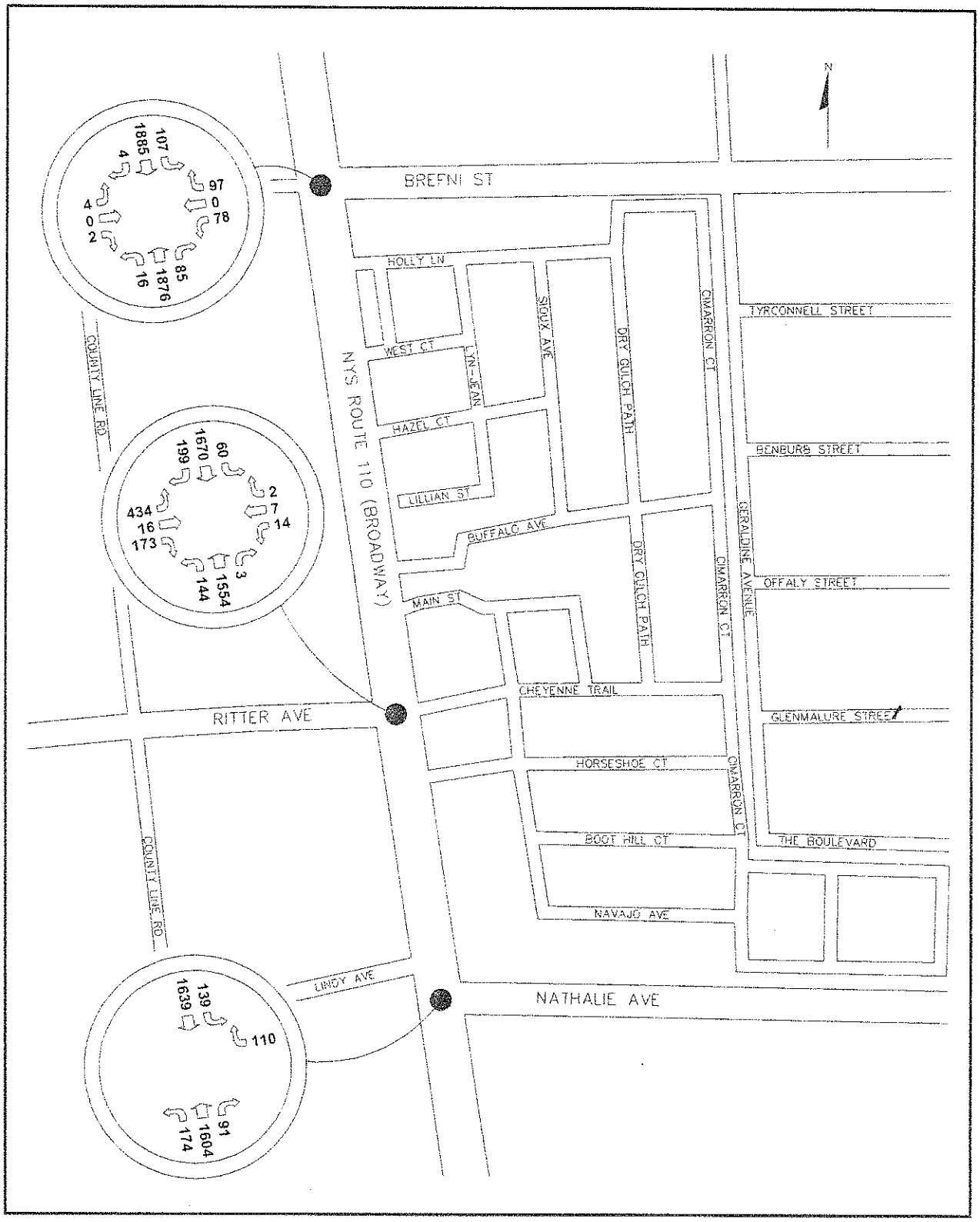


Figure 8: 2015 No Build Saturday Midday Peak Hour Traffic Volumes

PROPOSED DEVELOPMENT

Site Access

As depicted on the site plan prepared by Bowne AE&T Group, access to the "New Frontier" site will be provided via eight (8) driveways. Two (2) driveways are proposed on NYS Route 110, one signalized (opposite Ritter Avenue) and one unsignalized (north of Ritter Avenue configured for entering and exiting right-turns only). The remaining unsignalized driveways will be located on Brefni Street, Nathalie Avenue and Geraldine Avenue (4 locations). The driveways on Geraldine Avenue will be located opposite Benburb Street, Glenmalure Street, The Boulevard & opposite the southern terminus of Geraldine Avenue at Benburb Street.

Trip Generation

In order to identify the impacts the proposed development will have on the adjacent street system, it is necessary to estimate the magnitude of traffic volume to be generated during the peak hours and to estimate the directional distribution of the site traffic when entering and exiting the subject property. The proposed project consists of 45,500 SF of retail space and 500 apartments.

The trip generation estimates for the proposed uses were prepared utilizing data within the Institute of Transportation Engineers' publication, *Trip Generation, Eighth Edition.* This publication sets forth trip generation data obtained by traffic counts conducted at sites throughout the country. The following Table summarizes the trip generation estimates for the proposed development. Appendix C contains the trip generation worksheets.

Table 6: Trip Generation (Proposed Project)

Time Period	Distribution	500 Apartments	45,500 SF Shopping Center	**Total**
Weekday AM Peak Hour	Enter	50	59	**109**
	Exit	199	38	**237**
	Total	249	97	**346**
Weekday PM Peak Hour	Enter	190	184	**374**
	Exit	103	191	**294**
	Total	293	375	**668**
Saturday Midday Peak Hour	Enter	112	267	**379**
	Exit	112	247	**359**
	Total	224	514	**738**

Source: Trip Generation, 8th Edition, published by ITE

As can be seen from Table 6 above, the project is anticipated to generate 346 trips (109 entering and 237 exiting) during the weekday AM peak hour, 668 trips (374 entering and 294 exiting) during the weekday PM peak hour and 738 trips (379 entering and 359 exiting) during the Saturday midday peak hour.

It should be noted that the basic premise behind the data presented in the ITE Trip Generation Handbook is that data is collected at single use/freestanding sites and does not take into account interaction between different uses on the same site. However in a multi-use development like the proposed site, a portion of the traffic utilizing the retail use will originate from the residential component of the site and will not utilize surrounding roadways. Therefore the combined trip generation data for the retail and residential uses obtained from ITE presented above will be higher than the anticipated site generated traffic utilizing NYS Route 110 and other adjacent roadways. Therefore we have taken internal credit between the retail and residential uses in accordance with ITE guidelines. The detailed worksheets depicting the calculations of the internal capture rates for this project are contained in Appendix C.

Also, it should also be noted that, according to studies conducted by the Institute of Transportation Engineers (ITE), traffic associated with a retail development is not 100% newly generated, a significant portion of these trips will be "pass-by" traffic. It is expected that at least 40% of the peak hour trips generated by the retail development on the site would originate from traffic already using the roadway traveling to or from another destination. Therefore "pass-by"

credits were applied for the retail component of the proposed project in accordance with ITE guidelines. The "pass-by" distribution and volumes are depicted on traffic volume figures located in Appendix B.

Existing Site Trips

The site is currently occupied by a residential development (trailer park) which would be removed in order to accommodate the proposed project. Therefore, the traffic volumes associated with the trailer park were quantified and then subtracted from the 2015 Build volumes. The traffic volumes associated with the trailer park were determined by performing traffic counts at the existing site driveways and are summarized in Table 7 below. Traffic volume figures depicting the traffic associated with the existing use are contained in Appendix B.

Table 7: Trip Generation (Existing Use)

Time Period	Distribution	Residential
Weekday AM Peak Hour	Enter	33
	Exit	78
	Total	**111**
Weekday PM Peak Hour	Enter	63
	Exit	75
	Total	**138**
Saturday Midday Peak Hour	Enter	53
	Exit	42
	Total	**95**

Trip Distribution and Assignment

The volume of site traffic that would travel through the study intersections during peak hours were distributed and assigned to each movement based on the existing roadway and travel patterns. The nature of the proposed land use and its associated travel patterns were considered as well. Figures 9 and 10 depict the trip distribution for the retail and residential components of the proposed project. Figures 11, 12 and 13 depict the site generated volumes for the weekday AM, PM, and Saturday midday peak hours. The site generated volumes were then added to the

weekday AM, PM and Saturday midday No Build Condition volumes resulting in the Build Condition volumes. The Build volumes are depicted in Figures 14, 15 and 16.

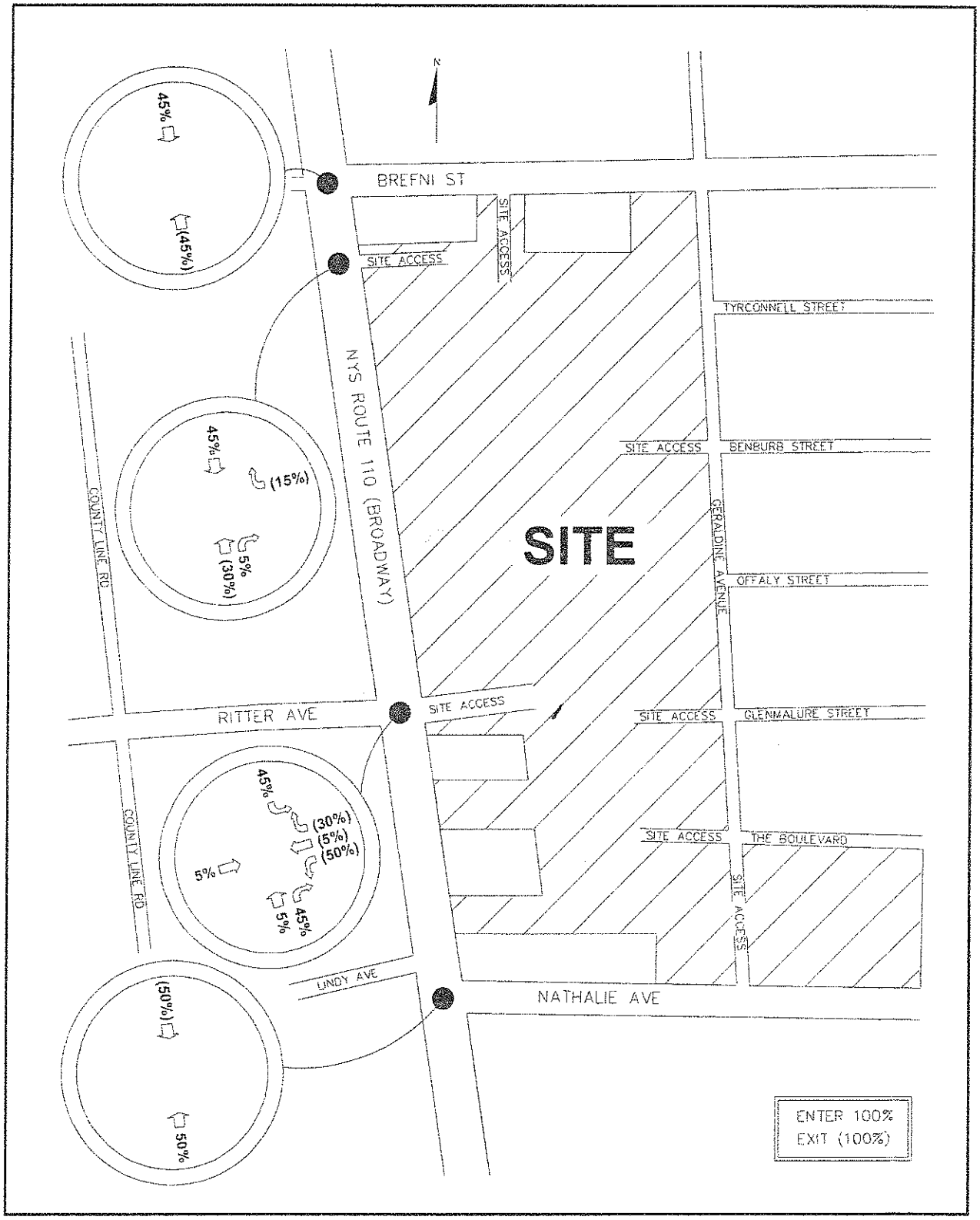


Figure 9: Site Generated Trip Distribution (Retail)

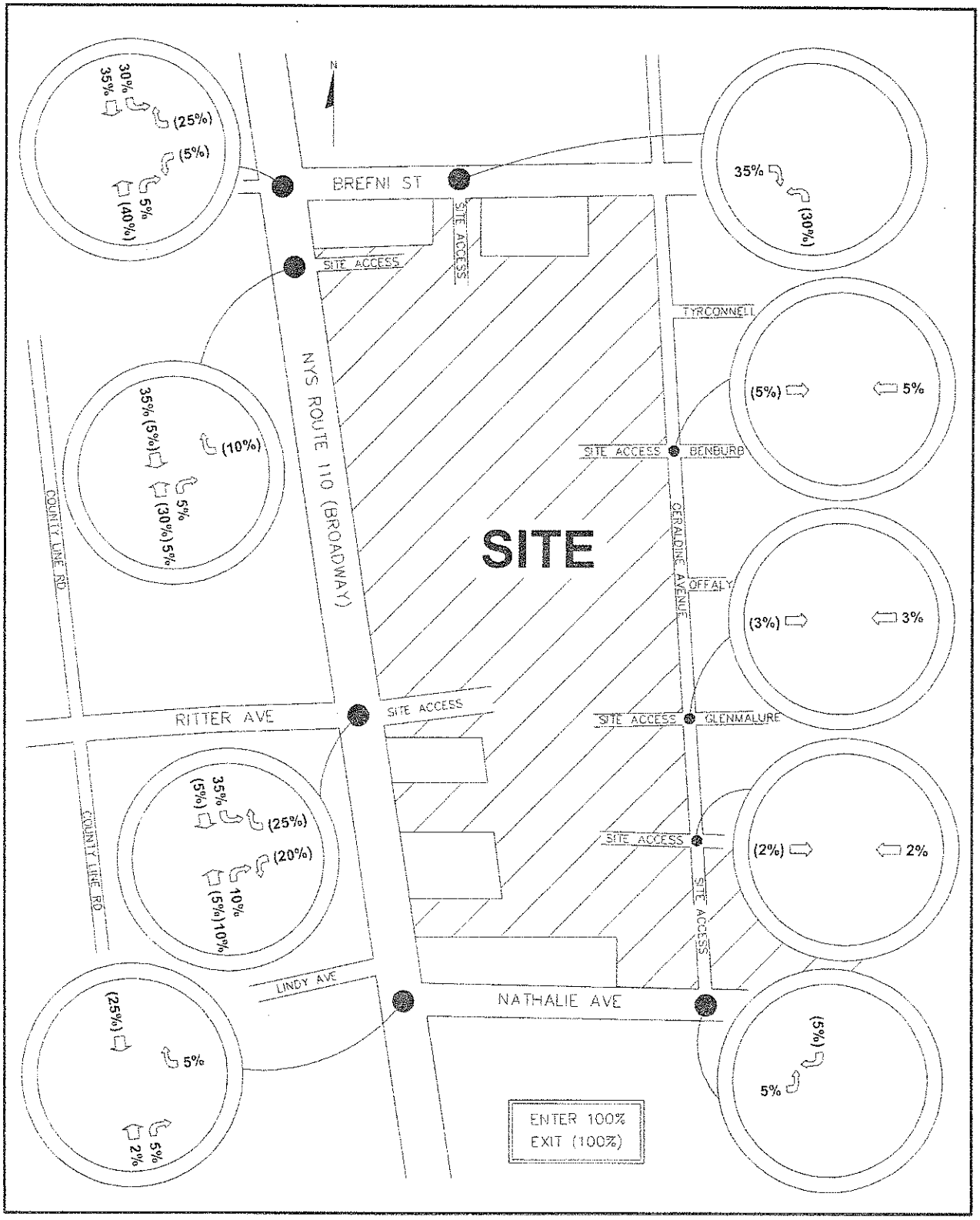


Figure 10: Site Generated Trip Distribution (Residential)

