

**DRAFT SUPPLEMENTAL  
ENVIRONMENTAL IMPACT STATEMENT  
VOLUME 2 OF 2**

**PREPARED FOR  
CANON, U.S.A., INC.**



**FOR**

**CANON, U.S.A., INC.  
TOWN OF HUNTINGTON  
SUFFOLK COUNTY, NEW YORK**

**PREPARED BY  
CAMERON ENGINEERING & ASSOCIATES, LLP**

**SEPTEMBER 2008**

**APPENDIX D**

**TRAFFIC REPORT**



ATLANTIC TRAFFIC  
& DESIGN ENGINEERS, INC.

2002 Orville Drive North  
Ronkonkoma, NY 11779  
631.738.1919  
631.738.1177 fax  
atde@atlantictraffic.com

# TRAFFIC IMPACT ANALYSIS

FOR

CANON U.S.A., INC.

---

## PROPOSED CANON AMERICAS HEADQUARTERS

TAX MAP # 0400-254-1-4,9 & 0400-254-2,4,49  
LIE SOUTH SERVICE ROAD & OLD WALT WHITMAN ROAD  
MELVILLE, TOWN OF HUNTINGTON  
SUFFOLK COUNTY, NEW YORK 11747

CHARLES D. OLIVO, P.E., PTOE

FRANK A. FILICIOTTO, E.I.T.

Last Revised August 27, 2008

Revised July 17, 2008

Revised July 9, 2008

Project No. AN08003

*Other Office Location:*

35 TECHNOLOGY DRIVE, WARREN, NEW JERSEY 07059  
908.769.5588

N:\2008\AN08003\Report\AN08003 Draft TIA last revised 08-25-2008 (my edits.doc)\JM\jss

TRAFFIC & TRANSPORTATION ENGINEERING, SITE PLANNING & ROADWAY DESIGN CONSULTANTS  
www.atlantictraffic.com

# TABLE OF CONTENTS

<b>INTRODUCTION .....</b>	<b>1</b>
<b>STUDY METHODOLOGY .....</b>	<b>2</b>
<b>EXISTING CONDITIONS.....</b>	<b>3</b>
Existing Roadway Conditions.....	3
Existing Traffic Volumes.....	12
<b>EXISTING TRAFFIC ANALYSIS .....</b>	<b>14</b>
<b>Future Conditions.....</b>	<b>19</b>
Future “Base” Traffic Volumes .....	19
Future Roadway Improvements .....	19
<b>OTHER PLANNED DEVELOPMENT.....</b>	<b>21</b>
Future “No-Build” Traffic Volumes.....	21
<b>TRAFFIC CHARACTERISTICS OF THE PROPOSED DEVELOPMENT .....</b>	<b>22</b>
ITE Trip Generation.....	22
<b>TRIP DISTRIBUTION .....</b>	<b>22</b>
Future “Build” Traffic Volumes .....	23
<b>FUTURE “BUILD” TRAFFIC ANALYSIS.....</b>	<b>23</b>
<b>RECOMMENDED MITIGATION MEASURES.....</b>	<b>29</b>
<b>WEAVING ANALYSIS .....</b>	<b>40</b>
<b>CORPORATE TRIP REDUCTION INITIATIVES .....</b>	<b>42</b>
Site Access and Circulation .....	44
<b>CONCLUSIONS.....</b>	<b>47</b>

## TECHNICAL APPENDIX

### LEVEL OF SERVICE DESCRIPTIONS

Unsignalized Intersections

Signalized Intersections

### LEVEL OF SERVICE (LOS) TABLES

**Table A** – LOS Signalized Intersection Comparison: Old Walt Whitman Road & Sweet Hollow Road/Pinelawn Road (C.R. 3)

**Table B** – LOS Signalized Intersection Comparison: Old Walt Whitman Road & Long Island Expressway North Service Road

**Table C** – LOS Signalized Intersection Comparison: Old Walt Whitman Road & Long Island Expressway South Service Road

**Table D** – LOS Signalized Intersection Comparison: Old Walt Whitman Road & Pineridge Street

**Table E** – LOS Signalized Intersection Comparison: Old Walt Whitman Road & Northgate Circle/Baylis Road

**Table F** – LOS Signalized Intersection Comparison: NYS Route 110 & Old Walt Whitman Road/Duryea Road

**Table G** – LOS Signalized Intersection Comparison: NYS Route 110 & Long Island Expressway North Service Road

**Table H** – LOS Signalized Intersection Comparison: NYS Route 110 & Long Island Expressway South Service Road

**Table I** – LOS Signalized Intersection Comparison: NYS Route 110 & Old Country Road

**Table J** – LOS Signalized Intersection Comparison: Round Swamp Road & Long Island Expressway South Service Road

**Table K** – LOS Unsignalized Intersections Comparison: Old Walt Whitman Road & Cottontail Road and Old Walt Whitman Road & Existing FedEx Driveway North

**Table L** – LOS Unsignalized Intersection Comparison: Old Walt Whitman Road & Existing FedEx Driveway South/Proposed Site Driveway

**Table M** – LOS Unsignalized Intersection Comparison: Old Walt Whitman Road & Old Country Road

**Table N** – LOS Unsignalized Intersection Comparison: Old Walt Whitman Road & Park Drive

**Table O** – LOS Unsignalized Intersection Comparison: Proposed Site Driveways

## **FIGURES**

Figure 1 – Location Map

Figures 2 through 5 – Existing Traffic Volumes

Figures 6 and 7 – Base Traffic Volumes

Figures 8 and 9 – Other Area Development Site Traffic

Figures 10 and 11 – Future No-Build Traffic Volumes

Figures 12 and 13 – Site-Generated Traffic Distributions Based on Zip Code Data

Figures 14 and 15 – Site-Generated Traffic Distributions Based on Travel Routes

Figures 16 through 21 – Site-Generated Traffic Volumes

Figures 22 and 23 – Future Build Traffic Volumes

## **HIGHWAY CAPACITY ANALYSIS OUTPUT SHEETS**

## **SYNCHRO CAPACITY ANALYSIS OUTPUT SHEETS**

## **CONCEPTUAL ROADWAY DESIGN PLANS**

## **PROPOSED ROADWAY NETWORK IMPROVEMENT MEASURES**

## **ZIP CODE DATA DISTRIBUTION GRAPHICS**

## **FIELD COLLECTED TRAFFIC DATA**

---

## INTRODUCTION

---

Atlantic Traffic & Design Engineers, Inc. (ATDE) has prepared this Analysis to examine the future traffic conditions associated with the proposed Canon Americas Headquarters. This revised document addresses the topics discussed at the August 8, 2008 meeting with the New York State Department of Transportation (NYSDOT) and the Town of Huntington, as well as previous meetings with the NYSDOT on April 1, 2008 and June 5, 2008.

The subject site is located at the southwest corner of the Long Island Expressway (LIE) South Service Road/Old Walt Whitman Road intersection in Melville, which is part of the Town of Huntington. The subject site previously operated as a farm with access provided via one (1) uncontrolled curb cut along Old Walt Whitman Road with a roadside parking area commonly occupied by a temporary food vendor. The proposed application includes the removal of the existing farm and associated uses to allow for the phased construction of a 900,000-square-foot office complex to serve as the new headquarters for Canon U.S.A., Inc. Primary access along the LIE South Service Road is proposed via one (1) right-turn ingress/right-turn egress unsignalized driveway that would allow entrance and exit at the site during specific time periods and would at the remaining times be closed. This access point is proposed to be located west of the Exit 49S off-ramp from the Long Island Expressway to address the NYSDOT's weaving concerns. Access would also be provided via two (2) full-movement driveways and one right turn ingress only driveway along southbound Old Walt Whitman Road. The central driveway along Old Walt Whitman Road is proposed to be signalized and would serve as the office complex's main access point. The southerly proposed driveway along Old Walt Whitman Road would be primarily utilized by truck deliveries and employees and the northerly access point would accommodate inbound traffic during peak arrival periods. No access would be provided along the Long Island Expressway South Service Road between the Exit 49S off-ramp and Old Walt Whitman Road.

This study identifies the changes in traffic movements along the adjacent roadway network, which are expected to occur as a result of the proposed development, and identifies the overall impacts of the proposed office complex on the adjacent street system during the future "build" traffic generation scenario. In addition, this study addresses on-site traffic operations such as parking and circulation.

---

## STUDY METHODOLOGY

---

The Traffic Impact Analysis prepared for this project serves as the basis for this report and the recommendations and conclusions contained within. This report is based on the recommended guidelines and practices of the Institute of Transportation Engineers (ITE) and in accordance with the NYSDOT's standards. The report summarizes in detail the following information:

- A review of the existing roadway and traffic conditions in the vicinity of the site including roadway geometry, traffic volumes and operations, and intersection capacities;
- A detailed review of the existing traffic volumes and travel patterns on the roadway network surrounding the site and a determination of the existing peak hour volumes during each of the time periods studied;
- A 6.5% seasonal adjustment factor in accordance with comments issued by the Town of Huntington's traffic consultant to conservatively account for seasonal fluctuations in traffic volume;
- Calculations of the projected ambient background traffic growth on the existing roadways;
- Inclusion of other area developments proposed or currently being built in the future volumes;
- A Highway Capacity Analysis of the existing roadway capacities and future capacities considering the development of the site under future build conditions, utilizing both Highway Capacity Software Plus (HCS+) and Synchro 6 Software;
- An analysis of proposed driveway configuration and overall site layout in regards to access and internal circulation;
- Conclusions and recommendations based on our Traffic Engineering Analysis of the existing roadway network and future conditions considering the traffic characteristics of the proposed development.
- Technical Appendix – Including, but not limited to, descriptions of Level of Service; various tables; supporting information; graphical representations of the following: site location, peak hour volumes during each time period and condition studied; and a representation of the site generated traffic volume and direction of travel.

---

## **EXISTING CONDITIONS**

---

The subject property is located at the southwest corner of the Long Island Expressway (LIE) South Service Road/Old Walt Whitman Road intersection in Melville, which is part of the Town of Huntington. The property has approximately 2,500 feet of frontage along eastbound LIE South Service Road and approximately 1,200 feet of frontage along southbound Old Walt Whitman Road. Figure 1 of the Technical Appendix provides an overview of the surrounding roadway network. Land uses in the Melville area are primarily residential dwellings, retail stores, and commercial office buildings. Melville is home to several corporate entities such as the Bank of America, Nikon, NEC, and Revlon.

A farm previously operated on the subject property with access provided via one (1) uncontrolled curb cut along southbound Old Walt Whitman Road. A Federal Express shipping operation and regional office building is located across from the subject property with access provided via three (3) curb cuts along northbound Old Walt Whitman Road. A residential complex known as Millennium Hills is located immediately south of the subject site, and access is provided via Paumonauk Hills Court.

### **EXISTING ROADWAY CONDITIONS**

The LIE, also known as Interstate 495, is under the jurisdiction of the New York State Department of Transportation (NYSDOT) and has a general east/west orientation providing three (3) standard travel lanes, one (1) high-occupancy vehicle (HOV) lane, and a full-width shoulder in each direction of travel. The posted speed limit is 55 miles per hour and the pavement and striping are in fair condition near the subject property. The LIE provides mobility to NYS Route 110, Route 135 and Route 231, as well as many other north-south arterials on Long Island. The exit 49S off-ramp, which is located along the subject site's frontage, connects the LIE to the LIE South Service Road.

The LIE South Service Road, also known as Route 906A, is under the jurisdiction of NYSDOT. The LIE South Service Road has a general east/west orientation, provides two (2) eastbound travel lanes with separate turn lanes at key intersections, and shoulders are provided along both sides of

the roadway. The posted speed limit in the vicinity of the site is 40 miles per hour and the pavement and lane striping are in fair condition. The roadway provides mobility to many local roads and Suffolk County Routes as well as to the LIE and NYS Route 110.

The LIE North Service Road, also known as Route 906B, is under the jurisdiction of NYSDOT. In the vicinity of the subject property, the LIE North Service Road has a general east/west orientation and provides two (2) westbound travel lanes with separate turn lanes at key intersections. Shoulders are provided along each side of the roadway, the posted speed limit is 40 miles per hour in the vicinity of the site and the pavement and lane striping are in fair condition. The LIE North Service Road provides mobility to many local roads and Suffolk County Routes as well as to the LIE and NYS Route 110.

Old Walt Whitman Road is a local road under Town of Huntington jurisdiction with a general north/south orientation, and the roadway provides one (1) lane and a shoulder in each direction of travel. The posted speed limit is 30 miles per hour in the vicinity of the site, and the pavement and striping are in fair condition. Along the subject site's frontage, sidewalks and on-street parking are not provided.

NYS Route 110 is under the jurisdiction of NYSDOT and has a general north/south orientation. This principal arterial experiences significant traffic volumes during most periods of a typical weekday. The traffic volumes are serviced by three (3) travel lanes and a shoulder in each direction of travel with a posted speed limit of 45 and 55 miles per hour in the vicinity of the site. The pavement and lane striping are in fair condition with sidewalks and on-street parking provided in certain areas.

Round Swamp Road is a local road under the Town of Huntington jurisdiction with a general north/south orientation, and provides two (2) lanes of travel and a shoulder in each direction. The posted speed limit is 30 miles per hour in the vicinity of the site. The pavement and striping are in fair condition with sidewalks provided along portions of both sides of the roadway.

Old Country Road is a local roadway under Town of Huntington jurisdiction with a general east/west orientation and traffic volumes are serviced by one (1) travel lane and a paved shoulder in each direction. The pavement and striping are in fair condition, and the posted speed limit is 30 and

35 miles per hour in the vicinity of the site with sidewalks provided along portions of the northerly side of the roadway.

Sweet Hollow Road is a local roadway under Town of Huntington jurisdiction with a general north/south orientation, however, at its intersection with Old Walt Whitman Road, Sweet Hollow Road has an east/west orientation. Sweet Hollow Road provides one (1) lane and a shoulder in each direction of travel, and the posted speed limit is 30 miles per hour in the vicinity of the site. The pavement and striping are in fair condition and sidewalks are not provided along either side of the roadway. Sweet Hollow Road reaches its southerly terminus at its intersection with Old Walt Whitman Road, at which point its name becomes Pinelawn Road.

Pinelawn Road, also known as C.R. 3, is under Suffolk County jurisdiction and has a general north/south orientation along its length with an east/west orientation at its intersection with NYS Route 110. Pinelawn Road provides two (2) lanes and a shoulder in each direction of travel, and sidewalks are provided along portions of both sides of the roadway. The pavement and striping are in fair condition with certain areas in need of repair or rehabilitation.

Pineridge Street is a local roadway under Town of Huntington jurisdiction with a general east/west orientation providing one (1) travel lane in each direction of travel with a posted speed limit of 30 miles per hour in the site vicinity. The pavement and striping are in fair condition and sidewalks are not provided along either side of the roadway, however, on-street parking is provided along both sides of the roadway. Pineridge Street reaches its easterly terminus at its intersection with Old Walt Whitman Road, and primarily provides access to residential properties south of the subject site.

Northgate Circle is a private roadway with a general east/west orientation and provides one (1) lane in each direction of travel to and from a gated residential complex. Northgate Circle reaches its easterly terminus at its intersection with Old Walt Whitman Road, at which point it becomes Baylis Road.

Baylis Road is a local roadway under Town of Huntington jurisdiction with a general east/west orientation, and provides one (1) lane and a shoulder in each direction of travel. To the west of its intersection with NYS Route 110, Baylis Road provides two (2) lanes and a shoulder in each

direction of travel. The posted speed limit is 30 miles per hour in the vicinity of the site and the pavement and striping are in fair condition. Sidewalks are provided along portions of both sides of the roadway, which reaches its westerly terminus at Old Walt Whitman Road.

Duryea Road is a local roadway under Town of Huntington jurisdiction with a general east/west orientation providing access to residential and commercial/office developments. Duryea Road provides one (1) lane and a shoulder in each direction of travel with sidewalks provided along portions of both sides of the roadway. The posted speed limit is 30 miles per hour in the vicinity of the site, and the pavement and striping are in fair condition. Duryea Road reaches its westerly terminus at its intersection with NYS Route 110, at which point it continues as Old Walt Whitman Road.

Cottontail Road is a local roadway under Town of Huntington jurisdiction with a general east/west orientation. The roadway provides one (1) lane in each direction of travel, and the posted speed limit is 30 miles per hour in the vicinity of the site. Shoulders, on-street parking and sidewalks are not provided along either side of the roadway. Cottontail Road primarily provides access to residential properties north of the LIE, and the roadway reaches its easterly terminus at its intersection with Old Walt Whitman Road.

Park Drive is a local roadway under Town of Huntington jurisdiction with a general east/west orientation. The roadway provides one (1) lane in each direction of travel, and the posted speed limit is 30 miles per hour in the vicinity of the site. The pavement is in fair condition and sidewalks are provided along both sides of the roadway. Park Drive primarily provides access to residential and commercial developments, and the roadway reaches its easterly terminus at its intersection with Old Walt Whitman Road.

### **Old Walt Whitman Road and LIE South Service Road**

The LIE South Service Road intersects with Old Walt Whitman Road to form a four-leg signalized intersection. The intersection is controlled by a three-phase traffic signal. The LIE South Service Road forms the eastbound approach to the intersection and Old Walt Whitman Road forms the northbound and southbound approaches to the intersection. The eastbound LIE South Service Road provides one (1) shared left-turn/through lane, one (1) exclusive through lane and one (1)

channelized right-turn lane with yield control. The northbound Old Walt Whitman Road approach provides one (1) exclusive through lane and one (1) exclusive right-turn lane. The southbound Old Walt Whitman Road approach provides one (1) exclusive left-turn lane and one (1) exclusive through lane, and crosswalks are not provided at any approach to the intersection.

### **Old Walt Whitman Road and LIE North Service Road**

Old Walt Whitman Road intersects the LIE North Service Road to form a four-leg signalized intersection, controlled by a three-phase traffic signal. Old Walt Whitman Road forms the northbound and southbound approaches to the intersection and the LIE North Service Road forms the westbound approach to the intersection. The westbound LIE approach provides one (1) shared left-turn/through lane, one (1) exclusive through lane and one (1) channelized right-turn lane. The northbound Old Walt Whitman Road approach provides one (1) exclusive left-turn lane and one (1) exclusive through lane. The southbound Old Walt Whitman Road approach provides one (1) exclusive through lane and one (1) exclusive right-turn lane, and crosswalks are not provided at any approach to the intersection.

### **Old Walt Whitman Road and Sweet Hollow Road/Pinelawn Road (C.R. 3)**

Old Walt Whitman Road intersects Sweet Hollow Road and Pinelawn Road to form a four-leg signalized intersection. The intersection is controlled by a two-phase traffic signal. Old Walt Whitman Road forms the northbound and southbound approaches to the intersection, Sweet Hollow Road forms the eastbound approach to the intersection and Pinelawn Road forms the westbound approach to the intersection. The eastbound Sweet Hollow Road approach provides one (1) lane to accommodate all turning movements. The westbound Pinelawn Road approach provides one (1) exclusive left-turn lane, one (1) exclusive through lane and one (1) exclusive right-turn lane. The northbound and southbound Old Walt Whitman Road approaches each provide one (1) lane to accommodate all turning movements, and crosswalks are not provided at any approach to the intersection.

### **Old Walt Whitman Road and Pineridge Street**

Old Walt Whitman Road intersects Pineridge Street to form a three-leg signalized intersection. The intersection is controlled by a two-phase traffic signal. Pineridge Street forms the eastbound

approach to the intersection and Old Walt Whitman Road forms the northbound and southbound approaches. Each approach provides one (1) lane to accommodate all turning moving movements, and crosswalks are not provided on any of the approaches.

#### **Old Walt Whitman Road and Northgate Circle/Baylis Road**

Old Walt Whitman Road intersects Northgate Circle and Baylis Road to form a four-leg signalized intersection. The intersection is controlled by a two-phase traffic signal. Northgate Circle forms the eastbound approach to the intersection, Baylis Road forms the westbound approach and Old Walt Whitman Road forms the northbound and southbound approaches. The eastbound Northgate Circle approach provides one (1) exclusive left-turn lane and one (1) shared through/right-turn lane. The westbound Baylis Road approach provides one (1) shared left-turn/through lane and one (1) exclusive right-turn lane. The northbound Old Walt Whitman Road approach provides one (1) lane to accommodate all turning movements and the southbound approach provides one (1) shared left-turn/through lane and one (1) exclusive right-turn lane. Field observations indicate that the southbound Old Walt Whitman Road approach operates as one (1) exclusive left-turn lane and one (1) shared through/right-turn lane due to the high southbound left-turn movement demand. Crosswalks are not provided at any approach to the intersection.

#### **NYS Route 110 and Old Walt Whitman Road/Duryea Road**

NYS Route 110 intersects Old Walt Whitman Road and Duryea Road to form a four-leg signalized intersection. The intersection is controlled by a three-phase traffic signal. Old Walt Whitman Road forms the eastbound approach to the intersection, Duryea Road forms the westbound approach and NYS Route 110 forms the northbound and southbound approaches. The eastbound Old Walt Whitman Road approach provides one (1) shared left-turn/through lane and one (1) channelized right-turn lane. The westbound Duryea Road approach provides one (1) shared left-turn/through lane and one (1) exclusive right-turn lane. The northbound NYS Route 110 approach provides two (2) exclusive left-turn lanes, three (3) exclusive through lanes and one (1) exclusive right-turn lane. The southbound NYS Route 110 approach provides one (1) exclusive left-turn lane, three (3) exclusive through lanes and one (1) exclusive right-turn lane, and crosswalks are not provided at any approach to the intersection.

### **NYS Route 110 and LIE South Service Road**

NYS Route 110 intersects the LIE South Service Road to form a four-leg signalized intersection. The intersection is controlled by a three-phase traffic signal. The LIE South Service Road forms the eastbound approach to the intersection and NYS Route 110 forms the northbound and southbound approaches. The eastbound LIE South Service Road provides one (1) shared left-turn/through lane, one (1) exclusive through lane and two (2) exclusive right-turn lanes. The northbound NYS Route 110 approach provides three (3) exclusive through lanes and one (1) exclusive right-turn lane, and the southbound NYS Route 110 approach provides one (1) exclusive left-turn lane and three (3) exclusive through lanes. Crosswalks are not provided at any approach to the intersection. The on-ramp to travel east along the LIE is located approximately 140 feet north of the intersection.

### **NYS Route 110 and LIE North Service Road**

NYS Route 110 intersects the LIE North Service Road to form a four-leg signalized intersection. The intersection is controlled by a three-phase traffic signal. The LIE North Service Road forms the westbound approach to the intersection and NYS Route 110 forms the northbound and southbound approaches. The westbound LIE North Service Road provides one (1) shared left-turn/through lane, one (1) exclusive through lane and one (1) exclusive right-turn lane. The northbound NYS Route 110 approach provides one (1) exclusive left-turn lane and three (3) exclusive through lanes. The southbound NYS Route 110 approach provides two (2) exclusive through lanes and one (1) exclusive right-turn lane. The on-ramp to travel west along the LIE is located approximately 80 feet south of the intersection, and crosswalks are not provided at any approach to the intersection.

### **NYS Route 110 and Old Country Road**

NYS Route 110 intersects Old Country Road to form a four-leg signalized intersection. The intersection is controlled by a four-phase traffic signal. Old Country Road forms the eastbound and westbound approaches to the intersection and NYS Route 110 forms the northbound and southbound approaches to the intersection. The eastbound Old Country Road approach provides one (1) exclusive left-turn lane, one (1) exclusive through lane and one (1) channelized right-turn lane. The westbound Old Country Road approach provides one (1) exclusive left-turn lane, one (1)

shared left-turn/through lane, one (1) exclusive through lane and one (1) channelized right-turn lane. Each NYS Route 110 approach provides one (1) exclusive left-turn lane, two (2) exclusive through lanes and one (1) exclusive right-turn lane, and crosswalks are not provided at any approach to the intersection.

### **Old Walt Whitman Road and Old Country Road**

Old Walt Whitman Road intersects Old Country Road to form a four-leg unsignalized intersection. Old Country Road forms the eastbound and westbound approaches to the intersection and Old Walt Whitman Road forms the northbound and southbound approaches. The intersection is STOP-controlled on the northbound and southbound Old Walt Whitman Road approaches. The eastbound Old Country approach provides one (1) lane to accommodate all turning movements and the westbound approach provides one (1) left-turn/through lane and one (1) shared through/right-turn lane. Each Old Walt Whitman Road approach provides one (1) lane to accommodate all turning movements. Crosswalks are not provided at any approach to the intersection. This intersection is situated approximately 200 feet to the west of the NYS Route 110 and Old Country Road signalized intersection.

### **Round Swamp Road and LIE South Service Road**

Round Swamp Road intersects the LIE South Service Road to form a four-leg signalized intersection. The intersection is controlled by a three-phase traffic signal. The LIE South Service Road forms the eastbound approach to the intersection and Round Swamp Road forms the northbound and southbound approaches. The eastbound LIE South Service Road approach provides one (1) exclusive left-turn lane, one (1) shared left-turn/through lane, one (1) exclusive through lane and one (1) exclusive right-turn lane. The northbound Round Swamp Road approach provides two (2) exclusive through lanes and one (1) exclusive right-turn lane. The southbound Round Swamp Road approach provides one (1) exclusive left-turn lane and two (2) exclusive through lanes. Crosswalks are provided at the northerly, easterly and westerly sides of the intersection.

### **Old Walt Whitman Road and Cottontail Road**

Old Walt Whitman Road intersects Cottontail Road to form a three-leg unsignalized intersection. Cottontail Road forms the eastbound approach to the intersection and Old Walt Whitman Road approach forms the northbound and southbound approaches. The intersection is STOP-controlled at the Cottontail Road approach. The eastbound Cottontail Road approach provides one (1) lane to accommodate all turning movements. The northbound Old Walt Whitman Road approach provides one (1) exclusive left-turn lane and one (1) exclusive through lane. The southbound Old Walt Whitman Road approach provides one (1) shared right-turn/through lane and one (1) exclusive through lane, and crosswalks are not provided at any approach to the intersection.

### **Old Walt Whitman Road & Park Drive**

Old Walt Whitman Road intersects Park Drive to form a three-leg unsignalized intersection that is STOP-controlled at the eastbound Park Drive approach. The eastbound Park Drive approach provides one (1) lane to accommodate all turning movements the northbound Old Walt Whitman Road approach provides one (1) shared left-turn/through lane and the southbound Old Walt Whitman Road approach provides one (1) exclusive through lane and one (1) exclusive right-turn lane. Crosswalks are not provided at any approach to the intersection. This intersection will be signalized as part of the Town of Huntington's proposed improvements for the Old Walt Whitman Road corridor (see Page 20 for additional information).

## EXISTING TRAFFIC VOLUMES

Manual turning movement counts were collected by Atlantic Traffic & Design Engineers, Inc., during the typical weekday morning and evening time periods to evaluate the existing traffic conditions and identify the specific hours when traffic activity on the adjacent roadways is at a maximum and could be potentially impacted by the proposed development. The counts were collected on Thursday, January 31, 2008 from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m. The time periods included in this study were identified based on the traffic engineering standards provided by the Institute of Transportation Engineers (ITE) and our knowledge of the traffic characteristics associated with office developments. The following intersections were surveyed:

- Old Walt Whitman Road and Old Country Road
- Old Walt Whitman Road and Sweet Hollow Road/Pinelawn Road (C.R. 3)
- Old Walt Whitman Road and Cottontail Road
- Old Walt Whitman Road and the LIE North Service Road
- Old Walt Whitman Road and the LIE South Service Road
- Old Walt Whitman Road and the existing FedEx Driveways
- Old Walt Whitman Road and Pineridge Street
- Old Walt Whitman Road and Northgate Circle/Baylis Road
- NYS Route 110 and Old Walt Whitman Road/Duryea Road
- NYS Route 110 and Old Country Road
- NYS Route 110 and LIE North Service Road
- NYS Route 110 and LIE South Service Road
- Round Swamp Road and LIE South Service Road

Spot counts were also conducted on the LIE Exit 49S off-ramp to confirm traffic conditions during the peak times. The spot counts were collected on Thursday, June 26, 2008 from 8:00 a.m. to 9:00 a.m. and from 5:00 p.m. to 6:00 p.m.

In addition, traffic count data was obtained from the Town of Huntington for the intersection of Old Walt Whitman Road and Park Drive. The data was collected in November 2003, and therefore a growth rate of 1.0% was applied and compounded over 5 years to generate 2008 traffic volumes.

The results of the traffic count program indicate that there is a distinct hour during the weekday mornings and weekday evenings when traffic experiences its highest levels. The weekday morning peak hour was found to occur from 8:00 a.m. to 9:00 a.m., and the weekday evening peak hour was found to occur from 5:00 p.m. to 6:00 p.m. Figures 2 and 3 of the Technical Appendix depict the 2008 existing “as-counted” traffic volumes during the weekday morning and evening peak hours, respectively. To provide a conservative analysis, certain intersections were balanced with each other by carrying the larger through volume between each intersection. In addition, a 6.5% seasonal adjustment factor was applied to the existing “as-counted” traffic volumes since January is typically a below average month for traffic activity, as suggested by GPI. Note that the 6.5% seasonal adjustment factor was also applied to the November 2003 Park Drive/Old Walt Whitman Road count data. The resulting 2008 existing “balanced” traffic volumes include the 6.5% adjustment factor and are shown on appended Figures 4 and 5.

---

## EXISTING TRAFFIC ANALYSIS

---

Level of Service and Volume-Capacity analyses were conducted for the study intersections using Synchro 6 Software and Highway Capacity Software Plus (HCS+).<sup>1</sup> The Synchro and HCS+ analyses were performed to gauge the operational state of traffic activity, and to identify any areas of excessive delay or congestion.

It should be noted that this revised Synchro analysis incorporates a comprehensive network consisting of the following intersections:

- Old Walt Whitman Road and Old Country Road
- Old Walt Whitman Road and Sweet Hollow Road/Pinelawn Road (C.R. 3)
- Old Walt Whitman Road and Cottontail Road
- Old Walt Whitman Road and the LIE North Service Road
- Old Walt Whitman Road and the LIE South Service Road
- Old Walt Whitman Road and the existing FedEx Driveways
- Old Walt Whitman Road and Pineridge Street
- Old Walt Whitman Road and Northgate Circle/Baylis Road
- NYS Route 110 and LIE North Service Road
- NYS Route 110 and LIE South Service Road
- Round Swamp Road and LIE South Service Road

This comprehensive Synchro network was created to analyze the operating conditions, the vehicle queuing, and the coordination of traffic signals at the above locations.

Several factors are used in the Highway Capacity Analysis to model the actual conditions found in the field. The peak hour factors are calculated based on the turning movement counts and are applied to the hourly volume at each approach to generate the peak fifteen-minute volume within the peak hour. The input volumes are then adjusted to reflect the critical fifteen-minute demand over the course of the peak hour, otherwise known as the peak flow rate. The percentage of heavy vehicles on the roadway network was also incorporated into the highway capacity analysis, based on

---

<sup>1</sup> See Technical Appendix for Level of Service/ Volume-Capacity descriptions

the traffic volume data collected in the field. The width of each intersection approach lane was field measured and incorporated into the highway capacity analysis as well.

Each of the study signalized intersections were field timed on several occasions during each of the time periods studied. The “as-built” Traffic Signal Plans and timing directives were also obtained from the NYSDOT and compared to the observed field timings.

In addition, in order to create a Synchro network model that accurately represented existing field conditions, video footage of each study intersection was recorded on Wednesday, August 20, 2008 during the evening peak period and Thursday, August 21, 2008 during the morning peak period. This footage was analyzed in order to appropriately calibrate the traffic operations within the Synchro model.

- Signalized Intersections:

The following table provides the existing Levels of Service experienced at each of the signalized intersections included in this study that were analyzed utilizing HCS+ software. The signalized intersections are listed along with their overall Level of Service.

**ANALYSIS UTILIZING HCS+ SOFTWARE (HCM METHODOLOGY)**

Intersection	Existing LOS	
	AM	PM
NYS Route 110 and Old Walt Whitman/Duryea Road	E	F
NYS Route 110 and Old Country Road	F	F

Notes:

1. During the weekday morning peak hour, the northbound NYS Route 110 through movement at its intersection with Duryea Road operates at a Level of Service “F”. The westbound left-turn/through movement at the Duryea Road approach to NYS Route 110 currently experiences capacity constraints and operates at a Level of Service “F” during the weekday evening peak hour. The southbound NYS Route 110 through movement also operates at a Level of Service “F” during the weekday evening peak hour.
2. The eastbound Old Country Road approach at its intersection with NYS Route 110 currently experiences operational constraints and operates at Level of Service “F” during

both peak hours. The westbound Old Country Road left-turn movement at this intersection currently experiences capacity constraints and operates at a Level of Service “F” during the weekday morning peak hour. The southbound NYS Route 110 through movement also operates at a Level of Service “F” during both peak hours. The northbound NYS Route 110 through movement operates at a Level of Service “F” during the weekday evening peak hour.

The table below provides the existing Levels of Service experienced at each of the signalized study intersections that were analyzed utilizing Synchro methodology, as requested by NYSDOT and the Town of Huntington. The signalized intersections are listed along with their corresponding overall Level of Service.

#### **ANALYSIS UTILIZING SYNCHRO SOFTWARE (SYNCHRO METHODOLOGY)**

<b>Intersection</b>	<b>Existing LOS</b>	
	<b>AM</b>	<b>PM</b>
Old Walt Whitman Road and Sweet Hollow Road/Pinelawn Road (C.R. 3)	B	B
Old Walt Whitman Road and LIE North Service Road	B	D
Old Walt Whitman Road and LIE South Service Road	D	C
Old Walt Whitman Road and Pineridge Street	A	A
Old Walt Whitman Road and Northgate Circle/Baylis Road	F	C
NYS Route 110 and LIE North Service Road	C	C
NYS Route 110 and LIE South Service Road	C	E
Round Swamp Road and LIE South Service Road	C	C

Notes:

1. The northbound through movement at the Old Walt Whitman Road approach to the LIE South Service Road currently experiences capacity constraints and operates at a Level of Service “F” during the weekday morning peak hour.
2. The southbound left-turn/through movement at the Old Walt Whitman Road and Northgate Circle/Baylis Road intersection currently experiences capacity constraints and operates at Level of Service “F” during the weekday morning peak hour.