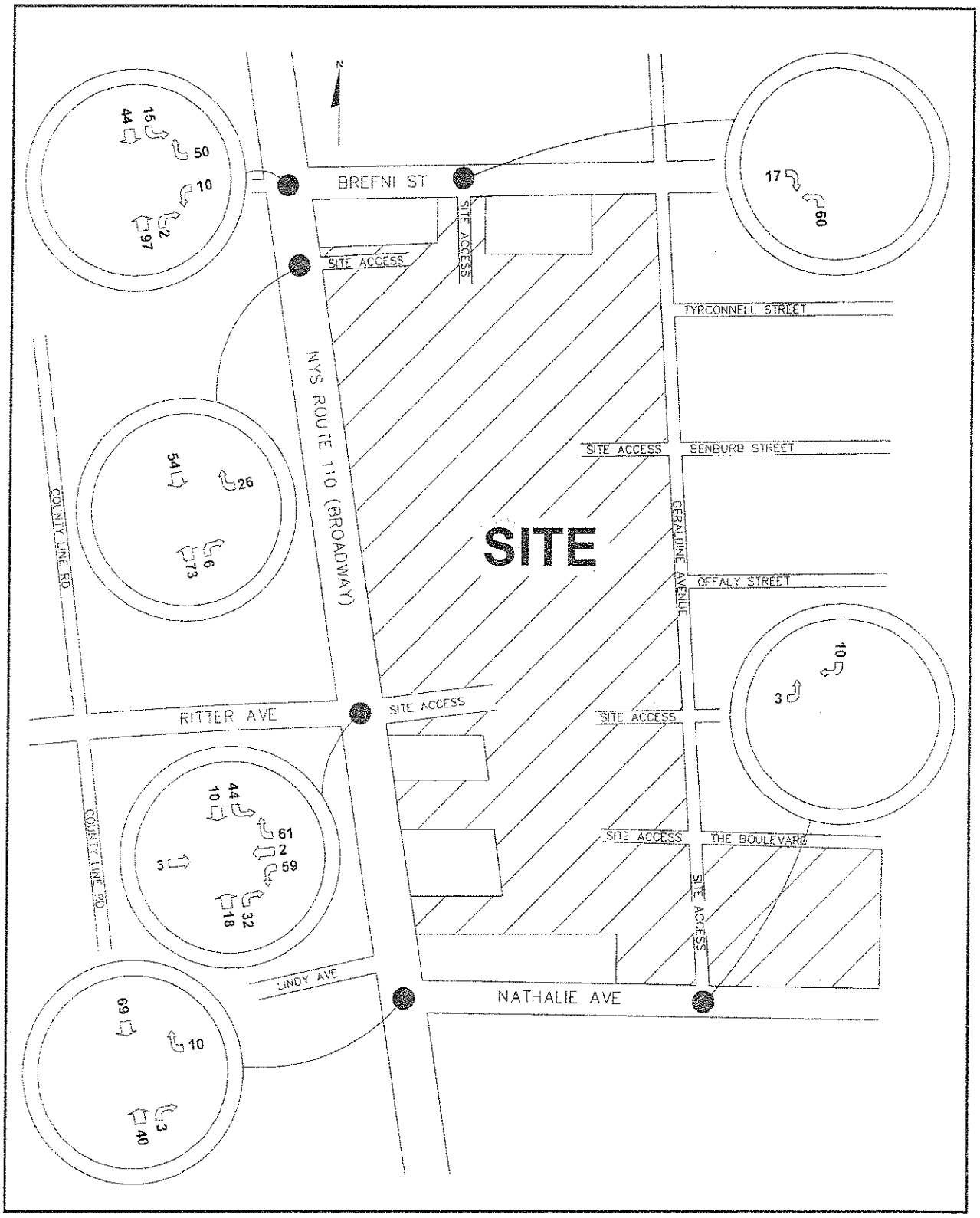


Figure 11: Site Generated AM Peak Hour Traffic Volumes

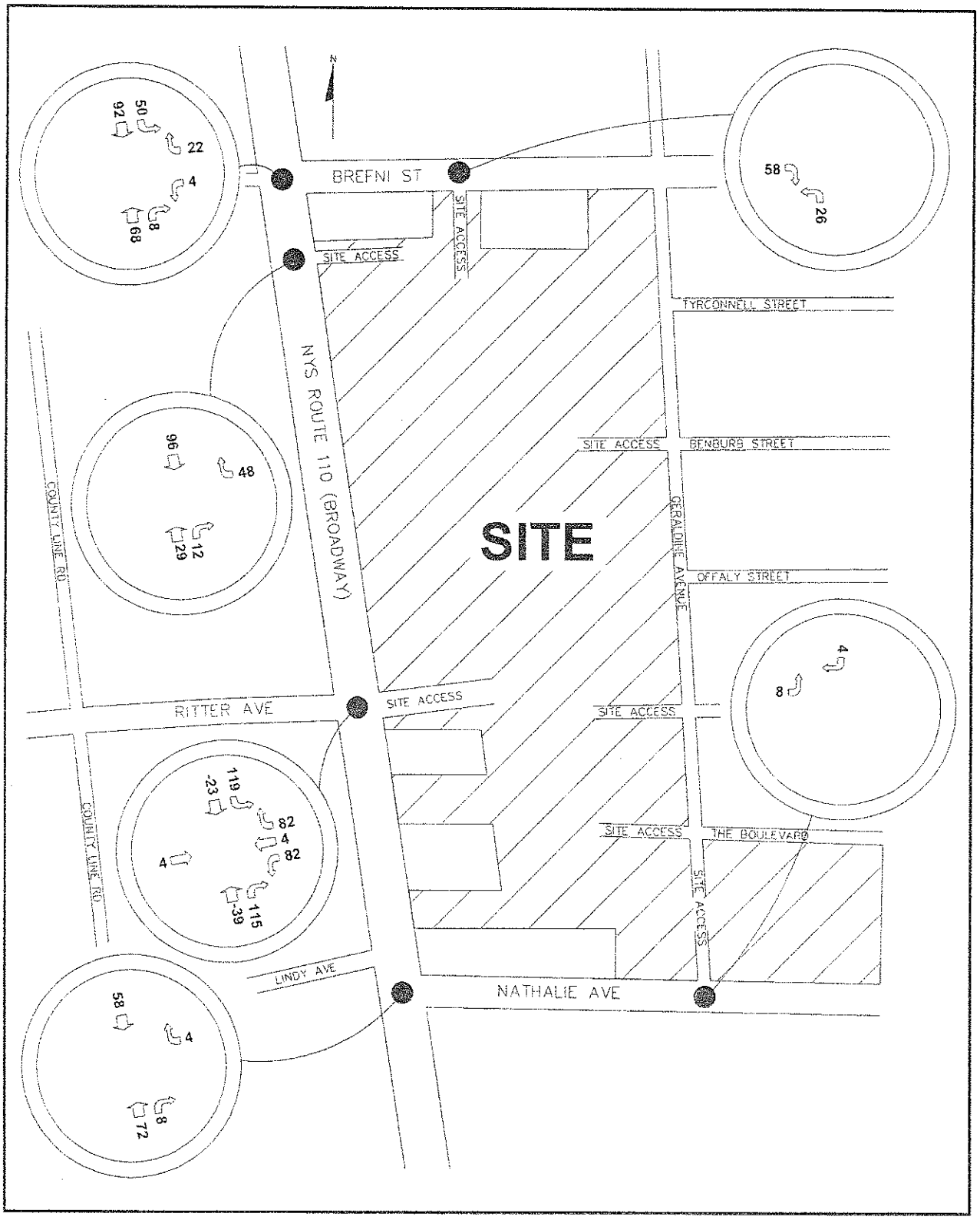


Figure 12: Site Generated PM Peak Hour Traffic Volumes

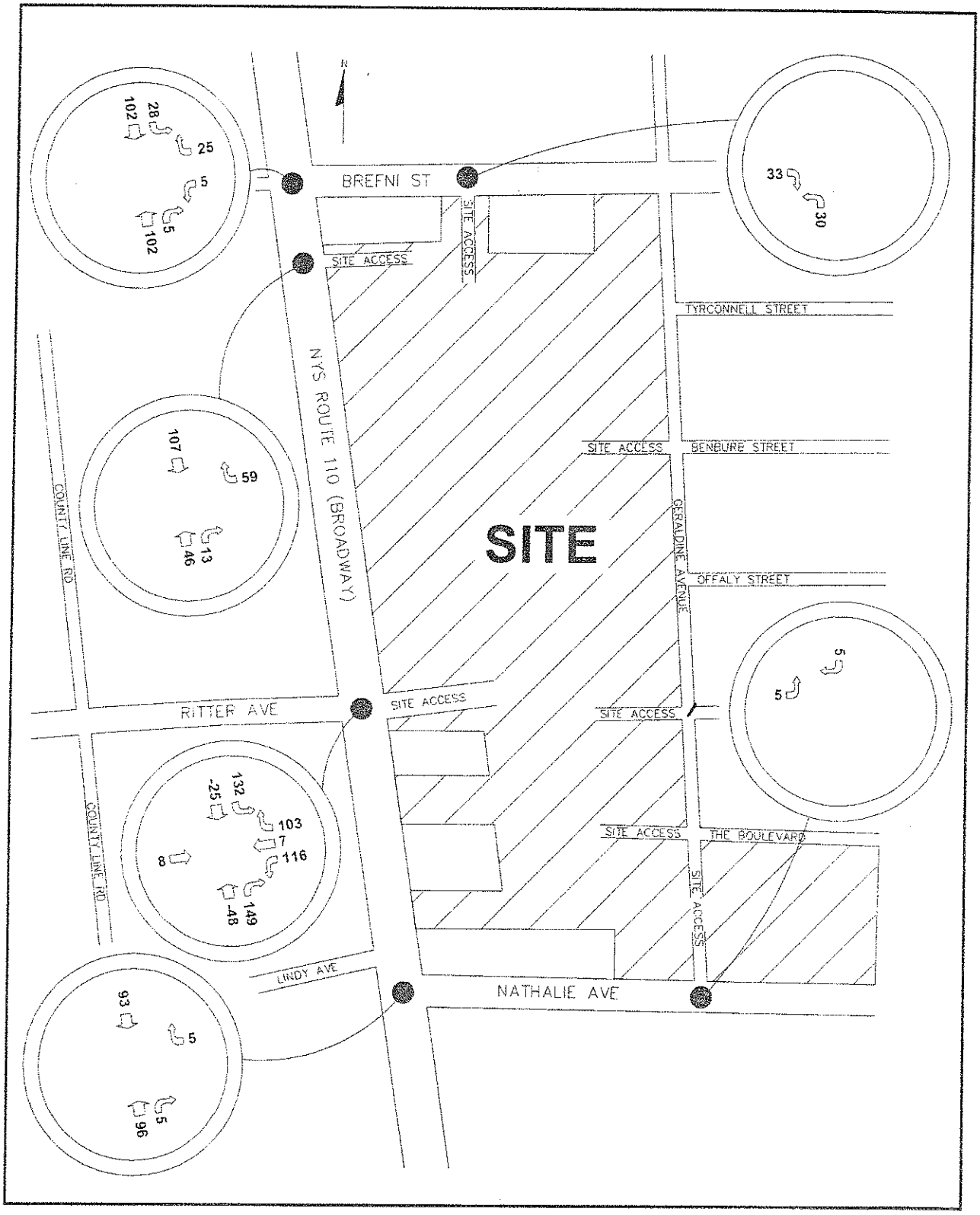


Figure 13: Site Generated Saturday Peak Hour Traffic Volumes

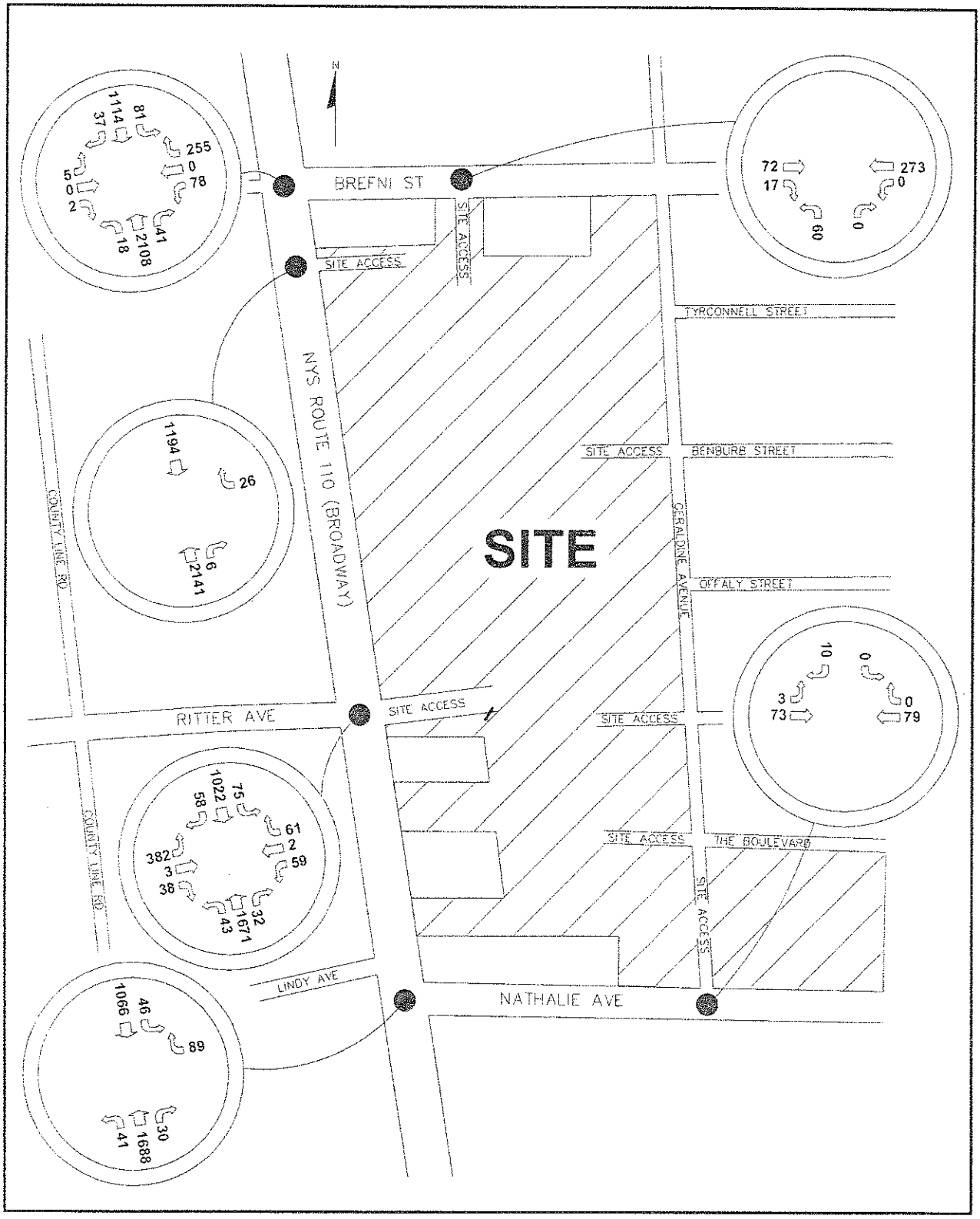


Figure 14: Build AM Peak Hour Traffic Volumes

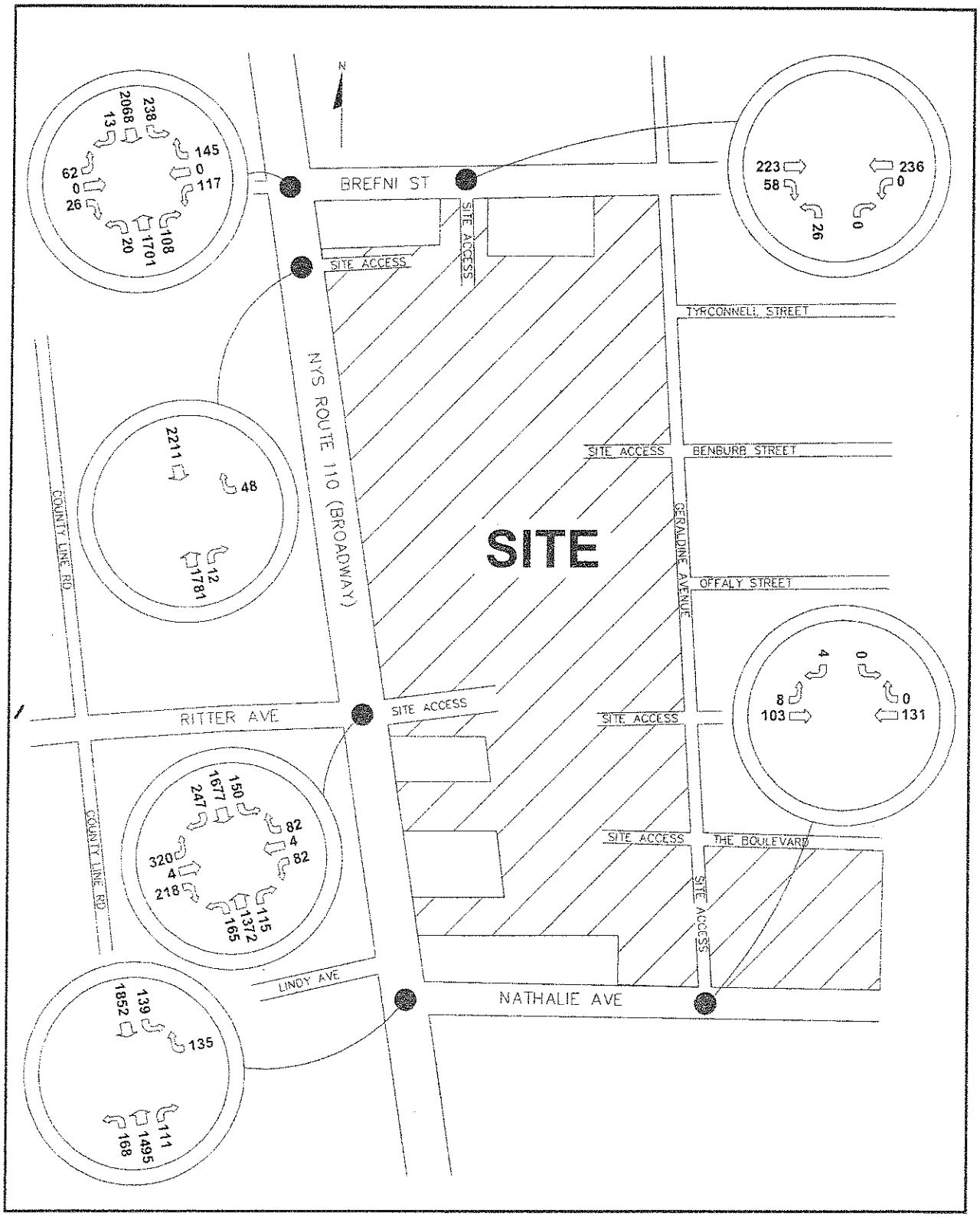


Figure 15: Build PM Peak Hour Traffic Volumes

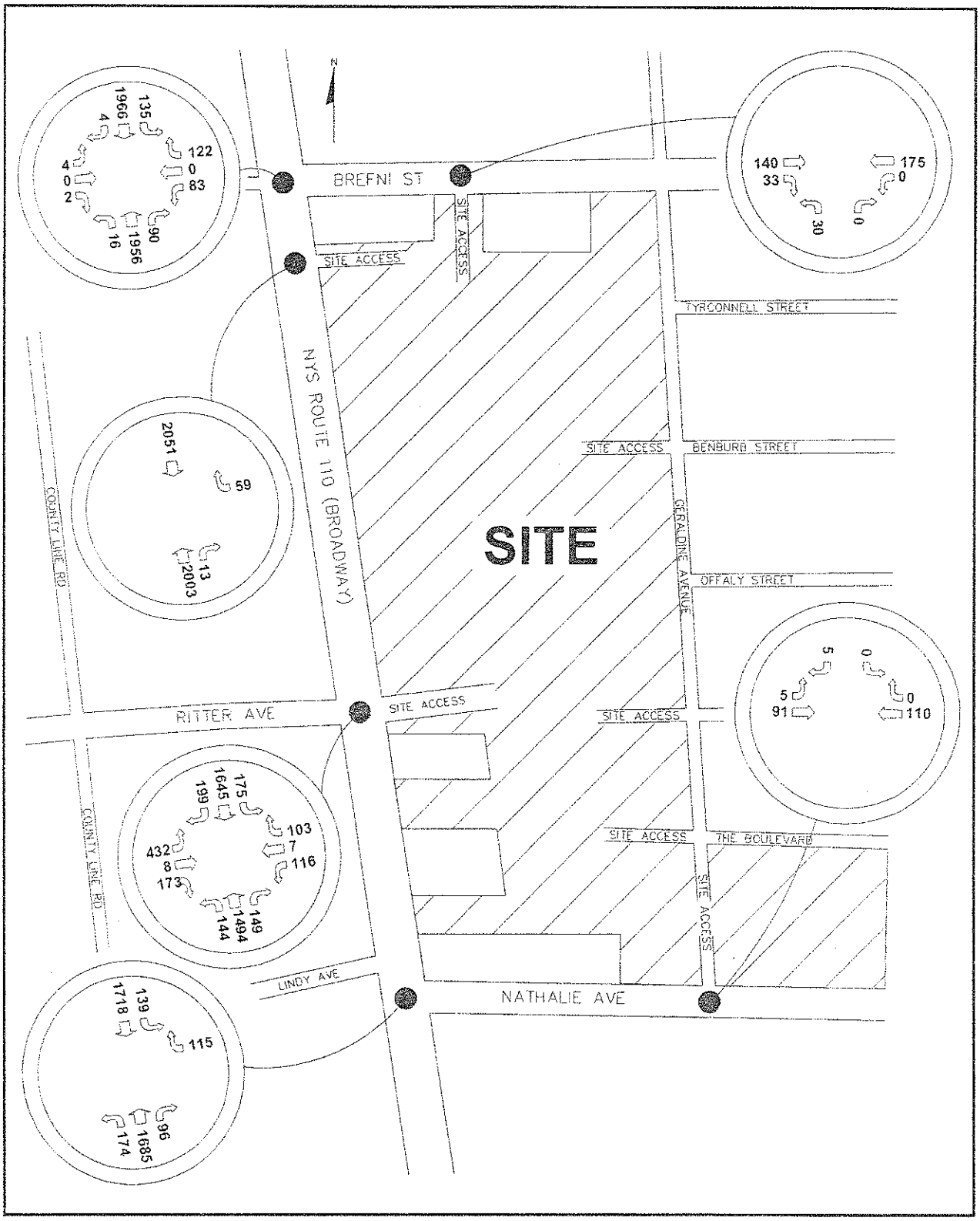


Figure 16: Build Saturday Peak Hour Traffic Volumes

TRAFFIC IMPACT ANALYSIS

As stated previously, the intersection capacity and level-of-service (LOS) analyses were based on the procedures and guidelines presented in the *HCM 2000*, published by the Transportation Research Board. The *HCS+, Release 5.24* was used to analyze the study intersection and provide a LOS measurement of the intersection operations. The six classes of LOS, ranging from LOS A (excellent) to F (worst), are defined in Appendix D.

Table 8: Level of Service Summary for Signalized Intersections

Signalized Intersections	Condition	AM Peak Hour		PM Peak Hour		Saturday Midday Peak Hour	
		LOS	Delay	LOS	Delay	LOS	Delay
NYS Route 110 at Brefni Street	No Build	C	30.1	D	36.0	B	19.7
	Build	D	43.2	D	43.4	C	23.8
	Build Mitigation 1	C	24.8	D	36.0	C	20.5
	Build Mitigation 2	C	24.2	D	35.2	B	19.9
NYS Route 110 at Ritter Avenue/Cheyenne Trail	No Build	D	52.0	D	39.1	D	52.6
	Build	D	53.8	D	41.1	E	67.0
	Build Mitigation 1	N/A					
	Build Mitigation 2	D	52.5	D	37.3	D	52.4

Notes: LOS = Level of Service. Delay = seconds/vehicle

Table 9: Level of Service Summary for Unsignalized Intersections

Unsignalized Intersection	Condition	Approach/ Movement.	AM Peak Hour		PM Peak Hour		Saturday Midday Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)
NYS Route 110 at Nathalie Avenue	No Build	NB-L	B	11.7	D	31.0	D	25.0+
		SB-L	C	17.2	C	20.1	C	21.3
		WB-R	C	20.7	C	21.9	C	20.0
	Build	NB-L	B	12.1	D	33.1	D	28.3
		SB-L	C	17.6	C	21.3	C	23.6
		WB-R	C	22.0	C	23.4	C	21.8
NYS Route 110 at Site Access	Build	WB-R	C	20.9	C	18.6	C	21.2
Nathalie Avenue at Site Access	Build	EB-LT	A	7.4	A	7.5	A	7.5
		SB-LR	A	8.7	A	9.0	A	8.9
Brefni Street at Site Access	Build	EB-LT	A	7.4	A	7.9	A	7.6
		NB-LR	B	11.6	B	12.6	B	11.0

Notes: LOS = Level of Service. Delay = seconds/vehicle

NYS Route 110 at Brefni Street

During the No Build Condition, the signalized intersection of NYS Route 110 at Brefni Street will operate at LOS C, D and B during the weekday AM, PM and Saturday midday peak hours respectively. After the completion of the project, the intersection will continue to operate at No Build LOS during the PM peak hour. The LOS will change from LOS C to LOS D during the weekday AM peak hour and LOS B to LOS C during the Saturday midday peak hour. The "Build Mitigation 1" condition incorporates restriping the westbound approach (Brefni Street) to include a left-turn/through lane and exclusive right-turn lane, the addition of a right-turn overlap for the westbound right-turn movement as well as performing timing adjustments. With these improvements implemented the intersection is anticipated to operate at No Build LOS during the AM and PM peak periods. The "Build Mitigation 2" condition incorporates the improvements from "Build Mitigation 1" and changes the northbound and southbound left turn phase from protected only to protected/permissive. With this improvement implemented the intersection is anticipated to operate at No Build LOS during all time periods studied.

NYS Route 110 at Ritter Avenue/Cheyenne Trail (Ritter Avenue/Site Access)

During the No Build Condition, the signalized intersection of NYS Route 110 at Ritter Avenue/Cheyenne Trail (Ritter Avenue/Site Access) will operate at LOS D during the weekday AM, PM and Saturday midday peak hours. After the completion of the project, the intersection will continue to operate at No Build LOS conditions during the weekday AM and PM peak hours. The Saturday midday peak hour will change from LOS D to LOS E. The change in LOS during the Saturday peak hour is due to the heavy eastbound left turning traffic from Ritter Avenue onto NYS Route 110 and the southbound left turn traffic into the site. Extending the southbound left turn lane storage length by 100 feet (from 140 feet to 240 feet) will improve the operation of the intersection by providing adequate storage for vehicles waiting the make a left turn into the site. To further improve the overall operation of this intersection, phasing adjustments were performed under the "Build Mitigation 2" condition to change the northbound and southbound left turn phase from protected only to protected/permissive. With the implementation of the phasing

adjustments and the extension of the southbound left turn storage, the intersection is anticipated to operate at No Build LOS during all time periods studied.

NYS Route 110 at Nathalie Avenue

During the No Build Condition, the northbound left-turn movement operates at LOS B during the weekday AM peak hour and at LOS D during the weekday PM peak hour and Saturday midday peak hour. The southbound left-turn movement operates at LOS C during the weekday AM, PM and Saturday midday peak hours. The westbound right-turn movement operates at LOS C during the weekday AM, PM and Saturday midday peak hours. After the completion of the project the intersection will continue to operate at No Build LOS conditions during the analyzed peak periods. Therefore, no significant impacts are created and no mitigation measures are proposed at this intersection.

NYS Route 110 at Site Access

Upon completion of the project, the westbound right-turn movement is anticipated to operate at LOS C during the weekday AM, PM and Saturday midday peak hours.

Nathalie Avenue at Site Access

Upon completion of the project, the eastbound left-turn/through movement is anticipated to operate at LOS A during the weekday AM, PM and Saturday midday peak hours and the southbound left-turn/right-turn movement is also anticipated to operate at LOS A during the weekday AM, PM and Saturday midday peak hours.

Brefni Street at Site Access

Upon completion of the project, the eastbound left-turn/through movement is anticipated to operate at LOS A during the weekday AM, PM and Saturday midday peak hours and the northbound left-turn/right-turn movement is anticipated to operate at LOS B during the weekday AM, PM and Saturday midday peak hours.

CONCLUSION

Nelson & Pope has investigated the potential traffic impacts associated with the proposed application to construct a mixed-use development "New Frontier" to be located on the east side of New York State Route 110 between Brefni Street and Nathalie Avenue in North Amityville, Town of Babylon, Suffolk County, New York. The proposed mixed-used development is comprised of a residential and a commercial component. The commercial portion of the development will contain 45,500 SF of retail space and the residential component will contain 500 apartments. The development will be located on parcels of land designated as District 100, Section 163, Block 01, Lots 54, 55, 56 & 57 and Section 164, Block 02, Lots 2, 5, 9, 10 & 25 on the Suffolk County Tax maps. The site is currently occupied by a residential development (trailer park) which would be removed to accommodate the proposed project.

The following is a summary of this investigation and the findings thereof:

1. The following intersections were studied:
    - NYS Route 110 at Brefni Street
    - NYS Route 110 at Ritter Avenue/Cheyenne Trail
    - NYS Route 110 at Nathalie Avenue

2. Existing volumes were counted in June 2010. 2015 No Build traffic volumes were determined by applying a 1.1% NYSDOT annual growth factor to the existing volumes as well as including traffic generated by other planned projects in the area. Traffic volumes generated by the proposed project were distributed through the study intersections and added to the 2015 No Build volumes to obtain 2015 Build volumes. It should be noted that traffic volumes associated with the existing site (trailer park) were subtracted from the 2015 Build traffic volumes.

3. The proposed project is anticipated to generate 346 trips (109 entering and 237 exiting) during the weekday AM peak hour, 668 trips (374 entering and 294 exiting) during the weekday PM peak hour and 738 trips (379 entering and 359 exiting) during the Saturday midday peak hour.

4. As depicted on the site plan prepared by Bowne AE&T Group, access to the "New Frontier" site will be provided via eight (8) driveways. Two (2) driveways are proposed on NYS Route 110, one signalized (opposite Ritter Avenue) and one unsignalized (north of Ritter Avenue configured for entering and exiting right-turns only). The remaining unsignalized driveways will be located on Brefni Street, Nathalie Avenue and Geraldine Avenue (4 locations). The driveways on Geraldine Avenue will be located opposite Benburb Street, Glenmalure Street, The Boulevard and opposite the southern terminus of Geraldine Avenue at Benburb Street.

5. Capacity analyses were conducted at all the study intersections for the 2010 Existing, 2015 No Build and 2015 Build conditions during the weekday AM, weekday PM and Saturday midday peak hours. The site access driveways on NYS Route 110, Brefni Street and Nathalie Avenue were also analyzed under the 2015 Build condition.

6. After the completion of the project, the unsignalized intersection of NYS Route 110 at Nathalie Avenue and site access locations are anticipated to operate at acceptable LOS during all time periods studied.

7. After the completion of the project, the intersection will continue to operate at No Build LOS during the PM peak hour. However, the LOS will change from LOS C to LOS D during the weekday AM peak hour and LOS B to LOS C during the Saturday midday peak hour. In order to improve the operation of the intersection the following mitigation measures were considered:

   - "Build Mitigation 1" – This mitigation measure considers restriping the westbound Brefni Street approach to provide a left-turn/through lane and exclusive right-turn lane and the addition of a right-turn overlap for the westbound right-turn movement as well as performing timing adjustments. With implementation of these improvements, the intersection is anticipated to operate at No Build LOS during the AM and PM peak periods.

   - "Build Mitigation 2" – This mitigation measure incorporates the improvements from "Build Mitigation 1" and changes the northbound/southbound left turn phase from protected only to protected/permissive. With the implementation of these

improvements, the intersection is anticipated to operate at No Build LOS during all time periods studied.

8. After the completion of the project, the intersection of NYS Route 110 at Ritter Avenue/Site Access will continue to operate at No Build LOS during the AM and PM peak hours and will experience a change in LOS during the Saturday midday peak hour. The change in LOS during the Saturday peak hour is due to the heavy eastbound left turning traffic from Ritter Avenue onto NYS Route 110 and the southbound left turn traffic into the site. Extending the southbound left turn lane storage length by 100 feet (from 140 feet to 240 feet) will improve the operation of the intersection by providing adequate storage for vehicles waiting the make a left turn into the site. To further improve the overall operation of this intersection, phasing adjustments were performed under the "Build Mitigation 2" condition to change the northbound and southbound left turn phase from protected only to protected/permissive. With the implementation of the phasing adjustments and the extension of the southbound left turn storage, the intersection is anticipated to operate at No Build LOS during all time periods studied.

Based on the results of the Traffic Impact Study as detailed in the body of this report, it is the professional opinion of Nelson & Pope that, the construction of the proposed project will not significantly impact the operation of the roadways and intersections adjacent to the site. The implementation of the proposed mitigation measures will improve the operation of the roadways and intersection adjacent to the site.

NEW FRONTIER

NORTH AMITYVILLE

TOWN OF BABYLON

APPENDIX

April 2011

N & P JOB NO. 09084

Appendix A: Existing Traffic Volumes

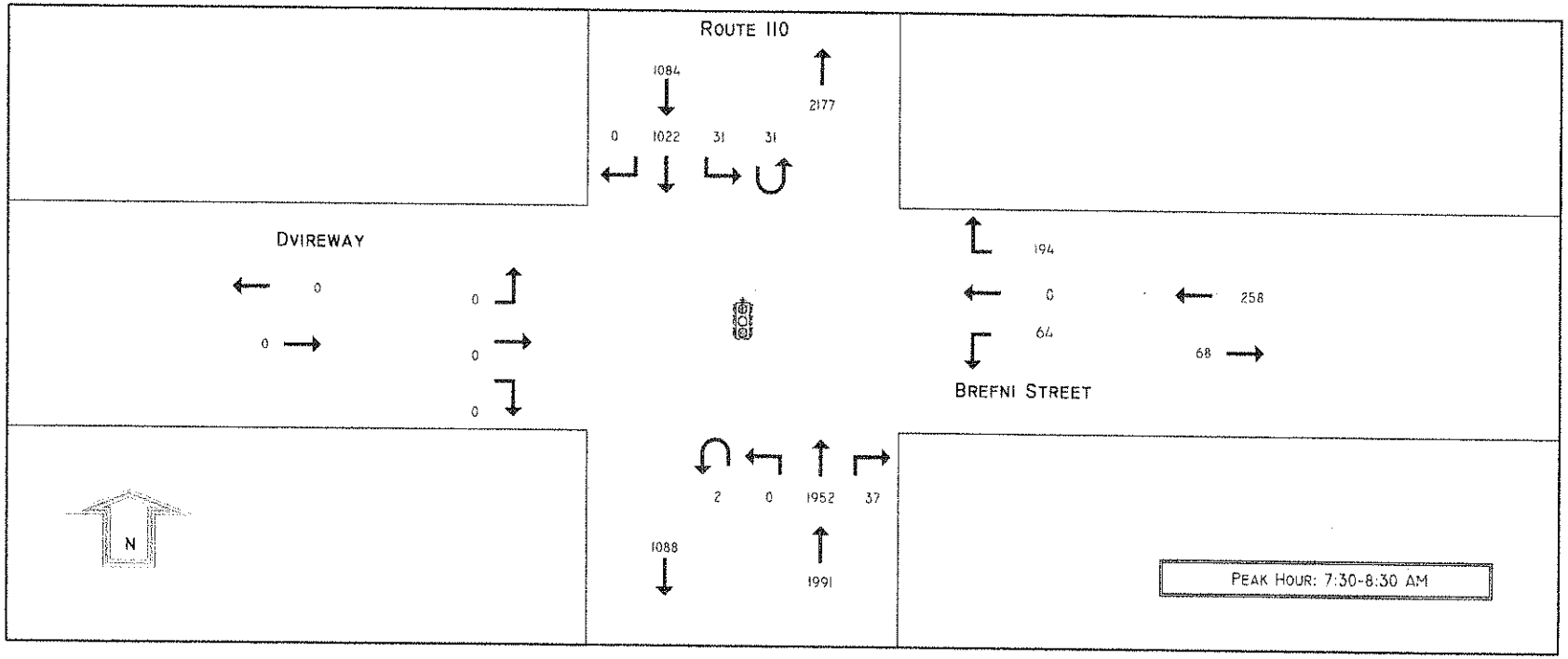
INTERSECTION: BREFNI STREET @ ROUTE 110

DATE COLLECTED: 6/17/10 WEDNESDAY

PROJECT TITLE: NEW FRONTIER

JURISDICTION: TOWN OF BABYLON

START TIME	BREFNI STREET												ROUTE 110												TOTAL	CUM. HOURLY
	EASTBOUND						WESTBOUND						NORTHBOUND						SOUTHBOUND							
	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL		
7:00 AM	0	0	0	0	0	0	0	7	0	42	0	49	0	0	451	6	0	457	4	3	233	0	0	240	746	
7:15 AM	0	0	0	0	0	0	0	8	0	44	0	52	0	0	481	8	0	489	5	14	279	0	0	298	839	
7:30 AM	0	0	0	0	0	0	0	25	0	55	0	80	2	0	508	8	0	518	9	5	240	0	0	254	852	
7:45 AM	0	0	0	0	0	0	0	13	0	39	0	52	0	0	463	6	0	469	14	11	271	0	0	296	817	3254
8:00 AM	0	0	0	0	0	0	0	8	0	52	0	60	0	0	486	11	0	497	2	8	251	0	0	261	818	3326
8:15 AM	0	0	0	0	0	0	0	18	0	48	0	66	0	0	495	12	0	507	6	7	260	0	0	273	846	3333
8:30 AM	0	0	0	0	0	0	0	11	0	47	0	58	2	0	477	8	0	487	7	9	260	0	0	276	821	3302
8:45 AM	0	0	0	0	0	0	0	14	1	31	0	46	0	0	478	7	0	485	3	8	281	0	0	292	823	3308
PEAK HOUR: 7:30-8:30 AM	0	0	0	0	0	0	0	64	0	194	0	258	2	0	1952	37	0	1991	31	31	1022	0	0	1084	3333	
PHF						####						0.81						0.96						0.92		
SEASONALLY ADJUSTED VOLUMES	0	0	0	0	0	0	0	64	0	194	0	258	2	0	1952	37	0	1991	31	31	1022	0	0	1084		
2015 AMBIENT NO BUILD	0	0	0	0	0	0	0	68	0	205	0	272	2	0	2059	39	0	2101	33	33	1078	0	0	1144		



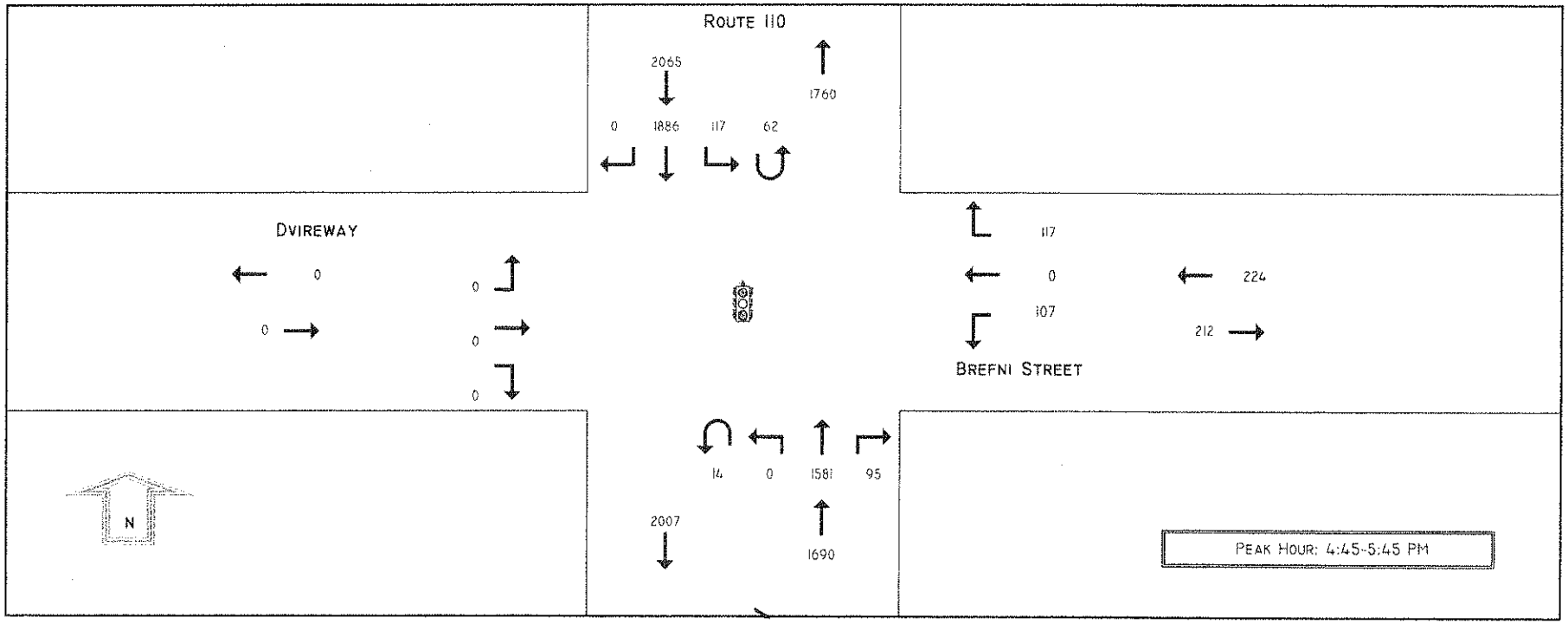
INTERSECTION: BREFNI STREET @ ROUTE 110

PROJECT TITLE: NEW FRONTIER

DATE COLLECTED: 6/17/10 WEDNESDAY

JURISDICTION: TOWN OF BABYLON

START TIME	BREFNI STREET												ROUTE 110												TOTAL	CUM. HOURLY
	EASTBOUND						WESTBOUND						NORTHBOUND						SOUTHBOUND							
	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL		
4:00 PM	0	0	0	0	0	0	0	11	0	19	0	30	4	0	436	15	0	455	6	14	472	0	0	492	977	
4:15 PM	0	0	0	0	0	0	0	16	0	19	0	35	4	0	385	24	0	413	12	10	455	0	0	477	925	
4:30 PM	0	0	0	0	0	0	0	23	0	32	0	55	4	0	472	20	0	496	9	6	412	0	0	427	978	
4:45 PM	0	0	0	0	0	0	0	25	0	33	0	58	3	0	373	24	0	400	15	61	429	0	0	505	963	3843
5:00 PM	0	0	0	0	0	0	0	24	0	25	0	49	1	0	424	23	0	448	25	15	452	0	0	492	989	3855
5:15 PM	0	0	0	0	0	0	0	36	0	35	0	71	4	0	386	26	0	416	13	26	472	0	0	511	998	3928
5:30 PM	0	0	0	0	0	0	0	22	0	24	0	46	6	0	398	22	0	426	9	15	533	0	0	557	1029	3979
5:45 PM	0	0	0	0	0	0	0	21	0	23	0	44	3	0	354	21	0	378	7	10	478	0	0	495	917	3933
PEAK HOUR: 4:45-5:45 PM	0	0	0	0	0	0	0	107	0	117	0	224	14	0	1581	95	0	1690	62	117	1886	0	0	2065	3979	
PHF						####						0.79						0.94						0.93		
SEASONALLY ADJUSTED VOLUMES	0	0	0	0	0	0	0	107	0	117	0	224	14	0	1581	95	0	1690	62	117	1886	0	0	2065		
2015 AMBIENT NO BUILD	0	0	0	0	0	0	0	113	0	123	0	236	15	0	1668	100	0	1783	65	123	1990	0	0	2179		



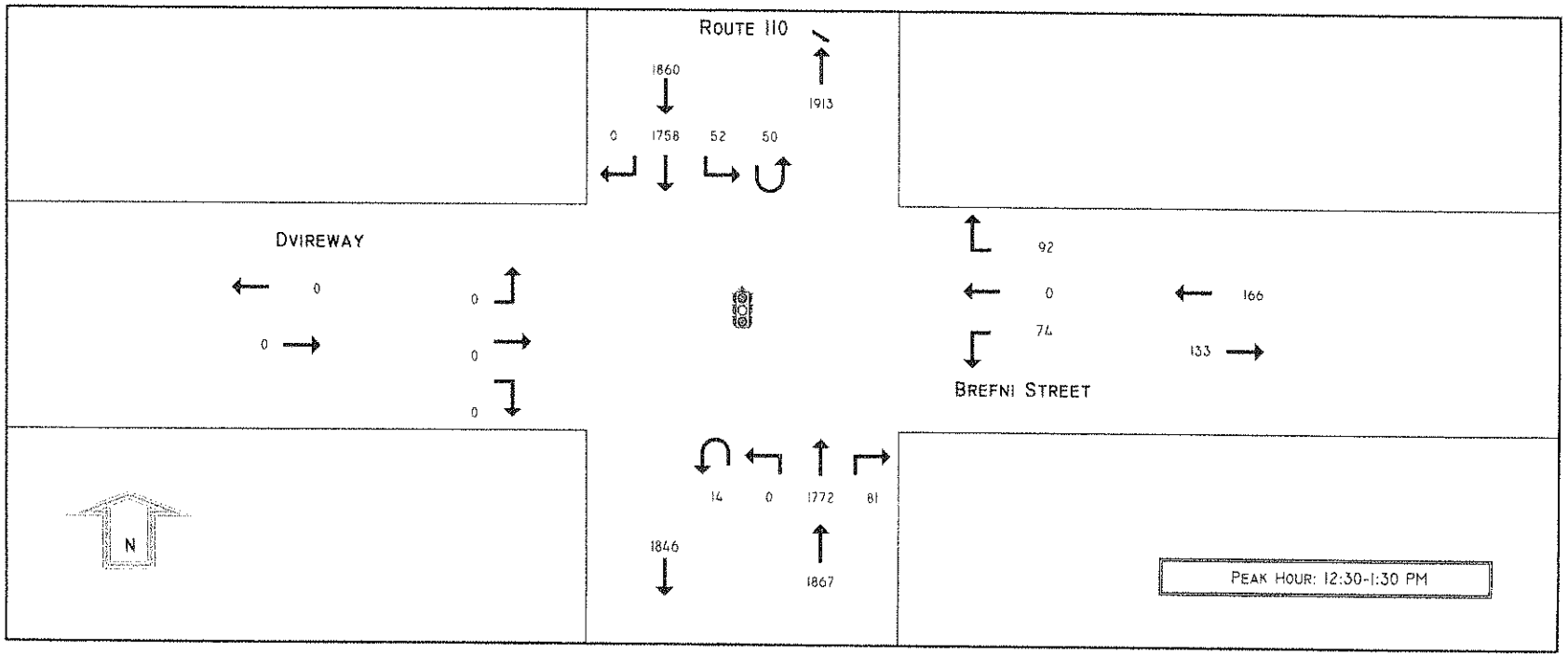
INTERSECTION: BREFNI STREET @ ROUTE 110

DATE COLLECTED: 6/19/10 SATURDAY

PROJECT TITLE: NEW FRONTIER

JURISDICTION: TOWN OF BABYLON

START TIME	BREFNI STREET												ROUTE 110												TOTAL	CUM. HOURLY
	EASTBOUND						WESTBOUND						NORTHBOUND						SOUTHBOUND							
	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL		
11:00 AM	0	0	0	0	0	0	0	15	0	20	7	42	2	0	403	13	4	422	6	8	394	0	0	408	872	
11:15 AM	0	0	0	0	0	0	0	10	0	19	4	33	0	0	420	15	1	436	9	6	364	0	0	379	848	
11:30 AM	0	0	0	0	0	0	0	14	0	16	9	39	3	0	433	11	0	447	4	5	345	0	0	354	840	
11:45 AM	0	0	0	0	0	0	0	20	0	11	8	39	1	0	424	15	3	443	15	7	380	0	0	402	884	3444
12:00 PM	0	0	0	0	0	0	0	19	0	4	4	27	1	0	402	11	1	415	10	10	427	0	0	447	889	3461
12:15 PM	0	0	0	0	0	0	0	20	0	12	11	43	4	0	387	24	0	415	7	12	412	0	0	431	889	3502
12:30 PM	0	0	0	0	0	0	0	20	0	14	8	42	0	0	431	18	0	449	12	15	425	0	0	452	943	3605
12:45 PM	0	0	0	0	0	0	0	20	0	15	6	41	6	0	414	20	2	442	13	9	421	0	0	443	926	3647
1:00 PM	0	0	0	0	0	0	0	11	0	13	8	32	3	0	418	17	2	440	11	7	390	0	0	408	880	3638
1:15 PM	0	0	0	0	0	0	0	19	0	17	6	42	4	0	415	18	0	437	11	18	429	0	0	458	937	3686
1:30 PM	0	0	0	0	0	0	0	22	0	18	4	44	1	0	425	22	1	449	9	11	420	0	0	440	933	3676
1:45 PM	0	0	0	0	0	0	0	25	0	20	7	52	1	0	407	25	2	435	9	23	415	0	0	447	934	3684
PEAK HOUR: 12:30-1:30 PM	0	0	0	0	0	0	0	70	0	59	28	157	13	0	1678	73	4	1768	47	49	1665	0	0	1761	3686	
PHF						####						0.93						0.98						0.96		
SEASONALLY ADJUSTED VOLUMES	0	0	0	0	0	0	0	74	0	62	30	166	14	0	1772	77	4	1867	50	52	1758	0	0	1860		
2015 AMBIENT NO BUILD	0	0	0	0	0	0	0	78	0	66	31	175	14	0	1869	81	4	1970	52	55	1855	0	0	1962		



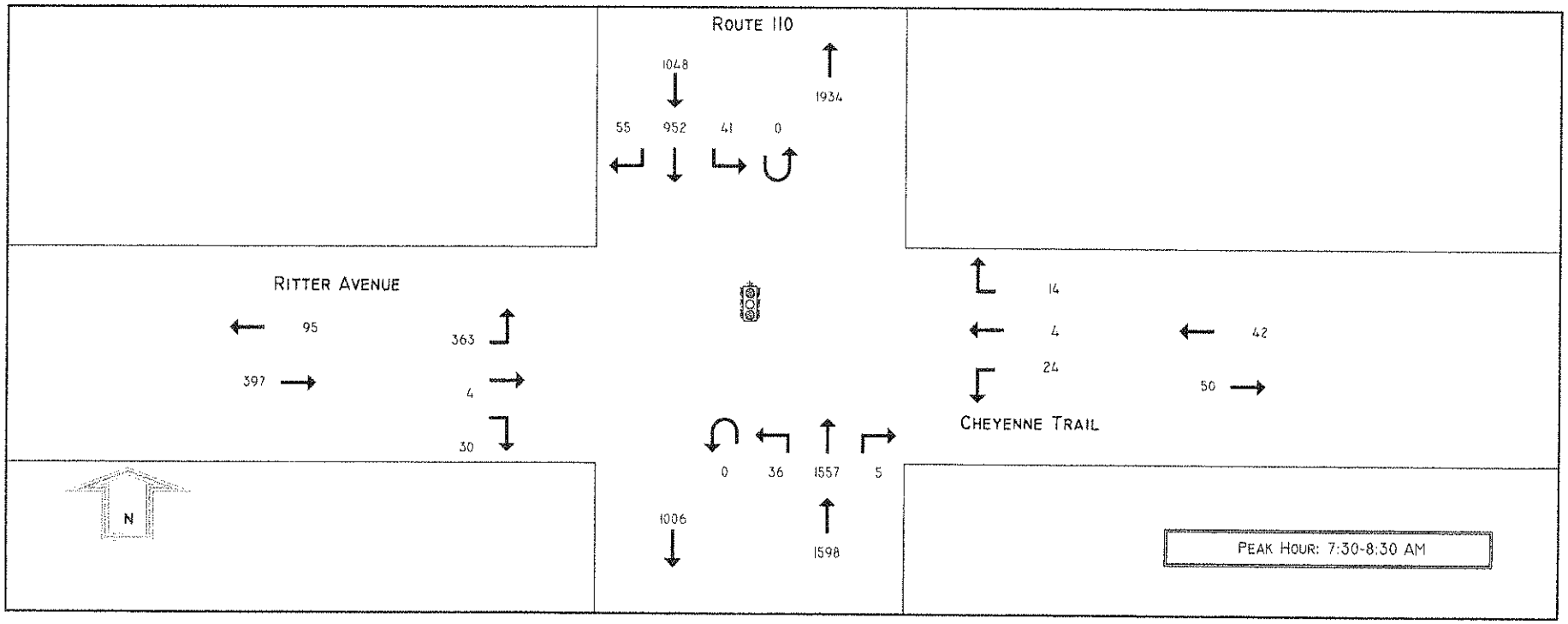
INTERSECTION: CHEYENNE TRAIL @ ROUTE 110

DATE COLLECTED: 6/17/10 WEDNESDAY

PROJECT TITLE: NEW FRONTIER

JURISDICTION: TOWN OF BABYLON

Start Time	Cheyenne Trail												Route 110												Total	Cum. Hourly
	Eastbound						Westbound						Northbound						Southbound							
	U-Turn	Left	Thru	Right	RTOR	Total	U-Turn	Left	Thru	Right	RTOR	Total	U-Turn	Left	Thru	Right	RTOR	Total	U-Turn	Left	Thru	Right	RTOR	Total		
7:00 AM	0	44	2	2	6	54	0	4	0	2	1	7	0	1	208	0	0	209	0	4	147	6	3	160	430	
7:15 AM	0	86	1	5	1	93	0	5	2	7	1	15	0	5	337	0	1	343	0	2	241	9	2	254	705	
7:30 AM	0	97	1	4	4	106	0	4	1	0	1	6	0	9	404	3	0	416	0	4	257	17	2	280	808	
7:45 AM	0	85	1	5	3	94	0	13	2	4	1	20	0	11	374	0	0	385	0	9	239	5	2	255	754	2697
8:00 AM	0	67	1	3	4	75	0	2	1	1	4	8	0	7	408	1	0	416	0	8	239	12	3	262	761	3028
8:15 AM	0	114	1	4	3	122	0	5	0	2	1	8	0	9	371	1	0	381	0	20	217	13	1	251	762	3085
8:30 AM	0	63	0	2	3	68	0	8	2	2	1	13	0	7	430	1	0	438	0	6	257	12	0	275	794	3071
8:45 AM	0	100	3	11	2	116	0	4	1	2	1	8	0	10	338	0	0	348	0	11	224	23	3	261	733	3050
Peak Hour: 7:30-8:30 AM	0	363	4	16	14	397	0	24	4	7	7	42	0	36	1557	5	0	1598	0	41	952	47	8	1048	3085	
PHF						0.81						0.53						0.96						0.94		
Seasonally Adjusted Volumes	0	363	4	16	14	397	0	24	4	7	7	42	0	36	1557	5	0	1598	0	41	952	47	8	1048		
2015 Ambient NO Build	0	383	4	17	15	419	0	25	4	7	7	44	0	38	1643	5	0	1686	0	43	1004	50	8	1106		