3. The northbound left-turn movement at the LIE North Service Road/NYS Route 110 intersection experiences capacity constraints and operates at a Level of Service “F” during the weekday evening peak hour.
4. The eastbound left-turn/through movement, and southbound left-turn movement at the LIE South Service Road/NYS Route 110 intersection both experience capacity constraints and operate at Levels of Service “F” during the weekday evening peak hour.

The individual movement delays and associated Levels of Service for each signalized intersection are shown in the Technical Appendix in Tables A through J.

- Unsignalized Intersection Capacity Analysis:

The following list provides the Level of Service of the critical intersection approach utilizing HCS+ software. Note that HCS+ does not provide an overall Level of Service for unsignalized intersections.

**ANALYSIS UTILIZING HCS + SOFTWARE (HCM METHODOLOGY)**

Intersection	Existing LOS	
	AM	PM
Old Walt Whitman Road and Old Country Road	F	F

Notes:

1. The northbound and southbound Old Walt Whitman Road approaches to Old Country Road currently operate at a Level of Service “F” during the weekday morning peak hour. During the weekday evening peak hour, the southbound Old Walt Whitman Road approach currently experiences capacity constraints and operates at Level of Service “F”.
2. A Synchro/SimTraffic analysis was conducted to simulate the interaction between the NYS Route 110-Old Country Road and Old Walt Whitman Road-Old Country Road intersections. The results of the simulation model indicate that extensive queuing occurs at the eastbound approach of the NYS Route 110-Old Country Road intersection. This queuing extends past the Old Walt Whitman Road-Old Country Road intersection. Extensive queuing is also prevalent during the peak hours at the northbound Old Walt Whitman approach to Old Country Road.

- The existing site driveway is generally inactive, and thus an analysis was not conducted.

The following table provides the existing Intersection Capacity Utilization (ICU) Levels of Service experienced at each of the unsignalized study intersections that were obtained utilizing Synchro software, as requested by NYSDOT and the Town of Huntington.

**ANALYSIS UTILIZING SYNCHRO SOFTWARE (SYNCHRO METHODOLOGY)**

Intersection	Existing LOS	
	AM	PM
Old Walt Whitman Road and Cottontail Road	B	A
Old Walt Whitman Road and Existing FedEx Driveway North	F	B
Old Walt Whitman Road and Existing FedEx Driveway South	D	B
Old Walt Whitman Road and Park Drive	C	A

Notes:

- Although the FedEx complex provides three driveways along Old Walt Whitman Road, one of the driveways was closed during the data collection program, and thus was not included in this analysis.
- During the weekday morning peak hour, the intersection of Old Walt Whitman and the existing FedEx Driveway North currently experiences capacity constraints and operates at a Level of Service “F”.

The individual approach delays and associated Levels of Service are contained within the Technical Appendix, in Tables K through N.

---

## **FUTURE CONDITIONS**

---

In this section of the analysis, the traffic volumes are projected two years into the future utilizing local information on background traffic growth and research on projects that may influence traffic in the surrounding area prior to the opening of the proposed office development. This step in the analysis is known as the no-build condition.

### **FUTURE “BASE” TRAFFIC VOLUMES**

It is recognized that traffic routinely fluctuates along various state and county roadways, as well as local streets and varies not only day-to-day, but also on a monthly and yearly basis. It is anticipated that the proposed development would be completed within two years. As a result, the background traffic growth within this timeframe is expected to be minimal. However, in accordance with generally accepted industry standards, the existing “balanced” traffic volumes were increased by a growth rate of 1.0% for two years. This ambient growth rate was obtained from the NYSDOT, specifically for the Town of Huntington, and was applied directly to the existing traffic volumes to generate the 2010 future “base” traffic volumes, which take into account potential traffic growth peripheral to the subject site. The 2010 future “base” traffic volumes are depicted on Figures 6 and 7 for the weekday morning and evening peak hours.

### **FUTURE ROADWAY IMPROVEMENTS**

The Melville area would likely experience significant changes to its transportation roadway network over the next 2 to 4 years. Based on this Firm's research and continued due diligence with the NYSDOT and the Town of Huntington, two roadway improvement projects are planned for the NYS Route 110 and Old Walt Whitman Road corridors. These projects are identified herein because they would introduce significant changes to the surrounding transportation network in an overall attempt to improve mobility throughout the Melville area. Both projects are expected to have positive effects on the Canon development project, and would comprise, in part, the off-site mitigation package identified in this report.

**Roadway Improvements for Old Walt Whitman Road from NYS Route 110 to Old Country Road, NYSDOT PIN 0758.58**

The Town of Huntington, with financial administration from the NYSDOT, would be initiating this project to upgrade Old Walt Whitman Road. Construction is scheduled to begin in 2009, based on information provided by the Town engineering staff. In general, the project would improve the road surface and pavement markings, replace and add traffic signal infrastructure, improve pedestrian facilities (sidewalks and ramps), and, at some intersections, improve vehicular capacity through the installation of turn bays and channelized right-turn lanes. New pavement markings would delineate a center two-way left-turn lane and new shoulder lines within the general limits of the existing pavement width.

Our office has obtained the approved design plans from the Town and incorporated the key elements of the project into the future capacity analysis herein. Any frontage improvements identified in this assessment would be directly coordinated with the Town's project.

**Northern State Parkway and LIE Interchange Improvements Project at NYS Route 110, NYSDOT PIN 0516.41**

The NYSDOT has proposed a series of roadway improvements that would upgrade the NYS Route 110 corridor and its junctions with Old Country Road, the Northern State Parkway and the LIE. Based on information obtained from the NYSDOT's project management staff, the improvement project would be phased in two parts: Phase 1, which extends northerly from the LIE to Arlington Street, is scheduled for construction in 2009; Phase 2, which extends northerly from Arlington Street to Arrowwood Lane (incorporating the Northern State Parkway interchange), is scheduled for construction in 2010. In general, the project would add one northbound and one southbound travel lane on NYS Route 110, beginning at Arrowwood Lane and meeting the existing 6-lane section just south of the LIE. Consequently, other major improvements are proposed, including a full bridge replacement at the Northern State Parkway, reconfiguration and signalization of the Old Walt Whitman Road-Old Country Road intersection, and miscellaneous capacity upgrades to the LIE Service Roads and other key intersections within the project limits.

Our office has obtained the approved design plans and design report from the NYSDOT, and incorporated the key elements of the project into the future capacity analysis. Any off-site improvements identified would be coordinated with the NYSDOT's project during the permit

review process.

For additional information pertaining to how these projects relate to the future traffic conditions and proposed mitigation package, please refer to **Recommended Mitigation Measures** section of this document.

### **OTHER PLANNED DEVELOPMENT**

Based on our research with the New York State Department of Transportation and the Town of Huntington, a 103,000-square-foot Rubie's Costume Company office complex, consisting of 91,800 square feet of office space, an 8,000-square-foot restaurant, and a 3,200-square-foot bank, is proposed to be constructed at the southwest corner of the NYS Route 110-LIE South Service Road intersection. Traffic volumes associated with the Rubie's Costume Company office building were obtained from the Traffic Impact Study last revised November 2006 prepared by RMS Engineering. The traffic volumes attributed to this other planned development are illustrated in Figures 8 and 9 of the Technical Appendix.

### **FUTURE "NO-BUILD" TRAFFIC VOLUMES**

The volumes from the other area development were added to the 2010 future "base" traffic volumes to develop the 2010 future "No-Build" traffic volumes. Figures 10 and 11 of the Technical Appendix depict the 2010 future "No-Build" traffic volumes for the study peak hours.

---

## TRAFFIC CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

---

### ITE TRIP GENERATION

The volume of trips generated by the proposed development was determined by using standard calculations compiled by the Institute of Transportation Engineers (ITE) in its 7<sup>th</sup> edition of *Trip Generation*, 2003. The trip generation was calculated as Land Use 710, “General Office Building”, for the proposed 900,000-square-foot development. The Trip Generation for the proposed development is summarized in the table below:

	<b>Weekday Morning Peak Hour</b>	<b>Weekday Evening Peak Hour</b>
Entering	1,224	225
Exiting	171	1,116
<b>Total</b>	<b>1,395</b>	<b>1,341</b>

### TRIP DISTRIBUTION

The site-generated traffic attributed to the proposed office development has been assigned to the roadway network based on current employee zip code data derived from the Lake Success Canon office complex and a reasonable assumption of modification to that traffic assignment as a result of the future relocation to Melville. Please refer to the appended [Zip Code Data Distribution Graphics](#) for a detailed representation of the trip distribution calculations. Figures 12 and 13 of the Technical Appendix depict the traffic distribution based on the zip code data. Our analysis of the data indicates that of the Long Island employee base, 75% reside in Nassau County and 25% reside in Suffolk County. Based on the population density of Nassau County, it is expected that the majority of traffic associated with the proposed office complex in Melville would still be drawn from Nassau County. However, with the relocation to Melville, it is anticipated that the Nassau County employee base would reduce by 25% in the future to account for employee relocations and new hires, therefore reflecting a more balanced distribution of traffic. As a result, the assignment of site-generated traffic has been modified at the LIE North Service Road and the LIE South Service Road to account for this presumed change in employee base.

The resulting traffic distribution utilized for this study is shown in Figures 14 and 15 of the Technical Appendix. This assignment of the future site-generated traffic to the adjacent roadway

network is based on this distribution and shown in Figures 16 through 21 for the weekday morning and weekday evening peak hours. Note, at the proposed LIE South Service Road site driveway, vehicles would only be able to enter the site during the morning peak period and exit during the evening peak period. Please note that no additional consideration was given for mass transportation or ride-share specific to this office development. To lessen the impact of Canon's trip generation on the peak hour of the adjacent roadway network, Canon has committed to implementing the following staggered arrival-departure hours program:

- 8:00 a.m. – 4:00 p.m.
- 8:30 a.m. – 4:30 p.m.
- 9:00 a.m. – 5:00 p.m.
- 9:30 a.m. – 5:30 p.m.

As a result, it would be expected that the trip generation of the proposed office building would be spread throughout the morning and evening periods and therefore the analysis contained herein which superimposes all of the site generated traffic onto the single busiest hour during the morning and evening peak periods would represent a “worst-case” scenario.

### **FUTURE “BUILD” TRAFFIC VOLUMES**

The 2010 future “Build” traffic volumes were established by surcharging the site-generated traffic volumes onto the 2010 future “No-Build” traffic volumes. The resulting 2010 future “Build” traffic volumes are shown on Figures 22 and 23.

### **FUTURE “BUILD” TRAFFIC ANALYSIS**

Level of Service and Volume-Capacity analyses were conducted under the future “No-Build” and “Build” conditions. The factors identified in the “Existing Traffic Analysis” section apply accordingly. The signalized intersections were analyzed under future conditions using the same traffic signal cycle lengths as in the existing conditions. In addition, the proposed Old Walt Whitman Road site driveways were included in the comprehensive Synchro network analysis.

Note that the following “No-Build” and “Build” analyses only incorporate the Town of Huntington’s proposed roadway improvements along Old Walt Whitman Road. The complete analysis results are provided in the Technical Appendix.

- Signalized Intersections:

The following list provides the future “No-Build” and “Build” Levels of Service at each of the signalized intersections included in this study that were analyzed utilizing HCS+ software. The signalized intersections are listed along with their overall Level of Service.

**ANALYSIS UTILIZING HCS+ SOFTWARE (HCM METHODOLOGY)**

Intersection	No-Build/Build LOS	
	AM	PM
NYS Route 110 and Old Walt Whitman/Duryea Road	E/E	F/F
NYS Route 110 and Old Country Road	F/F	F/F

Notes:

1. The northbound NYS Route 110 left-turn movement at its intersection with Old Walt Whitman Road/Duryea Road would degrade to Level of Service “F” during the weekday morning peak hour. The northbound NYS Route 110 through movement would continue to operate at the “No-Build” Level of Service “F” during the weekday morning peak hour. The westbound left-turn/through movement along Duryea Road, as well as the southbound NYS Route 110 through movement would continue to operate at the “No-Build” Level of Service “F” during the weekday evening peak hour.
2. The eastbound Old Country Road approach to NYS Route 110 would continue to operate at the “No-Build” Level of Service “F” during the weekday morning and weekday evening peak hours. The westbound Old Country Road left-turn movement would continue to operate at the “No-Build” Level of Service “F” during the weekday morning peak hour. The southbound NYS Route 110 right-turn movement would degrade to Level of Service “F” during the weekday morning peak hour. The northbound NYS Route 110 through movement would continue to operate at the “No-Build” Level of Service “F” during the weekday evening peak hour. The southbound NYS

Route 110 through movement would continue to operate at the “No-Build” Level of Service “F” during both peak hours.

The following list provides the future “No-Build” and “Build” Levels of Service at each of the signalized intersections included in this study that were analyzed utilizing Synchro methodology in Synchro software. The signalized intersections are listed along with their corresponding overall Level of Service.

**ANALYSIS UTILIZING SYNCHRO SOFTWARE (SYNCHRO METHODOLOGY)**

Intersection	No-Build/Build LOS	
	AM	PM
Old Walt Whitman Road and Sweet Hollow Road/Pinelawn Road (C.R. 3)	B/C	B/B
Old Walt Whitman Road and LIE North Service Road	B/D	D/F
Old Walt Whitman Road and LIE South Service Road	D/D	C/E
Old Walt Whitman Road and Pineridge Street	A/A	A/A
Old Walt Whitman Road and Northgate Circle/Baylis Road	A/B	A/A
NYS Route 110 and LIE North Service Road	D/E	C/D
NYS Route 110 and LIE South Service Road	D/D	F/F
Round Swamp Road and LIE South Service Road	C/D	C/C
Old Walt Whitman Road and Park Drive	A/A	A/A
Proposed Canon Main Site Driveway/Existing FedEx Driveway South & Old Walt Whitman Road	-/B	-/F

Notes:

1. Under the “Build” condition during the morning peak hour, each movement at the Old Walt Whitman/Sweet Hollow Road intersection would operate at “No-Build” Levels of Service. However, the overall Level of Service at the intersection would degrade to a Level of Service “C” due to an increase in delay of 1.8 seconds.
2. At the LIE North Service Road/Old Walt Whitman intersection, the westbound left-turn/through movement along the LIE North Service Road would degrade to a Level of Service “E” and the northbound left-turn movement to the intersection would degrade to a Level of Service “C” during the weekday morning peak hour. Also during the morning peak hour, the southbound through movement would degrade to a Level of Service “D”. During the weekday evening peak hour, the northbound left-turn movement, as well as the

southbound right-turn movement at the LIE North Service Road/Old Walt Whitman intersection, would degrade to a Level of Service “F”. Also during the weekday evening peak hour, the southbound through movement at the intersection would degrade to a Level of Service “D”.

3. During the weekday morning peak hour, the northbound Old Walt Whitman Road approach to the LIE South Service Road would degrade to a Level of Service “E” and the southbound left-turn movement would degrade to a Level of Service “C”. During the weekday evening peak hour, the eastbound left-turn/through movement would degrade to a Level of Service “F”, the northbound through/right-turn movement would degrade to a Level of Service “E”, and the southbound left-turn movement would degrade to a Level of Service “C”.
4. At the intersection of Pineridge Street and Old Walt Whitman Road, the southbound through/right-turn movement would degrade to a Level of Service “C” during the weekday evening peak hour.
5. The southbound approach at the intersection of Old Walt Whitman Road and Northgate Circle/Baylis Road would degrade to a Level of Service “E” during the morning peak hour. During the weekday evening peak hour, the southbound approach would degrade to a Level of Service “B”.
6. The westbound LIE North Service Road left-turn/through movement at its intersection with NYS Route 110 would degrade to Level of Service “F” during the weekend morning peak hour. During the weekday evening peak hour, the westbound LIE North Service Road left-turn/through movement would degrade to a Level of Service “F”, the westbound right-turn movement would degrade to a Level of Service “C”, and the northbound left-turn movement would continue to operate at a “No-Build” Level of Service “F”.
7. During the morning peak hour, the eastbound left-turn/through movement at the intersection of LIE South Service Road and NYS Route 110 will continue to operate at a “No-Build” Level of Service “F”. During the evening peak hour, the eastbound and northbound approaches to the intersection will also continue to operate at “No-Build” Levels of Service “F”.
8. At the intersection of LIE South Service Road and Round Swamp Road, each movement

would operate at “No-Build” Levels of Service during both peak hours.

9. At the intersection of Round Swamp Road and LIE South Service Road, the eastbound left-turn/through movement would degrade to a Level of Service “F”, and the northbound right-turn movement would degrade to a Level of Service “D” during the weekday morning peak hour. During the weekday evening peak hour the eastbound left-turn movement would degrade to a Level of Service “D”.
10. The intersection of Old Walt Whitman and Park Drive would continue to operate at “No-Build” Levels of Service during both peak hours.
11. A signalized access point is included under the development proposal at the intersection to be formed by Old Walt Whitman Road, the existing southerly FedEx driveway, and Canon’s main driveway. The “Build” condition incorporates one (1) additional southbound through lane and one (1) additional southbound right-turn bay on Old Walt Whitman Road. The additional southbound through lane would extend along the site’s Old Walt Whitman Road frontage. The additional pavement width would meet the presently widened section of road just south of the Canon site at Paumonauk Hills Court and be configured as a southbound right-turn lane for the adjacent residential complex. To the north, the additional pavement width would meet the expanded southbound approach at the Old Walt Whitman-LIE South Service Road intersection, discussed further in the **Recommended Mitigation Measures** section. Under “Build” conditions, this intersection will operate at an overall Level of Service “B” during the morning peak hour and an overall Level of Service “F” during the evening peak hour.

The individual movement delays and associated Levels of Service for each intersection are shown in the Technical Appendix in Tables A through J, as well as Table L.

- Unsignalized Intersection Capacity Analysis:

The following list provides the “No-Build” and “Build” Levels of Service at the unsignalized intersections included in this study utilizing HCS+ software. The unsignalized intersections are listed along with the Level of Service of their critical approach. Similar to analyses conducted for the signalized intersections, the following unsignalized analyses only incorporate the Town’s

proposed roadway improvements along Old Walt Whitman Road.

**ANALYSIS UTILIZING HCS + SOFTWARE (HCM METHODOLOGY)**

Intersection	No-Build/Build LOS	
	AM	PM
Old Walt Whitman Road and Old Country Road	F/F	F/F
Proposed Site Driveway & LIE South Service Road	-/-	-/D

Notes:

The following points identify persisting capacity constraints or changes in Level of Service under the future conditions:

1. The northbound Old Walt Whitman Road approach to its intersection with Old Country Road would continue to operate at the “No-Build” Level of Service “F” during the weekday morning peak hour. The southbound Old Walt Whitman Road approach would continue to operate at the “No-Build” Level of Service “F” during the weekday morning and weekday evening peak hour. The northbound Old Walt Whitman Road approach would degrade to Level of Service “E” during the weekday evening peak hour. The westbound Old Country Road approach would degrade to Level of Service “B” during the weekday morning peak hour.
2. The proposed right-turn ingress/egress-only Canon site driveway along the LIE South Service Road is expected to operate with a Level of Service “D” during the weekday evening peak hour with a calculated 95<sup>th</sup> percentile queue length of five (5) vehicles, which can be entirely accommodated on the site without impeding the on-site circulation. Note that a Level of Service is not provided during the weekday morning peak hour since egress movements are restricted at this driveway during that time and, as such, no conflicting traffic movements would be present at the site driveway.

The following list provides the future “No-Build” and “Build” Intersection Capacity Utilization (ICU) Levels of Service at each of the unsignalized intersections included in this study that were analyzed utilizing Synchro software.

## ANALYSIS UTILIZING SYNCHRO SOFTWARE (SYNCHRO METHODOLOGY)

Intersection	No Build/Build LOS	
	AM	PM
Old Walt Whitman Road and Cottontail Road	B/B	A/A
Old Walt Whitman Road and Existing FedEx Driveway North	E/A	B/A
Proposed Canon South Driveway & Old Walt Whitman Road	-/A	-/A

Notes:

1. The westbound approach at the intersection formed by the FedEx northerly driveway and Old Walt Whitman Road would improve to operate at an ICU Level of Service “A” during the weekday morning and weekday evening peak hour. Under the development proposal, the northerly FedEx driveway would be configured to operate as a right-turn egress-only driveway, which is expected to improve the Level of Service at this intersection.
  
2. The proposed southerly site driveway along Old Walt Whitman Road is expected to operate with a Level of Service “A” during the weekday morning and weekday evening peak hours. This intersection analysis incorporates the additional exclusive southbound through lane that is proposed under the development program.

### RECOMMENDED MITIGATION MEASURES

In order to address existing roadway network constraints as well as the anticipated impact associated with the proposed Canon Americas Headquarters, a series of mitigation measures within the surrounding roadway network have been identified. As recommended by GPI, a “No-Build” condition that includes the Town of Huntington and NYSDOT proposed roadway improvements was also incorporated into this analysis. The mitigation package maintains the calculated base “No-Build” traffic condition at the intersections under review by introducing capacity upgrades, and, in some areas, incorporating the NYSDOT and Town of Huntington’s improvement projects as discussed earlier. These agencies have proposed improvements that are extensive in scope and aim to address the area-wide transportation welfare. As a result, Canon’s proposed mitigation improvements are assumed to be implemented when the NYSDOT and the Town of Huntington

construct their respective projects, rather than being directed by Canon's construction schedule.

The following mitigation package includes improvements to the area-wide transportation network that would be required to address Canon's traffic impact on the noted intersections. These modifications are regionalized improvements and are not necessarily required for the efficient ingress to and egress from the site itself. As such, the funding and implementation mechanisms for these improvements are expected to be derived from public entities that may view them as significant benefits to the traveling public, in addition to just Canon's employees and visitors. Meetings have been conducted, and will continue to be conducted under the leadership of the Town of Huntington, to fashion sources of funds to implement these off-site mitigation recommendations. These improvements are described in detail and comprise the "Build with Mitigation" scenario.

The appended Conceptual Roadway Improvement Plans have been prepared by this office to depict the frontage improvements associated with the Canon project and their connection to the adjacent corridor improvements proposed by the Town of Huntington and the NYSDOT. Additionally, a table containing the various proposed mitigation measures and associated timeframes has been prepared to summarize the planned improvement programs.

### **Signalized Intersections**

#### **NYS Route 110 and Old Walt Whitman Road/Duryea Road**

Signal timing modifications are recommended during both peak hours. With the implementation of these timing modifications, the overall Level of Service of the "Build" condition would be consistent with the "No-Build" Level of Service during both peak hours. During the weekday morning peak hour, the northbound Route 110 left-turn movement would degrade to a Level of Service "E". Despite this degradation, the overall intersection will continue to operate at the "No-Build" Level of Service "E" and the southbound NYS Route 110 through movement would improve to a Level of Service "D". During the weekday evening peak hour, the eastbound Old Walt Whitman Road/Duryea Road approach would improve to a Level of Service "C". In addition, the westbound Old Walt Whitman Road/Duryea Road right-turn movement would improve to a Level of Service "C", the northbound NYS Route 110 through movement would improve to a Level of Service "D", the northbound right-turn movement would improve to a Level of Service "B", and the southbound right-turn movement would improve to a Level of Service "B" during the weekday evening peak hour. Note that NYSDOT's proposed roadway improvements do

not include this intersection.

**NYS Route 110 and Old Country Road**

The NYSDOT’s planned improvements to the NYS Route 110-Old Country Road intersection were incorporated into the “Build with Mitigation” analysis. The modifications include the addition of one (1) exclusive left-turn lane along the westbound Old Country Road approach and one (1) exclusive through lane along the northbound and southbound NYS Route 110 approaches. The NYSDOT project also proposes the extension of Old Walt Whitman Road, which is located immediately west of this intersection. This extension would connect Old Walt Whitman Road to southbound NYS Route 110, and was incorporated into this analysis. It should be noted that a percentage of the traffic currently making a right-turn movement from southbound NYS Route 110 to westbound Old Country Road would execute this turn at the Old Walt Whitman Road extension. Therefore, the traffic volumes have been modified accordingly in the “No-Build” with Town and NYSDOT improvements and the “Build with Mitigation” analyses. It is expected that the proposed roadway modifications, as well as signal timing changes would improve the “Build” condition such that the intersection would perform with less overall delay than in the “No-Build” condition. The overall delay decreases by 36.8 seconds and 37.0 seconds during the weekday morning and weekday evening peak hours, respectively, when compared to the “No-Build” with Town and NYSDOT improvements condition. Further, the overall intersection improves to operate at a Level of Service “E” during the weekday evening peak hour.

The following table presents a comparison of the overall Levels of Service at the signalized intersections under the “No-Build” with Town and NYSDOT roadway improvements and “Build with Mitigation” scenarios utilizing HCS+ software.

**ANALYSIS UTILIZING HCS+ SOFTWARE (HCM METHODOLOGY)**

Intersection	No-Build With Town & NYSDOT/Build with Mitigation	
	AM	PM
NYS Route 110 and Old Walt Whitman/Duryea Road	E/E	F/F
NYS Route 110 and Old Country Road	F/F	F/E

The following sub-section presents the “No-Build” with Town and NYSDOT improvements and the “Build with Mitigation” scenarios for the intersections analyzed using Synchro Software.

### **Old Walt Whitman Road and Sweet Hollow Road/Pinelawn Road (C.R. 3)**

Signal timing modifications are proposed at the Old Walt Whitman Road-Sweet Hollow Road/Pinelawn Road intersection. As a result of the signal timing improvements, the southbound Old Walt Whitman Road through movement, during the weekday morning peak hour, would degrade to a Level of Service “C”, while the westbound left-turn movement would improve to a Level of Service “C”. During the evening peak hour, each movement is expected to operate at “No-Build” with Town and NYSDOT improvements Levels of Service.

### **Old Walt Whitman Road and LIE North Service Road**

Similar to the LIE South Service Road, the NYSDOT’s improvement project proposes an additional through lane at the westbound approach to the NYS Route 110-LIE North Service Road intersection. This action would require widening along the LIE North Service Road, and it is reasonable to assume that the improvement could be extended west to the Old Walt Whitman Road intersection as well. The “Build with Mitigation” analysis includes an additional westbound through lane on the LIE North Service Road to complement the NYSDOT’s improvement project and address capacity constraints at the intersection. It is recommended that the northbound Old Walt Whitman Road approach at LIE North Service Road be reconfigured to provide two (2) exclusive left-turn lanes and one (1) exclusive through lane. The recommended mitigation, along with signal timing modifications and the new westbound through lane proposed under the NYSDOT project, would allow the overall intersection to operate at the “No-Build” with Town and NYSDOT improvements Level of Service “B” during the weekday morning peak hour. It should be noted that there is a slight decrease in overall intersection delay of 0.6 seconds when analyzed under the “Build with Mitigation” scenario. During the evening peak hour, the overall intersection is expected to operate at a “No-Build” with Town and NYSDOT improvements Level of Service “D”. It should be noted that the northbound left-turn movement would degrade to a Level of Service “C” and the southbound through movement and southbound right-turn movement would improve to a Level of Service “C” and a Level of Service “E”, respectively.

### **Old Walt Whitman Road and LIE South Service Road**

The NYSDOT's improvement project proposes an additional through lane at the eastbound approach to the NYS Route 110-LIE South Service Road intersection. This action would require widening along the LIE South Service Road, and it is reasonable to assume that the improvement could be extended westerly to the Old Walt Whitman Road intersection. The "Build with Mitigation" analysis includes an additional eastbound through lane on the LIE South Service Road to complement the NYSDOT's improvement project and address capacity constraints at the intersection. In addition, it is recommended that the southbound Old Walt Whitman Road approach be reconfigured to provide one (1) exclusive left-turn lane and two (2) exclusive through lanes. This recommended mitigation, along with signal timing modifications, would improve the overall intersection from Level of Service "D" in the "No-Build" with Town and NYSDOT improvements condition to Level of Service "B" in the "Build" with mitigation condition during the morning peak hour. During the evening peak hour, the overall intersection would also improve from a "No-Build" with Town and NYSDOT improvements Level of Service "D" to a Level of Service "C".

### **Old Walt Whitman Road and Pineridge Street**

During the morning peak hour, the eastbound approach would degrade slightly to a Level of Service "C" with the implementation of signal timing modifications. Although a degradation would be anticipated, the overall intersection would continue to operate at the "No-Build" with Town and NYSDOT improvements Level of Service "A" with a slight increase in delay of only 1.2 seconds. During the evening peak hour, the overall intersection is expected to degrade to a Level of Service "C". Please note that although a degradation would occur, a Level of Service "C" is still highly acceptable per traffic engineering design standards.

### **Old Walt Whitman Road and Northgate Circle/Baylis Road**

Signal timing modifications are recommended at the Old Walt Whitman Road intersection with Northgate Circle/Baylis Road. The eastbound and westbound approaches to the intersection would degrade to a Level of Service "D" and a Level of Service "C", respectively, while the southbound approach would improve to a Level of Service "A" during the weekday morning peak hour.

Although a degradation along certain approaches would be anticipated, the overall intersection would improve to operate at an overall Level of Service “A” with a slight decrease in delay of 2.4 seconds. During the evening peak hour, the eastbound and westbound approaches to the intersection would degrade to a Level of Service “C” and “B”, respectively, while the southbound approach would improve to a Level of Service “A”. However, it should be noted that the overall intersection would operate at a “No-Build” with Town and NYSDOT improvements Level of Service “A” with a slight decrease in overall intersection delay of 0.8 seconds.

#### **NYS Route 110 and LIE North Service Road**

The NYSDOT’s project, which involves an additional LIE North Service Road through lane, was also incorporated in the “Build with Mitigation” analysis at this intersection. An additional through lane along the LIE North Service Road would alleviate capacity constraints on the westbound approach of this intersection. During the weekday morning peak hour, the proposed signal timing modifications cause a degradation in the overall intersection Level of Service to a “C” but improve the northbound left-turn movement to operate at a Level of Service “B”. During the weekday evening peak hour, the overall intersection would degrade to a Level of Service “C” with a slight increase in delay of 3.2 seconds. The westbound right-turn movement is expected to degrade to a Level of Service “C” and the northbound left-turn movement is expected to improve to a Level of Service “B”.

#### **NYS Route 110 and LIE South Service Road**

The roadway improvements associated with the NYSDOT’s project have been incorporated in the “Build with Mitigation” analysis at this intersection. The NYSDOT project involves the addition of one (1) through lane along the LIE South Service Road. The additional through lane, along with signal timing modifications, would decrease the overall intersection delay by 1.3 seconds during the weekday morning peak hour when compared to the “No-Build” condition incorporating the Town and NYSDOT roadway improvements. The recommended mitigation would allow the overall intersection to continue to operate at the “No-Build” with Town and NYSDOT improvements Level of Service “C” and also improve the southbound NYS Route 110 approach to operate at a Level of Service “B”, during the weekday morning peak hour. During the weekday evening peak hour, the overall intersection would degrade to a Level of Service “F”. The northbound approach to the intersection is expected to operate at the “No-Build” with Town and

NYSDOT improvements Level of Service “E”, the eastbound approach to the intersection is expected to degrade to a Level of Service “F”, and the southbound approach to the intersection is expected to improve to a Level of Service “B”.

### **Round Swamp Road and LIE South Service Road**

Signal timing modifications are proposed at the Round Swamp Road and LIE South Service Road intersection. With the signal timing changes, the overall intersection is expected to degrade from a “No-Build” with Town and NYSDOT improvements Level of Service “C” to a Level of Service “D” during the weekday morning peak hour. Please note that although a degradation would occur, a Level of Service “D” is an acceptable Level of Service per traffic engineering design standards. During the weekday evening peak hour, each approach to the intersection is expected to operate at “No-Build” with Town and NYSDOT improvements Levels of Service and the overall intersection is expected to operate at a “No-Build” Level of Service “C”.

### **Park Drive and Old Walt Whitman Road**

Signal timing modifications are proposed at the intersection of Park Drive and Old Walt Whitman Road. With the signal timing changes, each approach to the intersection is expected to operate at “No-Build” with Town and NYSDOT improvements Levels of Service during the weekday morning peak hour as well as the weekday evening peak hour.

### **Canon Main Driveway and Old Walt Whitman Road**

A signalized access point would be constructed as part of the development proposal at the Old Walt Whitman Road intersection formed by the existing southerly FedEx driveway and Canon’s proposed main driveway. The “Build with Mitigation” condition incorporates one (1) additional southbound through lane and one (1) additional southbound right-turn bay on Old Walt Whitman Road. The additional southbound through lane would extend along the site’s Old Walt Whitman Road frontage. The additional pavement width would meet the presently widened section of road just south of the Canon site at Paumonauk Hills Court and be configured as a southbound right-turn lane for the adjacent residential complex. To the north, the additional pavement width would meet the expanded southbound approach at the Old Walt Whitman-LIE South Service Road intersection, discussed further in the mitigation section on Page 32. Under “Build with Mitigation” conditions, this intersection will operate at an overall Level of Service “B” during the morning peak hour and an overall Level of Service “D” during the evening peak hour.

The following lists respectively provide the future “No-Build” with Town and NYSDOT improvements and the “Build with Mitigation” Levels of Service at each of the signalized intersections analyzed in Synchro. The signalized intersections are listed along with their overall Level of Service.

**ANALYSIS UTILIZING SYNCHRO SOFTWARE (SYNCHRO METHODOLOGY)**

Intersection	No-Build with Town & NYSDOT/Build with Mitigation	
	AM	PM
Old Walt Whitman Road and Sweet Hollow Road/Pinelawn Road (C.R. 3)	B/C	B/B
Old Walt Whitman Road and LIE North Service Road	B/B	D/D
Old Walt Whitman Road and LIE South Service Road	D/B	D/C
Old Walt Whitman Road and Pineridge Street	A/A	A/B
Old Walt Whitman Road and Northgate Circle/Baylis Road	B/A	A/A
NYS Route 110 and LIE North Service Road	B/C	B/C
NYS Route 110 and LIE South Service Road	C/C	D/F
Round Swamp Road and LIE South Service Road	C/D	C/C
Old Walt Whitman Road and Park Drive	A/A	A/A
Proposed Canon Main Site Driveway/Existing FedEx Driveway South & Old Walt Whitman Road	-/B	-/D

**Old Walt Whitman Road – Coordinated Traffic Signal Network**

As noted by the Town of Huntington and Greenman-Pedersen, Inc., the Town’s Consultant, the existing traffic signals on Old Walt Whitman Road at Pineridge Street and Northgate Circle/Baylis Road would be replaced as part of the planned corridor improvement project. Together with the proposed traffic signal to be installed at Park Drive under the same improvement project, the Town may consider implementing a coordinated traffic signal network to improve throughput and vehicle progression within the corridor. The addition of a new traffic signal at Canon’s main access point would result in four (4) signalized intersections on Old Walt Whitman Road between the LIE South Service Road and NYS Route 110. In an effort to provide the Town with a recommendation for an optimized network to serve the traveling public as well as the future Canon office complex, our

office has developed a preliminary Coordinated Traffic Signal Network Plan under the Build with Mitigation scenario utilizing the Synchro Signal Coordination Methodology. Coordination means that there is a predictable time relationship between the operation of each signal relative to the operations of each of the other signals located within the specific system or zone. The above-mentioned intersections were segregated from the remainder of the Synchro network and optimized during the weekday morning and evening peak hours. Please note that while the existing traffic signals at the LIE North and South Service Roads are in close proximity to the four under consideration here, they are part of NYSDOT’s INFORM system and would not be fully integrated into a Town-maintained network. (However, it may be possible for the Town to implement a “force-off” from the LIE South Service Road intersection in an attempt to link the two separate networks.)

The table below summarizes the recommended cycle length and offset parameters for each traffic signal on Old Walt Whitman Road between the LIE South Service Road and NYS Route 110. Please note that the design of this network should be adjusted based on further consultations with the Town of Huntington and its traffic consultant as the Reference Phase/Offset Settings may require adjustment based on the Town’s implementation plan and the types of controller units typically utilized by the Town of Huntington. The parameters below, as well as all other traffic signal timing parameters, are provided in the appended Synchro output sheets.

<b>Intersection</b>	<b>Cycle Length (sec.) AM/PM</b>	<b>Offset (sec.) AM/PM</b>
Canon/FedEx	100/100	76/72
Pineridge Street	100/100	94/84
Northgate Circle/Baylis Road	100/100	0/0
Park Drive*	50/50	3/39

\*Half and double cycle lengths can function in coordinated traffic signal networks

### **Unsignalized Intersections**

#### **Old Walt Whitman Road and Old Country Road**

The proposed NYSDOT modifications at this intersection involve the installation of a traffic

signal. The traffic signal would be installed to operate in coordination with the NYS Route 110 and Old Country Road signal. The installation of a traffic signal at this intersection would improve the delays at the northbound and southbound approaches to the intersection. Note that this mitigation analysis incorporates the anticipated re-routing of traffic volumes based on the NYSDOT Planned extension of Old Walt Whitman Road to meet NYS Route 110 just south of the Northern State Parkway. The intersection would continue to operate at the “No-Build” Levels of Service with the build out of the Canon Development when compared to the “No-Build” condition incorporating the Town and NYSDOT improvements.

The following table presents the overall Levels of Service at the unsignalized intersection under the “No-Build” with Town and NYSDOT improvements and the “Build with Mitigation” scenarios utilizing HCS+ software.

**ANAYLSIS UTILIZING HCS + SOFTWARE (HCM METHODOLOGY)**

<b>Intersection</b>	<b>No-Build with Town &amp; DOT /Build with Mitigation</b>	
	<b>AM</b>	<b>PM</b>
Old Walt Whitman Road and Old Country Road	C/C	B/C

**Old Walt Whitman Road and Cottontail Road**

Under the “Build with Mitigation” scenario, the intersection of Old Walt Whitman Road and Cottontail Road will continue to operate at “No-Build” ICU Levels of Service with the build out of the Canon Development when compared to the “No-Build” condition incorporating the Town and NYSDOT improvements during both peak periods.

**Old Walt Whitman Road and Existing FedEx North Driveway**

Under the current development proposal, the northerly FedEx driveway would be configured to operate as a right-turn egress-only driveway, which is expected to improve the ICU Level of Service at this intersection. As such, the overall intersection is calculated to improve to an ICU Level of Service “A” during both peak periods.

**Proposed Canon South Driveway and Old Walt Whitman Road**

One of the proposed “Build with Mitigation” improvements includes one (1) additional southbound through lane on Old Walt Whitman Road. The additional southbound through lane would extend along the site’s Old Walt Whitman Road frontage. The additional pavement width would meet the presently widened section of road just south of the Canon site at Paumonauk Hills Court and be configured as a southbound right-turn lane for the adjacent residential complex. With this improvement, the overall Level of Service at the proposed Canon South Driveway intersection is calculated to have an ICU Level of Service “A” during both peak periods under the “Build with Mitigation” scenario.

The following table presents the overall ICU Levels of Service at the unsignalized intersections under the “No-Build” with Town and NYSDOT improvements and the “Build with Mitigation” scenario utilizing Synchro software.

**ANAYLSIS UTILIZING SYNCHRO SOFTWARE**

<b>Intersection</b>	<b>No-Build with Town &amp; DOT /Build with Mitigation</b>	
	<b>AM</b>	<b>PM</b>
Old Walt Whitman Road and Cottontail Road	B/B	A/A
Old Walt Whitman Road and Existing FedEx Driveway North	E/A	B/A
Proposed Canon South Driveway & Old Walt Whitman Road	-/A	-/A

---

## WEAVING ANALYSIS

---

A Weaving Analysis was previously conducted utilizing the Highway Capacity Software Plus (HCS+) software. Two (2) locations along the LIE South Service Road were studied based on a request made by the NYSDOT during the April 1, 2008 Pre-Application Meeting. The two weaving areas studied were (1) LIE eastbound Exit 48 (Round Swamp Road) off-ramp and (2) LIE eastbound Exit 49S (Old Walt Whitman Road) off-ramp. The results of this Weaving Analysis were presented in our April 21, 2008 Traffic Impact Analysis.

During the June 5, 2008 meeting with the NYSDOT, a request was made to conduct an analysis of the two weaving segments utilizing a different analysis tool. As a result, we have since conducted a Synchro/SimTraffic analysis demonstrating the peak hour operating conditions of the weaving segments under four (4) scenarios: Existing, No Build, Build, and Build with Mitigation. The attached Synchro/SimTraffic compact disc contains video simulations of the two weaving areas under each scenario. Please note that the video simulations provide a qualitative assessment of the off-ramps and weaving conditions rather than a quantitative, LOS-based analysis as calculated by HCS+. It was noted during the meeting and in our original Traffic Impact Analysis that the HCS+ software, which can provide quantitative results for weaving segments, is limited in its ability to accurately assess weaving conditions, specifically when the weave condition depends of queuing conditions at closely spaced intersections. As a result, the video simulations attempt to demonstrate the effect of the downstream signalized intersections (Round Swamp Road and Old Walt Whitman Road) in real time as the project advances from the Existing condition towards the Build with Mitigation condition.

It is important to note that the relocation of the office complex's driveway to a point west of the Exit 49S off-ramp is expected to improve potential weaving conditions along the site frontage west of Old Walt Whitman Road. Furthermore, based on the video simulations, we do not anticipate that the redistribution of site-generated traffic, as noted within the distribution section of this document, would have an adverse effect on the Exit 48 weaving area.

The introduction of Canon's site traffic to these locations would be adequately served within the weaving segments identified above. The juxtaposition of the morning and evening split of site traffic

and the adjacent peak roadway volumes demonstrates that Canon's peak arrival and departure times do not coincide with the peak periods of adjacent roadway activity. In general, the LIE South Service Road traffic volumes at Exit 48 are higher in the evening when Canon's additional traffic is projected to be comparatively low. Similarly, the LIE South Service Road traffic volumes are significantly higher in the morning when Canon's site-generated traffic is also projected to be comparatively low. In this manner, the anticipated site-generated volumes can be introduced into the surrounding roadway network in a safe and efficient manner as proposed within the site access management program.

---

## CORPORATE TRIP REDUCTION INITIATIVES

---

In an effort to reduce the number of daily employee trips and to meet Leadership in Energy and Environmental Design (LEED) requirements, Canon U.S.A., Inc. has approved the following Employee Trip Reduction Initiatives for the new corporate headquarters:

- Commuter Choice Program
  - Coordinate with Long Island transportation management to arrange a Commuter Choice Fair where transit and other commuter information would be distributed to employees (took place on April 22, 2008).
  - Investigate the Commuter Choice Program so transit benefits can be paid with pre-tax dollars for employees.
  - Provide incentives to carpool.
  - Implement a “guaranteed ride program” to ensure a ride home for carpoolers in a time of emergency.
  - Encourage public transit and vanpools.
  - Evaluate a shuttle service between the train stations and Canon.
  - Provide reserved parking for both hybrid and electric vehicles and electric power sources/ outlets for recharging.
- Encourage use of bicycles by providing 40 bicycle spaces.
- Implementation of the following employee staggered arrival-departure program to minimize the concentration of site-generated traffic on the adjacent roadway network during peak hours:
  - 8:00 a.m. to 4:00 p.m.
  - 8:30 a.m. to 4:30 p.m.
  - 9:00 a.m. to 5:00 p.m.

- 9:30 a.m. to 5:30 p.m.

The number of employees assigned to each pair of arrivals and departures would be determined as the corporate operation in Melville solidifies. These assignments will be based in part on where Canon's employees reside at the time the new office complex opens. The anticipated changes in the employee zip code distribution, as noted in the Trip Distribution section of this document, would be expected to affect the breakdown of the employee base in to the staggered arrival/departure program.

- Extend the time period that the departure gates are open as a result of the staggered arrivals/departures program so as to promote the progression of outbound traffic. Presently, the departure gate at the Lake Success facility is open from 5:00 p.m. to 5:30 p.m. only.
- Provide a bus stop for the MTA Long Island Bus line N95 along the Old Whitman Road site frontage.

Canon is also considering the following initiatives to further reduce employee traffic:

- Provide shuttle buses to and from the nearby Long Island Rail Road stations.
- Provide incentives for not using parking spaces.

An additional discussion on some of the above initiatives is provided in the following section, "Site Access and Circulation." Please note that in order to provide conservative analyses, credit for these employee trip reduction initiatives has not been applied to the traffic analyses provided herein. We recognize that these initiatives would help reduce daily traffic to and from the site, and in that regard the traffic analysis overestimates the peak hour projections of traffic impact on the surrounding roadways.

---

## SITE ACCESS AND CIRCULATION

---

A review has been made of the Site Plan for the proposed Canon Americas Headquarters prepared by Bohler Engineering and HOK Architects. Based on the proposed site layout, our office has provided a summary of the key on-site elements as they relate to traffic. The following items address site access, on-site circulation, and parking supply:

### ACCESS

- Primary access along LIE South Service Road is proposed via one (1) right-turn ingress/right-turn egress unsignalized access point that would be subject to entering and exiting restrictions based on the time of day. This access point is proposed to be located west of the Exit 49S off-ramp from the Long Island Expressway to address NYSDOT concerns. No form of access is provided along the Long Island Expressway South Service Road between the Exit 49S off-ramp and Old Walt Whitman Road. Access would also be provided via two (2) full-movement driveways and one right-turn ingress only driveway along southbound Old Walt Whitman Road. The central driveway along Old Walt Whitman Road is proposed to be signalized and would serve as the office complex's main access point. The southerly proposed driveway along Old Walt Whitman Road would be primarily utilized by truck deliveries and employees and the northerly access point would accommodate inbound traffic during peak arrival periods.
- Based on "A Toolbox for Alleviating Traffic Congestion and Enhancing Mobility" published by the ITE, a reversible lane system is one of the most efficient methods of increasing rush-period capacity on a roadway. Once a reversible system is deemed necessary and feasible, the method of designating lanes to be reversed and the direction of flow must be selected. Three general methods are used to accomplish a reversible system and as such, it is proposed that the following are utilized for the Canon internal roadway system:
  - special traffic signals suspended over each lane
  - permanent signs advising motorists of the changes in traffic regulations and the hours

they are in effect

- physical barriers, such as traffic cones

These recommendations are also contained within the National Cooperative Highway Research Program "Convertible Roadways and Lanes, Synthesis 340" document.

- As the travel section parallel to the LIE South Service Road would be utilized reversibly (AM inbound, PM outbound), it is recommended that Figure 3B-6 of the Federal Manual of Uniform Traffic Control Devices (MUTCD) be consulted in the design of the necessary pavement markings and signage provisions along this on-site roadway. The lane lines should consist of broken double yellow lines to delineate the edge of each lane, as shown in the above-mentioned figure. It is also recommended that lane-use control LED signals be provided on an overhead structure within the reversible lanes section. A steady downward green arrow signal indication shall mean that a road user is permitted to travel in the lane over which the green arrow signal indication is located. A steady red "X" signal indication shall mean that a road user is not permitted to use the lane. The bottom of the signal housing of any lane-use control signal face shall be at least 15 feet but no more than 19 feet above pavement grade (Section 4J, MUTCD).
- The internal layout of the site access facilities would assist in balancing the external distribution of traffic to the adjacent roadway network. The driveway location along the LIE South Service Road would be designed to provide adequate separation distance from the Exit 49S off-ramp to minimize weaving conflicts along the site frontage. Employees looking to access the site from the LIE South Service Road would need to use Exit 48 (Round Swamp Road) as the driveway is proposed to be located west of the Exit 49S off-ramp.
- Each access point would be equipped with a guard booth and electronic remote access (similar to the E-Z Pass system). These checkpoints would be located far enough into the site to minimize the potential for queuing issues on the public roadways.
- A public bus stop for the MTA Long Island Bus Route 95 is proposed along the site's Old Walt Whitman Road frontage. This would afford employees and staff the ability to choose an alternative means of transportation, which in turn works to reduce the

number of trips made to and from the complex via personal auto. This bus stop must be evaluated and approved by the MTA Long Island Bus Company.

- A circular drop-off area would be provided in front of the main building entrance to facilitate visitors, deliveries and visiting corporate dignitaries.

### **PARKING**

- The office building would be served by two (2) parking garages, one each on the north and south sides of the property. The opportunity for employee access on both the LIE South Service Road and Old Walt Whitman Road would distribute traffic effectively to both parking garages.
- This circular area would also provide two bus stops to be utilized by Canon shuttle buses to/from the nearby Long Island Rail Road (LIRR) stations at Farmingdale and Huntington. This area would be flanked by a visitor parking area providing approximately 200 parking stalls.

### **DELIVERIES**

- Primary delivery truck access would be provided at the south end of the site on Old Walt Whitman Road, and the delivery area would be situated away from the employee parking areas and visitor drop-off points. The on-site security team would be able to re-route any unauthorized trucks or other vehicles off the site through controlled access points.
- Based on delivery information obtained from Canon's Lake Success complex, the large majority of deliveries to the future Melville site are expected to take place during the middle of the day when traffic along the adjacent roadway network is below peak traffic volume levels. As such, delivery activity would generally not impede peak hour vehicular traffic flow on-site and along the adjacent roadway network.

---

## CONCLUSIONS

---

This report was prepared to examine the potential traffic impact of the proposed Canon Americas Headquarters. The HCS+ and Synchro Software Highway Capacity Analyses for the future conditions demonstrate that the traffic impacts generated by the proposed development would be mitigated to acceptable operating conditions within the noted study area once the recommended signal timing mitigation measures and roadway improvements are implemented as noted herein, which implementation will coordinate with Canon's phased developments.

The mitigation package presented consists of a three-fold approach, incorporating improvements from the NYSDOT's NYS Route 110 corridor project, the Town of Huntington's Old Walt Whitman Road corridor project, and frontage upgrades proposed on the LIE South Service Road and Old Walt Whitman Road. The scope of the NYSDOT and Town of Huntington's projects, which are already completely or partially funded, exceeds the off-site mitigation package developed herein to address Canon's anticipated impacts within the study roadway network. The additional off-site improvements identified in this report are conceptually consistent with aspects of these agencies' projects and, as a result, it is assumed that they could be constructed in connection with the public projects.

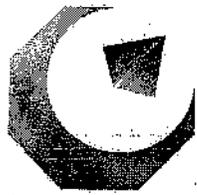
Canon has committed to a staggered arrival/departure program whereby each employee of the Melville facility would be assigned to one of four pairs of staggered arrival and departure times. The Corporate Trip Reduction Initiatives is anticipated to reduce peak hour site-generated traffic within the surrounding roadway network, although no quantitative credit for this has been factored in this conservative Traffic Impact Analysis.

Once these improvements have been completed, the surrounding roadway network is expected to operate under parameters that are more conducive to traffic flows on these public facilities. The mitigation package as noted above would create the necessary capacity to process the traffic volumes associated with the proposed Canon Americas Headquarters.

---

TECHNICAL APPENDIX

---

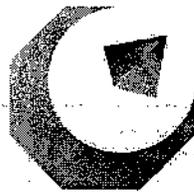


**ATLANTIC TRAFFIC  
& DESIGN ENGINEERS, INC.**

---

**TECHNICAL APPENDIX**

---



**ATLANTIC TRAFFIC  
& DESIGN ENGINEERS, INC.**

**LEVEL OF SERVICE DESCRIPTIONS**

---

## LEVEL OF SERVICE ANALYSIS

---

While traffic volumes provide a measure of activity on the area roadway system, it is also important to evaluate how well that system can accommodate those volumes -- i.e., a comparison of peak traffic volumes with available roadway capacity. By definition, capacity represents the maximum number of vehicles which can be accommodated given the constraints of roadway geometry, environment, traffic characteristics, and controls. Intersections are usually the critical point in any road network since it is at such points that conflicts exist between through, crossing, and turning traffic, and where congestion is most likely to occur.

### UNSIGNALIZED INTERSECTIONS

An unsignalized (i.e., "YIELD" or "STOP" sign controlled) driveway or side street along a through route is seldom critical from an overall capacity standpoint, however, it may be of great significance to the capacity of the minor cross-route, and it may influence the quality of traffic flow on both. In analyzing unsignalized intersections, it is assumed that both the through movements and right turn movements on the major street approaches are unimpeded and have the right-of-way over the minor street approaches and left turns from the major street. All other turning movements in the intersection cross, merge with, or are otherwise impeded by the major street movements.

The concept in determining traffic delays at an unsignalized intersection is to process these impeded movements in a sequential manner. For each impeded movement, all conflicting flows are summed, and an initial critical 'gap' in traffic is determined with a "follow-up" gap determined for subsequent vehicles waiting in a queue. Based upon the number of available gaps in the passing traffic stream, the potential capacity of that movement can be calculated.

However, since operation at capacity is usually unsatisfactory to most drivers, a descriptive mechanism (Level of Service) has been developed which describes traffic operations as a function of average total delay. Unsignalized Levels of Service range from 'A' (delays less than 10 seconds) to 'F' (delays greater than 50 seconds). Table I summarizes the relationship between capacity and Level of Service for unsignalized intersections as defined by the Transportation Research Board Highway Capacity Manual 2000.

## LEVEL OF SERVICE AND EXPECTED DELAY FOR UNSIGNALIZED INTERSECTIONS

---

LEVEL OF SERVICE	AVERAGE TOTAL DELAY (SEC./VEH.)
A	$\leq 10$
B	$> 10$ and $\leq 15$
C	$> 15$ and $\leq 25$
D	$> 25$ and $\leq 35$
E	$> 35$ and $\leq 50$
F	$> 50$

---

Transportation Research Board, Highway Capacity Manual, HCM2000, 2000, by the  
Transportation Research Board, Washington, D.C.

## SIGNALIZED INTERSECTIONS

At signalized intersections, numerous other factors regulate the various approach capacities, including width of approach, number of lanes, signal “green time”, turning percentages, truck volumes, etc. As with unsignalized intersections, operation at capacity is far from satisfactory since substantial delays or reduced operating speeds are likely. Therefore, a similar description mechanism has been developed (also called Level of Service) which indicates, on the basis of average delay per vehicle, the relative smoothness of intersection operation on a scale of ‘A’ (indicating average delays of 10 seconds or less) to ‘F’ (indicating average delays greater than 80 seconds). The various levels of signalized intersections are summarized in Table II. Again, the acceptable limit of delay for most motorists is Level of Service ‘E’.

Delays cannot be related to overall roadway capacity in a simple one-to-one fashion. It is possible to have delays in the Level of Service ‘F’ range, without exceeding the physical roadway capacity. Such delays can exist if one or more of the following conditions exist:

- long signal cycle lengths (the time of complete a full sequence of signal phases);
- the particular traffic movement experiences a long red time; or,
- a progressive movement for a particular lane group is poor.

## LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	DESCRIPTION	AVERAGE TOTAL DELAY
A	Progression is very favorable; many vehicles do not stop at all; short cycle length contributes to low delay values.	$\leq 10$
B	Generally occurs with good progression and/or short cycle length; more vehicles stop than with Level of Service A, causing higher levels of delay.	$> 10$ and $\leq 20$
C	Fair progression and/or longer cycle length; the number of vehicles stopping is significant at this level, though many vehicles still pass through the intersection without stopping.	$> 20$ and $\leq 35$
D	Longer delays may result from unfavorable progression, long cycle length, or high volume/capacity ratios; many vehicles stop and the proportion of vehicles not stopping declines; individual cycle failures are noticeable	$> 35$ and $\leq 55$
E	These high delay values generally indicate poor progression, long cycle length, and high volume/capacity ratios; individual cycle failures are frequent.	$> 55$ and $\leq 80$
F	Considered unacceptable to most drivers; often occurs with over-saturation (i.e. arrival flow rates exceed capacity), high volume/capacity ratios, and many individual cycle failures. Capacity is not necessarily exceeded under this Level of Service.	$> 80$

Transportation Research Board, Highway Capacity Manual, HCM2000, 2000, published by the Transportation Research Board, Washington, D.C.

---

**TECHNICAL APPENDIX**

---



**ATLANTIC TRAFFIC  
& DESIGN ENGINEERS, INC.**

**LEVEL OF SERVICE TABLES**

**Atlantic Traffic**

A USICKER BUSINESS, INC.

Job Title: Proposed Canon Corporate Center  
 Job No: AN09003  
 Date: August 27, 2008

**LOS Signalized Intersection Comparison: Old Walt Whitman Road & Sweet Hollow Road/Pinelawn Road (CR 3)**

Table A

**SYNCHRO**

Time Period	Mvmt.	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Morning Peak Hour	EB-LTR	14.8	0.54	B	15.1	0.55	B	15.1	0.55	B	15.1	0.55	B	11.6	0.46	B
	LT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	WB-L	62.7	0.92	E	69.7	0.95	E	69.7	0.95	E	69.7	0.95	E	31.0	0.74	C
	T	17.8	0.51	B	18.0	0.52	B	18.0	0.52	B	18.0	0.52	B	14.2	0.44	B
	SB-LTR	4.2	0.31	A	4.2	0.31	A	4.2	0.31	A	4.2	0.31	A	3.4	0.28	A
OVERALL		6.3	0.31	A	6.4	0.32	A	6.4	0.32	A	6.5	0.33	A	8.6	0.37	A
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		12.8	0.67	B	13.2	0.68	B	13.2	0.68	B	19.2	0.82	B	32.8	0.93	C
	18.0	-	B	19.1	-	B	19.1	-	B	20.9	-	C	21.0	-	C	

Time Period	Mvmt.	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Evening Peak Hour	EB-LTR	12.4	0.29	B	12.4	0.30	B	12.4	0.30	B	12.4	0.30	B	12.4	0.30	B
	LT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	WB-L	16.5	0.36	B	16.8	0.37	B	16.8	0.37	B	16.8	0.37	B	16.8	0.37	B
	T	15.2	0.36	B	15.2	0.36	B	15.2	0.36	B	15.2	0.36	B	15.2	0.36	B
	SB-LTR	4.4	0.21	A	4.3	0.21	A	4.3	0.21	A	4.3	0.21	A	4.3	0.21	A
OVERALL		12.4	0.70	B	12.9	0.71	B	12.9	0.71	B	15.0	0.76	B	15.0	0.76	B
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		7.4	0.29	A	7.4	0.30	A	7.4	0.30	A	7.8	0.33	A	7.8	0.33	A
	11.8	-	B	12.0	-	B	12.0	-	B	12.9	-	B	12.9	-	B	

**Atlantic Traffic**

DESIGN ENGINEERS, INC.  
 Job Title: Proposed Canon Corporate Center  
 Job No: AN08003  
 Date: August 27, 2008

**LOS Signalized Intersection Comparison: Old Walt Whitman Road & Long Island Expressway North Service Road**

Table B

**SYNCHRO**

Time Period	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Morning Peak Hour	WB-L	-	-	-	-	-	-	-	-	-	-	-	18.0	0.65	B
	LT	20.9	0.88	C	21.9	0.90	C	19.2	0.90	B	67.2	1.10	18.7	0.81	B
	R	0.0	0.09	A	0.0	0.90	A	0.1	0.09	A	0.0	0.09	0.1	0.09	A
	NB-L	12.7	0.54	B	11.8	0.50	B	11.8	0.50	B	33.9	0.91	33.4	0.64	A
	T	20.1	0.90	C	21.5	0.88	C	21.5	0.88	C	21.2	0.84	9.0	0.70	A
	SB-T	28.2	0.59	C	27.2	0.57	C	27.2	0.57	C	40.3	0.64	26.4	0.62	C
R	12.3	0.33	B	13.2	0.35	B	13.2	0.35	B	18.4	0.37	17.7	0.28	B	
OVERALL	19.2	-	B	19.9	-	B	18.7	-	B	44.3	-	D	18.1	-	B

Time Period	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Evening Peak Hour	WB-LT	-	-	-	-	-	-	-	-	-	-	-	28.9	0.23	C
	LT	56.8	0.91	E	55.7	0.91	E	62.9	0.93	E	62.7	0.97	61.3	1.00	E
	R	0.0	0.05	A	0.0	0.05	A	0.0	0.05	A	0.0	0.05	0.1	0.05	A
	NB-L	16.5	0.74	B	16.0	0.75	B	8.6	0.69	A	248.0	1.50	25.4	0.91	C
	T	8.6	0.30	A	5.5	0.30	A	2.7	0.30	A	10.0	0.34	4.0	0.28	A
	SB-T	40.3	0.55	D	28.7	0.39	C	39.3	0.52	D	41.0	0.58	28.1	0.50	C
R	66.5	0.98	E	42.6	0.84	D	62.8	1.03	F	127.9	1.15	75.2	1.02	E	
OVERALL	44.0	-	D	37.7	-	D	47.2	-	D	116.9	-	F	42.4	-	D

**Atlantic Traffic**

DESIGN ENGINEERS, INC.

Job Title: Proposed Canon Corporate Center  
 Job No: AN08003  
 Date: August 27, 2008

**LOS Signalized Intersection Comparison: Old Walt Whitman Road & Long Island Expressway South Service Road**

Table C

**SYNCHRO**

Time Period	Mvmt.	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Morning Peak Hour	EB-LT	41.5	1.02	D	57.3	1.06	E	60.3	1.06	E	60.5	1.06	E	24.7	0.83	C
	R	1.9	0.62	A	2.0	0.64	A	2.0	0.64	A	3.1	0.73	A	3.0	0.73	A
	NB-T	122.8	1.14	F	-	-	-	-	-	-	-	-	-	-	-	-
	R	29.5	0.21	C	-	-	-	-	-	-	-	-	-	-	-	-
	TR	-	-	-	39.6	0.77	D	39.6	0.77	D	70.2	1.00	E	23.0	0.67	C
	SB-L	16.0	0.30	B	13.9	0.28	B	13.9	0.28	B	21.3	0.31	C	17.7	0.28	B
T	14.0	0.53	B	14.4	0.90	B	14.3	0.60	B	19.0	0.73	B	17.7	0.58	B	
OVERALL		37.1	-	D	36.6	-	D	38.2	-	D	40.5	-	D	18.0	-	B

Time Period	Mvmt.	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Evening Peak Hour	EB-LT	47.5	0.95	D	26.2	0.8	C	55.1	0.99	E	142.9	1.24	F	34.4	0.92	C
	R	1.0	0.46	A	1.0	0.47	A	1	0.47	A	1.3	0.54	A	1.3	0.54	A
	NB-T	42.5	0.81	D	-	-	-	-	-	-	-	-	-	-	-	-
	R	23.3	0.21	C	-	-	-	-	-	-	-	-	-	-	-	-
	TR	9.0	0.26	A	37.5	0.67	D	62.7	0.84	D	62.4	1.01	E	37.3	0.93	D
	SB-L	3.3	0.22	A	10.9	0.34	B	7.8	0.17	A	25.2	0.36	C	24.1	0.47	C
T	3.3	0.22	A	6.1	0.31	A	3.5	0.25	A	5.4	0.18	A	4.0	0.18	A	
OVERALL		30.6	-	C	21.1	-	C	37.2	-	D	79.3	-	E	26.4	-	C

**Atlantic Traffic**

& DESIGN ENGINEERS, INC.

Job Title: Proposed Canon Corporate Center  
 Job No: AN08003  
 Date: August 27, 2008

**LOS Signalized Intersection Comparison: Old Walt Whitman Road & Pineridge Street**

Table D

**SYNCHRO**

Time Period	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation			
	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	
Weekday Morning Peak Hour	EB-LR	13.8	0.14	B	13.4	0.13	B	13.4	0.13	B	13.4	0.13	B	25.3	0.12	C
	NB-LT	3.4	0.33	A	-	-	-	-	-	-	-	-	-	-	-	-
	L	-	-	-	4.2	0.06	A	4.2	0.06	A	4.2	0.06	A	2.5	0.04	A
	T	-	-	-	3.1	0.30	A	3.1	0.30	A	4.3	0.46	A	4.5	0.51	A
SP-TR	9.0	0.65	A	8.2	0.66	A	8.2	0.66	A	9.0	0.69	A	9.8	0.76	A	
OVERALL	7.5	-	A	6.8	-	A	6.8	-	A	7.2	-	A	8.0	-	A	

Time Period	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation			
	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	
Weekday Evening Peak Hour	EB-LR	14.4	0.11	B	15.5	0.16	B	15.5	0.16	B	15.6	0.16	B	31.4	0.17	C
	NB-LT	7.0	0.56	A	-	-	-	-	-	-	-	-	-	-	-	-
	L	-	-	-	5.6	0.15	A	5.6	0.15	A	5.6	0.15	A	14.9	0.34	B
	T	-	-	-	3.8	0.40	A	3.8	0.40	A	4.0	0.44	A	3.7	0.47	A
SP-TR	8.9	0.66	A	8.9	0.67	A	8.9	0.67	A	20.4	0.89	C	32.2	0.87	C	
OVERALL	8.3	-	A	7.2	-	A	7.1	-	A	14.7	-	B	22.8	-	C	

**Atlantic Traffic**  
& DESIGN ENGINEERS, INC.

Job Title: Proposed Canon Corporate Center  
Job No: AN08003  
Date: August 27, 2008

**LOS Signalized Intersection Comparison: Old Wait Whitman Road & Northgate Circle/Baylis Road**

Table E

Time Period	SYNCHRO														
	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
Mvmt.	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Morning Peak Hour	EB-L	18.3	0.08	B	19.0	0.10	B	19.0	0.10	19.0	0.10	B	53.8	0.32	D
	TR	13.3	0.13	B	13.3	0.12	B	13.3	0.12	13.3	0.12	B	28.2	0.21	C
	WB-L	20.9	0.26	C	20.7	0.24	C	20.7	0.24	20.7	0.24	C	48.8	0.42	D
	TR	6.8	0.44	A	6.8	0.42	A	6.8	0.42	6.8	0.42	A	13.1	0.56	B
	NB-LTR	6.9	0.44	A	-	-	-	-	-	-	-	-	-	-	-
	L	-	-	-	4.5	0.03	A	4.5	0.03	4.5	0.03	A	1.5	0.02	A
	TR	-	-	-	5.7	0.37	A	5.7	0.37	5.7	0.37	A	4.6	0.52	A
	SBL	-	-	-	19.0	0.75	B	19.0	0.75	202.2	1.36	F	18.2	0.85	B
	LT	183.0	1.29	F	-	-	-	-	-	-	-	-	-	-	-
	R	3.0	0.01	A	11.3	0.65	B	10.8	0.65	12.9	0.69	B	2.1	0.56	A
OVERALL	104.2	-	F	11.6	-	B	11.5	-	45.7	-	D	9.1	-	A	
Weekday Evening Peak Hour	EB-L	18.5	0.09	B	19.5	0.12	B	17.9	0.10	19.5	0.12	B	34.5	0.15	C
	TR	12.9	0.07	B	12.9	0.07	B	12.9	0.06	12.9	0.07	B	20.6	0.07	C
	WB-L	20.0	0.21	B	19.8	0.18	B	19.8	0.14	19.8	0.18	B	33.6	0.17	C
	TR	6.6	0.44	A	7.0	0.45	A	5.9	0.39	7.1	0.45	A	8.6	0.44	A
	NB-LTR	5.4	0.34	A	-	-	-	-	-	-	-	-	-	-	-
	L	-	-	-	4.2	0.03	A	5.4	0.03	5.8	0.07	A	5.8	0.04	A
	TR	-	-	-	6.0	0.40	A	7.8	0.43	6.5	0.45	A	8.4	0.41	A
	SBL	-	-	-	8.9	0.45	A	11.3	0.48	10.4	0.49	B	2.4	0.43	A
	LT	33.0	0.90	C	-	-	-	-	-	-	-	-	-	-	-
	R	2.5	0.02	A	2.1	0.02	A	11.6	0.60	19.4	0.80	B	8.8	0.73	A
OVERALL	20.7	-	C	8.3	-	A	9.8	-	13.4	-	B	9.0	-	A	

**Atlantic Traffic**

& DESIGN ENGINEERS, INC.  
 Job Title: Proposed Canon Corporate Center  
 Job No: AN08003  
 Date: August 22, 2008

**LOS Signalized Intersection Comparison: Route 110 & Old Walt Whitman Road/Duryea Road**

Table F

Time Period	Mvmt.	HCS															
		2008 Existing				2010 No-Build				2010 Build				2010 Build w/Mitigation			
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt.	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt.	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt.	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	
Weekday Morning Peak Hour	EB-LT	36.1	0.23	D	36.1	0.23	D	36.1	0.23	D	36.1	0.23	D	37.8	0.25	D	
	WB-LT	37.6	0.35	D	37.8	0.36	D	37.8	0.36	D	37.8	0.36	D	39.5	0.39	D	
	R	61.8	0.86	E	64.3	0.88	E	64.3	0.88	E	64.3	0.88	E	79.6	0.94	E	
	NB-L	44.2	0.58	D	46.1	0.66	D	46.1	0.66	D	110.6	1.09	F	73.0	0.98	E	
	T	92.4	1.11	F	101.6	1.13	F	101.6	1.13	F	111.9	1.15	F	111.9	1.15	F	
	R	26.9	0.52	C	27.1	0.53	C	27.1	0.53	C	28.0	0.54	C	28.0	0.54	C	
	SB-L	40.1	0.25	D	40.1	0.25	D	40.1	0.25	D	40.1	0.25	D	37.6	0.23	D	
	T	43.5	0.94	D	47.8	0.97	D	47.8	0.97	D	47.8	0.97	D	52.7	0.99	D	
	R	21.3	0.09	C	21.3	0.09	C	21.3	0.09	C	21.3	0.09	C	21.9	0.10	C	
	OVERALL	62.4	-	E	67.6	-	E	67.6	-	E	74.6	-	E	74.6	-	E	
Weekday Evening Peak Hour	EB-LT	37.7	0.36	D	37.9	0.37	D	37.9	0.37	D	37.9	0.37	D	33.9	0.29	C	
	WB-LT	166.6	1.20	F	182.7	1.24	F	182.7	1.24	F	182.7	1.24	F	114.6	1.07	F	
	R	36.7	0.27	D	36.7	0.28	D	36.7	0.28	D	36.7	0.28	D	33.5	0.25	C	
	NB-L	40.5	0.31	D	40.9	0.35	D	40.9	0.35	D	41.7	0.43	D	53.6	0.67	D	
	T	51.5	0.99	D	56.6	1.01	E	56.6	1.01	E	56.6	1.01	E	36.8	0.91	D	
	R	22.7	0.23	C	22.8	0.23	C	22.8	0.23	C	22.8	0.23	C	19.6	0.21	B	
	SB-L	38.9	0.14	D	39.0	0.14	D	39.0	0.14	D	39.0	0.14	D	47.0	0.22	D	
	T	161.9	1.27	F	190.3	1.34	F	190.3	1.34	F	190.3	1.34	F	133.9	1.22	F	
	R	21.1	0.07	C	21.1	0.07	C	21.1	0.07	C	21.1	0.07	C	18.2	0.07	B	
	OVERALL	107.3	-	F	123.8	-	F	123.8	-	F	123.1	-	F	86.5	-	F	

\*The NYSDOT Project does not propose improvements at this intersection.