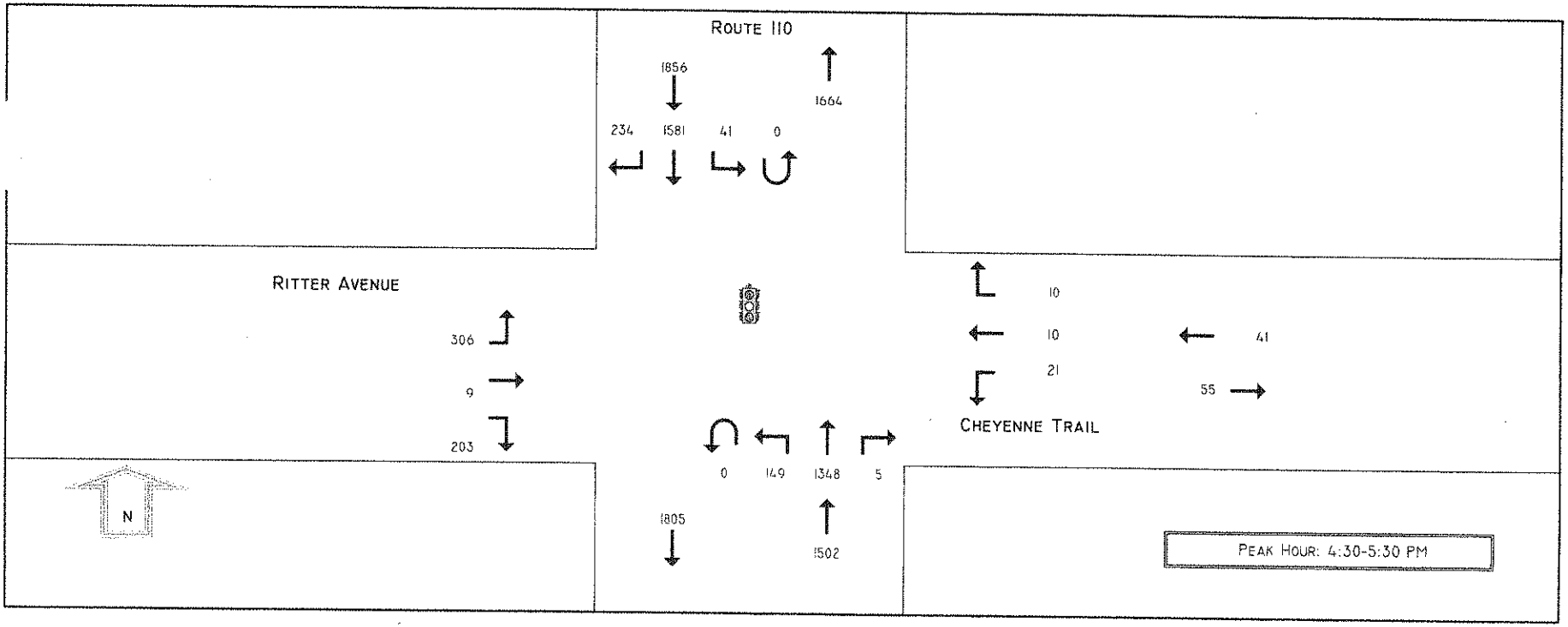
INTERSECTION: CHEYENNE TRAIL @ ROUTE 110

DATE COLLECTED: 6/17/10 WEDNESDAY

PROJECT TITLE: NEW FRONTIER

JURISDICTION: TOWN OF BABYLON

START TIME	CHEYENNE TRAIL												ROUTE 110												TOTAL	CUM. HOURLY
	EASTBOUND						WESTBOUND						NORTHBOUND						SOUTHBOUND							
	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL		
4:00 PM	0	65	3	41	6	115	0	2	1	2	1	6	0	24	284	1	0	309	0	11	350	38	9	408	838	
4:15 PM	0	86	1	27	3	117	0	4	0	0	0	4	0	34	294	0	1	329	0	12	396	28	11	447	897	
4:30 PM	0	86	2	47	3	138	0	7	3	3	1	14	0	41	340	1	0	382	0	11	360	52	15	438	972	
4:45 PM	0	79	4	38	13	134	0	2	4	3	1	10	0	38	297	2	0	337	0	7	389	41	17	454	935	3642
5:00 PM	0	67	2	38	4	111	0	5	2	1	0	8	0	22	390	2	0	414	0	12	417	57	7	493	1026	3830
5:15 PM	0	74	1	57	3	135	0	7	1	1	0	9	0	48	321	0	0	369	0	11	415	34	11	471	984	3917
5:30 PM	0	73	3	44	8	128	0	5	0	2	1	8	0	28	280	2	0	310	0	12	438	49	13	512	958	3903
5:45 PM	0	88	4	56	5	153	0	6	0	0	0	6	0	30	248	0	0	278	0	13	352	48	11	424	861	3829
PEAK HOUR: 4:30-5:30 PM	0	306	9	180	23	518	0	21	10	8	2	41	0	149	1348	5	0	1502	0	41	1581	184	50	1856	3917	
PHF						0.94						0.73						0.91						0.94		
SEASONALLY ADJUSTED VOLUMES	0	306	9	180	23	518	0	21	10	8	2	41	0	149	1348	5	0	1502	0	41	1581	184	50	1856		
2015 AMBIENT NO BUILD	0	323	9	190	24	546	0	22	11	8	2	43	0	157	1422	5	0	1585	0	43	1668	194	53	1958		



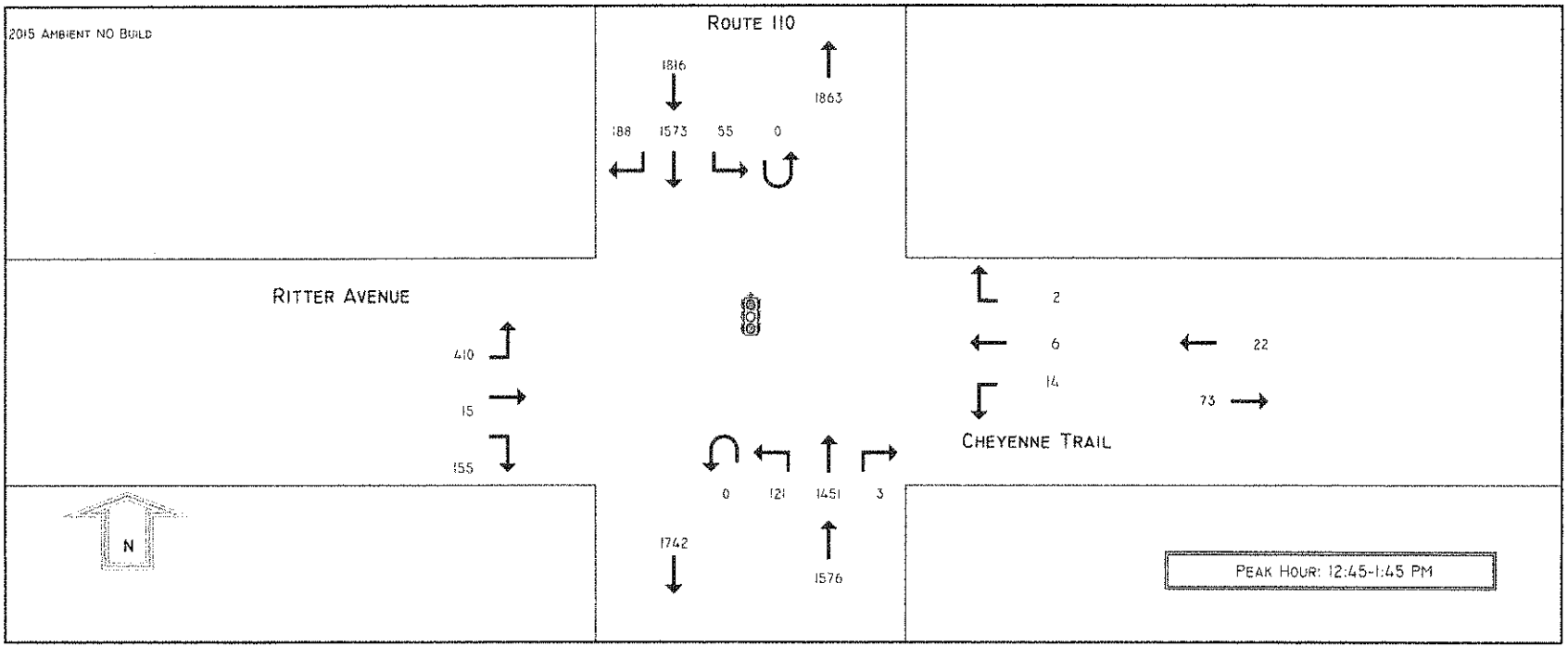
INTERSECTION: CHEYENNE TRAIL @ ROUTE 110

DATE COLLECTED: 6/19/10 WEDNESDAY

PROJECT TITLE: NEW FRONTIER

JURISDICTION: TOWN OF BABYLON

START TIME	CHEYENNE TRAIL												ROUTE 110												TOTAL	CUM. HOURLY
	EASTBOUND						WESTBOUND						NORTHBOUND						SOUTHBOUND							
	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL		
11:00 AM	0	50	3	7	3	63	0	1	2	1	0	4	0	21	229	1	0	251	0	4	243	15	7	269	587	
11:15 AM	0	64	2	19	9	94	0	10	2	1	0	13	0	21	329	0	0	350	0	4	347	29	4	384	841	
11:30 AM	0	68	3	14	5	90	0	6	2	3	0	11	0	12	306	0	0	318	0	12	289	39	6	346	765	
11:45 AM	0	65	3	12	14	94	0	3	4	3	0	10	0	30	355	3	0	388	0	14	322	29	1	366	858	3051
12:00 PM	0	65	3	21	8	97	0	11	1	6	0	18	0	30	298	1	0	329	0	8	329	28	8	373	817	3281
12:15 PM	0	64	0	9	4	77	0	6	0	0	0	6	0	30	335	5	0	370	0	20	371	31	13	435	888	3328
12:30 PM	0	87	1	25	3	116	0	6	3	1	0	10	0	29	254	3	1	287	0	14	344	38	7	403	816	3379
12:45 PM	0	110	0	42	3	155	0	3	1	0	0	4	0	26	345	3	0	374	0	10	359	33	14	416	949	3470
1:00 PM	0	88	8	34	0	130	0	2	4	1	0	7	0	35	344	0	0	379	0	15	376	28	1	420	936	3589
1:15 PM	0	97	1	32	5	135	0	6	1	0	0	7	0	30	361	0	0	391	0	14	383	38	11	446	979	3680
1:30 PM	0	93	5	28	3	129	0	2	0	0	1	3	0	24	324	0	0	348	0	13	372	47	6	438	918	3782
1:45 PM	0	93	2	10	5	110	0	6	1	0	0	7	0	33	289	1	0	323	0	30	338	42	7	417	857	3690
PEAK HOUR: 12:45-1:45 PM	0	388	14	136	11	549	0	13	6	1	1	21	0	115	1374	3	0	1492	0	52	1490	146	32	1720	3782	
PHF						0.89						0.75						0.95						0.96		
SEASONALLY ADJUSTED VOLUMES	0	410	15	144	12	580	0	14	6	1	1	22	0	121	1451	3	0	1576	0	55	1573	154	34	1816		
2012 AMBIENT NO BUILD	0	432	16	152	12	612	0	14	7	1	1	23	0	128	1531	3	0	1662	0	58	1660	163	36	1916		



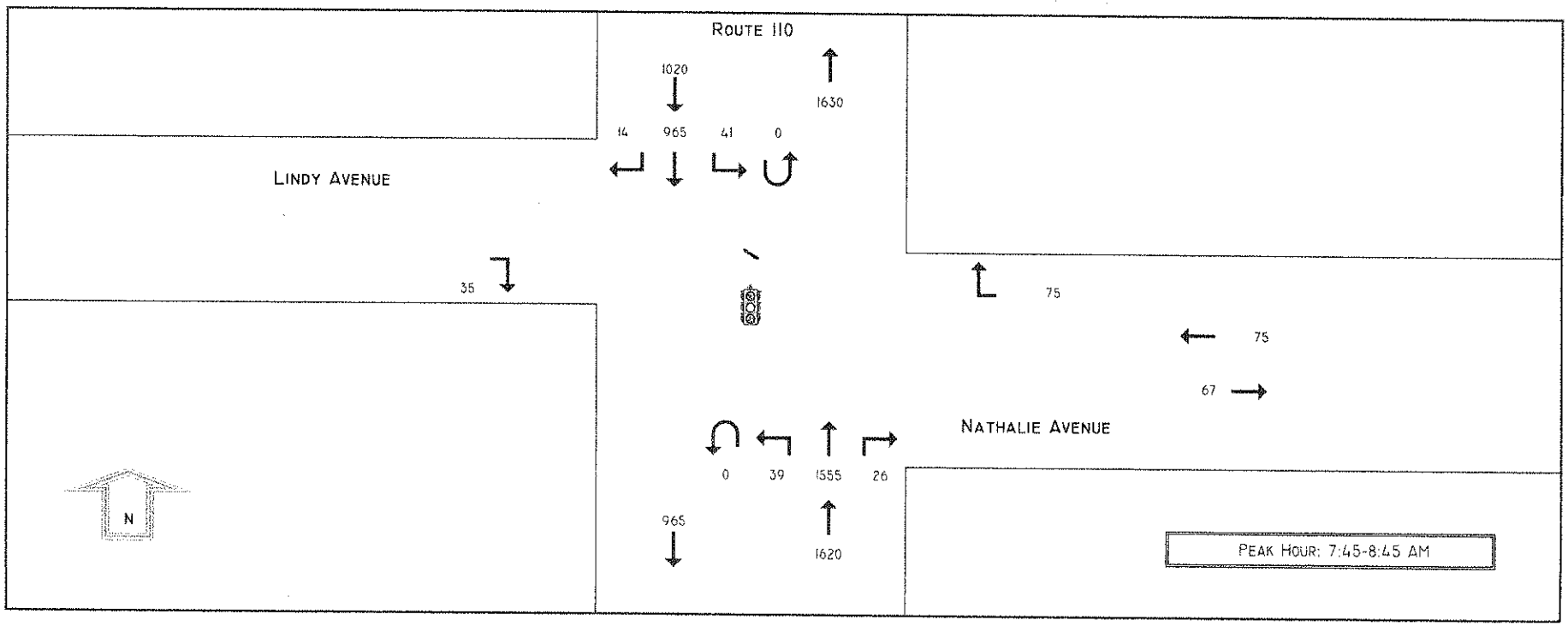
INTERSECTION: NATHALIE AVENUE @ ROUTE 110

DATE COLLECTED: 6/17/10 WEDNESDAY

PROJECT TITLE: NEW FRONTIER

JURISDICTION: TOWN OF BABYLON

START TIME	NATHALIE AVENUE												ROUTE 110												TOTAL	CUM. HOURLY
	EASTBOUND						WESTBOUND						NORTHBOUND						SOUTHBOUND							
	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL		
7:00 AM	0	0	0	3	0	3	0	0	0	16	0	16	0	4	272	5	0	281	0	6	231	2	0	239	539	
7:15 AM	0	0	0	10	0	10	0	0	0	10	0	10	0	5	379	6	0	390	0	7	226	2	0	235	645	
7:30 AM	0	0	0	8	0	8	0	1	0	17	0	18	0	8	358	15	0	381	0	8	236	4	0	248	655	
7:45 AM	0	0	0	7	0	7	0	0	0	20	0	20	0	8	366	10	0	384	0	12	270	2	0	284	695	2534
8:00 AM	0	0	0	14	0	14	0	0	0	22	0	22	0	13	411	5	0	429	0	11	243	1	0	255	720	2715
8:15 AM	0	0	0	10	0	10	0	0	0	21	0	21	0	10	379	6	0	395	0	11	219	6	0	236	662	2732
8:30 AM	0	0	0	4	0	4	0	0	0	12	0	12	0	8	399	5	0	412	0	7	233	5	0	245	673	2750
8:45 AM	0	0	0	8	0	8	0	0	0	11	0	11	0	6	366	6	0	378	0	6	227	5	0	238	635	2690
PEAK HOUR: 7:45-8:45 AM	0	0	0	35	0	35	0	0	0	75	0	75	0	39	1555	26	0	1620	0	41	965	14	0	1020	2750	
PHF						0.63						0.85						0.94						0.90		
SEASONALLY ADJUSTED VOLUMES	0	0	0	35	0	35	0	0	0	75	0	75	0	39	1555	26	0	1620	0	41	965	14	0	1020		
2015 AMBIENT NO BUILD	0	0	0	37	0	37	0	0	0	79	0	79	0	41	1641	27	0	1709	0	43	1018	15	0	1076		



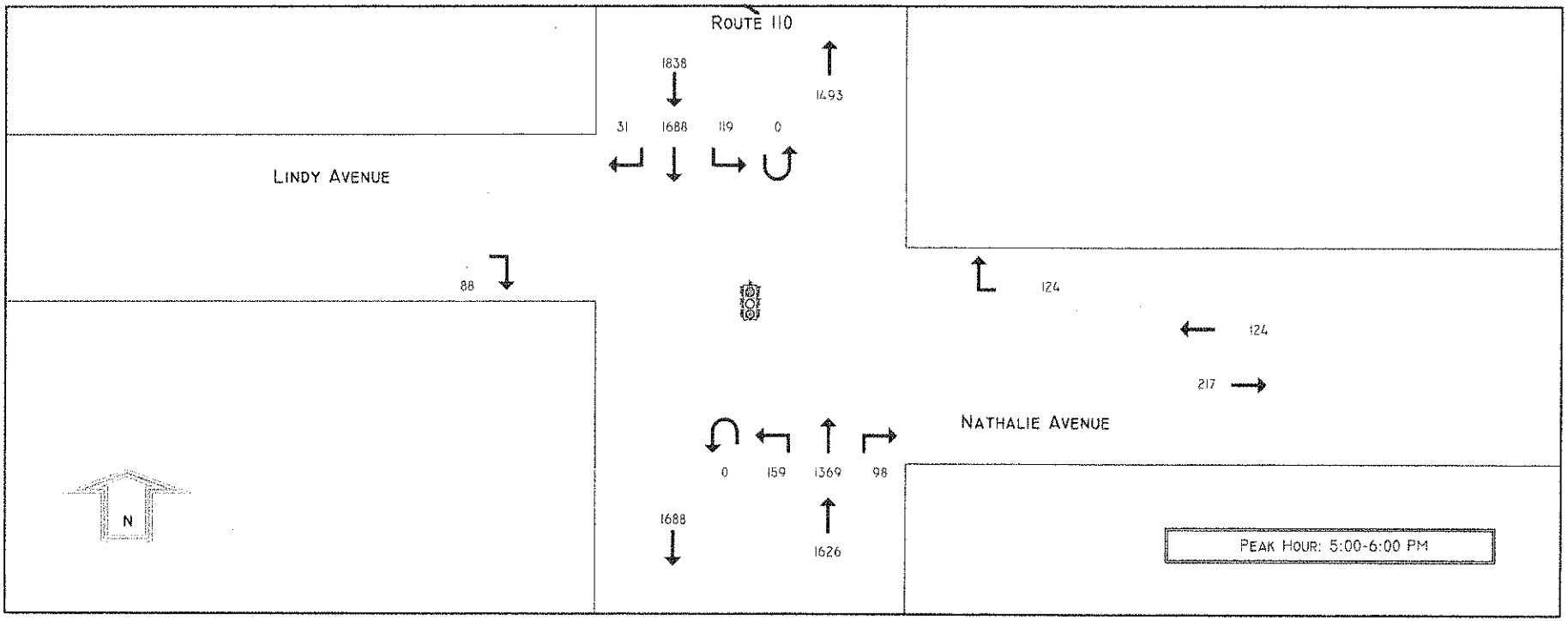
Intersection: Nathalie Avenue @ Route 110

Date Collected: 6/17/10 Wednesday

Project Title: New Frontier

Jurisdiction: Town of Babylon

Start Time	Nathalie Avenue												Route 110												Total	Cum. Hourly
	Eastbound						Westbound						Northbound						Southbound							
	U-Turn	Left	Thru	Right	RTOR	Total	U-Turn	Left	Thru	Right	RTOR	Total	U-Turn	Left	Thru	Right	RTOR	Total	U-Turn	Left	Thru	Right	RTOR	Total		
4:00 PM	0	0	0	23	0	23	0	1	0	17	0	18	0	30	361	21	0	412	0	23	388	4	0	415	868	
4:15 PM	0	0	0	17	0	17	0	0	0	21	0	21	0	31	357	24	0	412	0	33	380	5	0	418	868	
4:30 PM	0	0	0	28	0	28	0	0	0	30	0	30	0	33	387	18	0	438	0	30	409	4	0	443	939	
4:45 PM	0	0	0	24	0	24	0	0	0	22	0	22	0	37	308	23	0	368	0	25	408	2	0	435	849	3524
5:00 PM	0	0	0	21	0	21	0	0	0	24	0	24	0	34	391	18	0	443	0	30	432	8	0	470	958	3614
5:15 PM	0	0	0	22	0	22	0	0	0	37	0	37	0	51	336	19	0	406	0	29	400	11	0	440	905	3651
5:30 PM	0	0	0	23	0	23	0	0	0	31	0	31	0	37	345	25	0	407	0	29	448	6	0	483	944	3656
5:45 PM	0	0	0	22	0	22	0	0	0	32	0	32	0	37	297	36	0	370	0	31	408	6	0	445	869	3676
Peak Hour: 5:00-6:00 PM	0	0	0	88	0	88	0	0	0	124	0	124	0	159	1369	98	0	1626	0	119	1688	31	0	1838	3676	
PHF						0.96						0.84						0.92						0.95		
Seasonally Adjusted Volumes	0	0	0	88	0	88	0	0	0	124	0	124	0	159	1369	98	0	1626	0	119	1688	31	0	1838		
2015 Ambient NO Build	0	0	0	93	0	93	0	0	0	131	0	131	0	168	1444	103	0	1715	0	126	1781	33	0	1939		



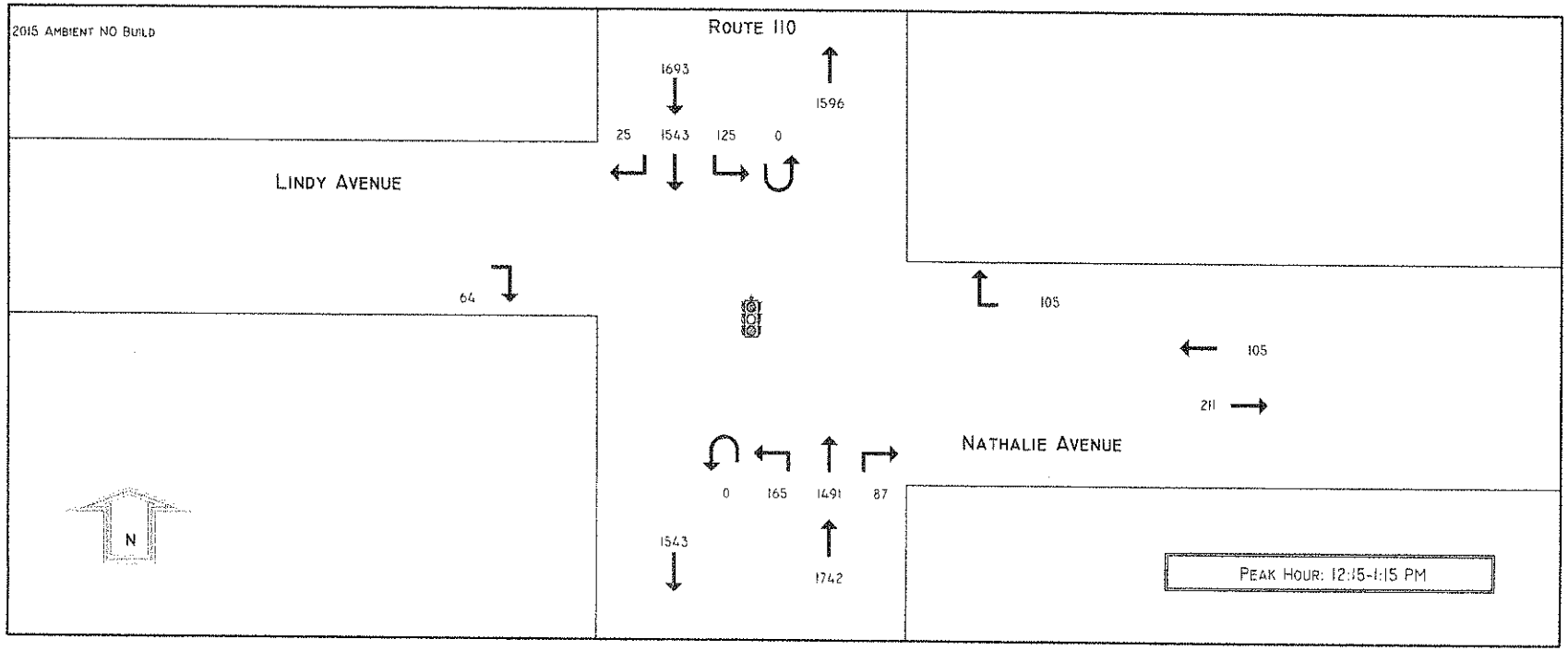
INTERSECTION: NATHALIE AVENUE @ ROUTE 110