**LOS Signalized Intersection Comparison: Route 110 & Long Island Expressway North Service Road**

Table G

Time Period	Mvmt.	2008 Existing						2010 No-Build						2010 No-Build w/Town & DOT						2010 Build						2010 Build w/Mitigation					
		Mvmt.		Mvmt.		Mvmt.		Mvmt.		Mvmt.		Mvmt.		Mvmt.		Mvmt.		Mvmt.		Mvmt.		Mvmt.		Mvmt.		Mvmt.		Mvmt.			
		Delay (sec/veh)	V/C	LOS	Delay (sec/veh)	V/C	LOS	Delay (sec/veh)	V/C	LOS	Delay (sec/veh)	V/C	LOS	Delay (sec/veh)	V/C	LOS	Delay (sec/veh)	V/C	LOS	Delay (sec/veh)	V/C	LOS	Delay (sec/veh)	V/C	LOS	Delay (sec/veh)	V/C	LOS			
Weekday Morning Peak Hour	WB-LT	57.1	1.02	E	63.4	1.04	E	24.4	0.72	C	138.4	1.23	F	34.0	0.84	C															
	R	10.3	0.18	B	11.0	0.18	B	11.0	0.18	B	11.4	0.19	B	12.6	0.18	B															
	NB-L	36.6	0.90	D	38.4	0.92	D	37.4	0.91	D	38.1	0.92	D	16.3	0.66	B															
	T	5.1	0.50	A	5.1	0.51	A	5.2	0.51	A	5.2	0.52	A	5.6	0.51	A															
	SB-T	41.7	0.95	D	50.7	1.00	D	23.5	0.69	C	50.7	1.00	D	34.6	0.70	C															
OVERALL	33.4	-	C	38.1	-	D	18.6	-	B	62.6	-	E	24.1	-	C																
Weekday Evening Peak Hour	WB-LT	72.1	1.02	E	78.1	1.04	E	37.9	0.73	D	90.4	1.08	F	39.9	0.77	D															
	R	17.4	0.18	B	18.8	0.18	B	16.8	0.18	B	21.5	0.18	C	21.5	0.19	C															
	NB-L	84.9	1.15	F	100.3	1.16	F	32.5	0.85	C	101.1	1.16	F	11.1	0.53	B															
	T	9.5	0.51	A	0.7	0.53	A	1.5	0.53	A	1.2	0.58	A	2.5	0.57	A															
	SB-T	28.8	0.83	C	30.4	0.86	C	20.9	0.80	C	30.4	0.86	C	32.1	0.75	C															
OVERALL	31.6	-	C	33.8	-	C	18.5	-	B	36.1	-	D	21.7	-	C																

**Atlantic Traffic**

A DESIGN ENGINEERS, INC.

Job Title: Proposed Canon Corporate Center  
 Job No: AN68003  
 Date: August 27, 2008

**LOS Signalized Intersection Comparison: Route 110 & Long Island Expressway South Service Road**

Table H

Time Period	Mvmt.	2008 Existing						2010 No-Build						2010 No-Build w/Town & DOT						2010 Build						2010 Build w/Mitigation					
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS						
Weekday Morning Peak Hour	EB-LT	60.4	1.06	E	85.8	1.12	F	23.5	0.78	C	116.5	1.19	F	30.4	0.81	C															
	R	57.1	1.05	E	67.1	1.07	E	67.1	1.07	E	66.8	1.07	E	68.0	1.04	E															
	NB-T	26.2	0.83	C	27.1	0.85	C	27.1	0.85	C	27.1	0.85	C	32.7	0.86	C															
	R	18.5	0.56	B	19.2	0.57	B	19.2	0.57	B	19.2	0.57	B	21.9	0.57	C															
	SB-L	64.6	0.96	E	68.1	0.97	E	67.9	0.97	E	67.9	0.97	E	48.3	0.91	D															
T	14.5	0.71	B	15.4	0.76	B	15.2	0.76	B	15.4	0.76	B	7.9	0.75	A																
OVERALL		32.7	-	C	38.3	-	D	28.8	-	C	43.5	-	D	27.8	-	C															
Weekday Evening Peak Hour	EB-LT	188.4	1.26	F	246.5	1.46	F	78.1	1.02	E	412.1	1.85	F	216.6	1.40	F															
	R	48.7	0.30	D	36.9	0.31	D	46.3	0.31	D	43.2	0.31	D	33.2	0.33	C															
	NB-T	63.3	1.03	E	69.6	1.05	E	69.6	1.05	E	62.0	1.05	E	62.0	1.06	E															
	R	57.2	0.95	E	62.0	0.97	E	62.0	0.97	E	62.5	0.97	E	54.8	0.94	D															
	SB-L	92.0	1.06	F	98.8	1.08	F	99.4	1.08	F	96.8	1.08	F	69.0	1.00	E															
T	14.3	0.78	B	15.4	0.81	B	15.6	0.81	B	15.4	0.81	B	7.2	0.77	A																
OVERALL		68.2	-	E	89.9	-	F	53.9	-	D	141.1	-	F	63.6	-	F															

**Atlantic Traffic**  
 & DESIGN ENGINEERS, INC.

Job Title: Proposed Canon Corporate Center  
 Job No: AN08003  
 Date: August 22, 2008

**LOS Signalized Intersection Comparison: Route 110 & Old Country Road**

Table I

Time Period	Mvmt.	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Morning Peak Hour	EB-L	252.8	1.31	F	264.5	1.34	F	264.5	1.34	F	285.7	1.39	F	240.0	1.29	F
	T	511.2	1.92	F	528.6	1.96	F	528.6	1.96	F	528.6	1.96	F	463.2	1.82	F
	WB-L	188.9	1.24	F	200.4	1.27	F	200.4	1.27	F	200.4	1.27	F	56.1	0.63	E
	LT	53.9	0.50	D	54.1	0.51	D	54.1	0.51	D	54.5	0.53	D	53.4	0.51	D
	NB-L	37.6	0.02	D	37.6	0.02	D	37.6	0.02	D	37.6	0.02	D	48.2	0.02	D
	T	54.1	0.80	D	55.6	0.83	D	55.6	0.83	D	57.0	0.85	D	35.8	0.47	D
	R	22.0	0.24	C	22.1	0.24	C	22.1	0.24	C	22.1	0.25	C	15.2	0.21	B
	SB-L	42.0	0.34	D	42.1	0.34	D	42.1	0.34	D	42.1	0.34	D	54.6	0.50	D
	T	311.2	1.56	F	339.3	1.63	F	339.3	1.63	F	356.6	1.67	F	52.1	0.91	D
	R	44.1	0.77	D	45.3	0.79	D	45.3	0.79	D	80.5	1.00	F	20.1	0.08	C
OVERALL		191.1	-	F	205.1	-	F	118.9	-	F	212.6	-	F	80.1	-	F

Time Period	Mvmt.	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Evening Peak Hour	EB-L	270.7	1.47	F	283.0	1.50	F	283.0	1.50	F	345.2	1.64	F	246.1	1.42	F
	T	250.2	0.88	E	267.9	0.90	E	267.9	0.90	E	267.9	0.90	E	183.0	1.27	F
	WB-L	34.9	0.31	C	34.9	0.32	C	34.9	0.32	C	35.0	0.32	C	50.0	0.75	D
	LT	29.1	0.04	C	29.1	0.04	C	29.1	0.04	C	29.1	0.04	C	41.0	0.53	D
	NB-L	300.5	1.59	F	328.5	1.66	F	328.5	1.66	F	381.6	1.77	F	33.3	0.05	C
	T	19.1	0.50	B	19.2	0.51	B	19.2	0.51	B	19.5	0.53	B	37.4	0.95	D
	R	34.2	0.55	C	34.5	0.56	C	34.5	0.56	C	34.5	0.56	C	17.1	0.49	B
	SB-L	91.5	1.10	F	107.5	1.14	F	107.5	1.14	F	110.6	1.15	F	51.4	0.78	D
	T	13.9	0.29	B	14.0	0.30	B	14.0	0.30	B	14.3	0.34	B	23.3	0.61	C
	R	176.7	-	F	193.0	-	F	193.0	-	F	220.2	-	F	7.3	0.03	A
OVERALL		176.7	-	F	193.0	-	F	98.3	-	F	220.2	-	F	82.3	-	E

**Atlantic Traffic**

DESIGN ENGINEERS, INC.

Job Title: Proposed Canon Corporate Center  
 Job No: AN08003  
 Date: August 27, 2008

**LOS Signalized Intersection Comparison: Round Swamp Road & Long Island Expressway South Service Road**

Table J

**SYNCHRO**

Time Period	Mvmt.	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Morning Peak Hour	EB-L	24.8	0.44	C	25.0	0.45	C	25.0	0.45	C	25.0	0.45	C	24.1	0.37	C
	LT	27.8	0.70	C	28.2	0.71	C	28.2	0.71	C	116.5	1.18	F	51.8	0.98	D
	R	27.7	0.55	C	28.0	0.56	C	28.0	0.56	C	28.0	0.56	C	26.3	0.47	C
	NB-T	23.4	0.57	C	23.7	0.59	C	23.7	0.59	C	23.7	0.59	C	28.1	0.57	C
	R	30.0	0.79	C	32.3	0.81	C	32.3	0.81	C	52.4	0.85	D	62.5	0.97	E
SB-L	22.6	0.77	C	24.3	0.79	C	24.3	0.79	C	24.3	0.79	C	48.4	0.93	D	
T	12.4	0.58	B	12.6	0.59	B	12.6	0.59	B	12.6	0.59	B	18.9	0.64	B	
OVERALL		22.1	-	C	22.8	-	C	22.8	-	C	51.2	-	D	37.9	-	D

Time Period	Mvmt.	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Evening Peak Hour	EB-L	40.7	0.84	D	42.1	0.85	D	42.1	0.85	D	49.0	0.91	D	49.0	0.91	D
	LT	33.5	0.85	C	34.8	0.87	C	34.8	0.87	C	39.7	0.92	D	39.7	0.92	D
	R	28.6	0.62	C	28.9	0.63	C	28.9	0.63	C	28.9	0.63	C	28.9	0.63	C
	NB-T	24.4	0.68	C	24.9	0.71	C	24.9	0.71	C	24.9	0.71	C	18.8	0.61	B
	R	21.9	0.80	C	23.7	0.82	C	23.7	0.82	C	26.1	0.84	C	33.2	0.88	C
SB-L	14.1	0.49	B	14.3	0.49	B	14.3	0.49	B	14.3	0.49	B	20.0	0.60	C	
T	12.1	0.52	B	12.2	0.53	B	12.2	0.53	B	12.2	0.53	B	12.2	0.53	B	
OVERALL		25.0	-	C	25.8	-	C	25.8	-	C	25.3	-	C	28.2	-	C

**Atlantic Traffic**

A. J. BROWN ENGINEERS, INC.  
 Job Title: Proposed Canon Corporate Center  
 Job No: AN08003  
 Date: August 22, 2008

**LOS Unsignalized Intersections Comparison: Old Wait Whitman Road & Cotontail Road and Old Wait Whitman Road & Existing Fedex Driveway North**

**Table K**

**Old Wait Whitman Road & Cotontail Road**

Time Period	2008 Existing			2010 No-Build			2010 No-Build w/mitigation			2010 Build			2010 Build w/mitigation		
	Intersection Capacity Utilization	ICU LOS	Approach	Intersection Capacity Utilization	ICU LOS	Approach	Intersection Capacity Utilization	ICU LOS	Approach	Intersection Capacity Utilization	ICU LOS	Approach	Intersection Capacity Utilization	ICU LOS	Approach
AM Peak Hour	55.3%	B		56.1%	B		56.1%	B		56.4%	B		56.4%	B	
PM Peak Hour	46.4%	A		47.0%	A		47.0%	A		48.4%	A		48.4%	A	
<b>OVERALL</b>															

**Old Wait Whitman Road & Existing Fedex Driveway North**

Time Period	2008 Existing			2010 No-Build			2010 No-Build w/mitigation			2010 Build			2010 Build w/mitigation		
	Intersection Capacity Utilization	ICU LOS	Approach	Intersection Capacity Utilization	ICU LOS	Approach	Intersection Capacity Utilization	ICU LOS	Approach	Intersection Capacity Utilization	ICU LOS	Approach	Intersection Capacity Utilization	ICU LOS	Approach
AM Peak Hour	91.6%	F		86.9%	E		86.9%	E		48.5%	A		48.5%	A	
PM Peak Hour	60.1%	B		61.0%	B		61.0%	B		42.3%	A		42.3%	A	
<b>OVERALL</b>															

**Atlantic Traffic**

& DESIGN ENGINEERS, INC.

Job Title: Proposed Canon Corporate Center  
 Job No: AN08003  
 Date: August 22, 2008

**LOS Unsignalized Intersection Comparison: Old Walt Whitman Road & Existing Fedex Drive Way South/Proposed Site Drive Way**

Table L

**Old Walt Whitman Road & Existing Fedex Drive Way South/Proposed Site Drive Way**

**SYNCHRO**

Time Period	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT		
	Intersection Capacity Utilization	ICU LOS	ICU LOS	Intersection Capacity Utilization	ICU LOS	ICU LOS	Intersection Capacity Utilization	ICU LOS	ICU LOS
Approach									
AM Peak Hour	74.7%	D		71.7%	C		71.1%		C
OVERALL									
PM Peak Hour	57.7%	B		54.6%	A		54.6%		A
OVERALL									

\* = Approach operating with no capacity for the expected demand.

Time Period	2010 Build (Signalized)			2010 Build (Signalized) w/Mitigation		
	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Morning Peak Hour						
EB-LT	37.2	0.53	D	33.9	0.44	C
R	10.5	0.08	B	9.9	0.07	A
WB-LTR	19.6	0.04	B	19.3	0.02	B
NB-L	14.8	0.54	B	22.6	0.55	C
TR	9.9	0.47	A	18.9	0.45	B
SB-L	4.8	0.02	A	6.5	0.01	A
T	15.6	0.66	B	14.3	0.72	B
R	2.1	0.15	A	2.1	0.16	A
OVERALL	14.9	-	B	16.5	-	B

Time Period	2010 Build (Signalized)			2010 Build (Signalized) w/Mitigation		
	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Evening Peak Hour						
EB-LT	581.1	2.22	F	108.0	1.13	F
R	10.6	0.42	B	8.6	0.26	A
WB-LTR	26.7	0.16	C	13.6	0.09	B
NB-L	5.2	0.07	A	21.5	0.19	C
TR	12.1	0.59	B	57.4	0.99	E
SB-L	4.8	0.02	A	18.8	0.14	B
T	9.7	0.42	A	26.0	0.67	C
R	1.9	0.19	A	3.7	0.26	A
OVERALL	153.8	-	F	51.3	-	D

**Atlantic Traffic**

& DESIGN ENGINEERS, INC.

Job Title: Proposed Canon Corporate Center  
 Job No: AN08003  
 Date: August 22, 2008

**LOS Unsignalized Intersection Comparison: Old Walt Whitman Road & Old Country Road Table M**

**HCS**

Time Period	Approach	2008 Existing			2010 No-Build			2010 Build		
		Approach Delay (sec/veh)	Approach LOS	Approach Delay (sec/veh)	Approach LOS	Approach Delay (sec/veh)	Approach LOS	Approach Delay (sec/veh)	Approach LOS	
AM Peak Hour	Northbound	94.9	F	125.5	F	816.3	F			
	Southbound	418.3	F	455.0	F	1599.0	F			
	Eastbound	7.7	A	7.8	A	7.8	A			
	Westbound	9.7	A	9.8	A	11.1	B			
PM Peak Hour	Northbound	28.2	D	30.4	D	38.7	E			
	Southbound	63.8	F	69.0	F	101.0	F			
	Eastbound	7.6	A	7.6	A	7.6	A			
	Westbound	8.7	A	8.8	A	8.9	A			

Time Period	Mvmt.	2010 No-Build w/Town & DOT (Signalized)			2010 Build w/Mitigation (Signalized)		
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Morning Peak Hour	EB-LTR	19.8	0.35	B	19.8	0.35	B
	WB-DEFL	39.9	0.83	D	48.4	0.89	D
	TR	17.9	0.15	B	18.0	0.16	B
	NB-L	11.8	0.08	B	12.0	0.10	B
	TR	13.3	0.28	B	13.3	0.28	B
	SB-LT	14.6	0.42	B	15.9	0.53	B
	R	12.2	0.14	B	12.4	0.18	B
OVERALL		20.8	-	C	22.6	-	C

Time Period	Mvmt.	2010 No-Build w/Town & DOT (Signalized)			2010 Build w/Mitigation (Signalized)		
		Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS
Weekday Evening Peak Hour	EB-LTR	20.8	0.55	C	20.8	0.55	C
	WB-DEFL	18.1	0.30	B	18.2	0.31	B
	TR	15.9	0.10	B	15.9	0.11	B
	NB-L	15.5	0.05	B	15.5	0.05	B
	TR	20.9	0.55	C	22.0	0.59	C
	SB-LT	16.1	0.13	B	16.2	0.14	B
	R	16.1	0.12	B	16.2	0.14	B
OVERALL		19.5	-	B	19.8	-	B

**LOS Signalized Intersection Comparison: Old Walt Whitman Road & Park Drive**

Table N

**SYNCHRO**

Time Period	Mvmt.	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
		Intersection Capacity Utilization	ICU LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	
Weekday Morning Peak Hour	EB-LR	-	-	16.3	0.15	B	16.3	0.15	B	16.3	0.15	B	13.2	0.08	B	
	NB-L	-	-	1.7	0.16	A	1.7	0.16	A	1.8	0.17	A	2.4	0.19	A	
	T	-	-	1.2	0.21	A	1.2	0.21	A	1.7	0.37	A	2.1	0.37	A	
	SB-TR	-	-	1.8	0.38	A	1.8	0.38	A	1.9	0.41	A	1.8	0.41	A	
	R	-	-	0.5	0.05	A	0.5	0.05	A	0.6	0.05	A	0.5	0.05	A	
	OVERALL	65.1%	C	1.7	-	A	1.7	-	A	1.9	-	A	2.0	-	A	

Time Period	Mvmt.	2008 Existing			2010 No-Build			2010 No-Build w/Town & DOT			2010 Build			2010 Build w/Mitigation		
		Intersection Capacity Utilization	ICU LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	Mvmt. Delay (sec/veh)	Mvmt. V/C	Mvmt. LOS	
Weekday Evening Peak Hour	EB-LR	-	-	19.3	0.59	B	19.3	0.59	B	19.3	0.59	B	15.6	0.54	B	
	NB-L	-	-	2.4	0.04	A	2.4	0.04	A	2.9	0.06	A	3.2	0.07	A	
	T	-	-	3.3	0.30	A	3.3	0.30	A	3.5	0.34	A	3.7	0.33	A	
	SB-TR	-	-	4.7	0.49	A	4.7	0.49	A	7.9	0.71	A	6.0	0.69	A	
	R	-	-	1.2	0.01	A	1.2	0.01	A	1.5	0.01	A	1.1	0.01	A	
	OVERALL	47.6%	A	6.2	-	A	6.2	-	A	7.8	-	A	6.3	-	A	

**Atlantic Traffic**

& DESIGN ENGINEERS, INC.

Job Title: Proposed Canon Corporate Center  
 Job No: AN08003  
 Date: August 22, 2008

**LOS Unsignalized Intersections Comparison: Proposed Site Driveways**

**Table O**

**Right-Turn Ingress/Egress Only Site Driveway & LIE S. Service Road**  
**HCS**

Time Period	Approach	2010 Build	
		Approach Delay (sec/veh)	Approach LOS
PM Peak Hour	Northbound	25.2	D
	Southbound	-	-
	Eastbound Westbound	-	-

\*right-turn egress movements are restricted during the AM Peak Hour

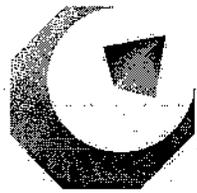
**Canon South Driveway & Old Walt Whitman Road**  
**SYNCHRO**

Time Period	Approach	2010 Build	
		Intersection Capacity Utilization	ICU LOS
AM Peak Hour	-	52.9%	A
PM Peak Hour	-	49.0%	A

---

**TECHNICAL APPENDIX**

---



**ATLANTIC TRAFFIC  
& DESIGN ENGINEERS, INC.**

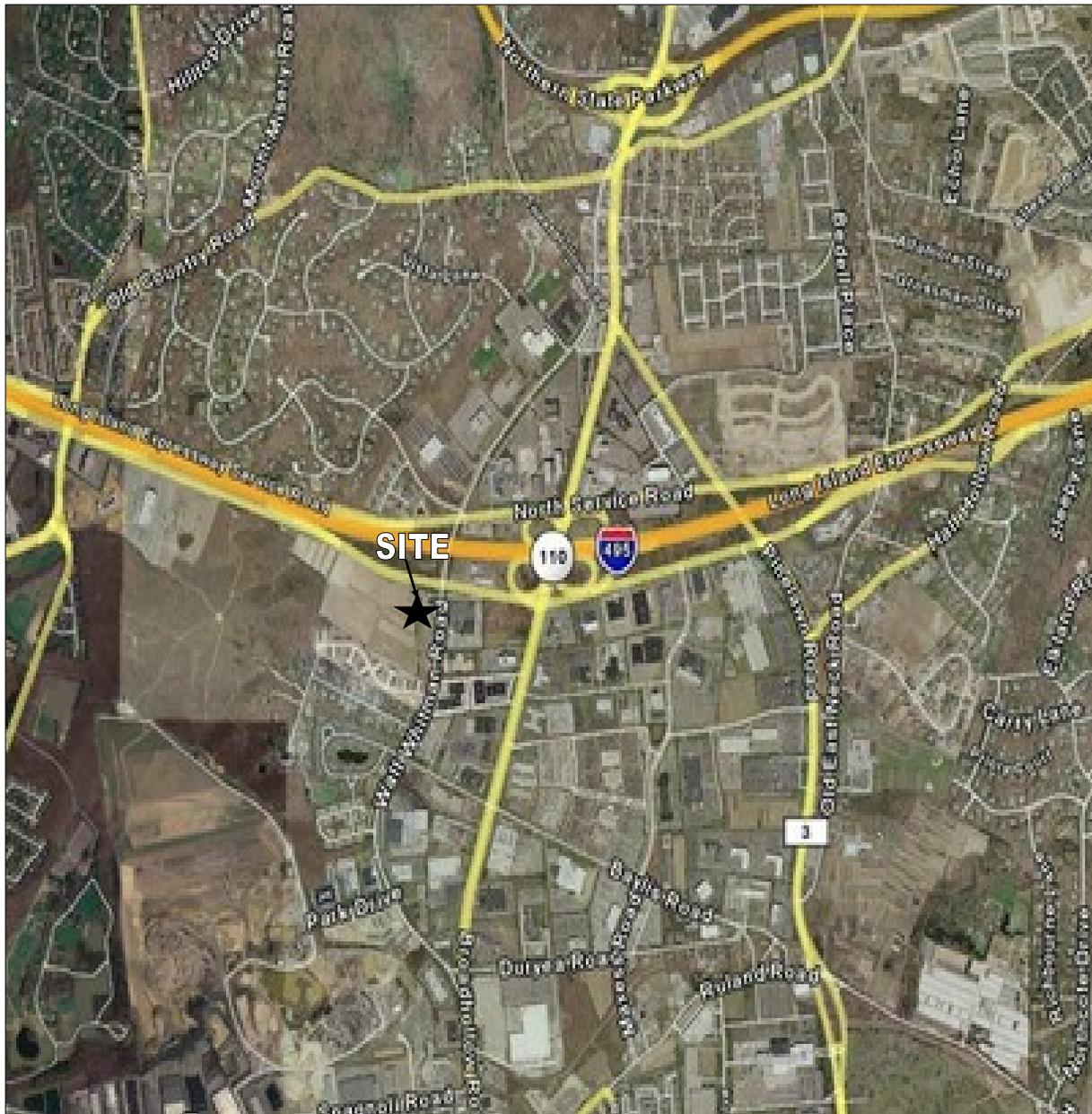
**FIGURES**

**SITE LOCATION MAP**

Figure 1

**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York

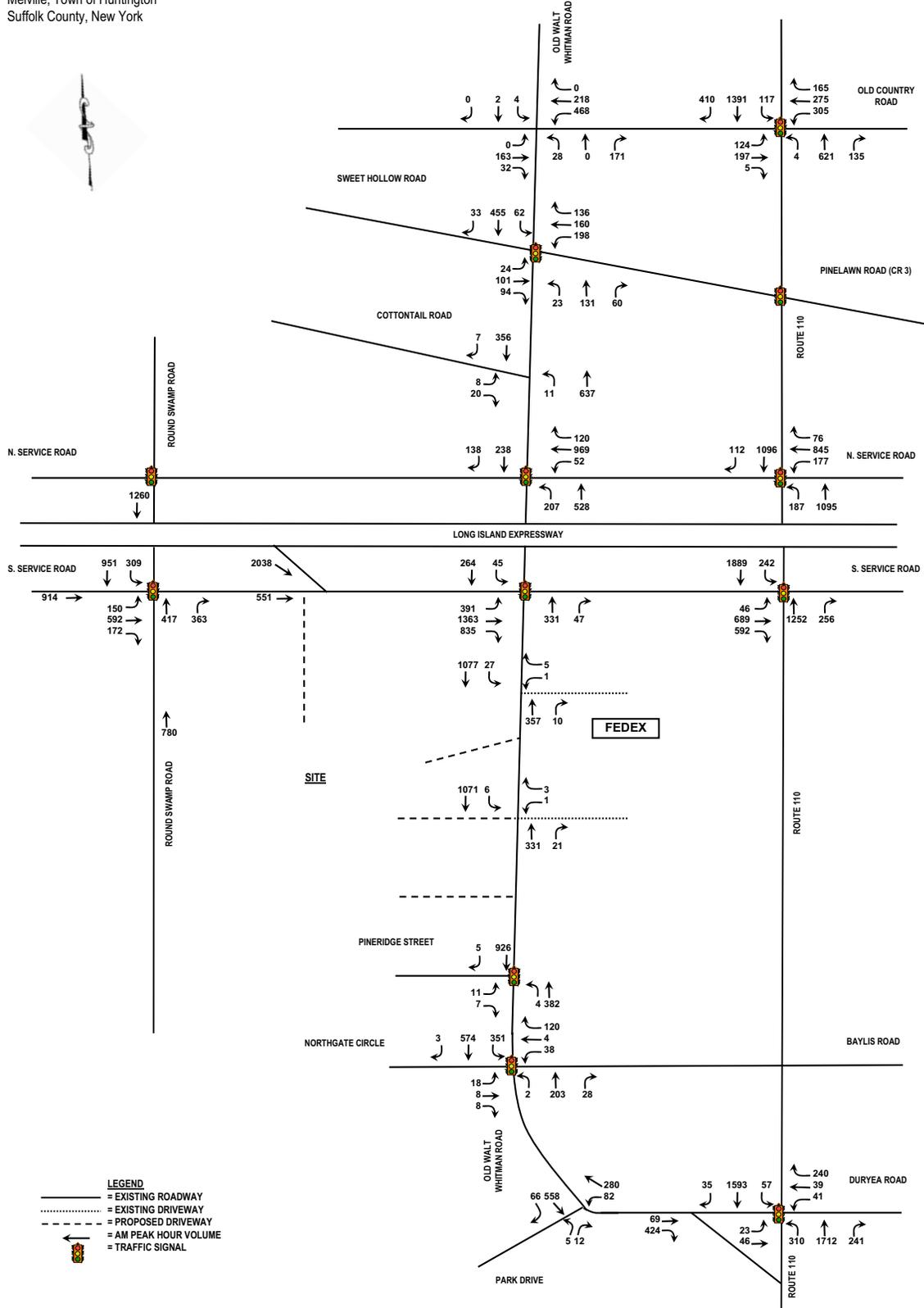


EXISTING "AS-COUNTED" TRAFFIC VOLUMES - MORNING PEAK HOUR

Figure 2

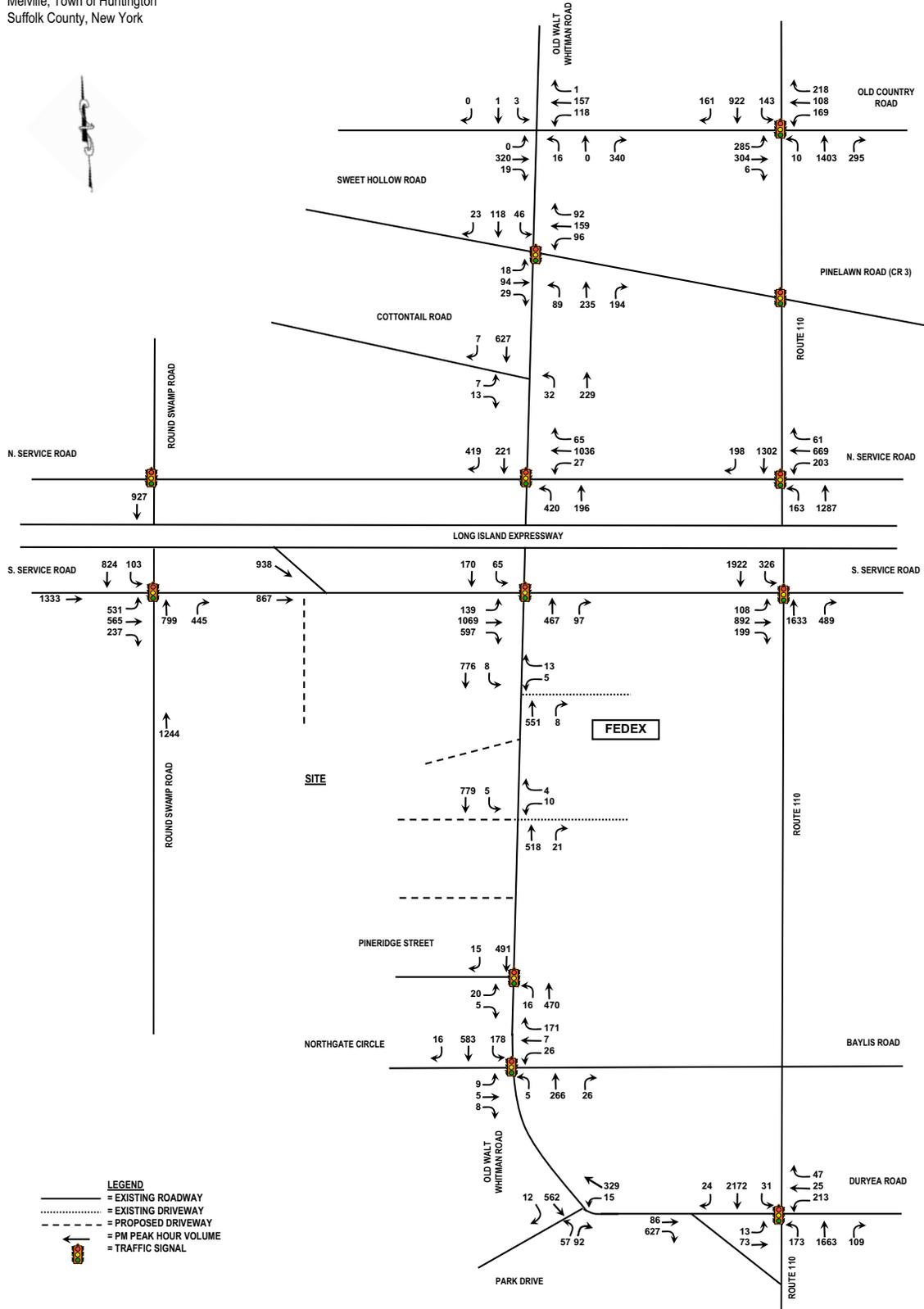
**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York