DATE COLLECTED: 6/19/10 WEDNESDAY

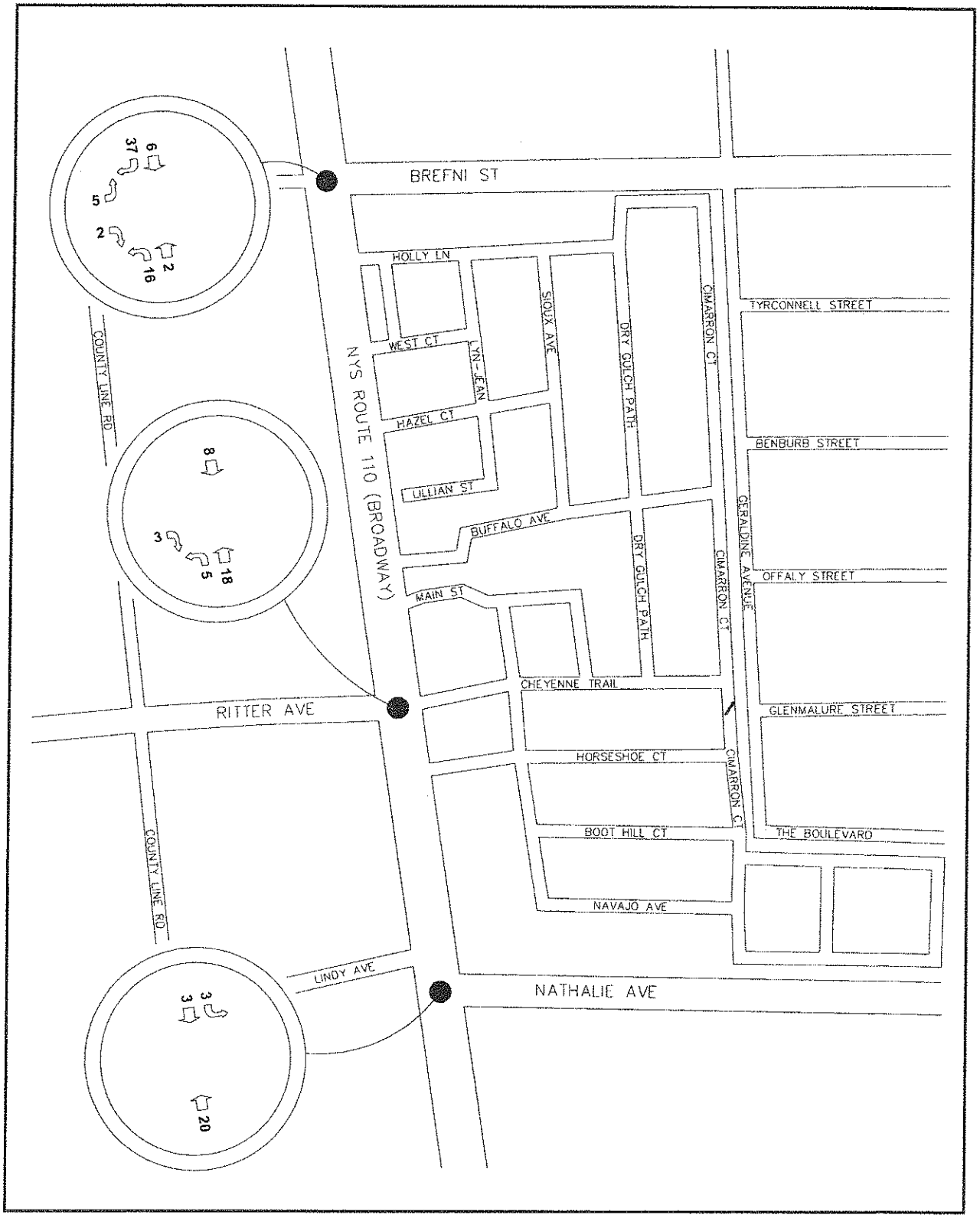
PROJECT TITLE: NEW FRONTIER

JURISDICTION: TOWN OF BABYLOM

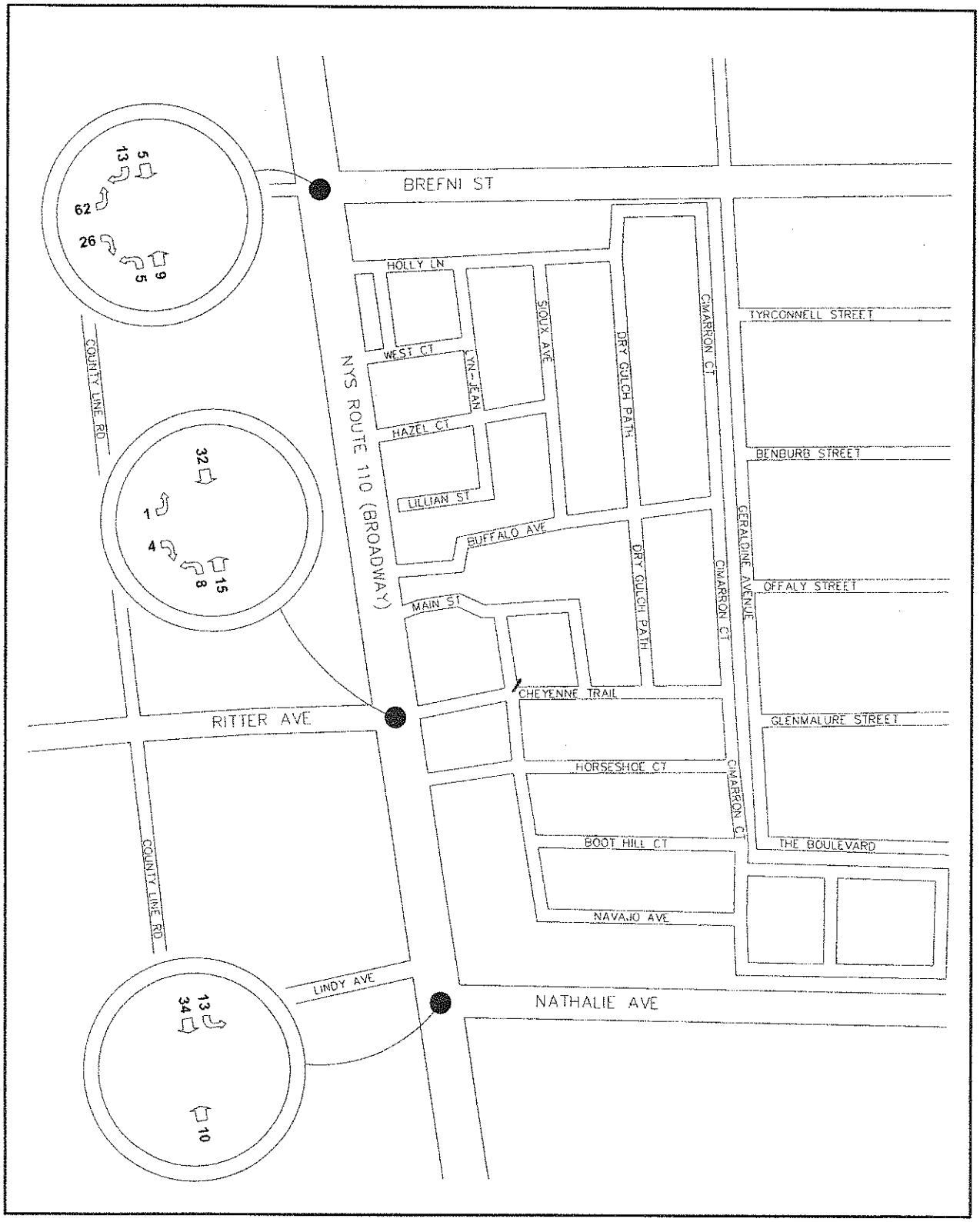
START TIME	NATHALIE AVENUE												ROUTE 110												TOTAL	CUM. HOURLY
	EASTBOUND						WESTBOUND						NORTHBOUND						SOUTHBOUND							
	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL	U-TURN	LEFT	THRU	RIGHT	RTOR	TOTAL		
11:00 AM	0	0	0	13	0	13	0	0	0	14	0	14	0	37	353	12	0	402	0	21	323	4	0	348	777	
11:15 AM	0	0	0	12	0	12	0	0	0	10	0	10	0	31	378	19	0	428	0	20	314	5	0	339	789	
11:30 AM	0	0	0	18	0	18	0	0	0	25	0	25	0	39	359	22	0	420	0	20	294	7	0	321	784	
11:45 AM	0	0	1	11	0	12	0	0	0	15	0	15	0	31	364	20	0	415	0	21	358	4	0	383	825	3175
12:00 PM	0	0	0	13	0	13	0	0	0	18	0	18	0	44	332	26	0	402	0	22	325	4	0	351	784	3182
12:15 PM	0	0	0	9	0	9	0	0	0	25	0	25	0	41	358	21	0	420	0	24	403	7	0	434	888	3281
12:30 PM	0	0	0	21	0	21	0	0	0	25	0	25	0	37	345	20	0	402	0	31	332	6	0	369	817	3314
12:45 PM	0	0	0	21	0	21	0	0	0	27	0	27	0	37	350	27	0	414	0	25	361	8	0	394	856	3345
1:00 PM	0	0	0	10	0	10	0	0	0	22	0	22	0	41	359	14	0	414	0	38	365	3	0	406	852	3413
1:15 PM	0	0	0	21	0	21	0	0	0	19	1	20	0	34	354	24	0	412	0	28	356	12	0	396	849	3374
1:30 PM	0	0	0	22	0	22	0	0	0	20	0	20	0	44	361	24	0	429	0	27	337	6	0	370	841	3398
1:45 PM	0	0	0	21	0	21	0	0	0	15	0	15	0	36	358	26	0	420	0	23	334	4	0	361	817	3359
PEAK HOUR: 12:15-1:15 PM	0	0	0	61	0	61	0	0	0	99	0	99	0	156	1412	82	0	1650	0	118	1461	24	0	1603	3413	
PHF						0.73						0.92						0.98						0.92		
SEASONALLY ADJUSTED VOLUMES	0	0	0	64	0	64	0	0	0	105	0	105	0	165	1491	87	0	1742	0	125	1543	25	0	1693		
2012 AMBIENT NO BUILD	0	0	0	68	0	68	0	0	0	110	0	110	0	174	1573	91	0	1838	0	131	1628	27	0	1786		



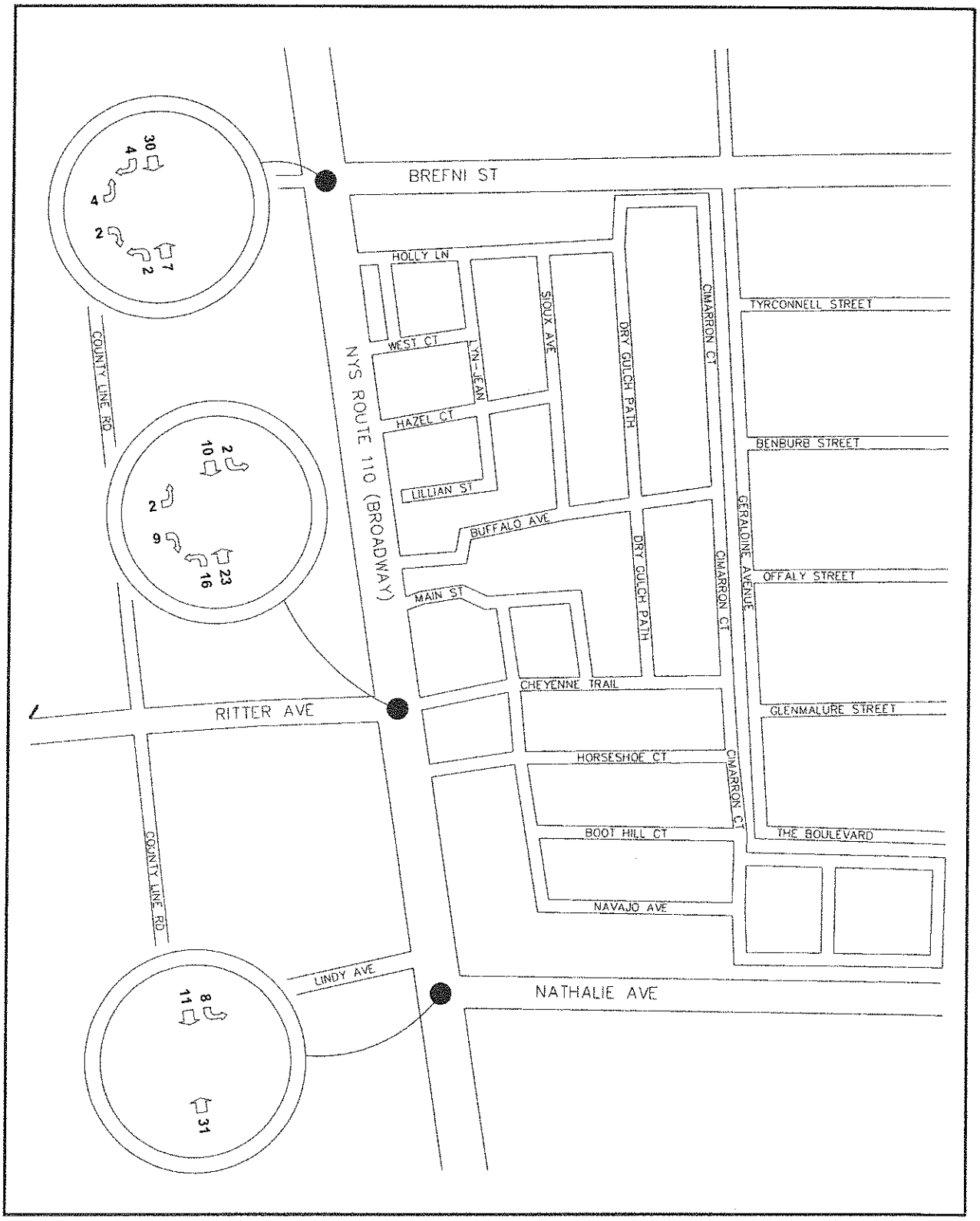
Appendix B: Supplemental Traffic Volume Figures



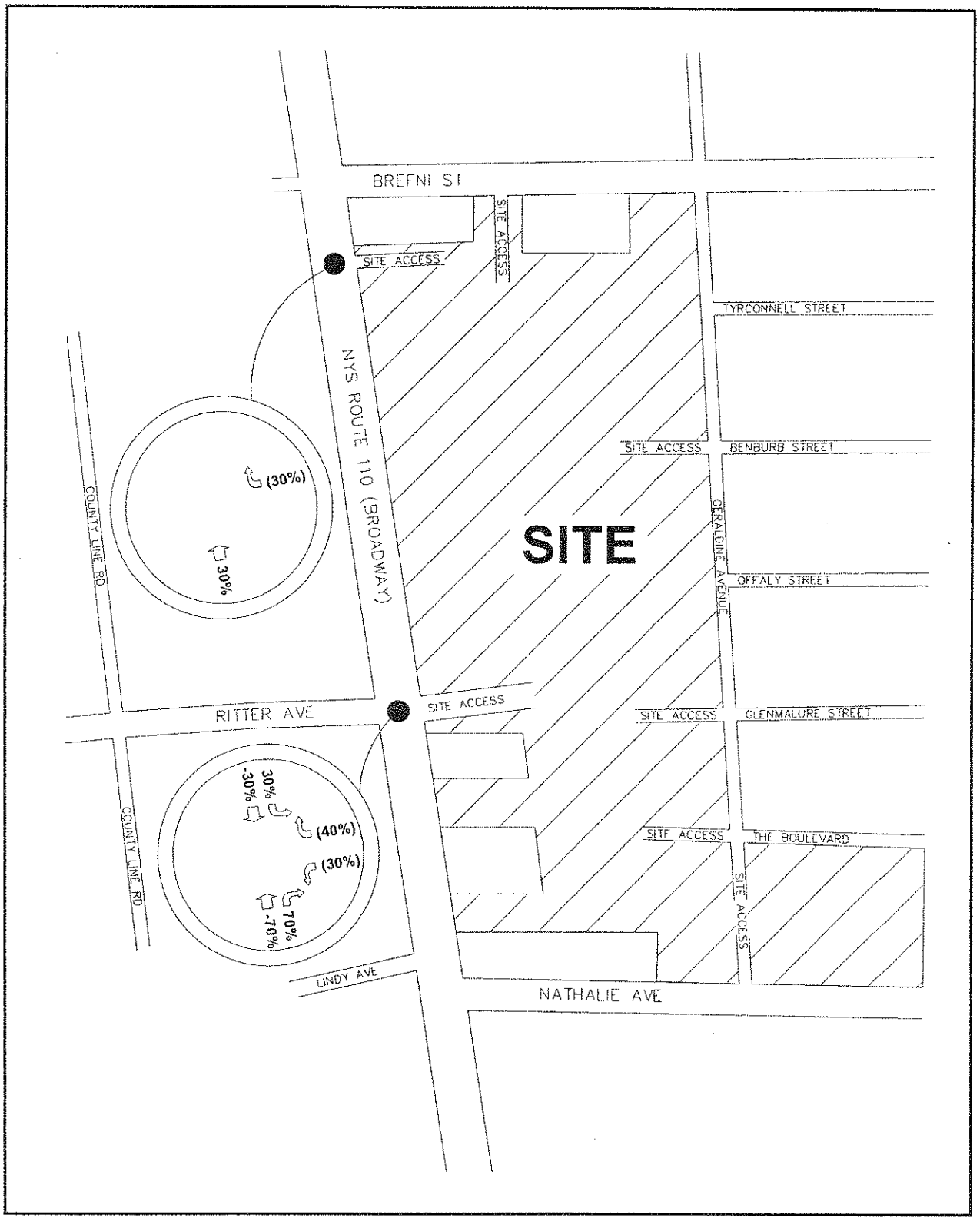
Other Planned Projects AM Volumes



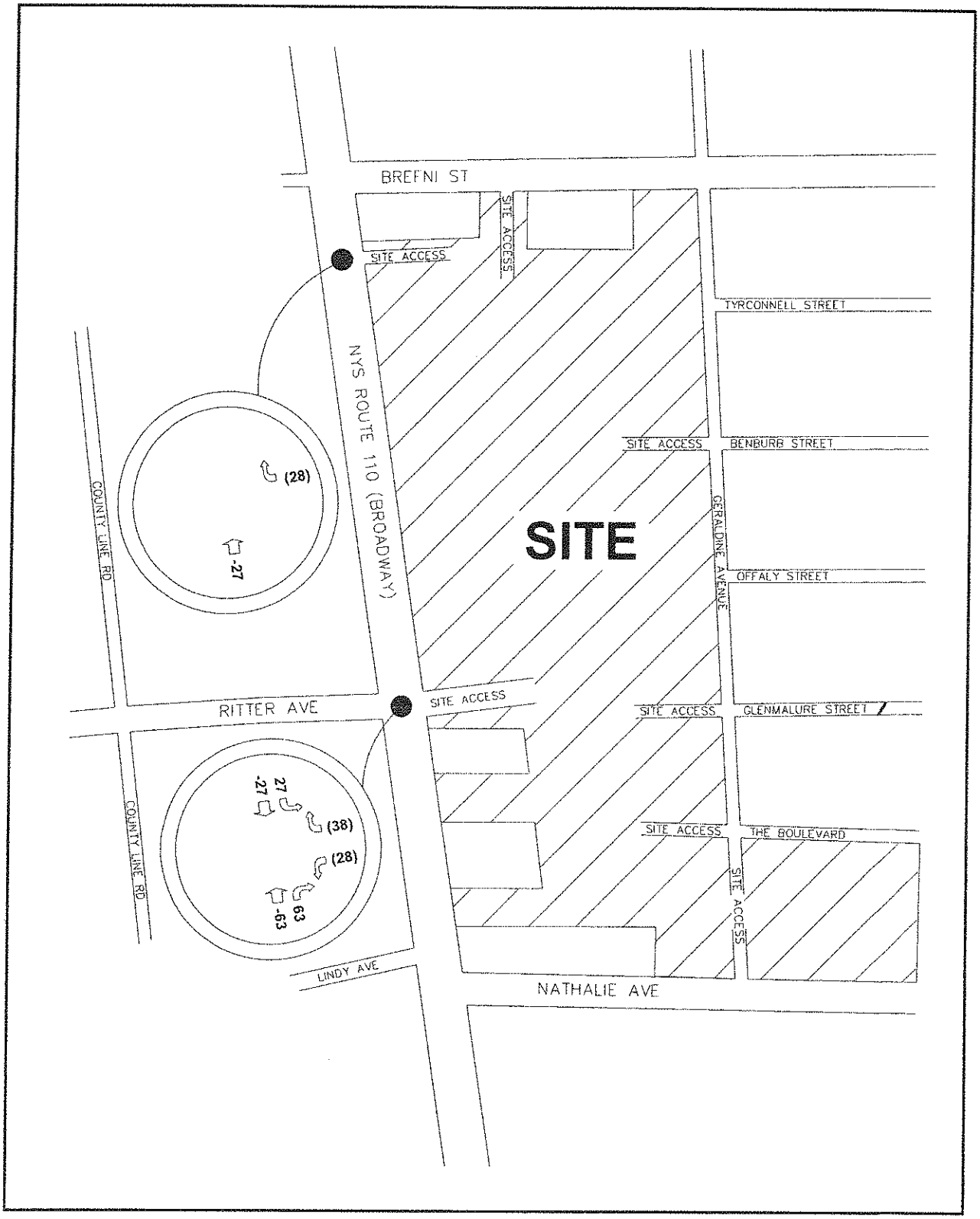
Other Planned Projects PM Volumes



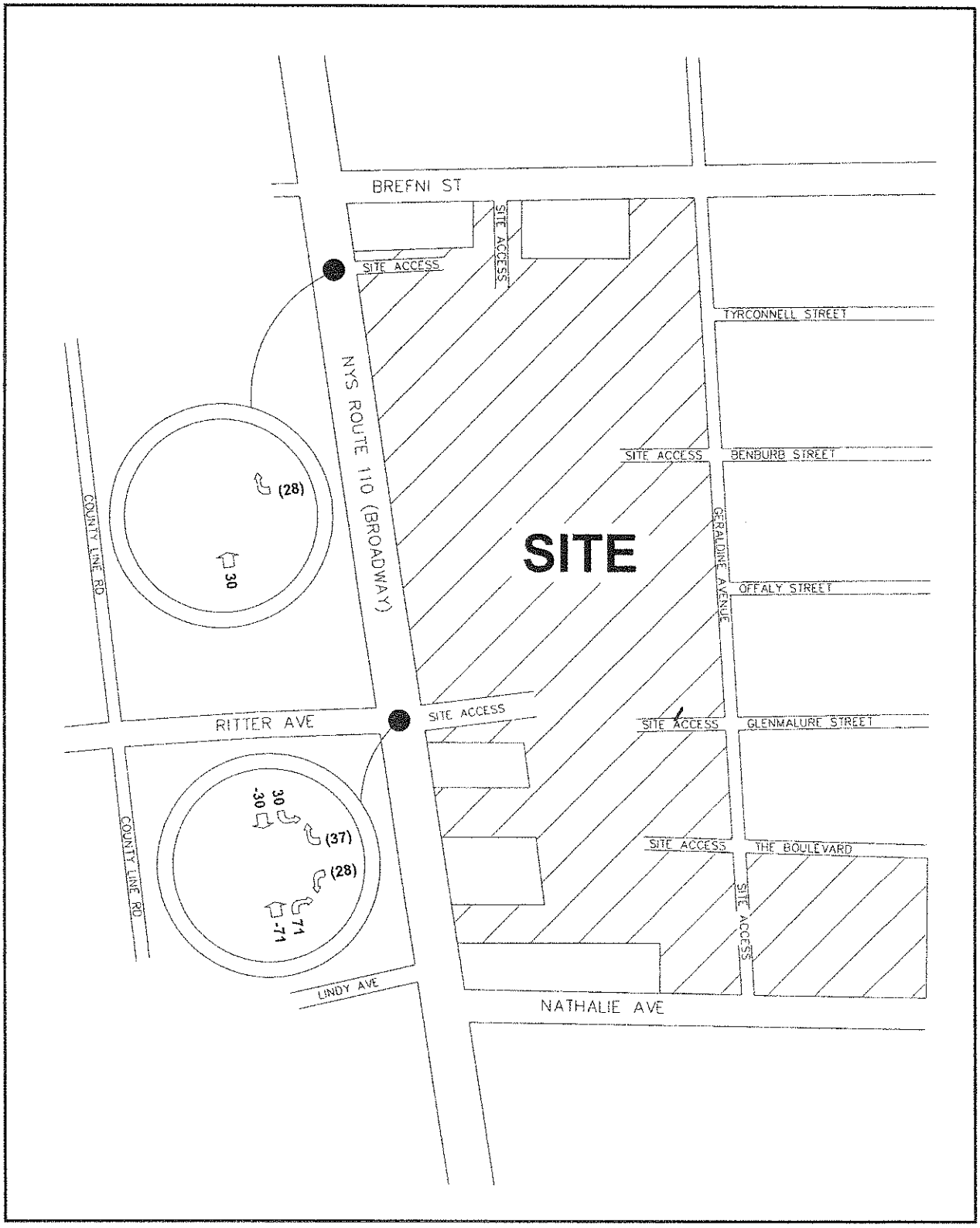
Other Planned Projects Saturday Volumes



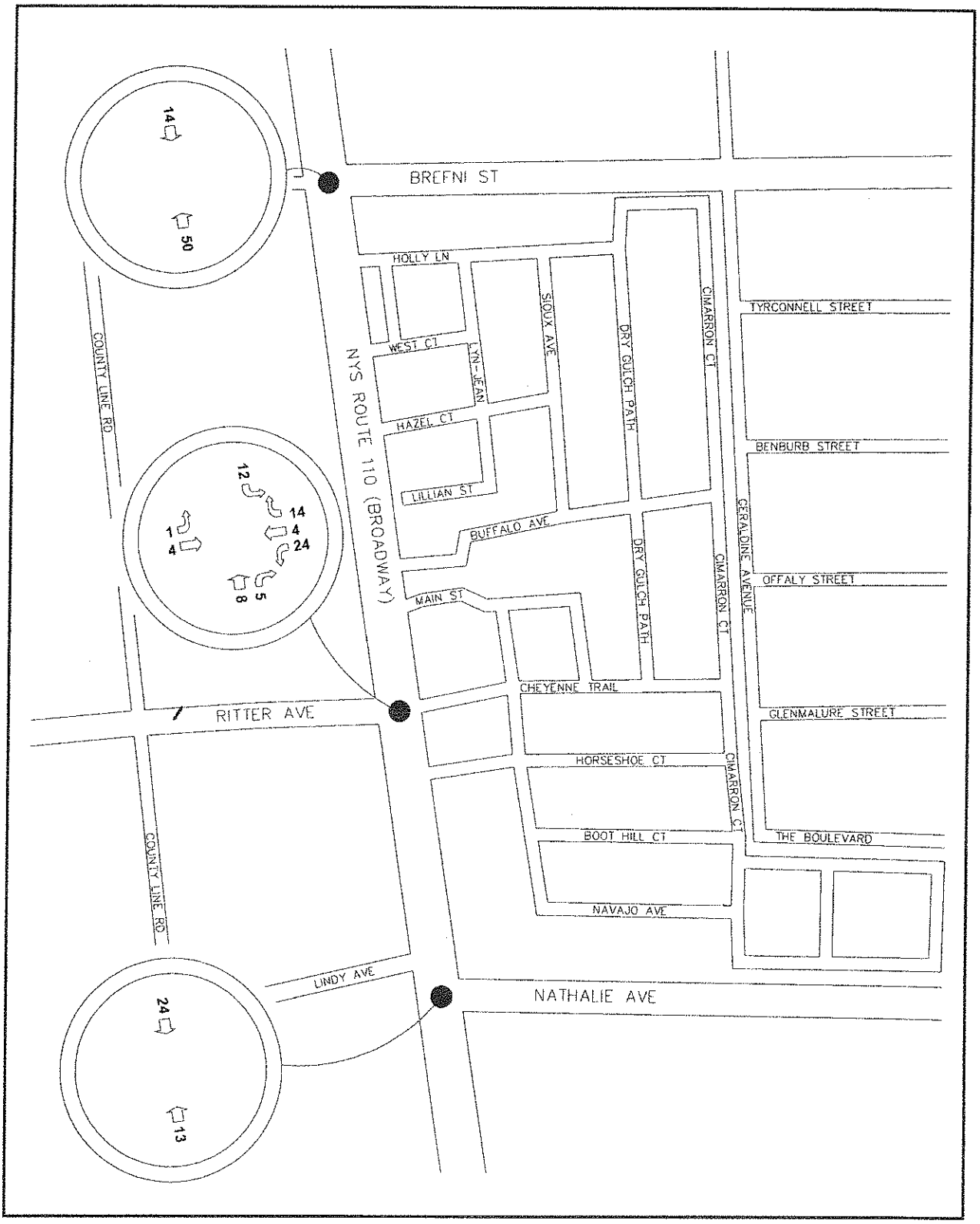
Pass-By Percent Distribution for Retail Component



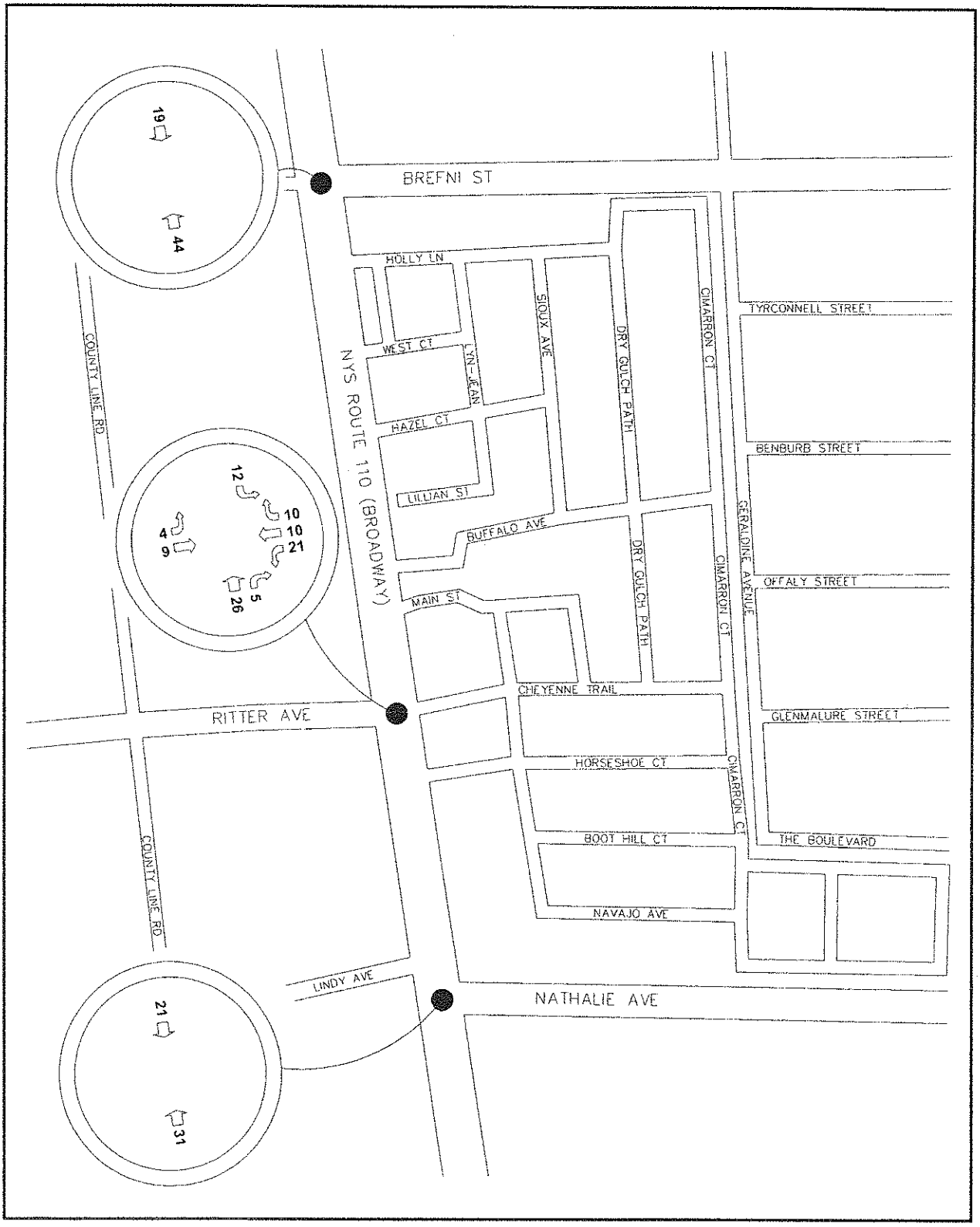
PM Peak Hour Pass-By Volumes



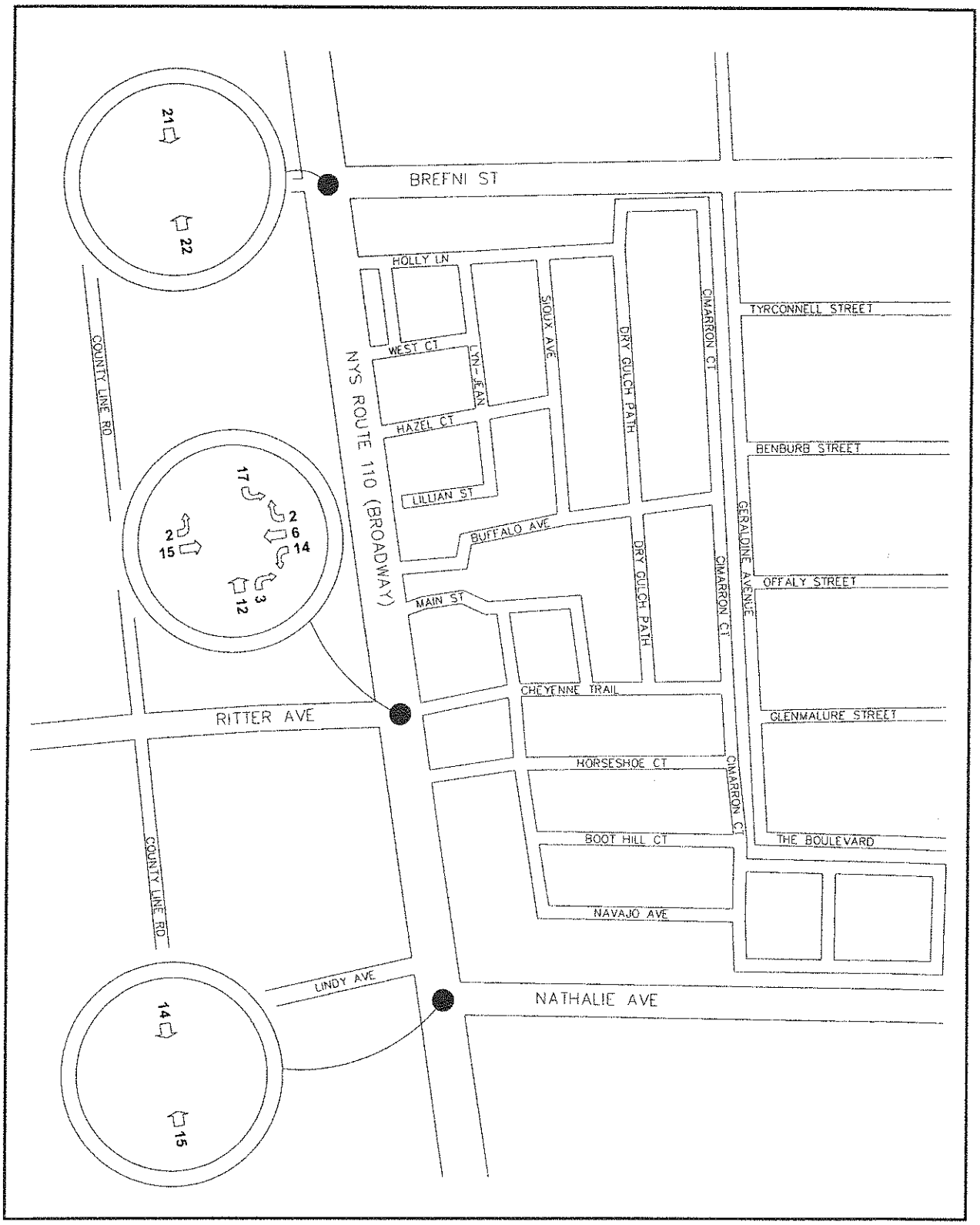
Saturday Peak Hour Pass-By Volumes



AM Peak Hour Existing Site Trips



PM Peak Hour Existing Site Trips



Saturday Peak Hour Existing Site Trips

Appendix C: Trip Generation

New Frontier - 09084
Summary of Trip Generation Calculation
For 500 Dwelling Units of Apartments
August 20, 2010

	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
Avg. Weekday 2-Way Volume	6.31	0.00	1.00	3154
7-9 AM Peak Hour Enter	0.10	0.00	1.00	50
7-9 AM Peak Hour Exit	0.40	0.00	1.00	199
7-9 AM Peak Hour Total	0.50	0.00	1.00	249
4-6 PM Peak Hour Enter	0.38	0.00	1.00	190
4-6 PM Peak Hour Exit	0.20	0.00	1.00	102
4-6 PM Peak Hour Total	0.59	0.00	1.00	293
AM Pk Hr, Generator, Enter	0.16	0.00	1.00	79
AM Pk Hr, Generator, Exit	0.39	0.00	1.00	193
AM Pk Hr, Generator, Total	0.54	0.00	1.00	272
PM Pk Hr, Generator, Enter	0.38	0.00	1.00	192
PM Pk Hr, Generator, Exit	0.25	0.00	1.00	123
PM Pk Hr, Generator, Total	0.63	0.00	1.00	315
Saturday 2-Way Volume	7.34	0.00	1.00	3669
Saturday Peak Hour Enter	0.00	0.00	1.00	0
Saturday Peak Hour Exit	0.00	0.00	1.00	0
Saturday Peak Hour Total	0.45	0.00	1.00	224
Sunday 2-Way Volume	6.22	0.00	1.00	3109
Sunday Peak Hour Enter	0.00	0.00	1.00	0
Sunday Peak Hour Exit	0.00	0.00	1.00	0
Sunday Peak Hour Total	0.00	0.00	1.00	0

Note: A zero indicates no data available.
The above rates were calculated from these equations:

24-Hr. 2-Way Volume:	T = 6.06(X) + 123.56, R^2 = 0.87
7-9 AM Peak Hr. Total:	T = .49(X) + 3.73
	R^2 = 0.83 , 0.2 Enter, 0.8 Exit
4-6 PM Peak Hr. Total:	T = .55(X) + 17.65
	R^2 = 0.77 , 0.65 Enter, 0.35 Exit
AM Gen Pk Hr. Total:	T = .54(X) + 2.45
	R^2 = 0.82 , 0.29 Enter, 0.71 Exit
PM Gen Pk Hr. Total:	T = .6(X) + 14.91
	R^2 = 0.8 , 0.61 Enter, 0.39 Exit
Sat. 2-Way Volume:	T = 7.85(X) + -256.19, R^2 = 0.85
Sat. Pk Hr. Total:	T = .41(X) + 19.23
	R^2 = 0.56 , 0 Enter, 0 Exit
Sun. 2-Way Volume:	T = 6.42(X) + -101.12, R^2 = 0.82
Sun. Pk Hr. Total:	0
	R^2 = 0 , 0 Enter, 0 Exit

Source: Institute of Transportation Engineers
Trip Generation, 8th Edition, 2008.

TRIP GENERATION BY MICROTRANS

New Frontier - 09084
Summary of Pass-By Trips
For 45.500 Th.Sq.Ft. GLA of Shopping Center
August 20, 2010

	Driveway Volume	Pass-By Trips	Volume Added to Adjacent Streets
Average Weekday			
7-9 AM Peak Hour Enter	59	0	59
7-9 AM Peak Hour Exit	38	0	38
7-9 AM Peak Hour Total	97	0	97
4-6 PM Peak Hour Enter	184	90	94
4-6 PM Peak Hour Exit	191	94	97
4-6 PM Peak Hour Total	375	184	191
Saturday			
Saturday Peak Hour Enter	267	101	166
Saturday Peak Hour Exit	247	93	154
Saturday Peak Hour Total	514	194	320

Note: A zero indicates no data available.

Pass-By Trips were calculated on the basis of the following:

Weekday P.M. Peak Period Pass-By Trip Percentage: Ln(T)=-0.29Ln(X)+5.00, R^2=0.37
Saturday Midday Pk. Pd. Pass-By Trip Percentage: T=-0.02(X)+38.59, R^2=0.29

Number of Pass-By Studies:100 for Weekday PM PK PD and 11 for Saturday.

Source: Institute of Transportation Engineers
Trip Generation Handbook, Second Edition, June, 2004.

TRIP GENERATION BY MICROTRANS

Analyst MCM
Date 8/7/10

MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt New Freetree
Time Period PM

LAND USE A RETAIL

ITE LU Code 820 GEN. RET.
Size 45,500 SF

	Total	Internal	External
Enter	184	17	167
Exit	191	23	168
Total	375	40	335
%	100%	~11%	89%

Exit to External
Enter from External

% Demand
Balanced
% Demand

% Demand
Balanced
% Demand

12% 23 Demand
23 Balanced
31% 59 Demand

9% 17 Demand
17 Balanced
53% 55 Demand

LAND USE B

ITE LU Code
Size

	Total	Internal	External
Enter			
Exit			
Total			
%			

Exit to External
Enter from External

Demand % Balanced Demand %

% Demand Balanced % Demand

LAND USE C APARTMENT

ITE LU Code 220 APT
Size 500 UNITS

	Total	Internal	External
Enter	190	23	167
Exit	103	17	86
Total	293	40	253
%	100%	~14%	86%

Enter from External
Exit to External

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter				
Exit				
Total				
Single-Use Trip Gen. Est.				

INTERNAL CAPTURE

Source: Kaku Associates, Inc.

Analyst MCM
Date 8/7/10

MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt NEW FRONTIER
Time Period SAT

LAND USE A RETAIL

ITE LU Code 820 GEN RETAIL
Size 45,500 SF

	Total	Internal	External
Enter	267	12	255
Exit	247	17	230
Total	514	29	485
%	100%	~6%	94%

Exit to External
Enter from External

% Demand
Balanced
% Demand

% Demand
Balanced
% Demand

7% 17 Demand
17 Balanced
37% 41 Demand

5% 12 Demand
12 Balanced
34% 38 Demand

LAND USE B

ITE LU Code
Size

	Total	Internal	External
Enter			
Exit			
Total			
%			

Exit to External
Enter from External

Demand % Balanced Demand %

% Demand Balanced % Demand

LAND USE C RESIDENTIAL

ITE LU Code 220 APT
Size 500 units

	Total	Internal	External
Enter	112	17	95
Exit	112	12	100
Total	224	29	195
%	100%	~13%	87%

Enter from External
Exit to External

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter				
Exit				
Total				
Single-Use Trip Gen. Est.				

INTERNAL CAPTURE

Source: Kaku Associates, Inc.

Appendix D: Level of Service Definitions

LEVEL OF SERVICE: SIGNALIZED INTERSECTIONS

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The levels of service range between level of service A (relatively congestion-free) and level of service F (congested).

The delay experienced by a motorist is made up of a number of factors that relate to control, geometry, traffic, and incidents at an intersection. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents, and when there are no other vehicles on the road. The portion of the total delay attributed to the control facility is called the control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Control delay may also be referred to as signal delay for signalized intersections.

Level of service criteria for signalized intersections is determined in terms of the average control delay per vehicle. The following average control delays are used to determine approach levels of service:

Level of Service A	$\leq$ 10.0 seconds per vehicle
Level of Service B	> 10.0 and $\leq$ 20.0 seconds per vehicle
Level of Service C	> 20.0 and $\leq$ 35.0 seconds per vehicle
Level of Service D	> 35.0 and $\leq$ 55.0 seconds per vehicle
Level of Service E	> 55.0 and $\leq$ 80.0 seconds per vehicle
Level of Service F	> 80.0 seconds per vehicle

Level of Service A describes operations with very low control delay. This occurs when progression is extremely favorable; most vehicles arrive during the green phase and do not stop at all. Short traffic signal cycles may contribute to low delay.

Level of Service B generally occurs with good progression and/or short traffic signal cycle lengths. More vehicles stop than for level of service A, causing higher average delays.

Level of Service C has higher delays than level of service B. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures, where motorists are required to wait through an entire signal cycle, may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.

Level of Service D At this level, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths or high volume-to-capacity ratios. The proportion of stopping vehicles increases. Individual cycle failures are noticeable.

Level of Service E is considered the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures occur frequently.

Level of Service F is considered unacceptable to most drivers. This condition often occurs with over saturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may occur at volume to capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

LEVEL OF SERVICE: TWO WAY STOP CONTROLLED INTERSECTIONS

The quality of traffic service at a two-way stop controlled, or "TWSC," intersection is measured according to the level of service and capacity of individual legs. The level of service ranges from LOS A to LOS F, just as with signalized intersections.

The right of way at the TWSC intersection is controlled by stop signs on two opposing legs of an intersection (on one leg of a "T"-type intersection). The capacity of a controlled leg is based on the distribution of gaps in the major street traffic flow, driver judgment in selecting a gap through which to execute the desired maneuver and the follow up time required by each driver in a queue.

The level of service for a TWSC intersection is determined by the computed or measured control delay and is defined for each minor movement. Level of service is not defined for the intersection as a whole. The delay experienced by a motorist is made up of a number of factors that relate to control, geometry, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during conditions with ideal geometry and in the absence of incidents, control, and traffic. This program only quantifies that portion of the total delay attributed to traffic control measures, either traffic signals or stop signs. This delay is called control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration. Average control delay for any particular minor movement is a function of the approach and the degree of saturation.