**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York



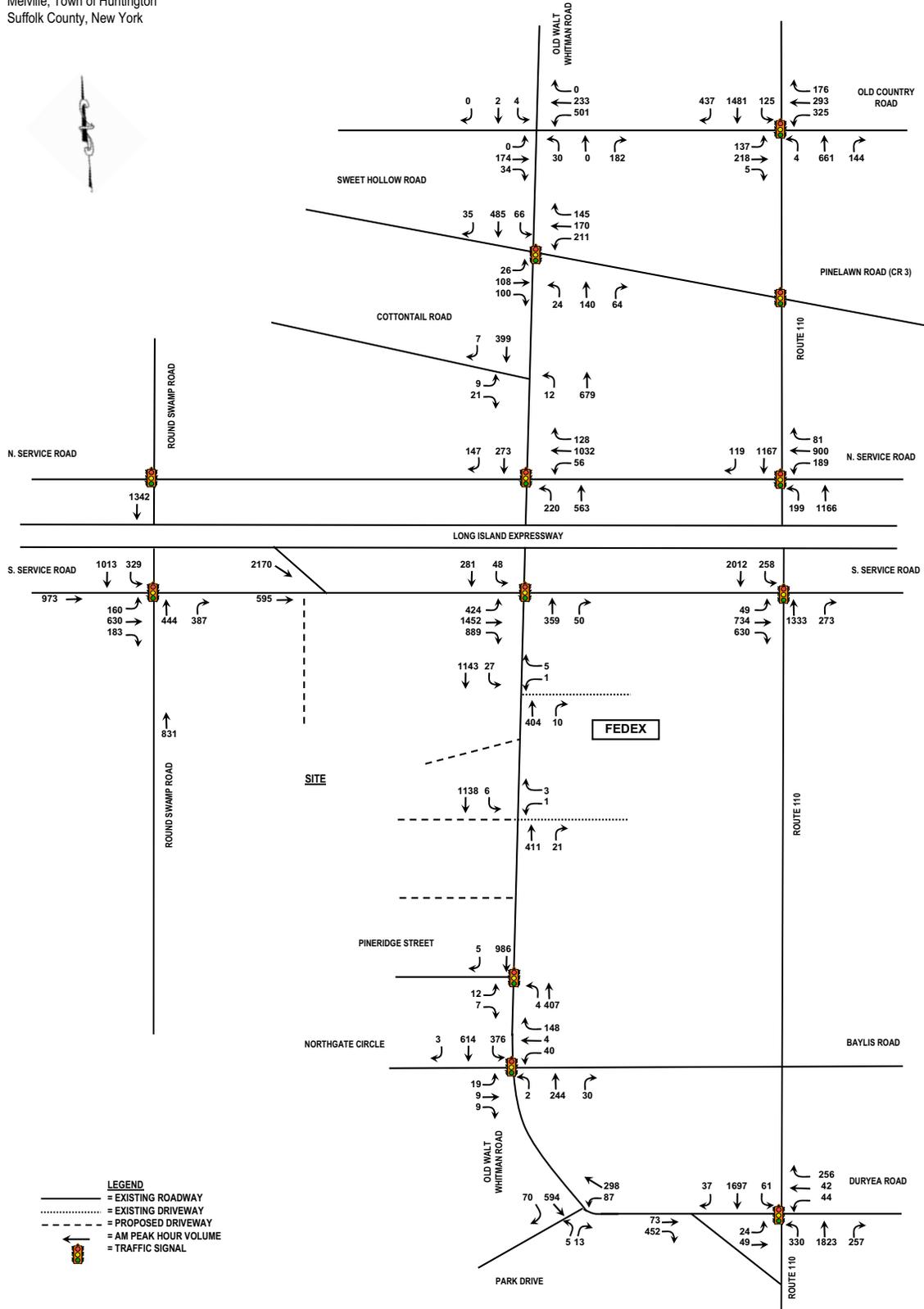
**LEGEND**  
 ——— = EXISTING ROADWAY  
 ..... = EXISTING DRIVEWAY  
 - - - - - = PROPOSED DRIVEWAY  
 ← 100 → = PM PEAK HOUR VOLUME  
 🚦 = TRAFFIC SIGNAL

EXISTING "BALANCED" TRAFFIC VOLUMES - MORNING PEAK HOUR

Figure 4

**Proposed Canon Corporate Center**

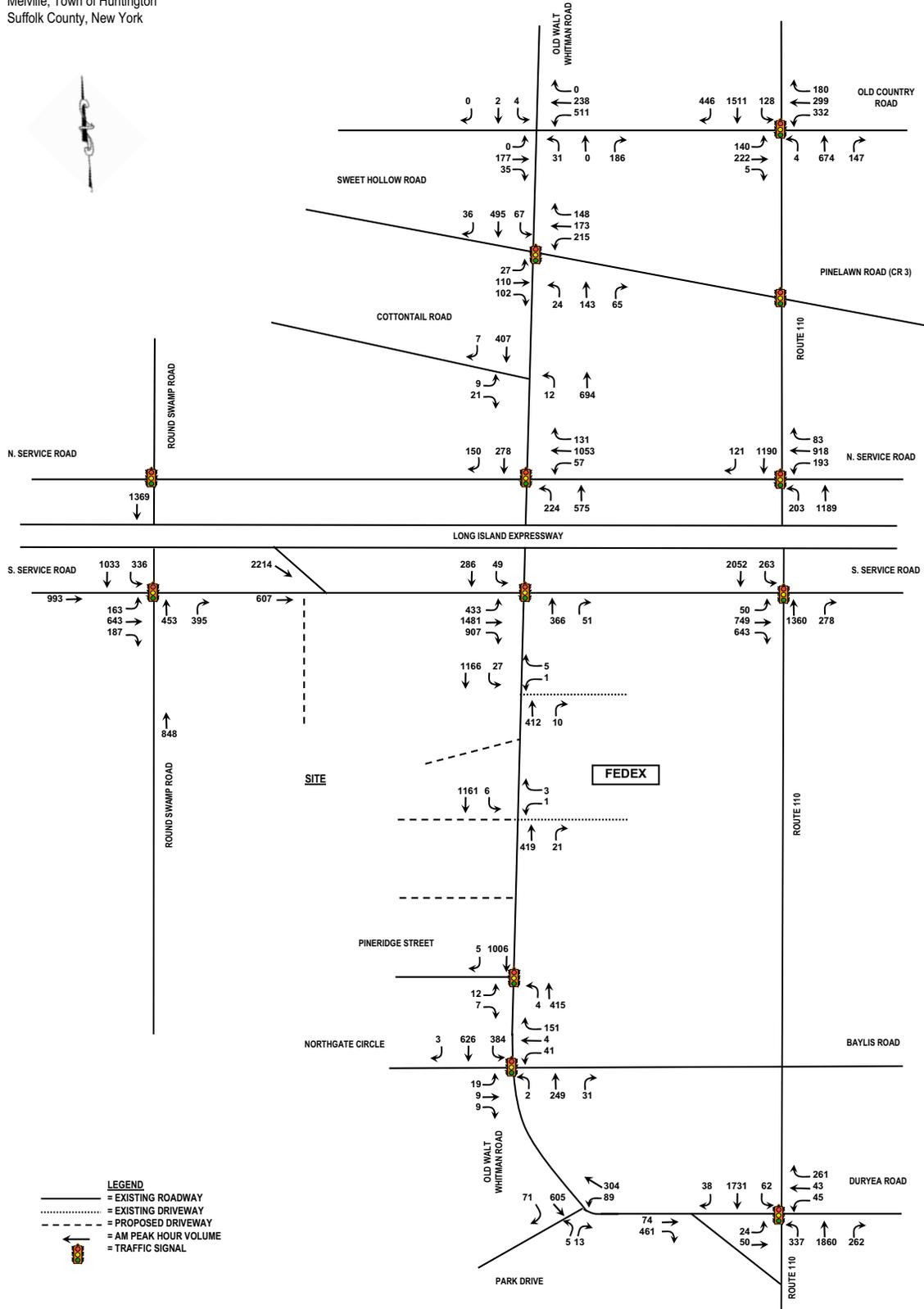
Melville, Town of Huntington  
Suffolk County, New York





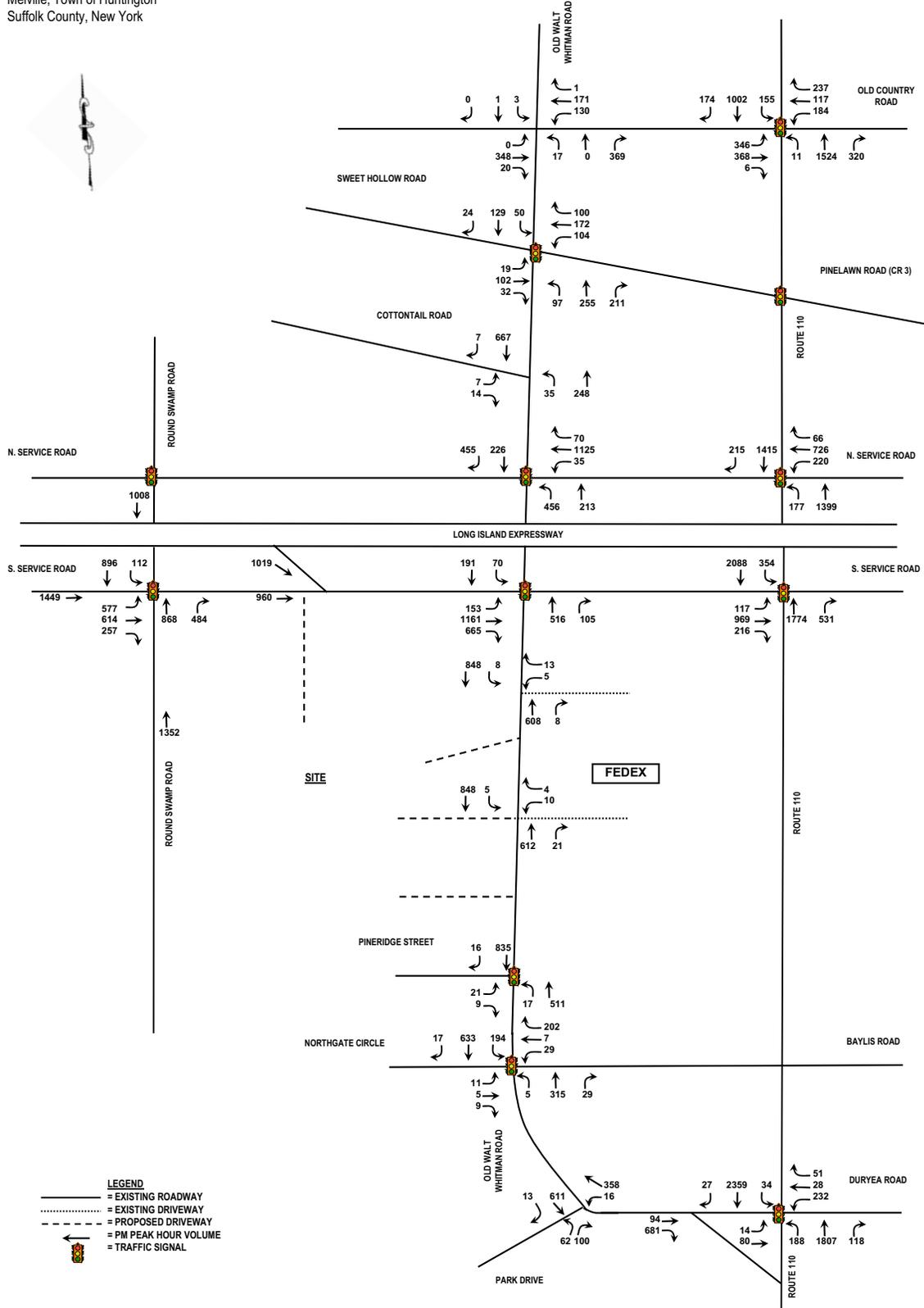
**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York



**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York

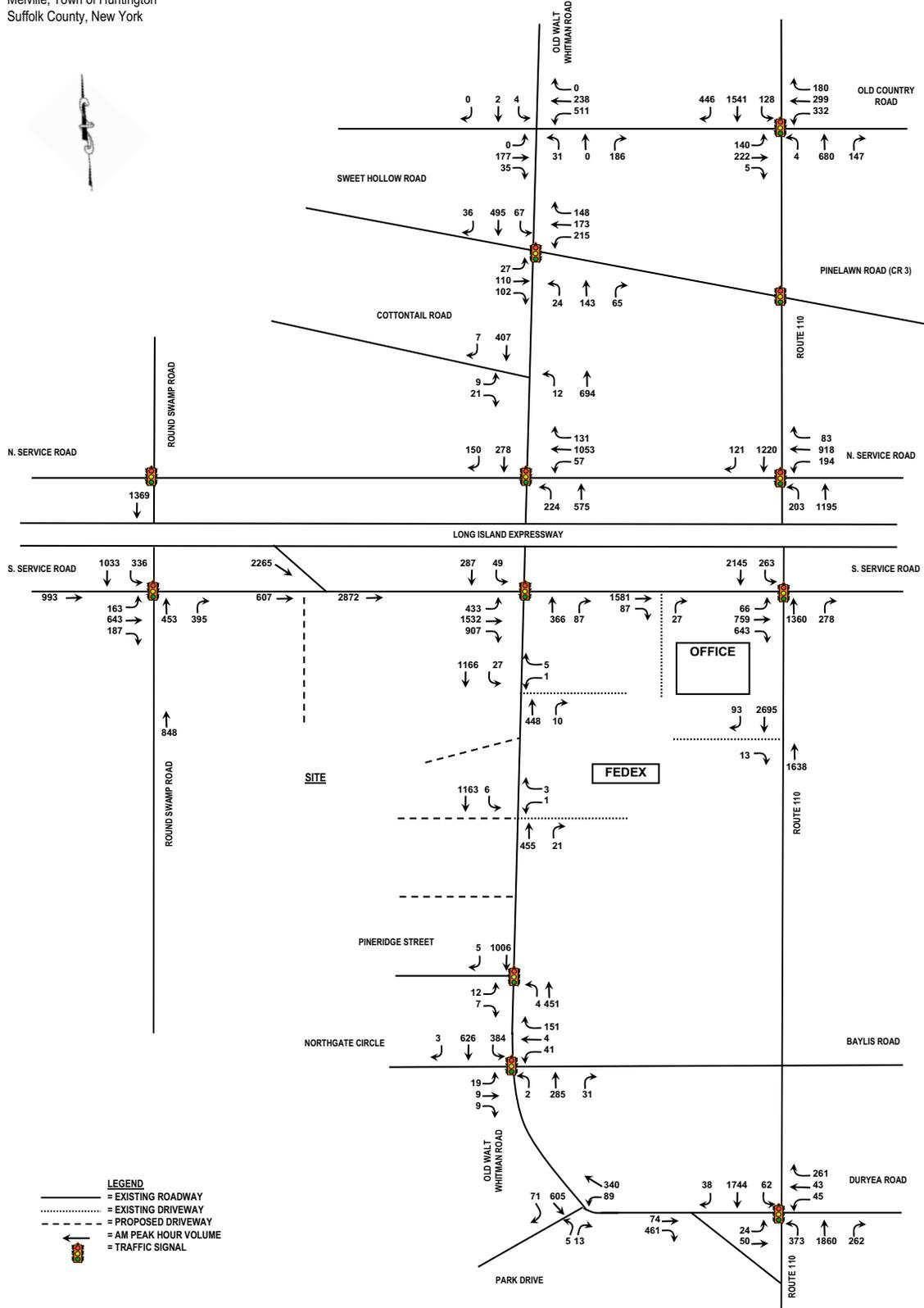






**Proposed Canon Corporate Center**

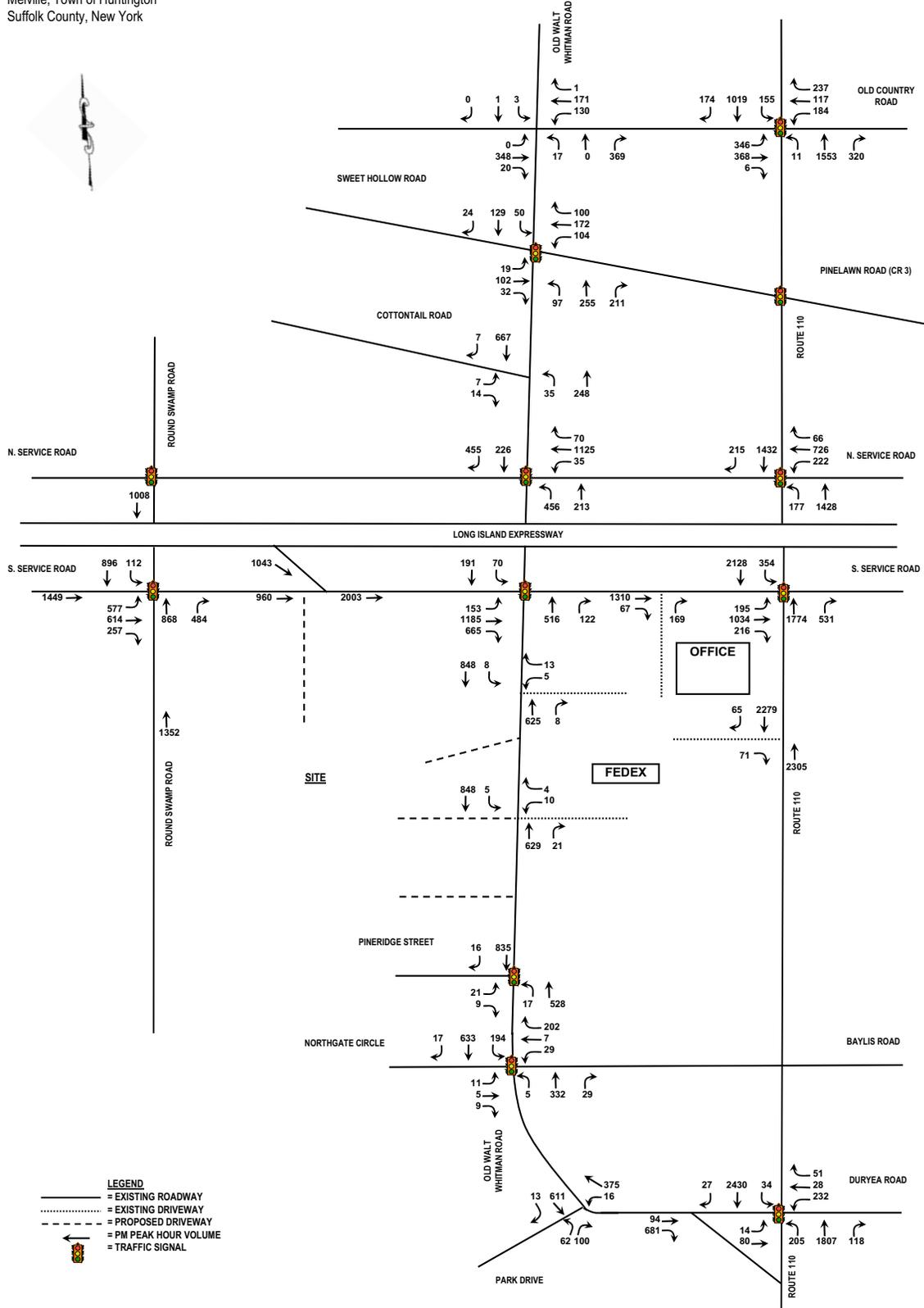
Melville, Town of Huntington  
Suffolk County, New York



**LEGEND**  
 ——— = EXISTING ROADWAY  
 - - - - - = EXISTING DRIVEWAY  
 - - - - - = PROPOSED DRIVEWAY  
 ← → = AM PEAK HOUR VOLUME  
 🚦 = TRAFFIC SIGNAL

**Proposed Canon Corporate Center**

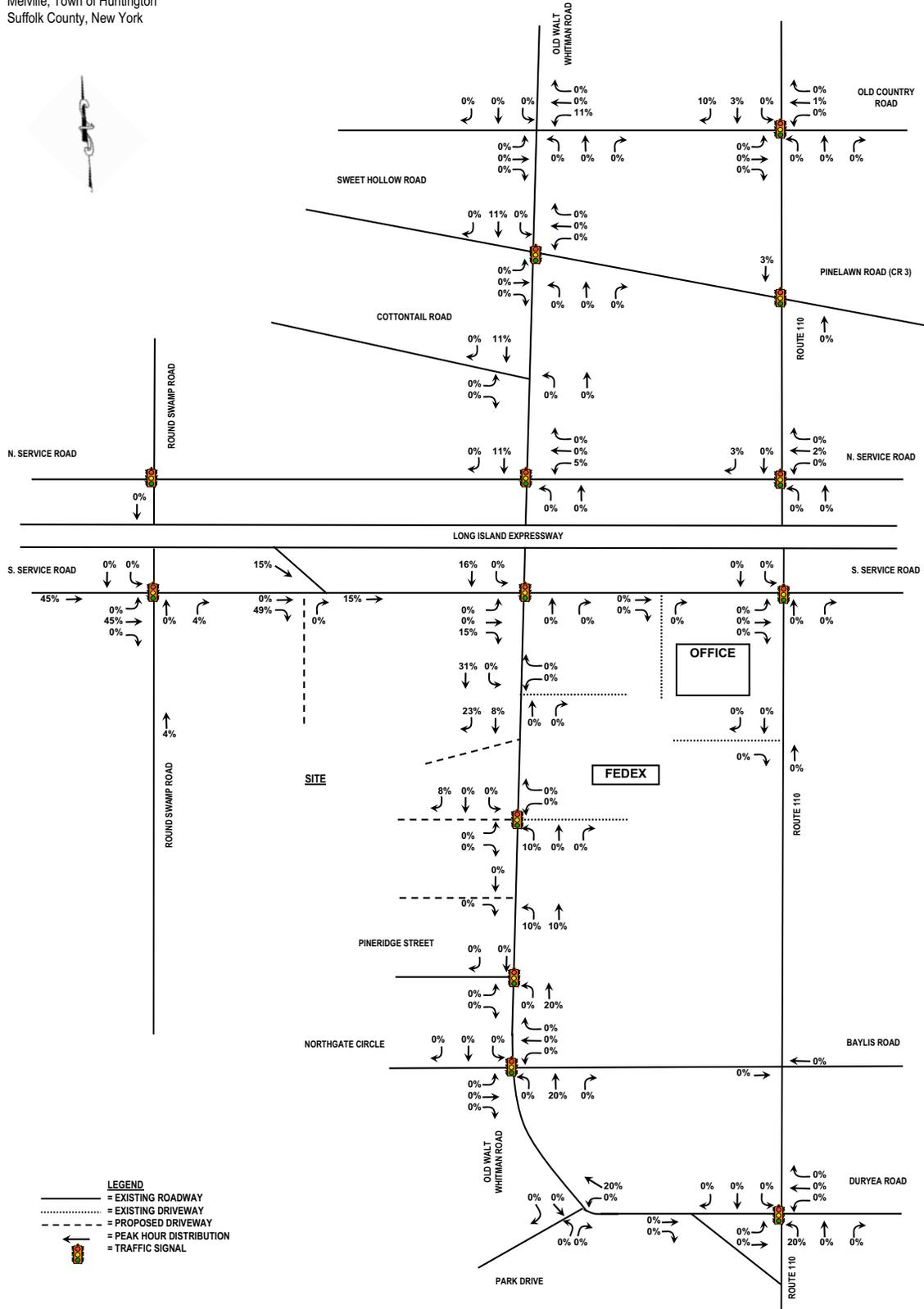
Melville, Town of Huntington  
Suffolk County, New York



**LEGEND**  
 ——— = EXISTING ROADWAY  
 - - - - - = EXISTING DRIVEWAY  
 - - - - - = PROPOSED DRIVEWAY  
 ← 100 → = PM PEAK HOUR VOLUME  
 🚦 = TRAFFIC SIGNAL

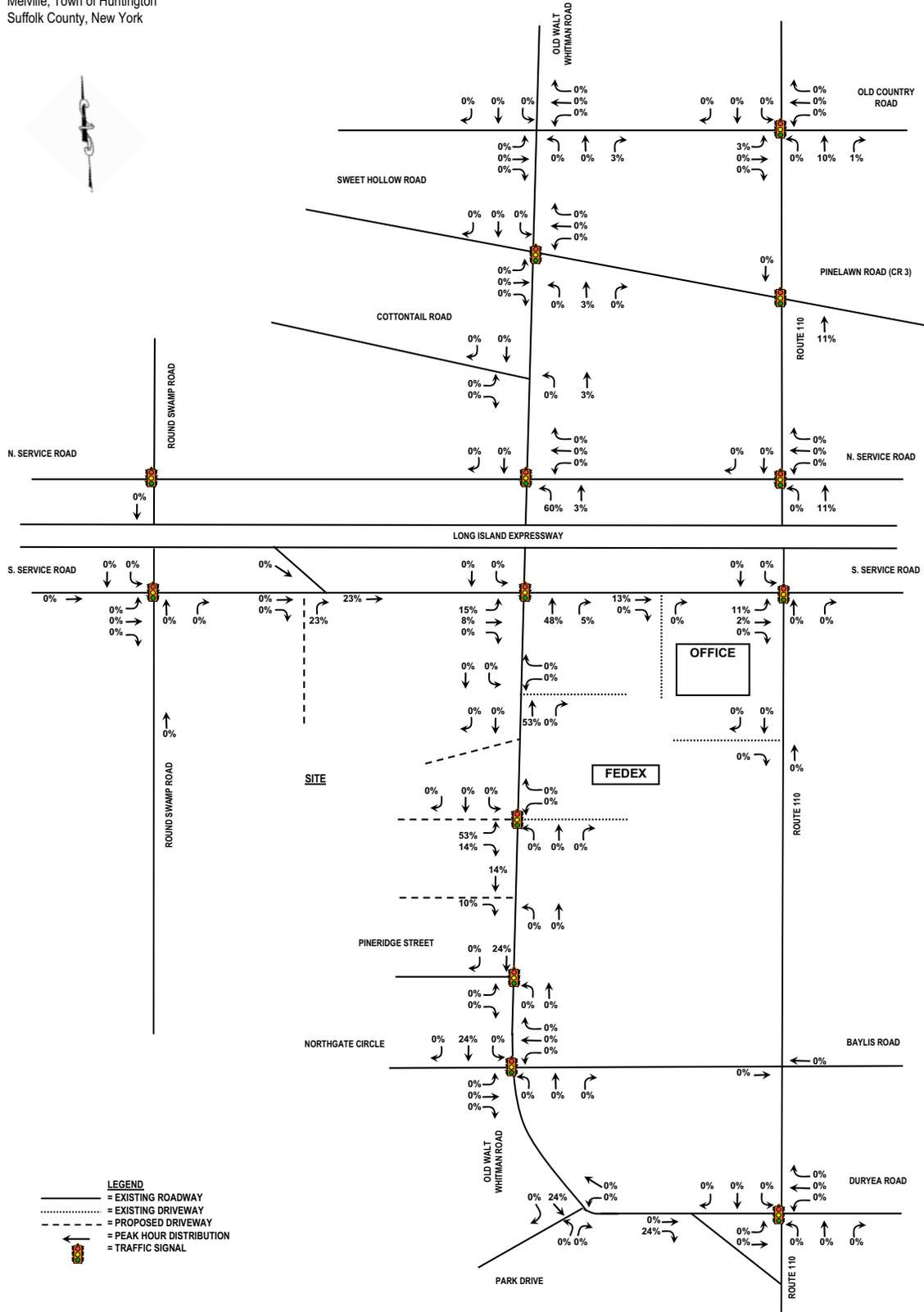
**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York



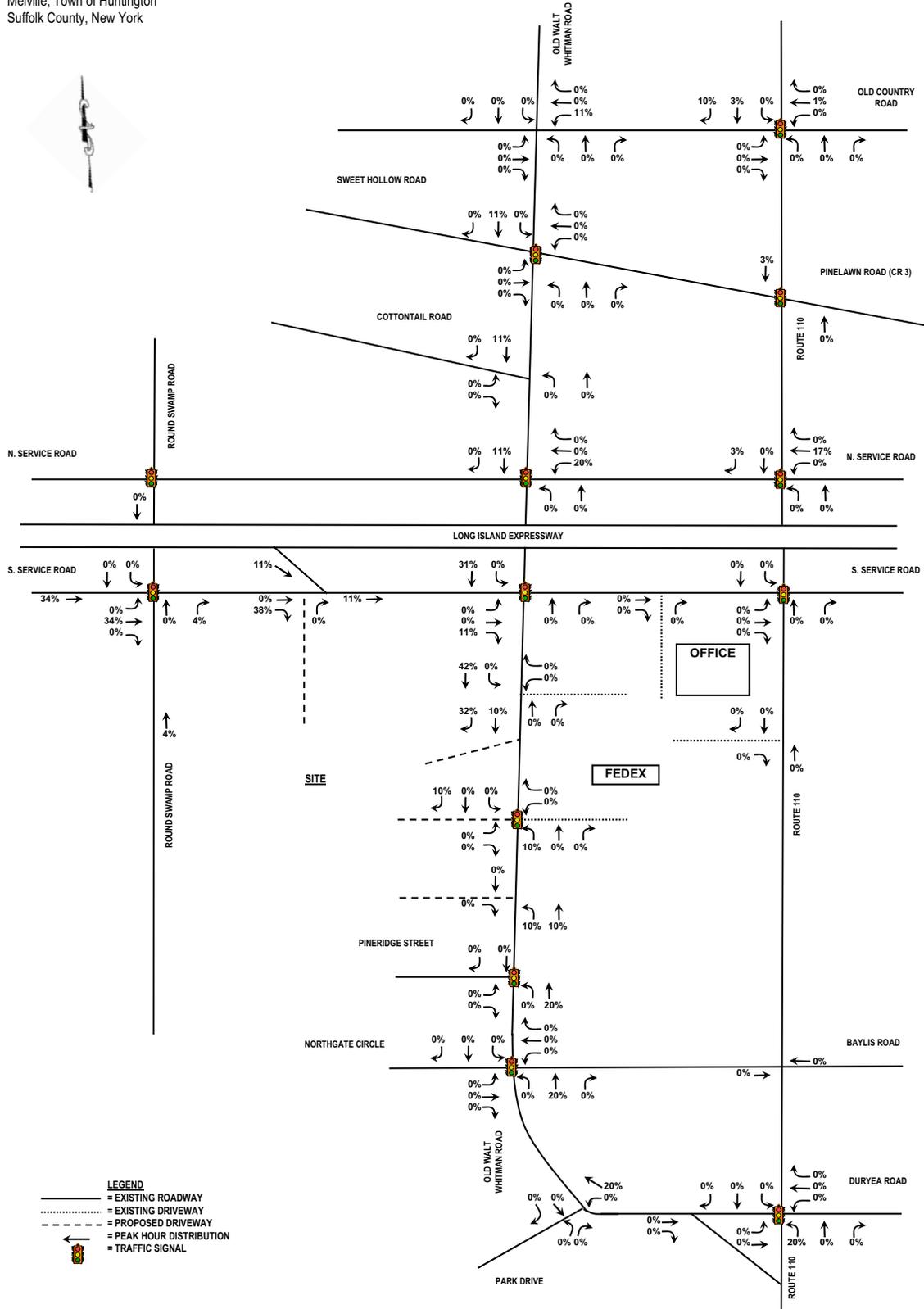
**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York



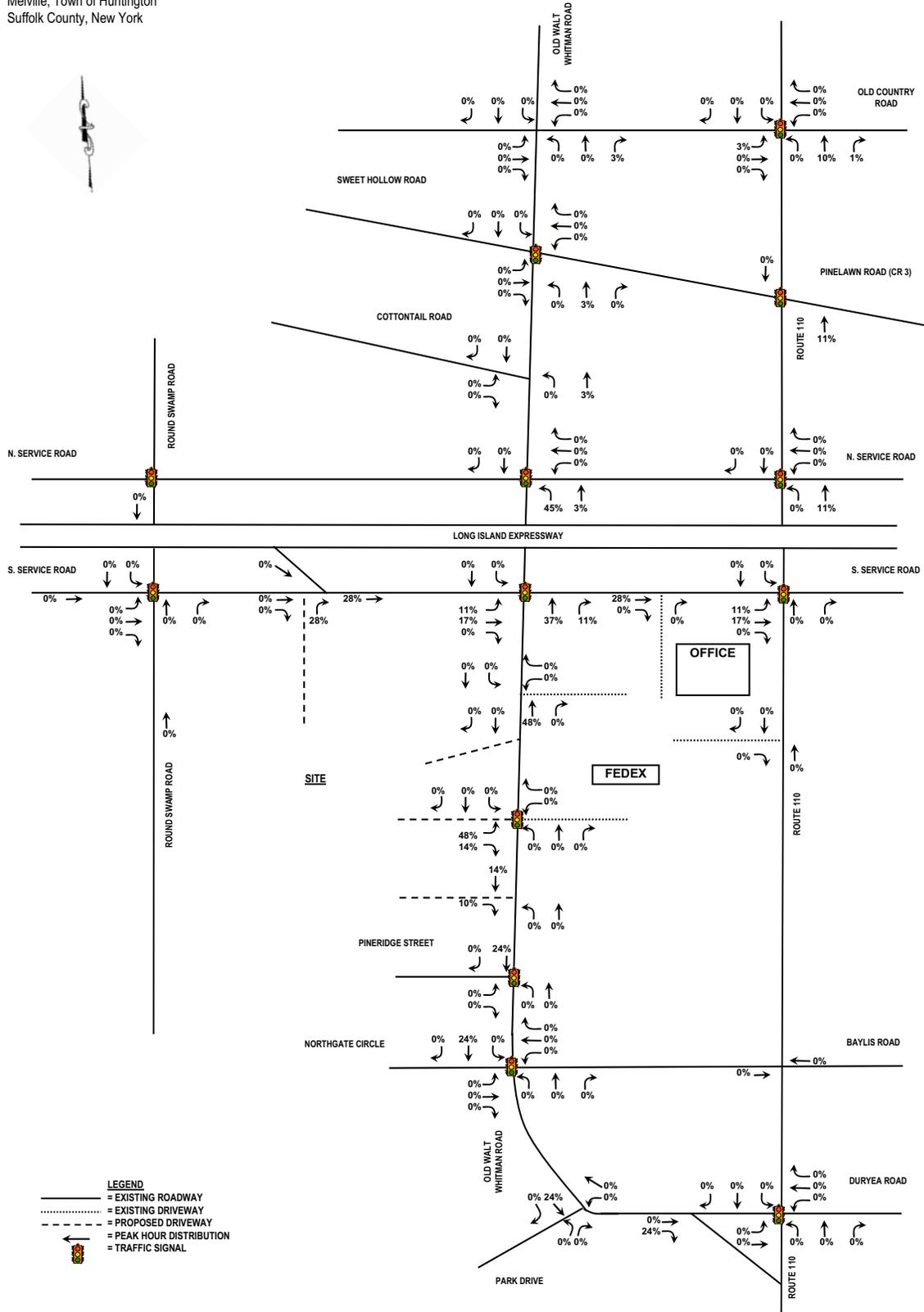
**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York