The expectation is that TWSC intersections are designed to carry smaller traffic volumes than signalized intersections. Therefore, the delay threshold times are lower for the same LOS grades. The following average control delays are used to determine approach levels of service:

Level of Service A	$\leq$ 10 seconds per vehicle
Level of Service B	> 10 and $\leq$ 15 seconds per vehicle
Level of Service C	> 15 and $\leq$ 25 seconds per vehicle
Level of Service D	> 25 and $\leq$ 35 seconds per vehicle
Level of Service E	> 35 and $\leq$ 50 seconds per vehicle
Level of Service F	> 50 seconds per vehicle

Appendix E: Capacity Analysis/Level of Service Worksheets & Summary Tables

LOS SUMMARY

NELSON & POPE

LEVELS OF SERVICE AND DELAY

			Existing Saturday			No Build Saturday			Build Saturday			Build Saturday Mitigation 1			Build Saturday Mitigation 2		
Signalized Intersections	Approach	Movt.	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS
NYS Route 110 at Brefni Street	EB	LTR	0.01	41.7	D	0.02	41.9	D	0.02	41.9	D	0.03	43.6	D	0.03	43.6	D
	WB	LTR	0.63	51.0	D	0.66	52.5	D	0.77	59.8	E	-	-	-	-	-	-
		LT	-	-	-	-	-	-	-	-	-	0.46	48.4	D	0.46	48.4	D
		R	-	-	-	-	-	-	-	-	-	0.24	29.2	C	0.24	29.2	C
	NB	L	0.06	44.7	D	0.06	44.7	D	0.06	44.7	D	0.06	43.8	D	0.05	17.6	B
		TR	0.86	14.8	B	0.91	17.9	B	0.95	22.1	C	0.94	19.7	B	0.94	19.7	B
	SB	L	0.43	48.3	D	0.45	48.5	D	0.57	51.2	D	0.54	49.4	D	0.44	32.2	C
		TR	0.83	13.4	B	0.89	16.4	B	0.93	19.5	B	0.92	17.5	B	0.92	17.5	B
	Intersection		-	16.8	B	-	19.7	B	-	23.8	C	-	20.5	C	-	19.9	B
NYS Route 110 at Ritter Avenue/Cheyenne Trail	EB	L	1.32	207.2	F	1.40	239.8	F	1.70	374.4	F	N/A			1.44	255.4	F
		TR	0.42	37.0	D	0.47	37.7	D	0.45	37.5	D				0.39	33.3	C
	WB	LTR	0.06	32.9	C	0.07	32.9	C	-	-	-				-	-	-
		LT	-	-	-	-	-	-	0.52	39.3	D				0.43	34.1	C
		R	-	-	-	-	-	-	0.26	35.0+	D				0.23	31.2	C
	NB	L	0.53	50.1	D	0.64	54.1	D	0.64	54.1	D				0.70	42.1	D
		TR	0.83	22.5	C	0.89	25.8	C	0.95	32.1	C				0.93	29.3	C
	SB	L	0.24	46.3	D	0.26	46.5	D	0.76	63.0	E				0.84	61.3	E
		T	0.89	25.8	C	0.94	31.0	C	0.93	29.4	C				0.91	27.0	C
		R	0.21	16.3	B	0.22	16.5	B	0.22	16.5	B				0.22	15.9	B
	Intersection		-	45.8	D	-	52.6	D	-	67.0	E				-	52.4	D
Unsignalized Intersections																	
NYS Route 110 at Nathalie Avenue	NB	L	0.43	21.2	C	0.50	25.0+	D	0.54	28.3	D						
	SB	L	0.33	18.0	C	0.41	21.3	C	0.44	23.6	C						
	WB	R	0.30	18.2	C	0.33	20.0	C	0.37	21.8	C						
NYS Route 110 at Site Access	WB	R	-	-	-	-	-	-	0.23	21.2	C						
Nathalie Avenue at Site Access	EB	LT	-	-	-	-	-	-	0.00	7.5	A						
	SB	LR	-	-	-	-	-	-	0.01	8.9	A						
Brefni Street at Site Access	WB	LT	-	-	-	-	-	-	0.00	7.6	A						
	NB	LR	-	-	-	-	-	-	0.05	11.0	B						

LOS SUMMARY

NELSON & POPE

			LEVELS OF SERVICE AND DELAY														
			Existing AM			No Build AM			Build AM			Build AM Mitigation 1			Build AM Mitigation 2		
Signalized Intersections	Approach	Movt.	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS
NYS Route 110 at Brefni Street	EB	LTR	0.01	39.3	D	0.03	39.5	D	0.03	39.5	D	0.03	41.9	D	0.03	41.9	D
	WB	LTR	0.98	93.1	F	1.04	109.3	F	1.26	189.9	F	-	-	-	-	-	-
		LT	-	-	-	-	-	-	-	-	-	0.50	47.6	D	0.50	47.6	D
		R	-	-	-	-	-	-	-	-	-	0.60	36.9	D	0.60	36.9	D
	NB	L	0.01	48.7	D	0.11	49.4	D	0.11	49.4	D	0.09	47.5	D	0.04	3.3	A
		TR	0.95	19.9	B	1.00	29.5	C	1.02	35.6	D	1.01	31.1	C	1.01	31.1	C
	SB	L	0.42	52.5	D	0.45	52.9	D	0.55	55.6	E	0.48	51.5	D	0.36	31.0	C
		TR	0.53	6.9	A	0.58	7.4	A	0.60	7.6	A	0.59	6.9	A	0.59	6.9	A
	Intersection		-	23.0	C	-	30.1	C	-	43.2	D	-	24.8	C	-	24.2	C
NYS Route 110 at Ritter Avenue/Cheyenne Trail	EB	L	1.35	221.7	F	1.43	255.6	F	1.46	266.0	F				1.46	266.0	F
		TR	0.06	32.8	C	0.08	33.1	C	0.08	33.1	C				0.08	33.1	C
	WB	LTR	0.15	33.8	C	0.15	33.8	C	-	-	-				-	-	-
		LT	-	-	-	-	-	-	0.17	34.0	C				0.17	34.0	C
		R	-	-	-	-	-	-	0.14	33.7	C		N/A		0.14	33.7	C
	NB	L	0.24	50.6	D	0.29	51.1	D	0.29	51.1	D				0.13	7.4	A
		TR	0.85	19.6	B	0.90	23.1	C	0.93	25.5	C				0.93	25.5	C
	SB	L	0.28	50.9	D	0.29	51.0	D	0.50	53.6	D				0.36	21.3	C
		T	0.55	12.4	B	0.58	12.9	B	0.59	12.9	B				0.59	12.9	B
		R	0.07	12.3	B	0.07	12.4	B	0.07	12.4	B				0.07	12.4	B
	Intersection		-	45.8	D	-	52.0	D	-	53.8	D				-	52.5	D

Unsignalized Intersections											
NYS Route 110 at Nathalie Avenue	NB	L	0.07	11.3	B	0.07	11.7	B	0.08	12.1	B
	SB	L	0.12	15.6	C	0.15	17.2	C	0.16	17.6	C
	WB	R	0.25	18.9	C	0.29	20.7	C	0.33	22.0	C
NYS Route 110 at Site Access	WB	R	-	-	-	-	-	-	0.11	20.9	C
Nathalie Avenue at Site Access	EB	LT	-	-	-	-	-	-	0.00	7.4	A
	SB	LR	-	-	-	-	-	-	0.01	8.7	A
Brefni Street at Site Access	WB	LT	-	-	-	-	-	-	0.00	7.4	A
	NB	LR	-	-	-	-	-	-	0.11	11.6	B

LOS SUMMARY

NELSON & POPE

			LEVELS OF SERVICE AND DELAY														
			Existing PM			No Build PM			Build PM			Build PM Mitigation 1			Build PM Mitigation 2		
Signalized Intersections	Approach	Movt.	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS	V/C Ratio	Delay Sec/Veh	LOS
NYS Route 110 at Brefni Street	EB	LTR	0.01	41.7	D	0.54	49.3	D	0.58	51.0	D	0.79	75.4	E	0.79	75.4	E
	WB	LTR	1.01	106.5	F	1.11	138.2	F	1.23	179.6	F	-	-	-	-	-	-
		LT	-	-	-	-	-	-	-	-	-	0.71	57.5	E	0.71	57.5	E
		R	-	-	-	-	-	-	-	-	-	0.39	35.2	D	0.39	35.2	D
	NB	L	0.11	52.2	D	0.16	52.5	D	0.16	52.5	D	0.16	52.5	D	0.16	24.6	C
		TR	0.96	32.4	C	1.02	45.2	D	1.04	51.0	D	1.04	51.0	D	1.04	51.0	D
	SB	L	0.49	41.4	D	0.51	41.9	D	0.65	46.0	D	0.68	48.0	D	0.58	35.2	D
		TR	0.86	9.3	A	0.91	12.6	B	0.95	16.0	B	0.96	18.6	B	0.96	18.6	B
	Intersection		-	26.9	C	-	36.0	D	-	43.4	D	-	36.0	D	-	35.2	D
NYS Route 110 at Ritter Avenue/Cheyenne Trail	EB	L	0.98	89.5	F	1.04	105.4	F	1.12	133.2	F				1.05	107.0	F
		TR	0.49	38.8	D	0.53	39.6	D	0.52	39.4	D				0.49	37.3	D
	WB	LTR	0.14	34.4	C	0.15	34.5	C		-	-				-	-	-
		LT	-	-	-	-	-	-	0.38	37.6	D				0.34	35.5	D
		R	-	-	-	-	-	-	0.21	35.2	D		N/A		0.20	33.6	C
	NB	L	0.65	53.7	D	0.72	57.8	E	0.72	57.8	E				0.64	29.8	C
		TR	0.82	22.3	C	0.87	25.1	C	0.91	27.9	C				0.91	27.9	C
	SB	L	0.17	44.8	D	0.18	44.9	D	0.63	53.0	D				0.56	32.0	C
		T	0.92	28.6	C	0.99	39.3	D	0.97	36.4	D				0.97	36.4	D
		R	0.25	16.9	B	0.27	17.2	B	0.27	17.2	B				0.27	17.2	B
	Intersection		-	32.3	C	-	39.1	D	-	41.1	D				-	37.3	D
Unsignalized Intersections																	
NYS Route 110 at Nathalie Avenue	NB	L	0.48	24.3	C	0.58	31.0	D	0.60	33.1	D						
	SB	L	0.30	17.3	C	0.38	20.1	C	0.40	21.3	C						
	WB	R	0.38	19.7	C	0.42	21.9	C	0.45	23.4	C						
NYS Route 110 at Site Access	WB	R	-	-	-	-	-	-	0.17	18.6	C						
Nathalie Avenue at Site Access	EB	LT	-	-	-	-	-	-	0.01	7.5	A						
	SB	LR	-	-	-	-	-	-	0.00	9.0	A						
Brefni Street at Site Access	WB	LT	-	-	-	-	-	-	0.00	7.9	A						
	NB	LR	-	-	-	-	-	-	0.06	12.6	B						

Existing Capacity Analyses

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: AM Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Existing 2010

N/S St: NYS Route 110

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	0	1	2	0	1	2	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	1	0	1	64	0	194	2	1952	37	62	1022	0
Lane Width		12.0			16.0		11.0	12.0		11.0	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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	21.0						10.0	74.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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	301	1568	0.01	0.19	39.3	D	39.3	D
Westbound								
LTR	325	1695	0.98	0.19	93.1	F	93.1	F
Northbound								
L	175	1745	0.01	0.10	48.7	D		
TR	2192	3461	0.95	0.63	19.9	B	19.9	B
Southbound								
L	159	1586	0.42	0.10	52.5	D		
TR	2102	3319	0.53	0.63	6.9	A	9.5	A

Intersection Delay = 23.0 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: PM Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Existing 2010

N/S St: NYS Route 110

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	0	1	2	0	1	2	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	1	0	1	107	0	117	14	1581	95	179	1886	0
Lane Width		12.0			16.0		11.0	12.0		11.0	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			
Thru	A					Thru			P	
Right	A					Right			P	
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A	P	
Right	A					Right		A	P	
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	18.0						7.0	13.0	62.0	
Yellow	4.0						3.0	3.0	4.0	
All Red	2.0						2.0	0.0	2.0	

Cycle Length: 120.0 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	262	1572	0.01	0.17	41.7	D	41.7	D
Westbound								
LTR	280	1679	1.01	0.17	106.5	F	106.5	F
Northbound								
L	131	1745	0.11	0.08	52.2	D		
TR	1857	3482	0.96	0.53	32.4	C	32.6	C
Southbound								
L	393	1745	0.49	0.22	41.4	D		
TR	2365	3547	0.86	0.67	9.3	A	12.1	B

Intersection Delay = 26.9 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: Saturday Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Existing 2010

N/S St: NYS Route 110

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	0	1	2	0	1	2	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	1	0	1	74	0	92	14	1772	81	102	1758	0
Lane Width		12.0			16.0		11.0	12.0		11.0	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			
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		18.0						15.0	72.0		
Yellow		4.0						3.0	4.0		
All Red		2.0						0.0	2.0		

Cycle Length: 120.0 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	267	1601	0.01	0.17	41.7	D	41.7	D
Westbound								
LTR	284	1705	0.63	0.17	51.0	D	51.0	D
Northbound								
L	247	1745	0.06	0.14	44.7	D		
TR	2195	3560	0.86	0.62	14.8	B	15.0	B
Southbound								
L	247	1745	0.43	0.14	48.3	D		
TR	2209	3582	0.83	0.62	13.4	B	15.3	B

Intersection Delay = 16.8 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: AM Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Cheyenne Trail

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : Existing 2010

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	0	1	2	0	1	2	1
LGConfig	L	TR			LTR		L	TR		L	T	R
Volume	363	4	30	24	4	14	36	1557	5	41	952	55
Lane Width	10.0	11.0			16.0		10.0	12.0		10.0	12.0	10.0
RTOR Vol			14			7			0			8

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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						10.0	65.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	331	1242	1.35	0.27	221.7	F		
TR	431	1616	0.06	0.27	32.8	C	211.7	F
Westbound								
LTR	444	1666	0.15	0.27	33.8	C	33.8	C
Northbound								
L	156	1560	0.24	0.10	50.6	D		
TR	1922	3442	0.85	0.56	19.6	B	20.3	C
Southbound								
L	160	1604	0.28	0.10	50.9	D		
T	1853	3319	0.55	0.56	12.4	B	13.9	B
R	732	1311	0.07	0.56	12.3	B		

Intersection Delay = 45.8 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: PM Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Cheyenne Trail

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : Existing 2010

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	0	1	2	0	1	2	1
LGConfig	L	TR		LTR			L	TR		L	T	R
Volume	306	9	203	21	10	10	149	1348	5	41	1581	234
Lane Width	10.0	11.0			16.0		10.0	12.0		10.0	12.0	10.0
RTOR Vol			23			2			0			50

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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	29.0						16.0	60.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	331	1280	0.98	0.26	89.5	F		
TR	407	1575	0.49	0.26	38.8	D	70.2	E
Westbound								
LTR	393	1523	0.14	0.26	34.4	C	34.4	C
Northbound								
L	253	1685	0.65	0.15	53.7	D		
TR	1814	3511	0.82	0.52	22.3	C	25.4	C
Southbound								
L	253	1685	0.17	0.15	44.8	D		
T	1833	3547	0.92	0.52	28.6	C	27.7	C
R	771	1492	0.25	0.52	16.9	B		

Intersection Delay = 32.3 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: Saturday Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Cheyenne Trail

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : Existing 2010

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	0	1	2	0	1	2	1
LGConfig	L	TR			LTR		L	TR		L	T	R
Volume	410	15	155	14	6	2	121	1451	3	55	1573	188
Lane Width	10.0	11.0			16.0		10.0	12.0		10.0	12.0	10.0
RTOR Vol			12			1			0			34

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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						15.0	60.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	349	1310	1.32	0.27	207.2	F		
TR	423	1587	0.42	0.27	37.0	D	159.8	F
Westbound								
LTR	439	1648	0.06	0.27	32.9	C	32.9	C
Northbound								
L	239	1685	0.53	0.14	50.1	D		
TR	1850	3581	0.83	0.52	22.5	C	24.6	C
Southbound								
L	239	1685	0.24	0.14	46.3	D		
T	1851	3582	0.89	0.52	25.8	C	25.6	C
R	771	1492	0.21	0.52	16.3	B		

Intersection Delay = 45.8 (sec/veh) Intersection LOS = D

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 7/27/2010
Analysis Time Period:
Intersection: NYS Route 110 at Nathalie Ave
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing 2010
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave/Driveway
North/South Street: NYS Route 110
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	39	1555	26	41	965	
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.86	0.86	
Hourly Flow Rate, HFR	41	1654	27	47	1122	
Percent Heavy Vehicles	3	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	2	0	1	2	
Configuration	L	T	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			75			
Peak Hour Factor, PHF			0.85			
Hourly Flow Rate, HFR			88			
Percent Heavy Vehicles			9			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes			1			
Configuration			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)	41	47			88			
C(m) (vph)	613	386			347			
v/c	0.07	0.12			0.25			
95% queue length	0.21	0.41			0.99			
Control Delay	11.3	15.6			18.9			
LOS	B	C			C			
Approach Delay				18.9				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 7/27/2010
Analysis Time Period: PM Peak
Intersection: NYS Route 110 at Nathalie Ave
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing 2010
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave/Driveway
North/South Street: NYS Route 110
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	159	1369	98	119	1688	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.95	0.95	
Hourly Flow Rate, HFR	172	1488	106	125	1776	
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	2	0	1	2	
Configuration	L	T	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			124			
Peak Hour Factor, PHF			0.84			
Hourly Flow Rate, HFR			147			
Percent Heavy Vehicles			0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes			1			
Configuration			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)	172	125			147			
C(m) (vph)	355	417			390			
v/c	0.48	0.30			0.38			
95% queue length	2.54	1.24			1.72			
Control Delay	24.3	17.3			19.7			
LOS	C	C			C			
Approach Delay				19.7				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 7/27/2010
Analysis Time Period:
Intersection: NYS Route 110 at Nathalie Ave
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing 2010
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave/Driveway
North/South Street: NYS Route 110
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	165	1491	87	125	1543	
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.92	0.92	
Hourly Flow Rate, HFR	168	1521	88	135	1677	
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	2	0	1	2	
Configuration	L	T	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			105			
Peak Hour Factor, PHF			0.92			
Hourly Flow Rate, HFR			114			
Percent Heavy Vehicles			0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes			1			
Configuration			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)	168	135			114			
C(m) (vph)	387	411			386			
v/c	0.43	0.33			0.30			
95% queue length	2.13	1.41			1.21			
Control Delay	21.2	18.0			18.2			
LOS	C	C			C			
Approach Delay				18.2				
Approach LOS				C				

No Build Capacity Analyses

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: AM Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : No Build 2015

N/S St: NYS Route 110

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	0	1	2	0	1	2	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	5	0	2	68	0	205	18	2061	39	66	1084	37
Lane Width		12.0			16.0		11.0	12.0		11.0	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			
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		21.0						10.0	74.0		
Yellow		4.0						3.0	4.0		
All Red		2.0						0.0	2.0		

Cycle Length: 120.0 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	258	1346	0.03	0.19	39.5	D	39.5	D
Westbound								
LTR	324	1690	1.04	0.19	109.3	F	109.3	F
Northbound								
L	175	1745	0.11	0.10	49.4	D		
TR	2192	3461	1.00	0.63	29.5	C	29.7	C
Southbound								
L	159	1586	0.45	0.10	52.9	D		
TR	2098	3312	0.58	0.63	7.4	A	9.9	A

Intersection Delay = 30.1 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: PM Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : No Build 2015

N/S St: NYS Route 110

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	0	1	2	0	1	2	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	62	0	26	113	0	123	20	1677	100	188	1995	13
Lane Width		12.0			16.0		11.0	12.0		11.0	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			
Thru	A					Thru			P	
Right	A					Right			P	
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A	P	
Right	A					Right		A	P	
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	18.0						7.0	13.0	62.0	
Yellow	4.0						3.0	3.0	4.0	
All Red	2.0						2.0	0.0	2.0	

Cycle Length: 120.0 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	175	1048	0.54	0.17	49.3	D	49.3	D
Westbound								
LTR	269	1613	1.11	0.17	138.2	F	138.2	F
Northbound								
L	131	1745	0.16	0.08	52.5	D		
TR	1858	3483	1.02	0.53	45.2	D	45.3	D
Southbound								
L	393	1745	0.51	0.22	41.9	D		
TR	2363	3544	0.91	0.67	12.6	B	15.1	B

Intersection Delay = 36.0 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: Saturday Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : No Build 2015

N/S St: NYS Route 110

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	0	1	2	0	1	2	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	4	0	2	78	0	97	16	1876	85	107	1885	4
Lane Width		12.0			16.0		11.0	12.0		11.0	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			
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		18.0						15.0	72.0		
Yellow		4.0						3.0	4.0		
All Red		2.0						0.0	2.0		

Cycle Length: 120.0 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	264	1586	0.02	0.17	41.9	D	41.9	D
Westbound								
LTR	284	1701	0.66	0.17	52.5	D	52.5	D
Northbound								
L	247	1745	0.06	0.14	44.7	D		
TR	2195	3560	0.91	0.62	17.9	B	18.1	B
Southbound								
L	247	1745	0.45	0.14	48.5	D		
TR	2208	3581	0.89	0.62	16.4	B	18.1	B

Intersection Delay = 19.7 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: AM Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Cheyenne Trail

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : No Build 2015

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	0	1	2	0	1	2	1
LGConfig	L	TR			LTR		L	TR		L	T	R
Volume	383	4	38	25	4	14	43	1661	5	43	1012	58
Lane Width	10.0	11.0			16.0		10.0	12.0		10.0	12.0	10.0
RTOR Vol			14			7			0			8

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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						10.0	65.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	330	1238	1.43	0.27	255.6	F		
TR	427	1601	0.08	0.27	33.1	C	240.3	F
Westbound								
LTR	439	1647	0.15	0.27	33.8	C	33.8	C
Northbound								
L	156	1560	0.29	0.10	51.1	D		
TR	1922	3442	0.90	0.56	23.1	C	23.8	C
Southbound								
L	160	1604	0.29	0.10	51.0	D		
T	1853	3319	0.58	0.56	12.9	B	14.3	B
R	732	1311	0.07	0.56	12.4	B		

Intersection Delay = 52.0 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: PM Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Cheyenne Trail

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : No Build 2015

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	0	1	2	0	1	2	1
LGConfig	L	TR			LTR		L	TR		L	T	R
Volume	324	9	218	22	11	10	165	1437	5	43	1700	247
Lane Width	10.0	11.0			16.0		10.0	12.0		10.0	12.0	10.0
RTOR Vol			23			2			0			50

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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	29.0						16.0	60.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	331	1281	1.04	0.26	105.4	F		
TR	407	1574	0.53	0.26	39.6	D	80.0+	F
Westbound								
LTR	375	1453	0.15	0.26	34.5	C	34.5	C
Northbound								
L	253	1685	0.72	0.15	57.8	E		
TR	1814	3511	0.87	0.52	25.1	C	28.4	C
Southbound								
L	253	1685	0.18	0.15	44.9	D		
T	1833	3547	0.99	0.52	39.3	D	37.2	D
R	771	1492	0.27	0.52	17.2	B		

Intersection Delay = 39.1 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: Saturday Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Cheyenne Trail

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : No Build 2015

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	0	1	2	0	1	2	1
LGConfig	L	TR			LTR		L	TR		L	T	R
Volume	434	16	173	14	7	2	144	1554	3	60	1670	199
Lane Width	10.0	11.0			16.0		10.0	12.0		10.0	12.0	10.0
RTOR Vol			12			1			0			34

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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						15.0	60.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	349	1309	1.40	0.27	239.8	F		
TR	423	1586	0.47	0.27	37.7	D	181.3	F
Westbound								
LTR	439	1646	0.07	0.27	32.9	C	32.9	C
Northbound								
L	239	1685	0.64	0.14	54.1	D		
TR	1850	3581	0.89	0.52	25.8	C	28.2	C
Southbound								
L	239	1685	0.26	0.14	46.5	D		
T	1851	3582	0.94	0.52	31.0	C	30.3	C
R	771	1492	0.22	0.52	16.5	B		

Intersection Delay = 52.6 (sec/veh) Intersection LOS = D

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 7/27/2010
Analysis Time Period:
Intersection: NYS Route 110 at Nathalie Ave
Jurisdiction:
Units: U. S. Customary
Analysis Year: No Build 2015
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave/Driveway
North/South Street: NYS Route 110
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	41	1661	27	46	1021	
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.86	0.86	
Hourly Flow Rate, HFR	43	1767	28	53	1187	
Percent Heavy Vehicles	3	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	2	0	1	2	
Configuration	L	T	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			79			
Peak Hour Factor, PHF			0.85			
Hourly Flow Rate, HFR			92			
Percent Heavy Vehicles			9			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes			1			
Configuration			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)	43	53			92			
C(m) (vph)	578	349			320			
v/c	0.07	0.15			0.29			
95% queue length	0.24	0.53			1.16			
Control Delay	11.7	17.2			20.7			
LOS	B	C			C			
Approach Delay				20.7				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 7/27/2010
Analysis Time Period:
Intersection: NYS Route 110 at Nathalie Ave
Jurisdiction:
Units: U. S. Customary
Analysis Year: No Build 2015
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave/Driveway
North/South Street: NYS Route 110
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	168	1454	103	139	1815	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.95	0.95	
Hourly Flow Rate, HFR	182	1580	111	146	1910	
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	2	0	1	2	
Configuration	L	T	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			131			
Peak Hour Factor, PHF			0.84			
Hourly Flow Rate, HFR			155			
Percent Heavy Vehicles			0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes			1			
Configuration			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)	182	146			155			
C(m) (vph)	315	383			365			
v/c	0.58	0.38			0.42			
95% queue length	3.41	1.75			2.05			
Control Delay	31.0	20.1			21.9			
LOS	D	C			C			
Approach Delay				21.9				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 7/27/2010
Analysis Time Period:
Intersection: NYS Route 110 at Nathalie Ave
Jurisdiction:
Units: U. S. Customary
Analysis Year: No Build 2015
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave/Driveway
North/South Street: NYS Route 110
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	174	1604	91	139	1639	
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.92	0.92	
Hourly Flow Rate, HFR	177	1636	92	151	1781	
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	2	0	1	2	
Configuration	L	T	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			110			
Peak Hour Factor, PHF			0.92			
Hourly Flow Rate, HFR			119			
Percent Heavy Vehicles			0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes		1				
Configuration		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)	177	151			119			
C(m) (vph)	353	370			357			
v/c	0.50	0.41			0.33			
95% queue length	2.69	1.93			1.43			
Control Delay	25.0+	21.3			20.0			
LOS	D	C			C			
Approach Delay				20.0				
Approach LOS				C				