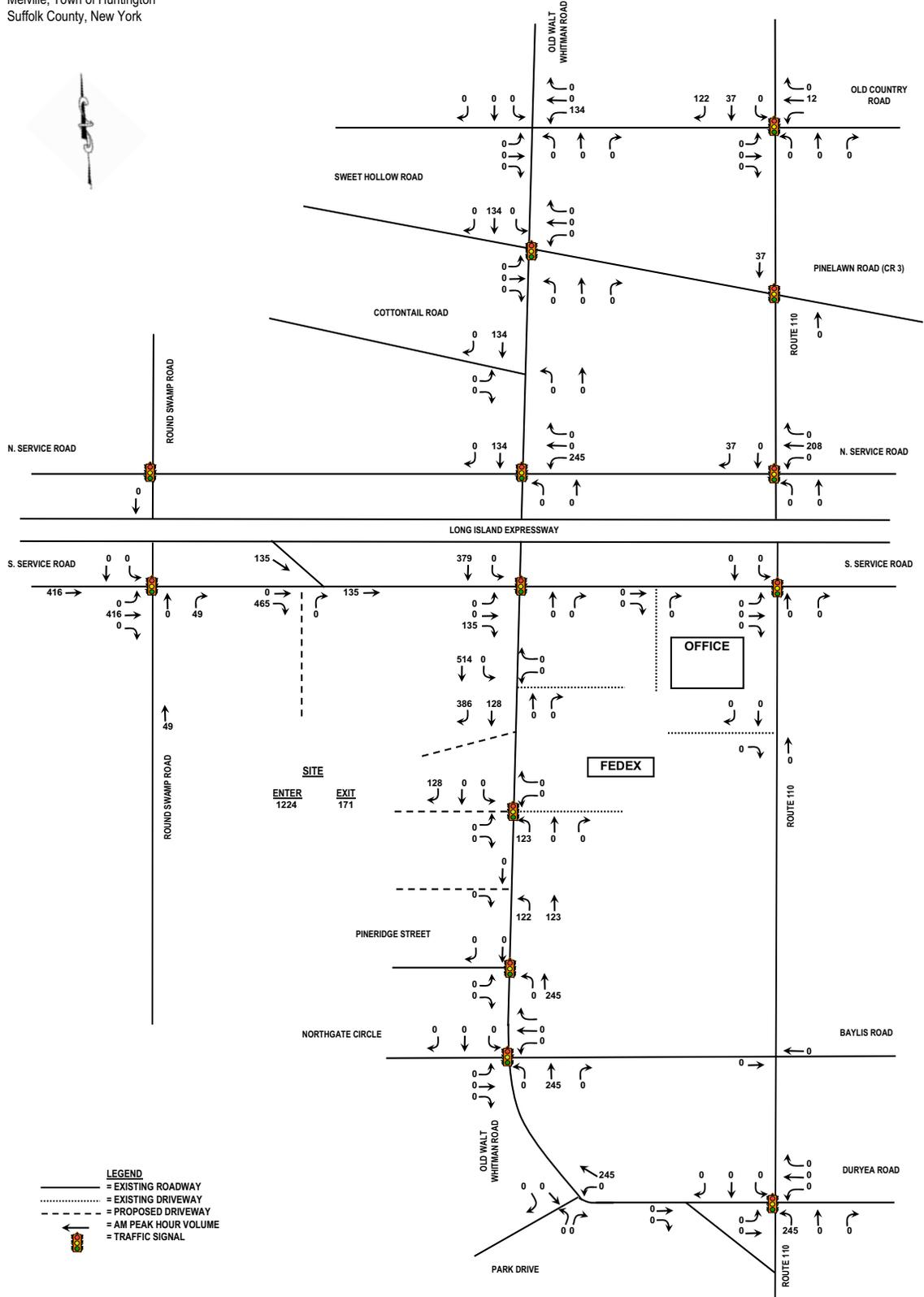
**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York



**Proposed Canon Corporate Center**

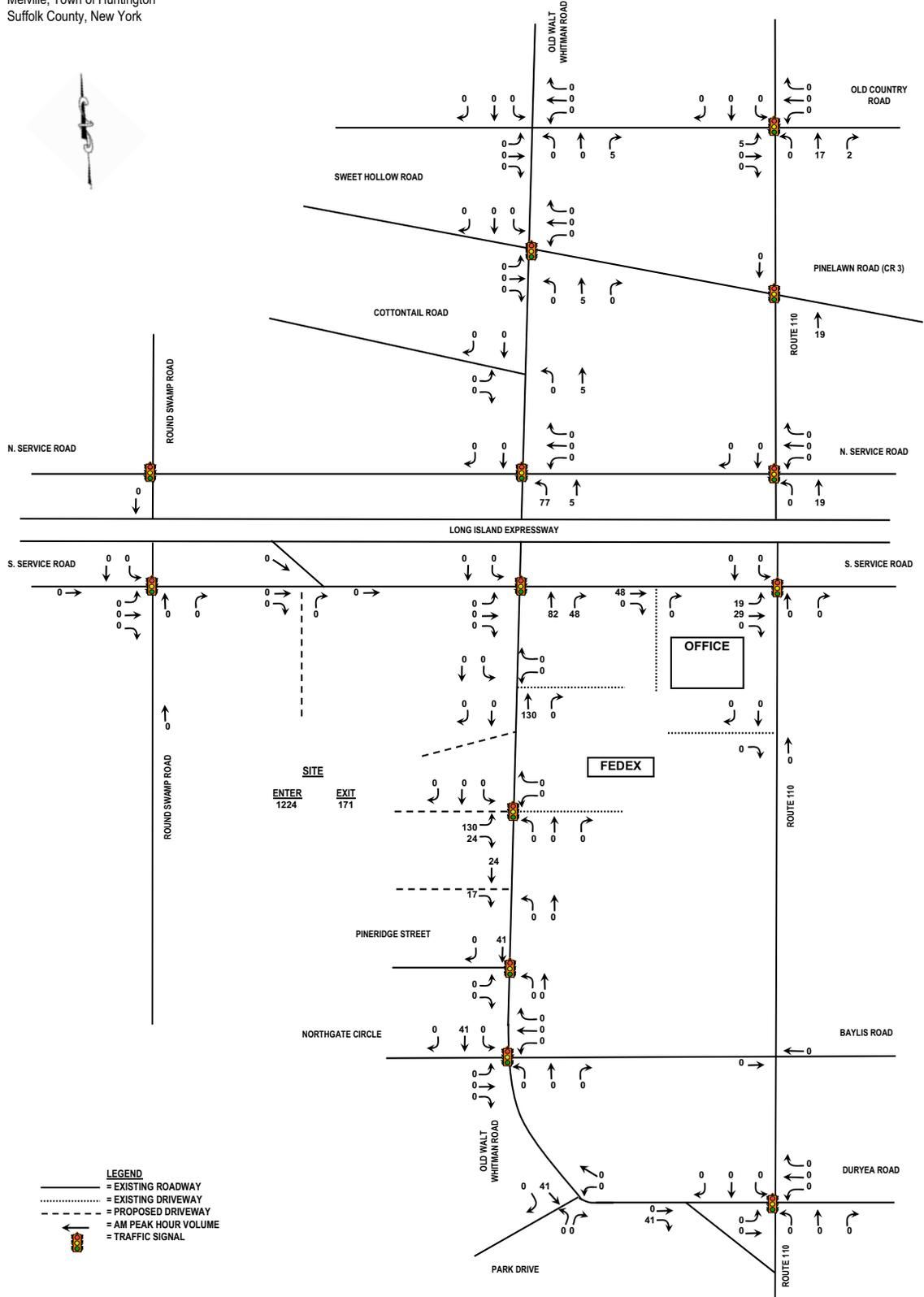
Melville, Town of Huntington  
Suffolk County, New York





**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York

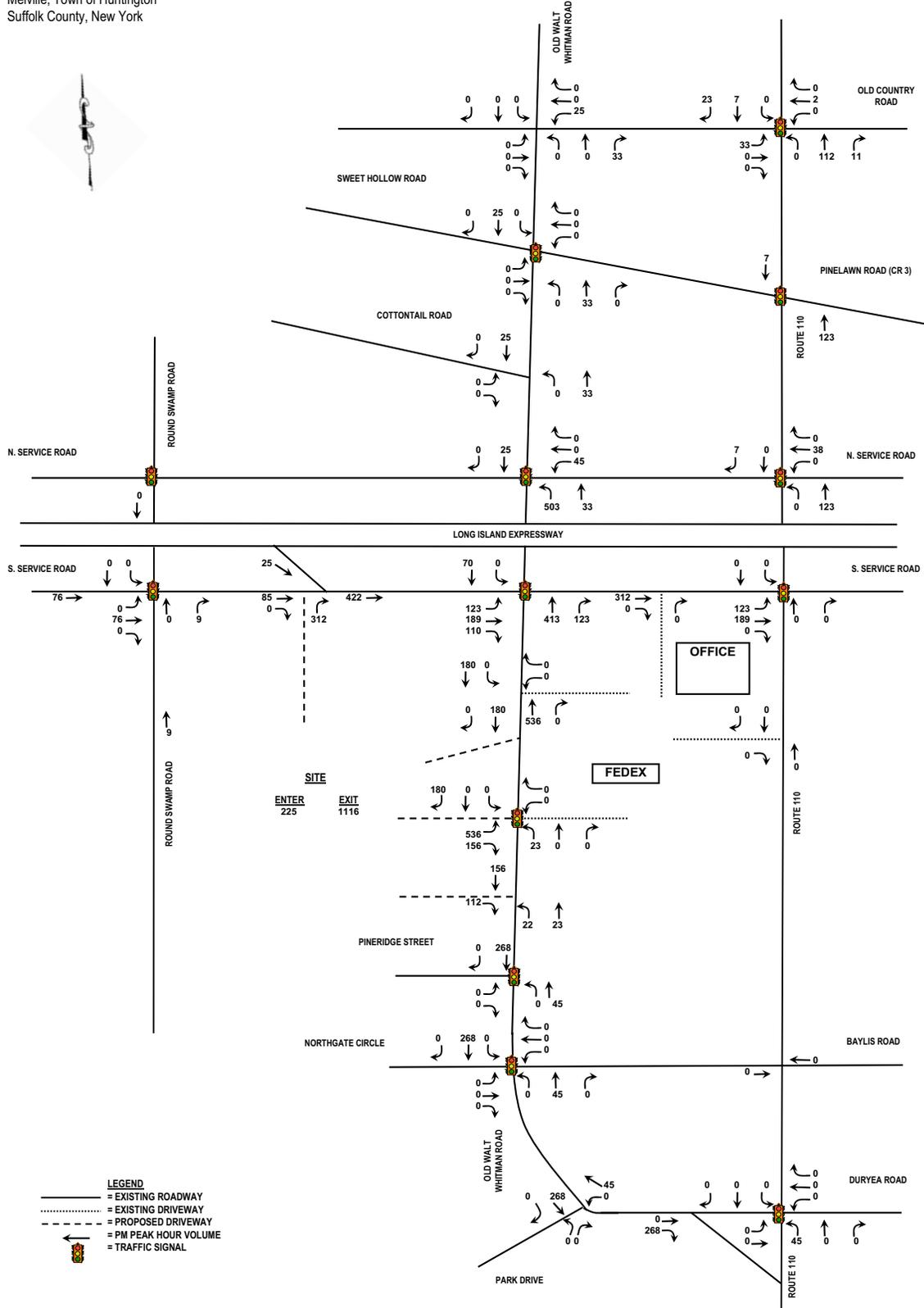






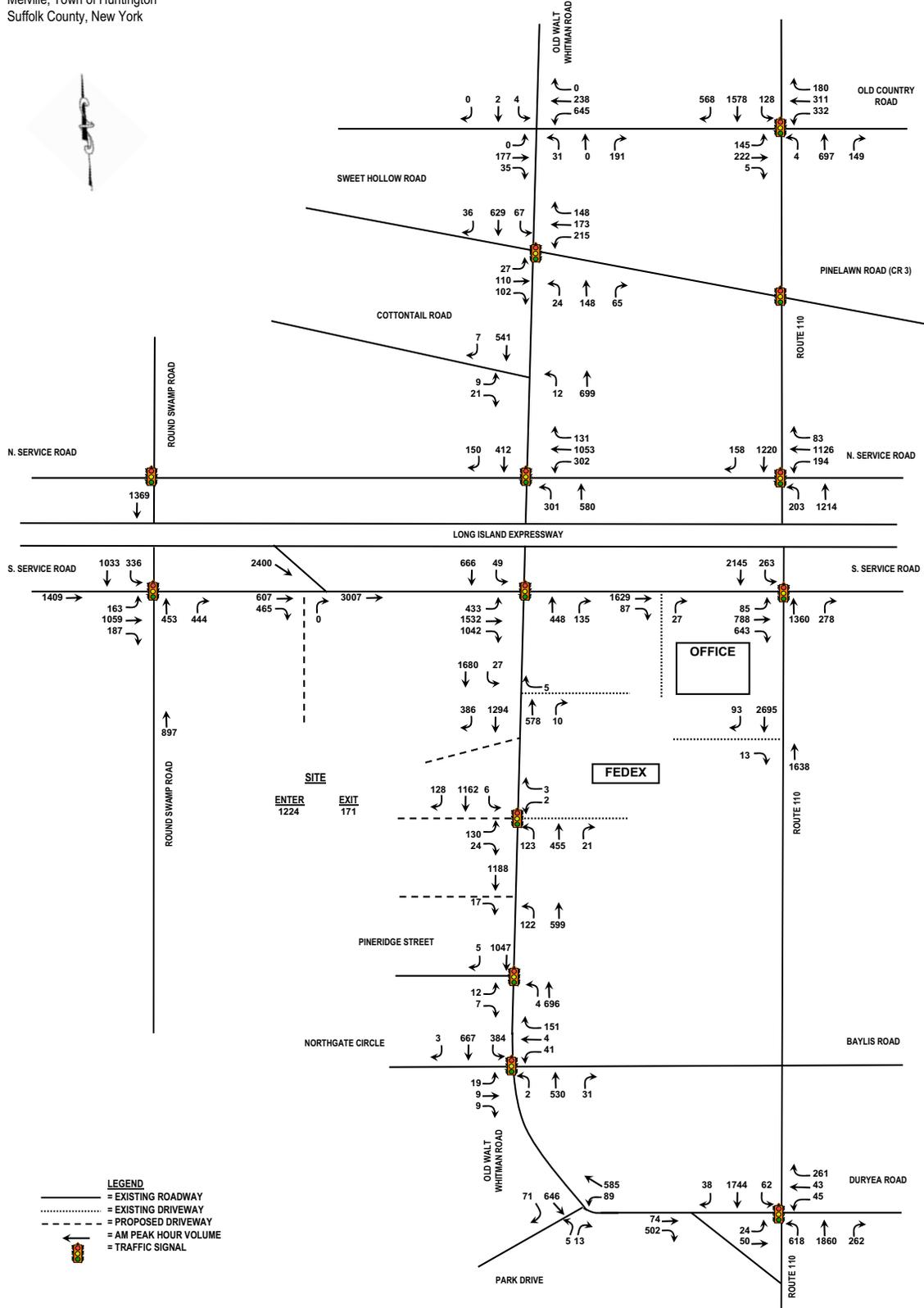
**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York



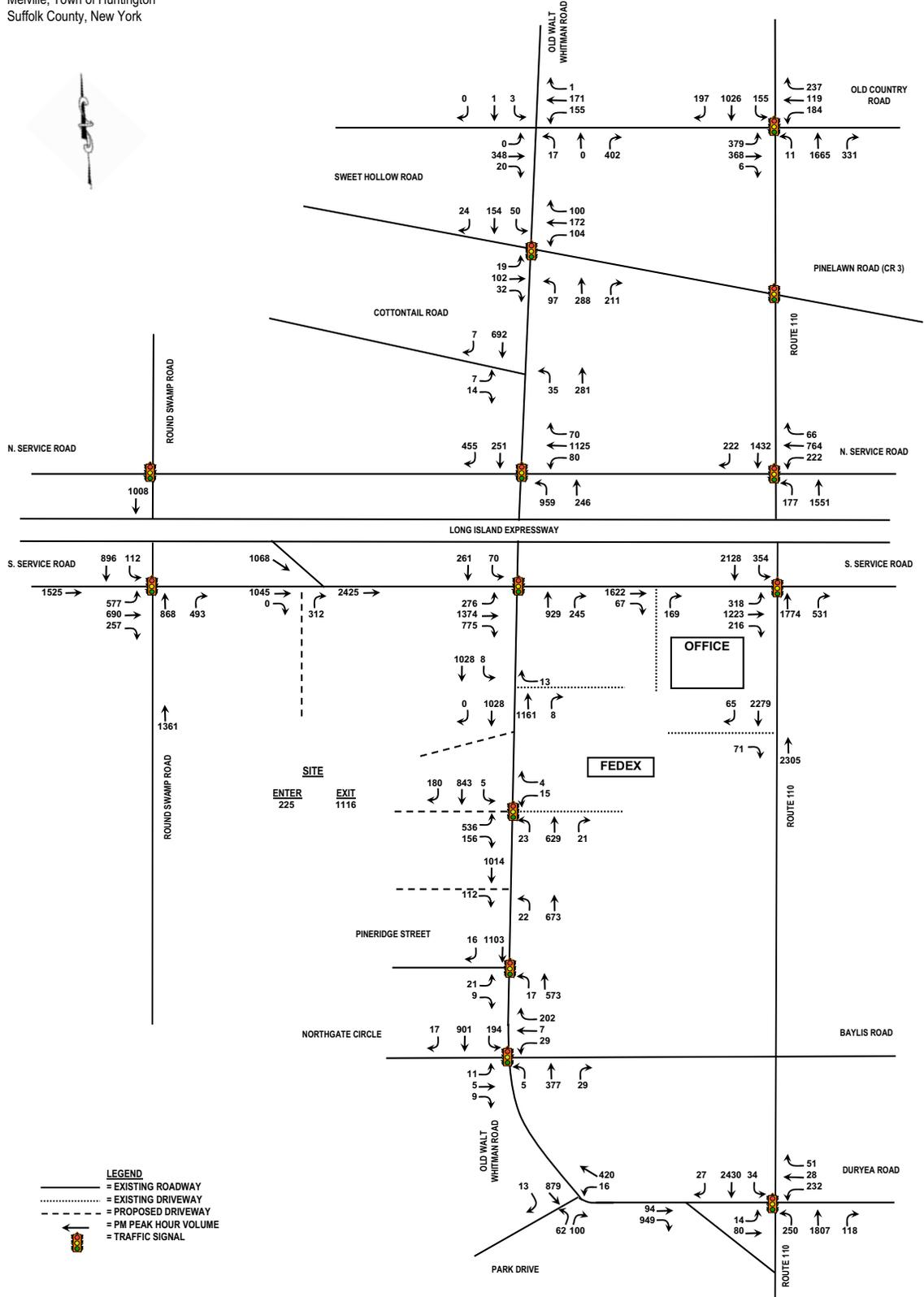
**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York



**Proposed Canon Corporate Center**

Melville, Town of Huntington  
Suffolk County, New York



---

TECHNICAL APPENDIX

---



**HIGHWAY CAPACITY ANALYSIS OUTPUT SHEETS**

---

**TECHNICAL APPENDIX**

---



**HIGHWAY CAPACITY ANALYSIS**

**Duryea Road/Old Walt Whitman Road and NYS Route 110**

HCS+ DETAILED REPORT												
General Information						Site Information						
Analyst	JJM					Intersection	Duryea Road & RI 110/OWW					
Agency or Co.	ATDE AN08003					Area Type	All other areas					
Date Performed	7/15/08					Jurisdiction						
Time Period	AM Peak Hour					Analysis Year	2008 Existing					
						Project ID	2008 AM Existing					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	0	1		0	1	1	2	3	1	1	3	1
Lane Group		LT			LT	R	L	T	R	L	T	R
Volume, V (vph)	24	49		44	42	256	330	1823	257	61	1697	37
% Heavy Vehicles, %HV	9	7		7	0	2	6	9	2	14	7	3
Peak-Hour Factor, PHF	0.82	0.77		0.73	0.65	0.80	0.88	0.89	0.80	0.79	0.96	0.67
Pretimed (P) or Actuated (A)	A	A		A	A	A	A	A	A	A	A	A
Start-up Lost Time, l <sub>i</sub>		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT		3			3	3	3	3	3	3	3	3
Unit Extension, UE		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>b</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0	0	0	0	0	0	0	0
Lane Width		13.0			10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>		0			0	0	0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>		3.2			3.2			3.2			3.2	
Phasing	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 30.0	G =	G =	G =	G = 25.0	G = 50.0	G =	G =				
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v		93			125	320	375	2048	321	77	1768	55
Lane Group Capacity, c		405			354	370	643	1847	616	308	1881	610
v/c Ratio, X		0.23			0.35	0.86	0.58	1.11	0.52	0.25	0.94	0.09
Total Green Ratio, g/C		0.25			0.25	0.25	0.21	0.42	0.42	0.21	0.42	0.42
Uniform Delay, d <sub>1</sub>		35.8			37.0	43.1	42.8	35.0	26.1	39.7	33.6	21.2
Progression Factor, PF		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k		0.11			0.11	0.39	0.17	0.50	0.13	0.11	0.45	0.11
Incremental Delay, d <sub>2</sub>		0.3			0.6	18.8	1.4	57.4	0.8	0.4	9.9	0.1
Initial Queue Delay, d <sub>3</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay		36.1			37.6	61.8	44.2	92.4	26.9	40.1	43.5	21.3
Lane Group LOS		D			D	E	D	F	C	D	D	C
Approach Delay		36.1			55.0			78.2			42.7	
Approach LOS		D			E			E			D	
Intersection Delay		62.4			X <sub>c</sub> = 0.91			Intersection LOS			E	

**HCS+™ DETAILED REPORT**

General Information		Site Information	
Analyst	JJM	Intersection	Duryea Road & Rt 110/OWW
Agency or Co.	ATDE AN08003	Area Type	All other areas
Date Performed	8/20/08	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	
		Project ID	2010 Future AM No-Build

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	0	1		0	1	1	2	3	1	1	3	1
Lane Group		LT			LT	R	L	T	R	L	T	R
Volume, V (vph)	24	50		45	43	261	373	1860	262	62	1744	38
% Heavy Vehicles, %HV	9	7		7	0	2	6	9	2	14	7	3
Peak-Hour Factor, PHF	0.82	0.77		0.73	0.65	0.80	0.88	0.89	0.80	0.79	0.96	0.87
Pretimed (P) or Actuated (A)	A	A		A	A	A	A	A	A	A	A	A
Start-up Lost Time, l <sub>i</sub>		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT		3			3	3	3	3	3	3	3	3
Unit Extension, UE		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>b</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0	0	0	0	0	0	0	0
Lane Width		13.0			10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>		0			0	0	0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>		3.2			3.2			3.2			3.2	
Phasing	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 30.0	G =	G =	G =	G = 25.0	G = 50.0	G =	G =				
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25							Cycle Length, C = 120.0					

	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Adjusted Flow Rate, v		94			128	326		424	2090	327	78	1817	57
Lane Group Capacity, c		405			353	370		643	1847	616	308	1881	610
w/o Ratio, X		0.23			0.36	0.88		0.66	1.13	0.53	0.25	0.97	0.09
Total Green Ratio, g/C		0.25			0.25	0.25		0.21	0.42	0.42	0.21	0.42	0.42
Uniform Delay, d <sub>1</sub>		35.8			37.1	43.3		43.6	35.0	26.2	39.7	34.2	21.2
Progression Factor, PF		1.000			1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k		0.11			0.11	0.41		0.23	0.50	0.13	0.11	0.47	0.11
Incremental Delay, d <sub>2</sub>		0.3			0.6	21.1		2.5	66.6	0.9	0.4	13.6	0.1
Initial Queue Delay, d <sub>3</sub>		0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay		36.1			37.6	64.3		46.1	101.6	27.1	40.1	47.8	21.3
Lane Group LOS		D			D	E		D	F	C	D	D	C
Approach Delay		36.1			56.9			84.8			46.7		
Approach LOS		D			E			F			D		
Intersection Delay		67.6			X <sub>c</sub> = 0.95			Intersection LOS			E		

HCS+ DETAILED REPORT														
General Information						Site Information								
Analyst	JJM					Intersection	Duryea Road & Rt 110/OWW							
Agency or Co.	ATDE AN08003					Area Type	All other areas							
Date Performed	8/20/08					Jurisdiction								
Time Period	AM Peak Hour					Analysis Year								
						Project ID	2010 Future AM Build							
Volume and Timing Input														
	EB			WB			NB			SB				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
Number of Lanes, N <sub>i</sub>	0	1		0	1	1	2	3	1	1	3	1		
Lane Group		LT			LT	R	L	T	R	L	T	R		
Volume, V (vph)	24	50		45	43	261	618	1860	262	62	1744	38		
% Heavy Vehicles, %HV	9	7		7	0	2	6	9	2	14	7	3		
Peak-Hour Factor, PHF	0.82	0.77		0.73	0.65	0.80	0.88	0.89	0.80	0.79	0.96	0.67		
Pretimed (P) or Actuated (A)	A	A		A	A	A	A	A	A	A	A	A		
Start-up Lost Time, t <sub>l</sub>		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Extension of Effective Green, e		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Arrival Type, AT		3			3	3	3	3	3	3	3	3		
Unit Extension, UE		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Filtering/Metering, I		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Initial Unmet Demand, Q <sub>0</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Ped / Bike / RTOR Volumes	0	0		0	0	0	0	0	0	0	0	0		
Lane Width		13.0			10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N		
Parking Maneuvers, N <sub>m</sub>														
Buses Stopping, N <sub>b</sub>		0			0	0	0	0	0	0	0	0		
Min. Time for Pedestrians, G <sub>p</sub>		3.2			3.2			3.2			3.2			
Phasing	EW Perm	02		03		04		Excl. Left	Thru & RT		07		08	
Timing	G = 30.0	G =		G =		G =		G = 25.0	G = 50.0		G =		G =	
	Y = 5	Y =		Y =		Y =		Y = 5	Y = 5		Y =		Y =	
Duration of Analysis, T = 0.25							Cycle Length, C = 120.0							
Lane Group Capacity, Control Delay, and LOS Determination														
	EB			WB			NB			SB				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
Adjusted Flow Rate, v		94			128	326	702	2090	327	78	1817	57		
Lane Group Capacity, c		405			353	370	643	1847	616	308	1881	610		
v/c Ratio, X		0.23			0.36	0.88	1.09	1.13	0.53	0.25	0.97	0.09		
Total Green Ratio, g/C		0.25			0.25	0.25	0.21	0.42	0.42	0.21	0.42	0.42		
Uniform Delay, d <sub>1</sub>		35.8			37.1	43.3	47.5	35.0	26.2	39.7	34.2	21.2		
Progression Factor, PF		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Delay Calibration, k		0.11			0.11	0.41	0.50	0.50	0.13	0.11	0.47	0.11		
Incremental Delay, d <sub>2</sub>		0.3			0.6	21.1	63.1	66.6	0.9	0.4	13.6	0.1		
Initial Queue Delay, d <sub>3</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Control Delay		36.1			37.8	64.3	110.6	101.6	27.1	40.1	47.8	21.3		
Lane Group LOS		D			D	E	F	F	C	D	D	C		
Approach Delay		36.1			56.9			95.8			48.7			
Approach LOS		D			E			F			D			
Intersection Delay		74.6			X <sub>c</sub> = 1.05			Intersection LOS			E			

HCS+ DETAILED REPORT												
General Information						Site Information						
Analyst	JJM					Intersection	Duryea Road & Rt 110/OWW					
Agency or Co.	ATDE AN08003					Area Type	All other areas					
Date Performed	8/20/08					Jurisdiction						
Time Period	AM Peak Hour					Analysis Year						
						Project ID	2010 Future AM Build With Mitigation					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	0	1		0	1	1	2	3	1	1	3	1
Lane Group		LT			LT	R	L	T	R	L	T	R
Volume, V (vph)	24	50		45	43	261	618	1860	262	62	1744	38
% Heavy Vehicles, %HV	9	7		7	0	2	6	9	2	14	7	3
Peak-Hour Factor, PHF	0.82	0.77		0.73	0.65	0.80	0.88	0.89	0.80	0.79	0.96	0.67
Prelimed (P) or Actuated (A)	A	A		A	A	A	A	A	A	A	A	A
Start-up Lost Time, L <sub>s</sub>		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT		3			3	3	3	3	3	3	3	3
Unit Extension, UE		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, G <sub>b</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0	0	0	0	0	0	0	0
Lane Width		13.0			10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>		0			0	0	0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>		3.2			3.2			3.2			3.2	
Phasing	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 28.0	G =	G =	G =	G = 28.0	G = 49.0	G =	G =				
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v		94			128	326	702	2090	327	78	1817	57
Lane Group Capacity, c		377			331	345	720	1810	604	345	1844	597
w/c Ratio, X		0.25			0.39	0.94	0.98	1.15	0.54	0.23	0.99	0.10
Total Green Ratio, g/C		0.23			0.23	0.23	0.23	0.41	0.41	0.23	0.41	0.41
Uniform Delay, d <sub>1</sub>		37.4			38.8	45.2	45.7	35.5	27.0	37.2	35.1	21.9
Progression Factor, PF		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k		0.11			0.11	0.46	0.48	0.50	0.14	0.11	0.49	0.11
Incremental Delay, d <sub>2</sub>		0.3			0.8	34.3	27.3	76.4	1.0	0.3	17.5	0.1
Initial Queue Delay, d <sub>3</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay		37.8			39.5	79.6	73.0	111.9	28.0	37.6	52.7	21.9
Lane Group LOS		D			D	E	E	F	C	D	D	C
Approach Delay		37.8			68.3			94.3			51.2	
Approach LOS		D			E			F			D	
Intersection Delay		76.3			X <sub>c</sub> = 1.05			Intersection LOS			E	

HCS+ DETAILED REPORT														
General Information						Site Information								
Analyst	JJM					Intersection	Duryea Road & RI 110/OWW							
Agency or Co.	ATDE AN08003					Area Type	All other areas							
Data Performed	7/15/08					Jurisdiction								
Time Period	PM Peak Hour					Analysis Year	2008 Existing							
						Project ID	2008 PM Existing							
Volume and Timing Input														
	EB			WB			NB			SB				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
Number of Lanes, N <sub>i</sub>	0	1		0	1	1	2	3	1	1	3	1		
Lane Group		LT			LT	R	L	T	R	L	T	R		
Volume, V (vph)	14	78		227	27	50	184	1771	116	33	2313	26		
% Heavy Vehicles, %HV	0	8		3	8	15	5	3	1	13	3	4		
Peak-Hour Factor, PHF	0.81	0.70		0.81	0.78	0.56	0.90	0.92	0.83	0.78	0.93	0.60		
Prelimed (P) or Actuated (A)	A	A		A	A	A	A	A	A	A	A	A		
Start-up Lost Time, l <sub>i</sub>		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Extension of Effective Green, e		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Arrival Type, AT		3			3	3	3	3	3	3	3	3		
Unit Extension, UE		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Filtering/Metering, I		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Initial Unmet Demand, Q <sub>b</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Ped / Bike / RTOR Volumes	0	0		0	0	0	0	0	0	0	0	0		
Lane Width		13.0			10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N		
Parking Maneuvers, N <sub>m</sub>														
Buses Stopping, N <sub>b</sub>		0			0	0	0	0	0	0	0	0		
Min. Time for Pedestrians, G <sub>p</sub>		3.2			3.2			3.2			3.2			
Phasing	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08						
Timing	G = 30.0	G =	G =	G =	G = 25.0	G = 50.0	G =	G =						
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =						
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0								
Lane Group Capacity, Control Delay, and LOS Determination														
	EB			WB			NB			SB				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
Adjusted Flow Rate, v		128			315	89		204	1925	140		42	2487	43
Lane Group Capacity, c		358			262	328		649	1954	622		311	1954	604
w/c Ratio, X		0.36			1.20	0.27		0.31	0.99	0.23		0.14	1.27	0.07
Total Green Ratio, g/C		0.25			0.25	0.25		0.21	0.42	0.42		0.21	0.42	0.42
Uniform Delay, d <sub>1</sub>		37.1			45.0	36.2		40.2	34.6	22.5		38.7	35.0	21.0
Progression Factor, PF		1.000			1.000	1.000		1.000	1.000	1.000		1.000	1.000	1.000
Delay Calibration, k		0.11			0.50	0.11		0.11	0.49	0.11		0.11	0.50	0.11
Incremental Delay, d <sub>2</sub>		0.6			121.6	0.4		0.3	16.9	0.2		0.2	126.9	0.1
Initial Queue Delay, d <sub>3</sub>		0.0			0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0
Control Delay		37.7			166.6	36.7		40.5	51.5	22.7		38.9	161.9	21.1
Lane Group LOS		D			F	D		D	D	C		D	F	C
Approach Delay		37.7			138.0			48.8				157.5		
Approach LOS		D			F			D				F		
Intersection Delay		107.3			X <sub>c</sub> = 1.02			Intersection LOS				F		

HCS+ DETAILED REPORT												
General Information						Site Information						
Analyst	JJM					Intersection	Duryea Road & Rt 110/OWW					
Agency or Co.	ATDE AN08003					Area Type	All other areas					
Date Performed	8/20/08					Jurisdiction						
Time Period	PM Peak Hour					Analysis Year						
						Project ID	2010 Future PM No-Build					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	0	1		0	1	1	2	3	1	1	3	1
Lane Group	LT			LT R			L	T	R	L	T	R
Volume, V (vph)	14	80		232	28	51	205	1807	118	34	2430	27
% Heavy Vehicles, %HV	0	8		3	8	15	5	3	1	13	3	4
Peak-Hour Factor, PHF	0.81	0.70		0.81	0.78	0.56	0.90	0.92	0.83	0.78	0.93	0.60
Pretimed (P) or Actuated (A)	A	A		A	A	A	A	A	A	A	A	A
Start-up Lost Time, l <sub>i</sub>	2.0			2.0 2.0			2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0			2.0 2.0			2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3			3 3			3	3	3	3	3	3
Unit Extension, UE	3.0			3.0 3.0			3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000			1.000 1.000			1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>b</sub>	0.0			0.0 0.0			0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0	0	0	0	0	0	0	0
Lane Width	13.0			10.0 10.0			10.0	10.0	10.0	10.0	10.0	10.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>	0			0 0			0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 30.0	G =	G =	G =	G = 25.0	G = 50.0	G =	G =				
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	131			322 91			228	1964	142	44	2613	45
Lane Group Capacity, c	353			259 328			649	1954	622	311	1954	604
v/c Ratio, X	0.37			1.24 0.28			0.35	1.01	0.23	0.14	1.34	0.07
Total Green Ratio, g/C	0.25			0.25 0.25			0.21	0.42	0.42	0.21	0.42	0.42
Uniform Delay, d <sub>1</sub>	37.2			45.0 36.3			40.6	35.0	22.6	38.7	35.0	21.1
Progression Factor, PF	1.000			1.000 1.000			1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.11			0.50 0.11			0.11	0.50	0.11	0.11	0.50	0.11
Incremental Delay, d <sub>2</sub>	0.7			137.7 0.5			0.3	21.6	0.2	0.2	155.3	0.1
Initial Queue Delay, d <sub>3</sub>	0.0			0.0 0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	37.9			182.7 36.7			40.9	56.6	22.8	39.0	190.3	21.1
Lane Group LOS	D			F D			D	E	C	D	F	C
Approach Delay	37.9			150.5			53.0			185.1		
Approach LOS	D			F			D			F		
Intersection Delay	123.8			X <sub>c</sub> = 1.08			Intersection LOS			F		

HCS+ DETAILED REPORT														
General Information						Site Information								
Analyst	JJM					Intersection	Duryea Road & Rt 110/OWW							
Agency or Co.	ATDE AN08003					Area Type	All other areas							
Date Performed	8/20/08					Jurisdiction								
Time Period	PM Peak Hour					Analysis Year								
						Project ID	2010 Future PM Build							
Volume and Timing Input														
	EB			WB			NB			SB				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
Number of Lanes, N <sub>i</sub>	0	1		0	1	1	2	3	1	1	3	1		
Lane Group	LT			LT R			L	T	R	L	T	R		
Volume, V (vph)	14	80		232	28	51	250	1807	118	34	2430	27		
% Heavy Vehicles, %HV	0	8		3	8	15	5	3	1	13	3	4		
Peak-Hour Factor, PHF	0.81	0.70		0.81	0.78	0.56	0.90	0.92	0.83	0.78	0.93	0.60		
Prelimed (P) or Actuated (A)	A	A		A	A	A	A	A	A	A	A	A		
Start-up Lost Time, l <sub>i</sub>		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Extension of Effective Green, e		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Arrival Type, AT		3			3	3	3	3	3	3	3	3		
Unit Extension, UE		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Filtering/Metering, I		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Initial Unmet Demand, Q <sub>b</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Ped / Bike / RTOR Volumes	0	0		0	0	0	0	0	0	0	0	0		
Lane Width		13.0			10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N		
Parking Maneuvers, N <sub>m</sub>														
Buses Stopping, N <sub>b</sub>		0			0	0	0	0	0	0	0	0		
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2				
Phasing	EW Perm	02		03		04		Excl. Left	Thru & RT		07		08	
Timing	G = 30.0	G =	G =	G =	G =	G = 25.0	G = 50.0	G =	G =					
	Y = 5	Y =	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =					
Duration of Analysis, T = 0.25							Cycle Length, C = 120.0							
Lane Group Capacity, Control Delay, and LOS Determination														
	EB			WB			NB			SB				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
Adjusted Flow Rate, v		131			322	91	278	1964	142	44	2613	45		
Lane Group Capacity, c		353			259	328	649	1954	622	311	1954	604		
v/c Ratio, X		0.37			1.24	0.28	0.43	1.01	0.23	0.14	1.34	0.07		
Total Green Ratio, g/C		0.25			0.25	0.25	0.21	0.42	0.42	0.21	0.42	0.42		
Uniform Delay, d <sub>1</sub>		37.2			45.0	36.3	41.3	35.0	22.8	38.7	35.0	21.1		
Progression Factor, PF		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Delay Calibration, k		0.11			0.50	0.11	0.11	0.50	0.11	0.11	0.50	0.11		
Incremental Delay, d <sub>2</sub>		0.7			137.7	0.5	0.5	21.6	0.2	0.2	155.3	0.1		
Initial Queue Delay, d <sub>3</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Control Delay		37.9			182.7	36.7	41.7	56.6	22.8	39.0	190.3	21.1		
Lane Group LOS		D			F	D	D	E	C	D	F	C		
Approach Delay	37.9			150.5			52.8			185.1				
Approach LOS	D			F			D			F				
Intersection Delay	123.1			X <sub>c</sub> = 1.09			Intersection LOS			F				

HCS+ DETAILED REPORT													
General Information						Site Information							
Analyst	JJM					Intersection	Duryea Road & Rt 110/OWW						
Agency or Co.	ATDE AN08003					Area Type	All other areas						
Date Performed	8/20/08					Jurisdiction							
Time Period	PM Peak Hour					Analysis Year	2010 Future PM Build with Mitigation						
Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Number of Lanes, N <sub>i</sub>	0	1		0	1	1	2	3	1	1	3	1	
Lane Group		LT			LT	R	L	T	R	L	T	R	
Volume, V (vph)	14	80		232	28	51	250	1807	118	34	2430	27	
% Heavy Vehicles, %HV	0	8		3	8	15	5	3	1	13	3	4	
Peak-Hour Factor, PHF	0.81	0.70		0.81	0.78	0.56	0.90	0.92	0.83	0.78	0.93	0.60	
Pretimed (P) or Actuated (A)	A	A		A	A	A	A	A	A	A	A	A	
Start-up Lost Time, l <sub>i</sub>		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Extension of Effective Green, e		2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival Type, AT		3			3	3	3	3	3	3	3	3	
Unit Extension, UE		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Filtering/Metering, I		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Initial Unmet Demand, Q <sub>b</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Ped / Bike / RTOR Volumes	0	0		0	0	0	0	0	0	0	0	0	
Lane Width		13.0			10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking Maneuvers, N <sub>m</sub>													
Buses Stopping, N <sub>b</sub>		0			0	0	0	0	0	0	0	0	
Min. Time for Pedestrians, G <sub>p</sub>		3.2			3.2			3.2			3.2		
Phasing	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08					
Timing	G = 34.0	G =	G =	G =	G = 16.0	G = 55.0	G =	G =					
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =					
Duration of Analysis, T = 0.25							Cycle Length, C = 120.0						
Lane Group Capacity, Control Delay, and LOS Determination													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Adjusted Flow Rate, v		131			322	91	278	1964	142	44	2613	45	
Lane Group Capacity, c		456			301	371	415	2150	664	199	2150	664	
w/c Ratio, X		0.29			1.07	0.25	0.67	0.91	0.21	0.22	1.22	0.07	
Total Green Ratio, g/C		0.28			0.28	0.28	0.13	0.46	0.46	0.13	0.46	0.46	
Uniform Delay, d <sub>1</sub>		33.5			43.0	33.1	49.5	30.3	19.5	46.4	32.5	18.2	
Progression Factor, PF		1.000			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Delay Calibration, k		0.11			0.50	0.11	0.24	0.43	0.11	0.11	0.50	0.11	
Incremental Delay, d <sub>2</sub>		0.3			71.6	0.3	4.2	6.5	0.2	0.6	101.4	0.0	
Initial Queue Delay, d <sub>3</sub>		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay		33.9			114.6	33.5	53.6	36.8	19.6	47.0	133.9	18.2	
Lane Group LOS		C			F	C	D	D	B	D	F	B	
Approach Delay		33.9			96.7			37.8			130.6		
Approach LOS		C			F			D			F		
Intersection Delay		86.5			X <sub>c</sub> = 1.08			Intersection LOS			F		

---

**TECHNICAL APPENDIX**

---



**HIGHWAY CAPACITY ANALYSIS**

**NYS Route 110 & Old Country Road**

HCS+ DETAILED REPORT												
General Information						Site Information						
Analyst	JJM					Intersection	Old Country Road & Rt 110					
Agency or Co.	ATDE AN08003					Area Type	All other areas					
Date Performed	7/15/08					Jurisdiction						
Time Period	AM Peak Hour					Analysis Year	2008 Existing					
						Project ID	2008 AM Existing					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	1	1		1	2		1	2	1	1	2	1
Lane Group	L	T		L	LT		L	T	R	L	T	R
Volume, V (vph)	137	218		325	293		4	661	144	125	1481	437
% Heavy Vehicles, %HV	2	13		3	9		0	11	12	3	3	2
Peak-Hour Factor, PHF	0.79	0.90		0.75	0.92		0.50	0.86	0.82	0.75	0.92	0.85
Pretimed (P) or Actuated (A)	A	A		A	A		A	A	A	A	A	A
Start-up Lost Time, l <sub>s</sub>	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3		3	3		3	3	3	3	3	3
Unit Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>0</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Pad / Bike / RTOR Volumes	0	0		0	0		0	0	0	0	0	0
Lane Width	10.0	10.0		12.0	11.0		11.0	12.0	13.0	11.0	12.0	13.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>	0	0		0	0		0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 12.0	G = 30.0	G =	G =	G = 44.0	G = 44.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 150.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	173	242		433	318		8	769	176	167	1610	514
Lane Group Capacity, c	132	126		350	642		512	956	735	497	1030	665
w/c Ratio, X	1.31	1.92		1.24	0.50		0.02	0.80	0.24	0.34	1.56	0.77
Total Green Ratio, g/C	0.08	0.08		0.20	0.20		0.29	0.29	0.49	0.29	0.29	0.41
Uniform Delay, d <sub>1</sub>	69.0	69.0		60.0	53.3		37.6	49.0	21.8	41.5	53.0	38.5
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.50	0.50		0.50	0.11		0.11	0.35	0.11	0.11	0.50	0.32
Incremental Delay, d <sub>2</sub>	183.6	442.2		128.9	0.6		0.0	5.1	0.2	0.4	258.2	5.6
Initial Queue Delay, d <sub>3</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	252.6	511.2		188.9	53.9		37.6	54.1	22.0	42.0	311.2	44.1
Lane Group LOS	F	F		F	D		D	D	C	D	F	D
Approach Delay	403.4			131.7			48.0			231.6		
Approach LOS	F			F			D			F		
Intersection Delay	191.1			X <sub>c</sub> = 1.11			Intersection LOS			F		

HCS+ DETAILED REPORT												
General Information						Site Information						
Analyst	JMM					Intersection	Old Country Road & RI 110					
Agency or Co.	ATDE AN08003					Area Type	All other areas					
Date Performed	8/21/08					Jurisdiction						
Time Period	AM Peak Hour					Analysis Year						
						Project ID	2010 Future AM No-Build					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	1	1		1	2		1	2	1	1	2	1
Lane Group	L	T		L	LT		L	T	R	L	T	R
Volume, V (vph)	140	222		332	299		4	680	147	128	1541	446
% Heavy Vehicles, %HV	2	13		3	9		0	11	12	3	3	2
Peak-Hour Factor, PHF	0.79	0.90		0.75	0.92		0.50	0.86	0.82	0.75	0.92	0.85
Pretimed (P) or Actuated (A)	A	A		A	A		A	A	A	A	A	A
Start-up Lost Time, l <sub>i</sub>	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3		3	3		3	3	3	3	3	3
Unit Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>b</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0		0	0	0	0	0	0
Lane Width	10.0	10.0		12.0	11.0		11.0	12.0	13.0	11.0	12.0	13.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>	0	0		0	0		0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 12.0	G = 30.0	G =	G =	G = 44.0	G = 44.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 150.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	177	247		443	325		8	791	179	171	1675	525
Lane Group Capacity, c	132	126		350	642		512	956	735	497	1030	665
w/c Ratio, X	1.34	1.96		1.27	0.51		0.02	0.83	0.24	0.34	1.63	0.79
Total Green Ratio, g/C	0.08	0.08		0.20	0.20		0.29	0.29	0.49	0.29	0.29	0.41
Uniform Delay, d <sub>1</sub>	69.0	69.0		60.0	53.4		37.6	49.5	21.9	41.7	53.0	38.9
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.50	0.50		0.50	0.11		0.11	0.37	0.11	0.11	0.50	0.34
Incremental Delay, d <sub>2</sub>	195.5	459.6		140.4	0.7		0.0	6.1	0.2	0.4	286.3	6.4
Initial Queue Delay, d <sub>3</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	264.5	528.6		200.4	54.1		37.6	55.6	22.1	42.1	339.3	45.3
Lane Group LOS	F	F		F	D		D	E	C	D	F	D
Approach Delay	418.3			138.5			49.3			252.7		
Approach LOS	F			F			D			F		
Intersection Delay	205.1			X <sub>in</sub> = 1.14			Intersection LOS			F		

HCS+ DETAILED REPORT												
General Information						Site Information						
Analyst	JJM					Intersection	Old Country Road & Rt 110					
Agency or Co.	ATDE AN08003					Area Type	All other areas					
Date Performed	8/21/08					Jurisdiction	WITH Town & DOT Improvements					
Time Period	AM Peak Hour					Analysis Year	2010 Future No-Build w MIT					
						Project ID	2010 Future AM No-Build with MIT					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	1	1		2	2		1	3	1	1	3	1
Lane Group	L	T		L	T		L	T	R	L	T	R
Volume, V (vph)	140	222		332	299		4	680	147	128	1541	45
% Heavy Vehicles, %HV	2	13		3	9		0	11	12	3	3	2
Peak-Hour Factor, PHF	0.79	0.90		0.75	0.92		0.50	0.86	0.82	0.75	0.92	0.85
Prefimed (P) or Actuated (A)	A	A		A	A		A	A	A	A	A	A
Start-up Lost Time, I <sub>i</sub>	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3		3	3		3	3	3	3	3	3
Unit Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>i</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0		0	0	0	0	0	0
Lane Width	10.0	10.0		12.0	11.0		11.0	12.0	13.0	11.0	12.0	13.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>	0	0		0	0		0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 12.0	G = 30.0	G =	G =	G = 44.0	G = 44.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 150.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	177	247		443	325		8	791	179	171	1675	53
Lane Group Capacity, c	132	126		681	642		512	1368	735	497	1474	665
w/c Ratio, X	1.34	1.96		0.65	0.51		0.02	0.58	0.24	0.34	1.14	0.08
Total Green Ratio, g/C	0.08	0.08		0.20	0.20		0.29	0.29	0.49	0.29	0.29	0.41
Uniform Delay, d <sub>1</sub>	69.0	69.0		55.2	53.4		37.6	45.1	21.9	41.7	53.0	27.3
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.50	0.50		0.23	0.11		0.11	0.17	0.11	0.11	0.50	0.11
Incremental Delay, d <sub>2</sub>	195.5	459.6		2.2	0.7		0.0	0.6	0.2	0.4	70.3	0.1
Initial Queue Delay, d <sub>3</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	264.5	528.6		57.4	54.1		37.6	45.7	22.1	42.1	123.3	27.3
Lane Group LOS	F	F		E	D		D	D	C	D	F	C
Approach Delay	418.3			56.0			41.3			113.3		
Approach LOS	F			E			D			F		
Intersection Delay	116.9			X <sub>c</sub> = 0.83			Intersection LOS			F		

HCS+ DETAILED REPORT												
General Information						Site Information						
Analyst	JJM					Intersection	Old Country Road & Rt 110					
Agency or Co.	ATDE AN08003					Area Type	All other areas					
Date Performed	8/21/08					Jurisdiction						
Time Period	AM Peak Hour					Analysis Year	2010 Future Build					
						Project ID	2010 Future AM Build					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	1	1		1	2		1	2	1	1	2	1
Lane Group	L	T		L	LT		L	T	R	L	T	R
Volume, V (vph)	145	222		332	311		4	697	149	128	1578	568
% Heavy Vehicles, %HV	2	13		3	9		0	11	12	3	3	2
Peak-Hour Factor, PHF	0.79	0.90		0.75	0.92		0.50	0.86	0.82	0.75	0.92	0.85
Pretimed (P) or Actuated (A)	A	A		A	A		A	A	A	A	A	A
Start-up Lost Time, l <sub>i</sub>	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3		3	3		3	3	3	3	3	3
Unlk Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>0</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0		0	0	0	0	0	0
Lane Width	10.0	10.0		12.0	11.0		11.0	12.0	13.0	11.0	12.0	13.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>	0	0		0	0		0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 12.0	G = 30.0	G =	G =	G = 44.0	G = 44.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 150.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	184	247		443	338		8	810	182	171	1715	668
Lane Group Capacity, c	132	126		350	642		512	956	735	497	1030	665
w/c Ratio, X	1.39	1.96		1.27	0.53		0.02	0.85	0.25	0.34	1.67	1.00
Total Green Ratio, g/C	0.08	0.08		0.20	0.20		0.29	0.29	0.49	0.29	0.29	0.41
Uniform Delay, d <sub>1</sub>	69.0	69.0		60.0	53.6		37.6	49.8	21.9	41.7	53.0	44.5
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.50	0.50		0.50	0.13		0.11	0.38	0.11	0.11	0.50	0.50
Incremental Delay, d <sub>2</sub>	216.7	459.6		140.4	0.8		0.0	7.2	0.2	0.4	303.6	36.0
Initial Queue Delay, d <sub>3</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	285.7	528.6		200.4	54.5		37.6	57.0	22.1	42.1	356.6	80.5
Lane Group LOS	F	F		F	D		D	E	C	D	F	F
Approach Delay	424.9			137.3			50.5			263.3		
Approach LOS	F			F			D			F		
Intersection Delay	212.6			X <sub>c</sub> = 1.15			Intersection LOS			F		

HCS+ - DETAILED REPORT												
General Information						Site Information						
Analyst	JJM					Intersection	Old Country Road & Rt 110					
Agency or Co.	ATDE AN08003					Area Type	All other areas					
Date Performed	8/21/08					Jurisdiction	WITH TOWN & DOT IMPROVEMENTS					
Time Period	AM Peak Hour					Analysis Year	2010 Future Build w MIT					
						Project ID	2010 Future AM Build with MIT					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	1	1		2	2		1	3	1	1	3	1
Lane Group	L	T		L	T		L	T	R	L	T	R
Volume, V (vph)	145	222		332	311		4	697	149	128	1578	57
% Heavy Vehicles, %HV	2	13		3	9		0	11	12	3	3	2
Peak-Hour Factor, PHF	0.79	0.90		0.75	0.92		0.50	0.86	0.82	0.75	0.92	0.85
Prelimed (P) or Actuated (A)	A	A		A	A		A	A	A	A	A	A
Start-up Lost Time, l <sub>i</sub>	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3		3	3		3	3	3	3	3	3
Unit Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>b</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0		0	0	0	0	0	0
Lane Width	10.0	10.0		12.0	11.0		11.0	12.0	13.0	11.0	12.0	13.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>	0	0		0	0		0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 13.0	G = 31.0	G =	G =	G = 30.0	G = 56.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 150.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	184	247		443	338		8	810	182	171	1715	67
Lane Group Capacity, c	143	136		703	663		349	1741	864	339	1876	807
v/c Ratio, X	1.29	1.82		0.63	0.51		0.02	0.47	0.21	0.50	0.91	0.08
Total Green Ratio, g/C	0.09	0.09		0.21	0.21		0.20	0.37	0.58	0.20	0.37	0.49
Uniform Delay, d <sub>1</sub>	68.5	68.5		54.3	52.8		48.2	35.6	15.1	53.4	44.7	20.1
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.50	0.50		0.21	0.12		0.11	0.11	0.11	0.11	0.43	0.11
Incremental Delay, d <sub>2</sub>	171.5	394.7		1.8	0.7		0.0	0.2	0.1	1.2	7.4	0.0
Initial Queue Delay, d <sub>3</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	240.0	463.2		56.1	53.4		48.2	35.8	15.2	54.6	52.1	20.1
Lane Group LOS	F	F		E	D		D	D	B	D	D	C
Approach Delay	367.9			54.9			32.2			51.3		
Approach LOS	F			D			C			D		
Intersection Delay	80.1			X <sub>v</sub> = 0.84			Intersection LOS			F		

HCS+ DETAILED REPORT												
General Information						Site Information						
Analyst	JJM					Intersection	Old Country Road & Rt 110					
Agency or Co.	ATDE AN08003					Area Type	All other areas					
Date Performed	7/15/08					Jurisdiction						
Time Period	PM Peak Hour					Analysis Year	2008 Existing					
						Project ID	2008 PM Existing					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	1	1		1	2		1	2	1	1	2	1
Lane Group	L	T		L	LT		L	T	R	L	T	R
Volume, V (vph)	339	361		180	115		11	1494	314	152	982	171
% Heavy Vehicles, %HV	0	1		2	6		0	1	1	0	3	0
Peak-Hour Factor, PHF	0.95	0.99		0.80	0.77		0.83	0.91	0.87	0.79	0.88	0.72
Prelimed (P) or Actuated (A)	A	A		A	A		A	A	A	A	A	A
Start-up Lost Time, l <sub>i</sub>	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3		3	3		3	3	3	3	3	3
Unit Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>b</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0		0	0	0	0	0	0
Lane Width	10.0	10.0		12.0	11.0		11.0	12.0	13.0	11.0	12.0	13.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>	0	0		0	0		0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 13.0	G = 13.0	G =	G =	G = 18.0	G = 26.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 90.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	357	365		225	149		13	1642	361	192	1116	237
Lane Group Capacity, c	243	254		256	477		349	1035	716	349	1015	816
v/c Ratio, X	1.47	1.44		0.88	0.31		0.04	1.59	0.50	0.55	1.10	0.29
Total Green Ratio, g/C	0.14	0.14		0.14	0.14		0.20	0.29	0.43	0.20	0.29	0.49
Uniform Delay, d <sub>1</sub>	38.5	38.5		37.7	34.5		29.0	32.0	18.5	32.4	32.0	13.7
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.50	0.50		0.41	0.11		0.11	0.50	0.11	0.15	0.50	0.11
Incremental Delay, d <sub>2</sub>	232.2	217.7		27.5	0.4		0.0	268.8	0.6	1.9	59.5	0.2
Initial Queue Delay, d <sub>3</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	270.7	258.2		65.2	34.9		29.1	300.5	19.1	34.2	91.5	13.9
Lane Group LOS	F	F		E	C		C	F	B	C	F	B
Approach Delay	263.4			53.1			248.4			72.5		
Approach LOS	F			D			F			E		
Intersection Delay	176.7			X <sub>0</sub> = 1.17			Intersection LOS			F		

HCS+ DETAILED REPORT																
General Information						Site Information										
Analyst	JJM					Intersection	Old Country Road & Rt 110									
Agency or Co.	ATDE AN08003					Area Type	All other areas									
Date Performed	8/21/08					Jurisdiction										
Time Period	PM Peak Hour					Analysis Year										
						Project ID	2010 Future PM No-Build									
Volume and Timing Input																
	EB			WB			NB			SB						
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
Number of Lanes, N <sub>i</sub>	1	1		1	2		1	2	1	1	2	1				
Lane Group	L	T		L	LT		L	T	R	L	T	R				
Volume, V (vph)	346	368		184	117		11	1553	320	155	1019	174				
% Heavy Vehicles, %HV	0	1		2	6		0	1	1	0	3	0				
Peak-Hour Factor, PHF	0.95	0.99		0.80	0.77		0.83	0.91	0.87	0.79	0.88	0.72				
Pretimed (P) or Actuated (A)	A	A		A	A		A	A	A	A	A	A				
Start-up Lost Time, l <sub>i</sub>	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0				
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0				
Arrival Type, AT	3	3		3	3		3	3	3	3	3	3				
Unit Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0				
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000				
Initial Unmet Demand, Q <sub>b</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0				
Ped / Bike / RTOR Volumes	0	0		0	0		0	0	0	0	0	0				
Lane Width	10.0	10.0		12.0	11.0		11.0	12.0	13.0	11.0	12.0	13.0				
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N				
Parking Maneuvers, N <sub>m</sub>																
Buses Stopping, N <sub>b</sub>	0	0		0	0		0	0	0	0	0	0				
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2						
Phasing	EB Only		WB Only		03		04		Excl. Left		Thru & RT		07		08	
Timing	G = 13.0		G = 13.0		G =		G =		G = 18.0		G = 26.0		G =		G =	
	Y = 5		Y = 5		Y =		Y =		Y = 5		Y = 5		Y =		Y =	
Duration of Analysis, T = 0.25									Cycle Length, C = 90.0							
Lane Group Capacity, Control Delay, and LOS Determination																
	EB			WB			NB			SB						
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
Adjusted Flow Rate, v	364	372		230	152		13	1707	368	196	1158	242				
Lane Group Capacity, c	243	254		256	477		349	1035	716	349	1015	816				
v/c Ratio, X	1.50	1.46		0.90	0.32		0.04	1.65	0.51	0.56	1.14	0.30				
Total Green Ratio, g/C	0.14	0.14		0.14	0.14		0.20	0.29	0.43	0.20	0.29	0.49				
Uniform Delay, d <sub>1</sub>	38.5	38.5		37.9	34.5		29.0	32.0	18.6	32.4	32.0	13.7				
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000				
Delay Calibration, k	0.50	0.50		0.42	0.11		0.11	0.50	0.12	0.16	0.50	0.11				
Incremental Delay, d <sub>2</sub>	244.5	229.4		31.1	0.4		0.0	296.5	0.6	2.1	75.5	0.2				
Initial Queue Delay, d <sub>3</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay	283.0	267.9		69.0	34.9		29.1	328.5	19.2	34.5	107.5	14.0				
Lane Group LOS	F	F		E	C		C	F	B	C	F	B				
Approach Delay	275.4			55.4			272.2			84.3						
Approach LOS	F			E			F			F						
Intersection Delay	193.0			X <sub>c</sub> = 1.20			Intersection LOS			F						

HCS+ DETAILED REPORT												
General Information						Site Information						
Analyst	JJM					Intersection	Old Country Road & Rt 110					
Agency or Co.	ATDE AN03003					Area Type	All other areas					
Date Performed	8/21/08					Jurisdiction	With Town & DOT Improvements					
Time Period	PM Peak Hour					Analysis Year	2010 Future No-Build w MIT					
						Project ID	2010 Future PM No-Build with Mitigation					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	1	1		2	2		1	3	1	1	3	1
Lane Group	L	T		L	T		L	T	R	L	T	R
Volume, V (vph)	346	368		184	117		11	1553	320	155	1019	17
% Heavy Vehicles, %HV	0	1		2	6		0	1	1	0	3	0
Peak-Hour Factor, PHF	0.95	0.99		0.80	0.77		0.83	0.91	0.87	0.79	0.88	0.72
Prelimed (P) or Actuated (A)	A	A		A	A		A	A	A	A	A	A
Start-up Lost Time, l <sub>i</sub>	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3		3	3		3	3	3	3	3	3
Unit Extension, U <sub>E</sub>	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>b</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0		0	0	0	0	0	0
Lane Width	10.0	10.0		12.0	11.0		11.0	12.0	13.0	11.0	12.0	13.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>	0	0		0	0		0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 13.0	G = 13.0	G =	G =	G = 18.0	G = 26.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 90.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	364	372		230	152		13	1707	368	196	1158	24
Lane Group Capacity, c	243	254		496	477		349	1480	716	349	1452	816
v/c Ratio, X	1.50	1.46		0.46	0.32		0.04	1.15	0.51	0.56	0.80	0.03
Total Green Ratio, g/C	0.14	0.14		0.14	0.14		0.20	0.29	0.43	0.20	0.29	0.49
Uniform Delay, d <sub>1</sub>	38.5	38.5		35.3	34.5		29.0	32.0	18.6	32.4	29.6	11.9
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.50	0.50		0.11	0.11		0.11	0.50	0.12	0.16	0.34	0.11
Incremental Delay, d <sub>2</sub>	244.5	229.4		0.7	0.4		0.0	77.2	0.6	2.1	3.2	0.0
Initial Queue Delay, d <sub>3</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	283.0	267.9		36.0	34.9		29.1	109.2	19.2	34.5	32.8	11.9
Lane Group LOS	F	F		D	C		C	F	B	C	C	B
Approach Delay	275.4			35.6			92.8			32.7		
Approach LOS	F			D			F			C		
Intersection Delay	89.3			X <sub>c</sub> = 0.94			Intersection LOS			F		

**HCS+™ DETAILED REPORT**

General Information				Site Information			
Analyst	JJM			Intersection	Old Country Road & Rt 110		
Agency or Co.	ATDE AN08003			Area Type	All other areas		
Date Performed	8/21/08			Jurisdiction			
Time Period	PM Peak Hour			Analysis Year	2010 Future Build		
				Project ID	2010 Future PM Build		

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	1	1		1	2		1	2	1	1	2	1
Lane Group	L	T		L	LT		L	T	R	L	T	R
Volume, V (vph)	379	368		184	119		11	1665	331	155	1026	197
% Heavy Vehicles, %HV	0	1		2	6		0	1	1	0	3	0
Peak-Hour Factor, PHF	0.95	0.99		0.80	0.77		0.83	0.91	0.87	0.79	0.88	0.72
Pretimed (P) or Actuated (A)	A	A		A	A		A	A	A	A	A	A
Start-up Lost Time, I <sub>s</sub>	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3		3	3		3	3	3	3	3	3
Unit Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>b</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0		0	0	0	0	0	0
Lane Width	10.0	10.0		12.0	11.0		11.0	12.0	13.0	11.0	12.0	13.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, No	0	0		0	0		0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 13.0	G = 13.0	G =	G =	G = 18.0	G = 26.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25							Cycle Length, C = 90.0					

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	399	372		230	155		13	1830	380	196	1166	274
Lane Group Capacity, c	243	254		256	477		349	1035	716	349	1015	816
v/c Ratio, X	1.64	1.46		0.90	0.32		0.04	1.77	0.53	0.56	1.15	0.34
Total Green Ratio, g/C	0.14	0.14		0.14	0.14		0.20	0.29	0.43	0.20	0.29	0.49
Uniform Delay, d <sub>1</sub>	38.5	38.5		37.9	34.6		29.0	32.0	18.8	32.4	32.0	14.1
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.50	0.50		0.42	0.11		0.11	0.50	0.13	0.16	0.50	0.11
Incremental Delay, d <sub>2</sub>	306.7	229.4		31.1	0.4		0.0	349.6	0.8	2.1	78.6	0.2
Initial Queue Delay, d <sub>3</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	345.2	267.9		69.0	35.0		29.1	381.6	19.5	34.5	110.6	14.3
Lane Group LOS	F	F		E	C		C	F	B	C	F	B
Approach Delay	307.9			55.3			317.7			85.4		
Approach LOS	F			E			F			F		
Intersection Delay	220.2			X <sub>v</sub> = 1.27			Intersection LOS			F		

**HCS+ DETAILED REPORT**

General Information			Site Information		
Analyst	JJM		Intersection	Old Country Road & Rt 110	
Agency or Co.	ATDE AN08003		Area Type	All other areas	
Date Performed	8/21/08		Jurisdiction	WITH TOWN & DOT IMPROVEMENTS	
Time Period	PM Peak Hour		Analysis Year	2010 Future Build w MIT	
			Project ID	2010 Future PM Build with Mitigation	

Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	1	1		2	2		1	3	1	1	3	1
Lane Group	L	T		L	T		L	T	R	L	T	R
Volume, V (vph)	379	368		184	119		11	1665	331	155	1026	20
% Heavy Vehicles, %HV	0	1		2	6		0	1	1	0	3	0
Peak-Hour Factor, PHF	0.95	0.99		0.80	0.77		0.83	0.91	0.87	0.79	0.88	0.72
Pretimed (P) or Actuated (A)	A	A		A	A		A	A	A	A	A	A
Start-up Lost Time, l <sub>i</sub>	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3		3	3		3	3	3	3	3	3
Unit Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q <sub>b</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0		0	0		0	0	0	0	0	0
Lane Width	10.0	10.0		12.0	11.0		11.0	12.0	13.0	11.0	12.0	13.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>	0	0		0	0		0	0	0	0	0	0
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 15.0	G = 8.0	G =	G =	G = 13.0	G = 34.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25							Cycle Length, C = 90.0					

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	399	372		230	155		13	1830	380	196	1166	28
Lane Group Capacity, c	281	293		306	293		252	1936	771	252	1898	1001
v/c Ratio, X	1.42	1.27		0.75	0.53		0.05	0.95	0.49	0.78	0.61	0.03
Total Green Ratio, g/C	0.17	0.17		0.09	0.09		0.14	0.38	0.47	0.14	0.38	0.60
Uniform Delay, d <sub>1</sub>	37.5	37.5		40.0	39.2		33.2	27.1	16.6	37.1	22.7	7.3
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.50	0.50		0.31	0.13		0.11	0.46	0.11	0.33	0.20	0.11
Incremental Delay, d <sub>2</sub>	208.6	145.5		10.0	1.8		0.1	10.3	0.5	14.3	0.6	0.0
Initial Queue Delay, d <sub>3</sub>	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	246.1	183.0		50.0	41.0		33.3	37.4	17.1	51.4	23.3	7.3
Lane Group LOS	F	F		D	D		C	D	B	D	C	A
Approach Delay	215.6			46.4			33.9			26.9		
Approach LOS	F			D			C			C		
Intersection Delay	62.3			X <sub>o</sub> = 0.99			Intersection LOS			E		

---

**TECHNICAL APPENDIX**

---



**HIGHWAY CAPACITY ANALYSIS**

**Old Walt Whitman Road & Old Country Road**

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	JJM			Intersection	Old Country Rd & Old Walt Whit			
Agency/Co.	ATDE			Jurisdiction				
Date Performed	7/15/08			Analysis Year	2008 Existing			
Analysis Time Period	AM Peak Hour							
Project Description AN08003: Canon - Melville								
East/West Street: Old Country Road				North/South Street: Old Walt Whitman Road				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	174	34	501	233	0		
Peak-Hour Factor, PHF	0.90	0.93	0.73	0.87	0.88	0.90		
Hourly Flow Rate, HFR (veh/h)	0	187	46	575	264	0		
Percent Heavy Vehicles	0	-	-	2	-	-		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	2	0		
Configuration	LTR			LT			TR	
Upstream Signal		1			1			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	30	0	182	4	2	0		
Peak-Hour Factor, PHF	0.88	0.90	0.89	0.50	0.50	0.90		
Hourly Flow Rate, HFR (veh/h)	34	0	204	8	4	0		
Percent Heavy Vehicles	0	0	7	50	100	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration		LTR			LTR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LT	LTR			LTR		
v (veh/h)	0	575	238			12		
C (m) (veh/h)	1312	1332	244			17		
v/c	0.00	0.43	0.98			0.71		
95% queue length	0.00	2.23	9.08			1.83		
Control Delay (s/veh)	7.7	9.7	94.9			418.3		
LOS	A	A	F			F		
Approach Delay (s/veh)	-	--	94.9			418.3		
Approach LOS	-	--	F			F		