Build Capacity Analyses

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: AM Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Build 2015

N/S St: NYS Route 110

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	0	1	2	0	1	2	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	5	0	2	78	0	255	18	2108	41	81	1114	37
Lane Width		12.0			16.0		11.0	12.0		11.0	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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	21.0						10.0	74.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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	245	1278	0.03	0.19	39.5	D	39.5	D
Westbound								
LTR	325	1697	1.26	0.19	189.9	F	189.9	F
Northbound								
L	175	1745	0.11	0.10	49.4	D		
TR	2192	3461	1.02	0.63	35.6	D	35.7	D
Southbound								
L	159	1586	0.55	0.10	55.6	E		
TR	2098	3312	0.60	0.63	7.6	A	10.7	B

Intersection Delay = 43.2 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: AM Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Build 2015 w/ mitigation

N/S St: NYS Route 110

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	2	0	1	2	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	5	0	2	78	0	255	18	2108	41	81	1114	37
Lane Width		12.0			10.0	10.0	11.0	12.0		11.0	12.0	
RTOR Vol			0			26			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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	18.0						12.0	75.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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	264	1581	0.03	0.17	41.9	D	41.9	D
Westbound								
LT	191	1143	0.50	0.17	47.6	D	39.6	D
R	468	1478	0.60	0.32	36.9	D		
Northbound								
L	204	1745	0.09	0.12	47.5	D		
TR	2221	3461	1.01	0.64	31.1	C	31.2	C
Southbound								
L	185	1586	0.48	0.12	51.5	D		
TR	2125	3312	0.59	0.64	6.9	A	9.9	A

Intersection Delay = 24.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: AM Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Build 2015 w/ mitigation 2

N/S St: NYS Route 110

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	2	0	1	2	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	5	0	2	78	0	255	18	2108	41	81	1114	37
Lane Width		12.0			10.0	10.0	11.0	12.0		11.0	12.0	
RTOR Vol			0			26			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	P		
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
WB	Left	A				SB	Left	A	P		
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	A			
Green		18.0						12.0	75.0		
Yellow		4.0						3.0	4.0		
All Red		2.0						0.0	2.0		

Cycle Length: 120.0 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	264	1581	0.03	0.17	41.9	D	41.9	D
Westbound								
LT	191	1143	0.50	0.17	47.6	D	39.6	D
R	468	1478	0.60	0.32	36.9	D		
Northbound								
L	439	1745	0.04	0.79	3.3	A		
TR	2221	3461	1.01	0.64	31.1	C	30.8	C
Southbound								
L	245	1586	0.36	0.79	31.0	C		
TR	2125	3312	0.59	0.64	6.9	A	8.5	A

Intersection Delay = 24.2 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: PM Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Build 2015

N/S St: NYS Route 110

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	0	1	2	0	1	2	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	62	0	26	117	0	145	20	1701	108	238	2068	13
Lane Width		12.0			16.0		11.0	12.0		11.0	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			
Thru	A					Thru			P	
Right	A					Right			P	
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A	P	
Right	A					Right		A	P	
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	18.0						7.0	13.0	62.0	
Yellow	4.0						3.0	3.0	4.0	
All Red	2.0						2.0	0.0	2.0	

Cycle Length: 120.0 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	165	988	0.58	0.17	51.0	D	51.0	D
Westbound								
LTR	271	1626	1.23	0.17	179.6	F	179.6	F
Northbound								
L	131	1745	0.16	0.08	52.5	D		
TR	1857	3481	1.04	0.53	51.0	D	51.0	D
Southbound								
L	393	1745	0.65	0.22	46.0	D		
TR	2363	3544	0.95	0.67	16.0	B	19.1	B

Intersection Delay = 43.4 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: PM Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Build 2015 w/ mitigation

N/S St: NYS Route 110

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	2	0	1	2	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	62	0	26	117	0	145	20	1701	108	238	2068	13
Lane Width		12.0			10.0	10.0	11.0	12.0		11.0	12.0	
RTOR Vol			0			15			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			
Thru	A					Thru			P	
Right	A					Right			P	
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru		A	P	
Right	A					Right		A	P	
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	19.0						7.0	12.0	62.0	
Yellow	4.0						3.0	3.0	4.0	
All Red	2.0						2.0	0.0	2.0	

Cycle Length: 120.0 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	121	693	0.79	0.17	75.4	E	75.4	E
Westbound								
LT	208	1187	0.71	0.17	57.5	E	45.8	D
R	423	1492	0.39	0.28	35.2	D		
Northbound								
L	131	1745	0.16	0.08	52.5	D		
TR	1857	3481	1.04	0.53	51.0	D	51.0	D
Southbound								
L	378	1745	0.68	0.22	48.0	D		
TR	2333	3544	0.96	0.66	18.6	B	21.6	C

Intersection Delay = 36.0 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: PM Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Build 2015 w/ mitigation 2

N/S St: NYS Route 110

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	2	0	1	2	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	62	0	26	117	0	145	20	1701	108	238	2068	13
Lane Width		12.0			10.0	10.0	11.0	12.0		11.0	12.0	
RTOR Vol			0			15			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		P	
	Thru	A					Thru			P	
	Right	A					Right			P	
	Peds						Peds				
WB	Left	A				SB	Left	A	A	P	
	Thru	A					Thru		A	P	
	Right	A					Right		A	P	
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	A			
Green		19.0						7.0	12.0	62.0	
Yellow		4.0						3.0	3.0	4.0	
All Red		2.0						2.0	0.0	2.0	

Cycle Length: 120.0 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	121	693	0.79	0.17	75.4	E	75.4	E
Westbound								
LT	208	1187	0.71	0.17	57.5	E	45.8	D
R	423	1492	0.39	0.28	35.2	D		
Northbound								
L	134	1745	0.16	0.59	24.6	C		
TR	1857	3481	1.04	0.53	51.0	D	50.7	D
Southbound								
L	439	1745	0.58	0.78	35.2	D		
TR	2333	3544	0.96	0.66	18.6	B	20.3	C

Intersection Delay = 35.2 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: Saturday Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Build 2015

N/S St: NYS Route 110

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	0	1	2	0	1	2	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	4	0	2	83	0	122	16	1956	90	135	1966	4
Lane Width		12.0			16.0		11.0	12.0		11.0	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			
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		18.0						15.0	72.0		
Yellow		4.0						3.0	4.0		
All Red		2.0						0.0	2.0		

Cycle Length: 120.0 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	254	1525	0.02	0.17	41.9	D	41.9	D
Westbound								
LTR	286	1714	0.77	0.17	59.8	E	59.8	E
Northbound								
L	247	1745	0.06	0.14	44.7	D		
TR	2195	3560	0.95	0.62	22.1	C	22.3	C
Southbound								
L	247	1745	0.57	0.14	51.2	D		
TR	2208	3581	0.93	0.62	19.5	B	21.5	C

Intersection Delay = 23.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: Saturday Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Build 2015 w/ mitigation

N/S St: NYS Route 110

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	2	0	1	2	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	4	0	2	83	0	122	16	1956	90	135	1966	4
Lane Width		12.0			10.0	10.0	11.0	12.0		11.0	12.0	
RTOR Vol			0			12			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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right	A			
Green	16.0						16.0	73.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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	237	1583	0.03	0.15	43.6	D	43.6	D
Westbound								
LT	192	1281	0.46	0.15	48.4	D	37.4	D
R	502	1507	0.24	0.33	29.2	C		
Northbound								
L	262	1745	0.06	0.15	43.8	D		
TR	2225	3560	0.94	0.63	19.7	B	19.9	B
Southbound								
L	262	1745	0.54	0.15	49.4	D		
TR	2238	3581	0.92	0.63	17.5	B	19.6	B

Intersection Delay = 20.5 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: Saturday Peak Hour
Project ID: New Frontier - 09084
E/W St: Brefni Street

Inter.: NYS Route 110 at Brefni Street
Area Type: All other areas
Jurisd:
Year : Build 2015 w/ mitigation 2

N/S St: NYS Route 110

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	2	0	1	2	0
LGConfig		LTR			LT	R	L	TR		L	TR	
Volume	4	0	2	83	0	122	16	1956	90	135	1966	4
Lane Width		12.0			10.0	10.0	11.0	12.0		11.0	12.0	
RTOR Vol			0			12			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	P		
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
WB	Left	A				SB	Left	A	P		
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	A			
Green		16.0						16.0	73.0		
Yellow		4.0						3.0	4.0		
All Red		2.0						0.0	2.0		

Cycle Length: 120.0 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	237	1583	0.03	0.15	43.6	D	43.6	D
Westbound								
LT	192	1281	0.46	0.15	48.4	D	37.4	D
R	502	1507	0.24	0.33	29.2	C		
Northbound								
L	323	1745	0.05	0.81	17.6	B		
TR	2225	3560	0.94	0.63	19.7	B	19.7	B
Southbound								
L	323	1745	0.44	0.81	32.2	C		
TR	2238	3581	0.92	0.63	17.5	B	18.4	B

Intersection Delay = 19.9 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: AM Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Site Access

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : Build 2015

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	1	1	2	0	1	2	1
LGConfig	L	TR			LT	R	L	TR		L	T	R
Volume	382	3	38	59	2	61	43	1671	32	75	1022	58
Lane Width	10.0	11.0			16.0	12.0	10.0	12.0		10.0	12.0	10.0
RTOR Vol			14			7			0			8

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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						10.0	65.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	324	1215	1.46	0.27	266.0	F		
TR	425	1594	0.08	0.27	33.1	C	250.3	F
Westbound								
LT	403	1511	0.17	0.27	34.0	C	33.8	C
R	431	1615	0.14	0.27	33.7	C		
Northbound								
L	156	1560	0.29	0.10	51.1	D		
TR	1913	3427	0.93	0.56	25.5	C	26.1	C
Southbound								
L	160	1604	0.50	0.10	53.6	D		
T	1853	3319	0.59	0.56	12.9	B	15.6	B
R	732	1311	0.07	0.56	12.4	B		

Intersection Delay = 53.8 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: AM Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Site Access

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : Build 2015 w/ mitigation

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	1	1	2	0	1	2	1
LGConfig	L	TR			LT	R	L	TR		L	T	R
Volume	382	3	38	59	2	61	43	1671	32	75	1022	58
Lane Width	10.0	11.0			16.0	12.0	10.0	12.0		10.0	12.0	10.0
RTOR Vol			14			7			0			8

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	P		
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
WB	Left	A				SB	Left	A	P		
	Thru	A					Thru		P		
	Right	A					Right		P		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						10.0	65.0		
Yellow		4.0						3.0	4.0		
All Red		2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	324	1215	1.46	0.27	266.0	F		
TR	425	1594	0.08	0.27	33.1	C	250.3	F
Westbound								
LT	403	1511	0.17	0.27	34.0	C	33.8	C
R	431	1615	0.14	0.27	33.7	C		
Northbound								
L	351	1560	0.13	0.69	7.4	A		
TR	1913	3427	0.93	0.56	25.5	C	25.0	C
Southbound								
L	220	1604	0.36	0.69	21.3	C		
T	1853	3319	0.59	0.56	12.9	B	13.5	B
R	732	1311	0.07	0.56	12.4	B		

Intersection Delay = 52.5 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: PM Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Site Access

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : Build 2015

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	1	1	2	0	1	2	1
LGConfig	L	TR			LT	R	L	TR		L	T	R
Volume	320	4	218	82	4	82	165	1372	115	150	1677	247
Lane Width	10.0	11.0			16.0	12.0	10.0	12.0		10.0	12.0	10.0
RTOR Vol			23			2			0			50

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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	29.0						16.0	60.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	303	1172	1.12	0.26	133.2	F		
TR	405	1566	0.52	0.26	39.4	D	97.3	F
Westbound								
LT	249	962	0.38	0.26	37.6	D	36.4	D
R	417	1615	0.21	0.26	35.2	D		
Northbound								
L	253	1685	0.72	0.15	57.8	E		
TR	1797	3479	0.91	0.52	27.9	C	30.9	C
Southbound								
L	253	1685	0.63	0.15	53.0	D		
T	1833	3547	0.97	0.52	36.4	D	35.8	D
R	771	1492	0.27	0.52	17.2	B		

Intersection Delay = 41.1 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: PM Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Site Access

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : Build 2015 w/ mitigation

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	1	1	2	0	1	2	1
LGConfig	L	TR			LT	R	L	TR		L	T	R
Volume	320	4	218	82	4	82	165	1372	115	150	1677	247
Lane Width	10.0	11.0			16.0	12.0	10.0	12.0		10.0	12.0	10.0
RTOR Vol			23			2			0			50

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	P		
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A	P		
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	31.0						14.0	60.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	324	1178	1.05	0.28	107.0	F		
TR	431	1566	0.49	0.28	37.3	D	80.3	F
Westbound								
LT	278	1010	0.34	0.28	35.5	D	34.6	C
R	444	1615	0.20	0.28	33.6	C		
Northbound								
L	285	1685	0.64	0.68	29.8	C		
TR	1797	3479	0.91	0.52	27.9	C	28.1	C
Southbound								
L	285	1685	0.56	0.68	32.0	C		
T	1833	3547	0.97	0.52	36.4	D	34.2	C
R	771	1492	0.27	0.52	17.2	B		

Intersection Delay = 37.3 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: Saturday Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Site Access

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : Build 2015

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	1	1	2	0	1	2	1
LGConfig	L	TR			LT	R	L	TR		L	T	R
Volume	432	8	173	116	7	103	144	1494	149	175	1645	199
Lane Width	10.0	11.0			16.0	12.0	10.0	12.0		10.0	12.0	10.0
RTOR Vol			12			1			0			34

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			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						15.0	60.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	285	1067	1.70	0.27	374.4	F		
TR	420	1574	0.45	0.27	37.5	D	279.6	F
Westbound								
LT	263	985	0.52	0.27	39.3	D	37.4	D
R	431	1615	0.26	0.27	35.0+	D		
Northbound								
L	239	1685	0.64	0.14	54.1	D		
TR	1827	3536	0.95	0.52	32.1	C	33.9	C
Southbound								
L	239	1685	0.76	0.14	63.0	E		
T	1851	3582	0.93	0.52	29.4	C	31.3	C
R	771	1492	0.22	0.52	16.5	B		

Intersection Delay = 67.0 (sec/veh) Intersection LOS = E

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/16/2010
Period: Saturday Peak Hour
Project ID: New Frontier - 09084
E/W St: Ritter Ave/Site Access

Inter.: NYS Route 110 at Ritter Ave
Area Type: All other areas
Jurisd:
Year : Build 2015 w/ mitigation

N/S St: NYS Route 110

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	1	1	2	0	1	2	1
LGConfig	L	TR			LT	R	L	TR		L	T	R
Volume	432	8	173	116	7	103	144	1494	149	175	1645	199
Lane Width	10.0	11.0			16.0	12.0	10.0	12.0		10.0	12.0	10.0
RTOR Vol			12			1			0			34

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	P		
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
WB Left	A				SB	Left	A	P		
Thru	A					Thru		P		
Right	A					Right		P		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	34.9						9.1	61.0		
Yellow	4.0						3.0	4.0		
All Red	2.0						0.0	2.0		

Cycle Length: 120.0 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								
L	337	1096	1.44	0.31	255.4	F		
TR	484	1574	0.39	0.31	33.3	C	192.8	F
Westbound								
LT	319	1037	0.43	0.31	34.1	C	32.8	C
R	497	1615	0.23	0.31	31.2	C		
Northbound								
L	216	1685	0.70	0.65	42.1	D		
TR	1856	3536	0.93	0.52	29.3	C	30.3	C
Southbound								
L	216	1685	0.84	0.65	61.3	E		
T	1881	3582	0.91	0.52	27.0	C	29.1	C
R	783	1492	0.22	0.52	15.9	B		

Intersection Delay = 52.4 (sec/veh) Intersection LOS = D

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 7/27/2010
Analysis Time Period: AM Peak
Intersection: NYS Route 110 at Nathalie Ave
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave/Driveway
North/South Street: NYS Route 110
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	41	1688	30	46	1066	
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.86	0.86	
Hourly Flow Rate, HFR	43	1795	31	53	1239	
Percent Heavy Vehicles	3	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	2	0	1	2	
Configuration	L	T	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			89			
Peak Hour Factor, PHF			0.85			
Hourly Flow Rate, HFR			104			
Percent Heavy Vehicles			9			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes			1			
Configuration			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)	43	53			104			
C(m) (vph)	552	339			314			
v/c	0.08	0.16			0.33			
95% queue length	0.25	0.55			1.41			
Control Delay	12.1	17.6			22.0			
LOS	B	C			C			
Approach Delay				22.0				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 7/27/2010
Analysis Time Period:
Intersection: NYS Route 110 at Nathalie Ave
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave/Driveway
North/South Street: NYS Route 110
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	168	1495	111	139	1852	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.95	0.95	
Hourly Flow Rate, HFR	182	1624	120	146	1949	
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	2	0	1	2	
Configuration	L	T	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			135			
Peak Hour Factor, PHF			0.84			
Hourly Flow Rate, HFR			160			
Percent Heavy Vehicles			0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes			1			
Configuration			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)	182	146			160			
C(m) (vph)	304	365			353			
v/c	0.60	0.40			0.45			
95% queue length	3.62	1.87			2.27			
Control Delay	33.1	21.3			23.4			
LOS	D	C			C			
Approach Delay				23.4				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 7/27/2010
Analysis Time Period:
Intersection: NYS Route 110 at Nathalie Ave
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave/Driveway
North/South Street: NYS Route 110
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	174	1685	96	139	1718	
Peak-Hour Factor, PHF	0.98	0.98	0.98	0.92	0.92	
Hourly Flow Rate, HFR	177	1719	97	151	1867	
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	2	0	1	2	
Configuration	L	T	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			115			
Peak Hour Factor, PHF			0.92			
Hourly Flow Rate, HFR			124			
Percent Heavy Vehicles			0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes			1			
Configuration			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)	177	151			124			
C(m) (vph)	327	342			336			
v/c	0.54	0.44			0.37			
95% queue length	3.05	2.17			1.65			
Control Delay	28.3	23.6			21.8			
LOS	D	C			C			
Approach Delay				21.8				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 8/12/2010
Analysis Time Period: AM Peak
Intersection: NYS Route 110 @ Site Access
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: NYS Route 110
North/South Street: Site Access
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		2141	6		1194	
Peak-Hour Factor, PHF		0.96	0.90		0.94	
Hourly Flow Rate, HFR		2230	6		1270	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Raised curb			/ 0		
RT Channelized?						
Lanes		2	0		2	
Configuration		T	TR		T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			26			
Peak Hour Factor, PHF			0.90			
Hourly Flow Rate, HFR			28			
Percent Heavy Vehicles			0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes			1			
Configuration			R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R			
v (vph)					28			
C(m) (vph)					254			
v/c					0.11			
95% queue length					0.37			
Control Delay					20.9			
LOS					C			
Approach Delay				20.9				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 8/12/2010
Analysis Time Period: PM Peak
Intersection: NYS Route 110 @ Site Access
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: NYS Route 110
North/South Street: Site Access
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		1781	12		2211	
Peak-Hour Factor, PHF		0.94	0.90		0.94	
Hourly Flow Rate, HFR		1894	13		2352	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Raised curb			/ 0		
RT Channelized?						
Lanes		2	0		2	
Configuration		T	TR		T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume			48			
Peak Hour Factor, PHF			0.90			
Hourly Flow Rate, HFR			53			
Percent Heavy Vehicles			0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes			1			
Configuration			R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R			
v (vph)					53			
C(m) (vph)					317			
v/c					0.17			
95% queue length					0.59			
Control Delay					18.6			
LOS					C			
Approach Delay				18.6				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 8/12/2010
Analysis Time Period: Saturday Peak
Intersection: NYS Route 110 @ Site Access
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: NYS Route 110
North/South Street: Site Access
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		2003	13		2051	
Peak-Hour Factor, PHF		0.98	0.90		0.96	
Hourly Flow Rate, HFR		2043	14		2136	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Raised curb			/ 0		
RT Channelized?						
Lanes		2	0		2	
Configuration		T	TR		T	
Upstream Signal?		No			No	

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

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config					R			
v (vph)					65			
C(m) (vph)					287			
v/c					0.23			
95% queue length					0.85			
Control Delay					21.2			
LOS					C			
Approach Delay				21.2				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 8/12/2010
Analysis Time Period: AM Peak
Intersection: Brefni St @ Site Access
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: Brefni St.
North/South Street: Site Access
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		72	17	0	273	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		80	18	0	303	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	60		0			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	66		0			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		0		66				
C(m) (vph)		1495		612				
v/c		0.00		0.11				
95% queue length		0.00		0.36				
Control Delay		7.4		11.6				
LOS		A		B				
Approach Delay				11.6				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 8/12/2010
Analysis Time Period: PM Peak
Intersection: Brefni St @ Site Access
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: Brefni St.
North/South Street: Site Access
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		223	58	0	236	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		247	64	0	262	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	26		0			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	28		0			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0	0				
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		0		28				
C(m) (vph)		1249		502				
v/c		0.00		0.06				
95% queue length		0.00		0.18				
Control Delay		7.9		12.6				
LOS		A		B				
Approach Delay				12.6				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 8/12/2010
Analysis Time Period: Saturday Peak
Intersection: Brefni St @ Site Access
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: Brefni St.
North/South Street: Site Access
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		140	33	0	175	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR		155	36	0	194	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	30		0			
Peak Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	33		0			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		0		33				
C(m) (vph)		1383		633				
v/c		0.00		0.05				
95% queue length		0.00		0.16				
Control Delay		7.6		11.0				
LOS		A		B				
Approach Delay				11.0				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 8/12/2010
Analysis Time Period: AM Peak
Intersection: Nathalie Ave @ Site Access
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave.
North/South Street: Site Access
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	3	73			79	0
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	3	81			87	0
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

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

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	3						11	
C(m) (vph)	1509						971	
v/c	0.00						0.01	
95% queue length	0.01						0.03	
Control Delay	7.4						8.7	
LOS	A						A	
Approach Delay							8.7	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 8/12/2010
Analysis Time Period: PM Peak
Intersection: Nathalie Ave @ Site Access
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave.
North/South Street: Site Access
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	8	103			131	0
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	8	114			145	0
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				0		4
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				0		4
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/		No	/
Lanes				0	0	
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	8						4	
C(m) (vph)	1437						902	
v/c	0.01						0.00	
95% queue length	0.02						0.01	
Control Delay	7.5						9.0	
LOS	A						A	
Approach Delay							9.0	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: MCM
Agency/Co.: Nelson & Pope
Date Performed: 8/12/2010
Analysis Time Period: Saturday Peak
Intersection: Nathalie Ave @ Site Access
Jurisdiction:
Units: U. S. Customary
Analysis Year: Build 2015
Project ID: New Frontier - 09084
East/West Street: Nathalie Ave.
North/South Street: Site Access
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	91			110	0
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	5	101			122	0
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

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

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	5						5	
C(m) (vph)	1465						929	
v/c	0.00						0.01	
95% queue length	0.01						0.02	
Control Delay	7.5						8.9	
LOS	A						A	
Approach Delay							8.9	
Approach LOS							A	