TWO-WAY STOP CONTROL SUMMARY									
<b>General Information</b>				<b>Site Information</b>					
Analyst	JJM			Intersection	Old Country Rd & Old Walt Whit				
Agency/Co.	ATDE			Jurisdiction					
Date Performed	7/15/08			Analysis Year	2010 Future No-Build				
Analysis Time Period	AM Peak Hour								
Project Description AN08003: Canon - Melville									
East/West Street: Old Country Road				North/South Street: Old Walt Whitman Road					
Intersection Orientation: East-West				Study Period (hrs): 0.25					
<b>Vehicle Volumes and Adjustments</b>									
<b>Major Street</b>	<b>Eastbound</b>			<b>Westbound</b>					
Movement	1	2	3	4	5	6			
	L	T	R	L	T	R			
Volume (veh/h)	0	177	35	511	238	0			
Peak-Hour Factor, PHF	0.90	0.93	0.73	0.87	0.88	0.90			
Hourly Flow Rate, HFR (veh/h)	0	190	47	587	270	0			
Percent Heavy Vehicles	0	--	--	2	--	--			
Median Type	Undivided								
RT Channelized			0				0		
Lanes	0	1	0	0	2	0			
Configuration	LTR			LT			TR		
Upstream Signal		1			1				
<b>Minor Street</b>	<b>Northbound</b>			<b>Southbound</b>					
Movement	7	8	9	10	11	12			
	L	T	R	L	T	R			
Volume (veh/h)	31	0	186	4	2	0			
Peak-Hour Factor, PHF	0.88	0.90	0.89	0.50	0.50	0.90			
Hourly Flow Rate, HFR (veh/h)	35	0	208	8	4	0			
Percent Heavy Vehicles	0	0	7	50	100	0			
Percent Grade (%)	0			0					
Flared Approach		N			N				
Storage		0			0				
RT Channelized			0				0		
Lanes	0	1	0	0	1	0			
Configuration		LTR			LTR				
<b>Delay, Queue Length, and Level of Service</b>									
Approach	Eastbound	Westbound	Northbound			Southbound			
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	LTR	LT	LTR			LTR			
v (veh/h)	0	587	243			12			
C (m) (veh/h)	1305	1327	227			16			
v/c	0.00	0.44	1.07			0.75			
95% queue length	0.00	2.32	10.60			1.89			
Control Delay (s/veh)	7.8	9.8	125.5			455.0			
LOS	A	A	F			F			
Approach Delay (s/veh)	--	--	125.5			455.0			
Approach LOS	--	--	F			F			

HCS+ DETAILED REPORT													
General Information						Site Information							
Analyst	JJM					Intersection	Old Country Road & OWW						
Agency or Co.	ATDE AN08003					Area Type	All other areas						
Date Performed	8/21/08					Jurisdiction	With Town & DOT Improvements						
Time Period	AM Peak Hour					Analysis Year	2010 Future No-Build w MIT						
						Project ID	2010 Future AM No-Build with Mitigation						
Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Number of Lanes, N <sub>i</sub>	0	1	0	0	2	0	1	1	0	0	1	1	
Lane Group		LTR		DefL	TR		L	TR			LT	R	
Volume, V (vph)	0	177	35	261	87	0	31	0	186	4	303	100	
% Heavy Vehicles, %HV	0	7	0	2	9	0	0	0	7	50	2	0	
Peak-Hour Factor, PHF	0.90	0.93	0.73	0.87	0.88	0.90	0.88	0.90	0.89	0.50	0.80	0.90	
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A	
Start-up Lost Time, l <sub>i</sub>		2.0		2.0	2.0		2.0	2.0			2.0	2.0	
Extension of Effective Green, e		2.0		2.0	2.0		2.0	2.0			2.0	2.0	
Arrival Type, AT		3		3	3		3	3			3	3	
Unit Extension, UE		3.0		3.0	3.0		3.0	3.0			3.0	3.0	
Filtering/Metering, I		1.000		1.000	1.000		1.000	1.000			1.000	1.000	
Initial Unmet Demand, Q <sub>b</sub>		0.0		0.0	0.0		0.0	0.0			0.0	0.0	
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Width		12.0		12.0	12.0		12.0	12.0			12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking Maneuvers, N <sub>m</sub>													
Buses Stopping, N <sub>b</sub>		0		0	0		0	0			0	0	
Min. Time for Pedestrians, G <sub>p</sub>		3.2			3.2			3.2			3.2		
Phasing	EW Perm	02		03		04		NS Perm	06		08		
Timing	G = 35.0	G =	G =	G =	G =	G = 45.0	G =	G =	G =	G =	G =	G =	
	Y = 5	Y =	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =	Y =	Y =	Y =	
Duration of Analysis, T = 0.25							Cycle Length, C = 90.0						
Lane Group Capacity, Control Delay, and LOS Determination													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Adjusted Flow Rate, v		238		300	99		35	209			387	111	
Lane Group Capacity, c		681		361	678		424	755			918	808	
v/c Ratio, X		0.35		0.83	0.15		0.08	0.28			0.42	0.14	
Total Green Ratio, g/C		0.39		0.39	0.39		0.50	0.50			0.50	0.50	
Uniform Delay, d <sub>1</sub>		19.4		24.8	17.8		11.7	13.1			14.3	12.1	
Progression Factor, PF		1.000		1.000	1.000		1.000	1.000			1.000	1.000	
Delay Calibration, k		0.11		0.37	0.11		0.11	0.11			0.11	0.11	
Incremental Delay, d <sub>2</sub>		0.3		15.1	0.1		0.1	0.2			0.3	0.1	
Initial Queue Delay, d <sub>3</sub>		0.0		0.0	0.0		0.0	0.0			0.0	0.0	
Control Delay		19.8		39.9	17.9		11.8	13.3			14.6	12.2	
Lane Group LOS		B		D	B		B	B			B	B	
Approach Delay		19.8			34.4			13.1			14.0		
Approach LOS		B			C			B			B		
Intersection Delay		20.8			X <sub>c</sub> = 0.60			Intersection LOS			C		

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	JJM			Intersection	Old Country Rd & Old Walt Whit			
Agency/Co.	ATDE			Jurisdiction				
Date Performed	8/21/08			Analysis Year	2010 Future Build			
Analysis Time Period	AM Peak Hour							
Project Description AN08003: Canon - Melville								
East/West Street: Old Country Road				North/South Street: Old Walt Whitman Road				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	<b>Eastbound</b>			<b>Westbound</b>				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	177	35	645	238	0		
Peak-Hour Factor, PHF	0.90	0.93	0.73	0.87	0.88	0.90		
Hourly Flow Rate, HFR (veh/h)	0	190	47	741	270	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	2	0		
Configuration	LTR			LT			TR	
Upstream Signal		1			1			
<b>Minor Street</b>	<b>Northbound</b>			<b>Southbound</b>				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	31	0	191	4	2	0		
Peak-Hour Factor, PHF	0.88	0.90	0.89	0.50	0.50	0.90		
Hourly Flow Rate, HFR (veh/h)	35	0	214	8	4	0		
Percent Heavy Vehicles	0	0	7	50	100	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration		LTR			LTR			
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LT	LTR			LTR		
v (veh/h)	0	741	249			12		
C (m) (veh/h)	1305	1327	96			6		
v/c	0.00	0.56	2.59			2.00		
95% queue length	0.00	3.62	23.16			2.53		
Control Delay (s/veh)	7.8	11.1	816.3			1599		
LOS	A	B	F			F		
Approach Delay (s/veh)	--	--	816.3			1599		
Approach LOS	--	--	F			F		

**HCS+ DETAILED REPORT**

General Information				Site Information			
Analyst	JMM			Intersection	Old Country Road & OWW		
Agency or Co.	ATDE AN08003			Area Type	All other areas		
Date Performed	8/21/08			Jurisdiction	With Mitigation & Town & DOT		
Time Period	AM Peak Hour			Analysis Year	2010 Future Build w MIT		
				Project ID	2010 Future AM Build with Mitigation		

Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	0	1	0	0	2	0	1	1	0	0	1	1
Lane Group	LTR			DefL		TR	L	TR		LT		R
Volume, V (vph)	0	177	35	279	93	0	31	0	191	4	385	128
% Heavy Vehicles, %HV	0	7	0	2	9	0	0	0	7	50	2	0
Peak-Hour Factor, PHF	0.90	0.93	0.73	0.87	0.88	0.90	0.88	0.90	0.89	0.50	0.80	0.90
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, I <sub>i</sub>		2.0		2.0	2.0		2.0	2.0			2.0	2.0
Extension of Effective Green, e		2.0		2.0	2.0		2.0	2.0			2.0	2.0
Arrival Type, AT		3		3	3		3	3			3	3
Unit Extension, UE		3.0		3.0	3.0		3.0	3.0			3.0	3.0
Filtering/Metering, I		1.000		1.000	1.000		1.000	1.000			1.000	1.000
Initial Unmet Demand, Q <sub>i</sub>		0.0		0.0	0.0		0.0	0.0			0.0	0.0
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width		12.0		12.0	12.0		12.0	12.0			12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>		0		0	0		0	0			0	0
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EW Perm	02		03		04		NS Perm	06		08	
Timing	G = 35.0	G =	G =	G =	G =	G = 45.0	G =	G =	G =	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =	Y =	Y =	Y =
Duration of Analysis, T = 0.25							Cycle Length, C = 90.0					

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v		238		321	106		35	215			489	142
Lane Group Capacity, c		681		361	678		340	755			921	808
v/c Ratio, X		0.35		0.89	0.16		0.10	0.28			0.53	0.18
Total Green Ratio, g/C		0.39		0.39	0.39		0.50	0.50			0.50	0.50
Uniform Delay, d <sub>1</sub>		19.4		25.7	17.9		11.9	13.1			15.3	12.3
Progression Factor, PF		1.000		1.000	1.000		1.000	1.000			1.000	1.000
Delay Calibration, k		0.11		0.41	0.11		0.11	0.11			0.13	0.11
Incremental Delay, d <sub>2</sub>		0.3		22.7	0.1		0.1	0.2			0.6	0.1
Initial Queue Delay, d <sub>3</sub>		0.0		0.0	0.0		0.0	0.0			0.0	0.0
Control Delay		19.8		48.4	18.0		12.0	13.3			15.9	12.4
Lane Group LOS		B		D	B		B	B			B	B
Approach Delay	19.8			40.9			13.1			15.1		
Approach LOS	B			D			B			B		
Intersection Delay	22.6			X <sub>c</sub> = 0.69			Intersection LOS			C		

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	JJM			Intersection	Old Country Rd & Old Walt Whit			
Agency/Co.	ATDE			Jurisdiction				
Date Performed	7/15/08			Analysis Year	2008 Existing			
Analysis Time Period	PM Peak Hour							
Project Description: AN08003: Canon - Melville								
East/West Street: Old Country Road				North/South Street: Old Walt Whitman Road				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	341	20	127	169	1		
Peak-Hour Factor, PHF	0.90	0.81	0.79	0.78	0.87	0.25		
Hourly Flow Rate, HFR (veh/h)	0	420	25	162	194	4		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	2	0		
Configuration	LTR			LT			TR	
Upstream Signal		1			1			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	17	0	362	3	1	0		
Peak-Hour Factor, PHF	0.67	0.90	0.93	0.38	0.25	0.90		
Hourly Flow Rate, HFR (veh/h)	25	0	389	7	4	0		
Percent Heavy Vehicles	19	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach	N			N				
Storage	0			0				
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LTR			LTR				
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LT	LTR			LTR		
v (veh/h)	0	162	414			11		
C (in) (veh/h)	1387	1126	564			72		
v/c	0.00	0.14	0.75			0.15		
95% queue length	0.00	0.50	6.48			0.51		
Control Delay (s/veh)	7.6	8.7	28.2			63.8		
LOS	A	A	D			F		
Approach Delay (s/veh)	--	--	28.2			63.8		
Approach LOS	--	--	D			F		

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	JJM			Intersection	Old Country Rd & Old Walf Whit			
Agency/Co.	ATDE			Jurisdiction				
Date Performed	7/15/08			Analysis Year	2010 Future No-Build			
Analysis Time Period	PM Peak Hour							
Project Description AN08003: Canon - Melville								
East/West Street: Old Country Road				North/South Street: Old Walf Whitman Road				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	348	20	130	171	1		
Peak-Hour Factor, PHF	0.90	0.81	0.79	0.78	0.87	0.25		
Hourly Flow Rate, HFR (veh/h)	0	429	25	166	196	4		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	2	0		
Configuration	LTR			LT		TR		
Upstream Signal		1			1			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	17	0	369	3	1	0		
Peak-Hour Factor, PHF	0.67	0.90	0.93	0.38	0.25	0.90		
Hourly Flow Rate, HFR (veh/h)	25	0	396	7	4	0		
Percent Heavy Vehicles	19	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration		LTR			LTR			
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LT		LTR			LTR	
v (veh/h)	0	166		421			11	
C (m) (veh/h)	1384	1117		546			67	
w/c	0.00	0.15		0.77			0.16	
95% queue length	0.00	0.52		6.98			0.55	
Control Delay (s/veh)	7.6	8.8		30.4			69.0	
LOS	A	A		D			F	
Approach Delay (s/veh)	--	--		30.4			69.0	
Approach LOS	--	--		D			F	

HCS+ DETAILED REPORT													
General Information						Site Information							
Analyst	JJM					Intersection	Old Country Road & OWW						
Agency or Co.	ATDE AN08003					Area Type	All other areas						
Date Performed	8/21/08					Jurisdiction	With Town & DOT Improvements						
Time Period	PM Peak Hour					Analysis Year	2010 Future No-Build w MIT						
						Project ID	2010 Future PM No-Build with Mitigation						
Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Number of Lanes, N <sub>i</sub>	0	1	0	0	2	0	1	1	0	0	1	1	
Lane Group		LTR		DefL	TR		L	TR			LT	R	
Volume, V (vph)	0	348	20	72	72	1	17	0	369	3	79	79	
% Heavy Vehicles, %HV	0	2	0	0	1	0	19	0	0	0	0	0	
Peak-Hour Factor, PHF	0.90	0.81	0.79	0.78	0.87	0.25	0.67	0.90	0.93	0.38	0.80	0.90	
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A	
Start-up Lost Time, l <sub>i</sub>		2.0		2.0	2.0		2.0	2.0			2.0	2.0	
Extension of Effective Green, e		2.0		2.0	2.0		2.0	2.0			2.0	2.0	
Arrival Type, AT		3		3	3		3	3			3	3	
Unit Extension, UE		3.0		3.0	3.0		3.0	3.0			3.0	3.0	
Filtering/Metering, I		1.000		1.000	1.000		1.000	1.000			1.000	1.000	
Initial Unmet Demand, Q <sub>b</sub>		0.0		0.0	0.0		0.0	0.0			0.0	0.0	
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Width		12.0		12.0	12.0		12.0	12.0			12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking Maneuvers, N <sub>m</sub>													
Buses Stopping, N <sub>b</sub>		0		0	0		0	0			0	0	
Min. Time for Pedestrians, G <sub>p</sub>		3.2			3.2			3.2			3.2		
Phasing	EW Perm	02		03		04		NS Perm	06		08		
Timing	G = 45.0	G =	G =	G =	G =	G = 45.0	G =	G =	G =	G =	G =	G =	
	Y = 5	Y =	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =	Y =	Y =	Y =	
Duration of Analysis, T = 0.25							Cycle Length, C = 100.0						
Lane Group Capacity, Control Delay, and LOS Determination													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Adjusted Flow Rate, v		455		92	87		25	397			107	88	
Lane Group Capacity, c		833		303	841		494	727			832	727	
w/c Ratio, X		0.55		0.30	0.10		0.05	0.55			0.13	0.12	
Total Green Ratio, g/C		0.45		0.45	0.45		0.45	0.45			0.45	0.45	
Uniform Delay, d <sub>1</sub>		20.1		17.5	15.9		15.5	20.1			16.1	16.0	
Progression Factor, PF		1.000		1.000	1.000		1.000	1.000			1.000	1.000	
Delay Calibration, k		0.15		0.11	0.11		0.11	0.15			0.11	0.11	
Incremental Delay, d <sub>2</sub>		0.8		0.6	0.1		0.0	0.9			0.1	0.1	
Initial Queue Delay, d <sub>3</sub>		0.0		0.0	0.0		0.0	0.0			0.0	0.0	
Control Delay		20.8		18.1	15.9		15.5	20.9			16.1	16.1	
Lane Group LOS		C		B	B		B	C			B	B	
Approach Delay		20.8			17.0			20.6			16.1		
Approach LOS		C			B			C			B		
Intersection Delay		19.5			X <sub>v</sub> = 0.55			Intersection LOS			B		

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	JJM			Intersection	Old Country Rd & Old Walt Whitt			
Agency/Co.	ATDE			Jurisdiction				
Date Performed	8/21/08			Analysis Year	2010 Future Build			
Analysis Time Period	PM Peak Hour							
Project Description: AN08003: Canon - Melville								
East/West Street: Old Country Road				North/South Street: Old Walt Whitman Road				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	<b>Eastbound</b>			<b>Westbound</b>				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	348	20	155	171	1		
Peak-Hour Factor, PHF	0.90	0.81	0.79	0.78	0.67	0.25		
Hourly Flow Rate, HFR (veh/h)	0	429	25	198	196	4		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	2	0		
Configuration	LTR			LT		TR		
Upstream Signal		1			1			
<b>Minor Street</b>	<b>Northbound</b>			<b>Southbound</b>				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	17	0	402	3	1	0		
Peak-Hour Factor, PHF	0.67	0.90	0.93	0.38	0.25	0.90		
Hourly Flow Rate, HFR (veh/h)	25	0	432	7	4	0		
Percent Heavy Vehicles	19	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach	N			N				
Storage	0			0				
RT Channelized	0			0				
Lanes	0	1	0	0	1	0		
Configuration	LTR			LTR				
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LT	LTR			LTR		
v (veh/h)	0	198	457			11		
C (m) (veh/h)	1384	1117	538			48		
v/c	0.00	0.18	0.85			0.23		
95% queue length	0.00	0.64	8.97			0.77		
Control Delay (s/veh)	7.6	8.9	38.7			101.0		
LOS	A	A	E			F		
Approach Delay (s/veh)	--	--	38.7			101.0		
Approach LOS	--	--	E			F		

HCS+ DETAILED REPORT												
General Information						Site Information						
Analyst	JJM					Intersection	Old Country Road & OWW					
Agency or Co.	ATDE AN08003					Area Type	All other areas					
Date Performed	8/21/08					Jurisdiction						
Time Period	PM Peak Hour					Analysis Year	2010 Future Build w MIT					
						Project ID	2010 Future PM Build with Mitigation					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N <sub>i</sub>	0	1	0	0	2	0	1	1	0	0	1	1
Lane Group	LTR			DofL TR			L TR			LT R		
Volume, V (vph)	0	348	20	74	75	1	17	0	402	3	89	89
% Heavy Vehicles, %HV	0	2	0	0	1	0	19	0	0	0	0	0
Peak-Hour Factor, PHF	0.90	0.81	0.79	0.78	0.87	0.25	0.67	0.90	0.93	0.38	0.80	0.90
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, I <sub>t</sub>		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Extension of Effective Green, e		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Arrival Type, AT		3		3	3		3	3		3	3	
Unit Extension, UE		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Filtering/Metering, I		1.000		1.000	1.000		1.000	1.000		1.000	1.000	
Initial Unmet Demand, Q <sub>0</sub>		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width		12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N <sub>m</sub>												
Buses Stopping, N <sub>b</sub>		0		0	0		0	0		0	0	
Min. Time for Pedestrians, G <sub>p</sub>	3.2			3.2			3.2			3.2		
Phasing	EW Perm	02	03	04	NS Perm	06	07	08				
Timing	G = 45.0	G =	G =	G =	G = 45.0	G =	G =	G =				
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	455			95 90			25 432			119 99		
Lane Group Capacity, c	833			303 841			489 727			832 727		
v/c Ratio, X	0.55			0.31 0.11			0.05 0.59			0.14 0.14		
Total Green Ratio, g/C	0.45			0.45 0.45			0.45 0.45			0.45 0.45		
Uniform Delay, d <sub>1</sub>	20.1			17.6 15.9			15.5 20.6			16.2 16.1		
Progression Factor, PF	1.000			1.000 1.000			1.000 1.000			1.000 1.000		
Delay Calibration, k	0.15			0.11 0.11			0.11 0.18			0.11 0.11		
Incremental Delay, d <sub>2</sub>	0.8			0.6 0.1			0.0 1.3			0.1 0.1		
Initial Queue Delay, d <sub>3</sub>	0.0			0.0 0.0			0.0 0.0			0.0 0.0		
Control Delay	20.8			18.2 15.0			15.5 22.0			16.2 16.2		
Lane Group LOS	C			B B			B C			B B		
Approach Delay	20.8			17.1			21.6			16.2		
Approach LOS	C			B			C			B		
Intersection Delay	19.8			X <sub>c</sub> = 0.57			Intersection LOS			B		

---

**TECHNICAL APPENDIX**

---



**HIGHWAY CAPACITY ANALYSIS**

**Proposed Site Driveways**

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	JJM			Intersection	LIE S Service Road & Site Driv			
Agency/Co.	ATDE			Jurisdiction				
Date Performed	8/20/08			Analysis Year	2010 Future Build			
Analysis Time Period	PM Peak Hour							
Project Description AN08003: Canot - Melville								
East/West Street: LIE S. Service Road				North/South Street: Site Driveway				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		1045	0					
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	0	1161	0	0	0	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0				0	
Lanes	0	2	0	0	0	0		
Configuration		T	TR					
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)			312					
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	0	0	346	0	0	0		
Percent Heavy Vehicles	0	0	2	0	0	0		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0				0	
Lanes	0	0	1	0	0	0		
Configuration			R					
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration					R			
v (veh/h)					346			
C (m) (veh/h)					514			
v/c					0.67			
95% queue length					4.99			
Control Delay (s/veh)					25.2			
LOS					D			
Approach Delay (s/veh)	--	--	25.2					
Approach LOS	--	--	D					

---

**TECHNICAL APPENDIX**

---



**SYNCHRO CAPACITY ANALYSIS OUTPUT SHEETS**

---

**TECHNICAL APPENDIX**

---



**SYNCHRO ANALYSIS**

**Sweet Hollow Road/Pinelawn Road & Old Walt Whitman Road**

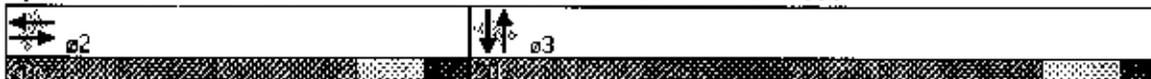


Lane Group	EFL	EET	EBR	WBL	WET	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↑	↗		↕			↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1984	0	1636	1712	1478	0	1926	0	0	2072	0
Flt Permitted		0.937		0.461				0.873			0.919	
Satd. Flow (perm)	0	1870	0	794	1712	1478	0	1693	0	0	1918	0
Satd. Flow (RTOR)		66				184		64			10	
Volume (vph)	26	108	100	211	170	145	24	140	64	66	485	35
Lane Group Flow (vph)	0	345	0	234	279	184	0	283	0	0	670	0
Turn Type	Perm			Perm		Perm	Perm				Perm	
Protected Phases		2			2			3				3
Permitted Phases	2			2		2	3				3	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	20.0	30.0	30.0	0.0	30.0	30.0	0.0
Act Effct Green (s)		16.0		16.0	16.0	16.0		26.0			26.0	
Actuated g/C Ratio		0.32		0.32	0.32	0.32		0.52			0.52	
v/c Ratio		0.54		0.92	0.51	0.31		0.31			0.67	
Control Delay		14.8		62.7	17.8	4.2		8.3			12.8	
Queue Delay		0.0		0.0	0.0	0.0		0.0			0.0	
Total Delay		14.8		62.7	17.8	4.2		8.3			12.8	
LOS		B		E	B	A		A			B	
Approach Delay		14.8			29.3			6.3			12.8	
Approach LOS		B			C			A			B	

**Intersection Summary**

Cycle Length: 50  
 Actuated Cycle Length: 50  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 18.0  
 Intersection Capacity Utilization: 77.2%  
 Analysis Period (min): 15  
 Intersection LOS: B  
 ICU Level of Service: D

**Splits and Phases: 3: Sweet Hollow Road & Old Walt Whitman Road**



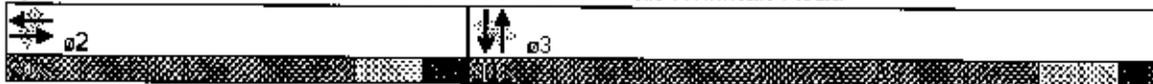


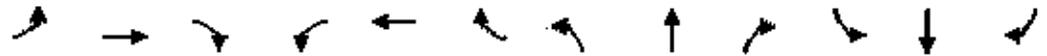
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↑	↗		↕			↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1983	0	1636	1712	1478	0	1926	0	0	2072	0
Flt. Permitted		0.935		0.455				0.873			0.917	
Satd. Flow (perm)	0	1866	0	783	1712	1478	0	1693	0	0	1914	0
Satd. Flow (RTOR)		65				187		65			10	
Volume (vph)	27	110	102	215	173	148	24	143	65	67	495	36
Lane Group Flow (vph)	0	351	0	239	284	187	0	289	0	0	684	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			2			3			3	
Permitted Phases	2			2		2	3			3		
Total Split (s)	20.0	20.0	0.0	20.0	20.0	20.0	30.0	30.0	0.0	30.0	30.0	0.0
Act Effct Green (s)		16.0		16.0	16.0	16.0		26.0			26.0	
Actuated g/C Ratio		0.32		0.32	0.32	0.32		0.52			0.52	
v/c Ratio		0.55		0.95	0.52	0.31		0.32			0.68	
Control Delay		15.1		69.7	18.0	4.2		6.4			13.2	
Queue Delay		0.0		0.0	0.0	0.0		0.0			0.0	
Total Delay		15.1		69.7	18.0	4.2		6.4			13.2	
LOS		B		E	B	A		A			B	
Approach Delay		15.1			31.8			6.4			13.2	
Approach LOS		B			C			A			B	

**Intersection Summary**

Cycle Length: 50  
 Actuated Cycle Length: 50  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 19.1  
 Intersection LOS: B  
 Intersection Capacity Utilization: 78.7%  
 ICU Level of Service: D  
 Analysis Period (min) 15

Splits and Phases: 3: Sweet Hollow Road & Old Walt Whitman Road



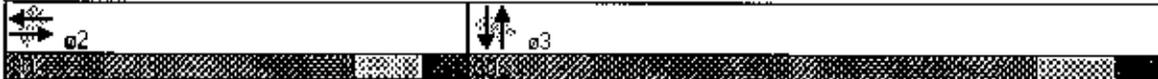


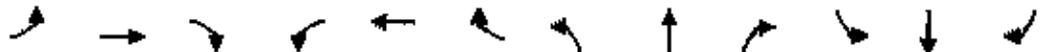
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗	↗		↕			↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1983	0	1636	1712	1478	0	1926	0	0	2072	0
Flt Permitted		0.935		0.455				0.873			0.917	
Satd. Flow (perm)	0	1866	0	783	1712	1478	0	1693	0	0	1914	0
Satd. Flow (RTOR)		65				187		65			10	
Volume (vph)	27	110	102	215	173	148	24	143	65	67	495	36
Lane Group Flow (vph)	0	351	0	239	284	187	0	289	0	0	684	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			2			3				3
Permitted Phases	2			2		2	3			3		
Total Split (s)	20.0	20.0	0.0	20.0	20.0	20.0	30.0	30.0	0.0	30.0	30.0	30.0
Act Effct Green (s)		16.0		16.0	16.0	16.0		26.0			25.0	
Actuated g/C Ratio		0.32		0.32	0.32	0.32		0.52			0.52	
w/c Ratio		0.55		0.95	0.52	0.31		0.32			0.68	
Control Delay		15.1		69.7	18.0	4.2		6.4			13.2	
Queue Delay		0.0		0.0	0.0	0.0		0.0			0.0	
Total Delay		15.1		69.7	18.0	4.2		6.4			13.2	
LOS		B		E	B	A		A			B	
Approach Delay		15.1			31.8			6.4			13.2	
Approach LOS		B			C			A			B	

**Intersection Summary**

Cycle Length: 50  
 Actuated Cycle Length: 50  
 Control Type: Actuated-Uncoordinated  
 Maximum w/c Ratio: 0.95  
 Intersection Signal Delay: 19.1  
 Intersection LOS: B  
 Intersection Capacity Utilization: 78.7%  
 CU Level of Service: D  
 Analysis Period (min): 15

Splits and Phases: 3: Sweet Hollow Road & Old Walt Whitman Road



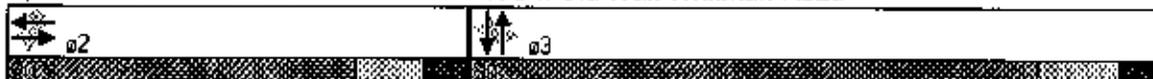


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↖		↗		↕			↕		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1983	0	1636	1712	1478	0	1927	0	0	2084	0
Flt Permitted	0.935		0.455				0.865			0.930		
Satd. Flow (perm)	0	1866	0	783	1712	1478	0	1679	0	0	1947	0
Satd. Flow (RTOR)	65				187		63			8		
Volume (vph)	27	110	102	215	173	148	24	148	65	67	629	36
Lane Group Flow (vph)	0	351	0	239	284	187	0	294	0	0	833	0
Turn Type	Perm		Perm		Perm		Perm			Perm		
Protected Phases	2				2		3			3		
Permitted Phases	2		2		2		3			3		
Total Spill (s)	20.0	20.0	0.0	20.0	20.0	20.0	30.0	30.0	0.0	30.0	30.0	0.0
Act Effct Green (s)	16.0		16.0		16.0		26.0			26.0		
Actuated g/C Ratio	0.32		0.32		0.32		0.52			0.52		
w/c Ratio	0.55		0.95		0.52		0.31			0.33		0.82
Control Delay	15.1		69.7		18.0		4.2			6.5		19.2
Queue Delay	0.0		0.0		0.0		0.0			0.0		0.0
Total Delay	15.1		69.7		18.0		4.2			6.5		19.2
LOS	B		E		B		A			A		B
Approach Delay	15.1				31.8		6.5			19.2		
Approach LOS	B				C		A			B		

**Intersection Summary**

Cycle Length: 50  
 Actuated Cycle Length: 50  
 Control Type: Actuated-Uncoordinated  
 Maximum w/c Ratio: 0.95  
 Intersection Signal Delay: 20.9      Intersection LOS: C  
 Intersection Capacity Utilization: 85.6%      ICU Level of Service: E  
 Analysis Period (min) 15

Splits and Phases: 3: Sweet Hollow Road & Old Walt Whitman Road





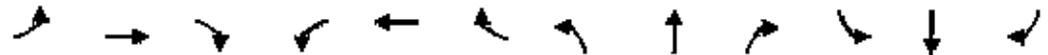
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SBT	SEB
Lane Configurations	↕			↕			↕			↕		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1983	0	1636	1712	1478	0	1927	0	0	2084	0
Flt Permitted		0.989		0.496				0.864			0.928	
Satd. Flow (perm)	0	1874	0	854	1712	1478	0	1677	0	0	1943	0
Satd. Flow (RTOR)		72				187		66			7	
Volume (vph)	27	110	102	215	173	148	24	148	85	67	629	36
Lane Group Flow (vph)	0	861	0	239	284	187	0	294	0	0	833	0
Turn Type	Perm			Perm			Perm	Perm		Perm		
Protected Phases		2			2			3				3
Permitted Phases	2			2		2	3			3		
Total Split (s)	23.0	23.0	0.0	23.0	23.0	23.0	27.0	27.0	0.0	27.0	27.0	0.0
Act Effct Green (s)		19.0		19.0	19.0	19.0		23.0			23.0	
Actuated g/C Ratio		0.38		0.38	0.38	0.38		0.46			0.46	
v/c Ratio		0.46		0.74	0.44	0.28		0.37			0.93	
Control Delay		11.6		31.0	14.2	3.4		6.6			32.8	
Queue Delay		0.0		0.0	0.0	0.0		0.0			0.0	
Total Delay		11.6		31.0	14.2	3.4		6.6			32.8	
LOS		B		C	B	A		A			C	
Approach Delay		11.6			17.0			6.6			32.8	
Approach LOS		B			B			A			C	

**Intersection Summary**

Cycle Length: 50	
Actuated Cycle Length: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 21.0	Intersection LOS: C
Intersection Capacity Utilization: 85.6%	ICU Level of Service: B
Analysis Period (min) 15	

**Splits and Phases: 3: Sweet Hollow Road & Old Walt Whitman Road**



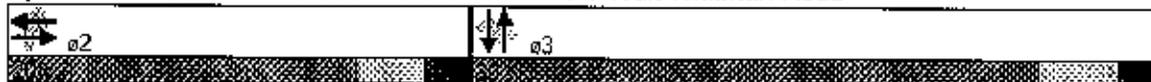


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NET	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↕	↗		↕			↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	2078	0	1668	1900	1507	0	2005	0	0	2047	0
Flt Permitted		0.929		0.657				0.898			0.798	
Satd. Flow (perm)	0	1946	0	1154	1900	1507	0	1815	0	0	1654	0
Satd. Flow (RTOR)		27				115		89			19	
Volume (vph)	19	100	31	102	169	98	95	250	207	49	126	24
Lane Group Flow (vph)	0	167	0	132	217	115	0	688	0	0	255	0
Turn Type	Perm			Perm		Perm	Perm				Perm	
Protected Phases		2			2			3				3
Permitted Phases	2			2		2	3				3	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	20.0	30.0	30.0	0.0	30.0	30.0	0.0
Act Effect Green (s)		16.0		16.0	16.0	16.0		26.0			26.0	
Actuated g/C Ratio		0.32		0.32	0.32	0.32		0.52			0.52	
v/c Ratio		0.29		0.36	0.36	0.21		0.70			0.29	
Control Delay		12.4		16.5	15.2	4.4		12.4			7.4	
Queue Delay		0.0		0.0	0.0	0.0		0.0			0.0	
Total Delay		12.4		16.5	15.2	4.4		12.4			7.4	
LOS		B		B	B	A		B			A	
Approach Delay		12.4			12.9			12.4			7.4	
Approach LOS		B			B			B			A	

**Intersection Summary**

Cycle Length: 50  
 Actuated Cycle Length: 50  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 11.8  
 Intersection Capacity Utilization: 64.7%  
 Analysis Period (min): 15  
 Intersection LOS: B  
 ICU Level of Service: C

**Splits and Phases: 3: Sweet Hollow Road & Old Walt Whitman Road**



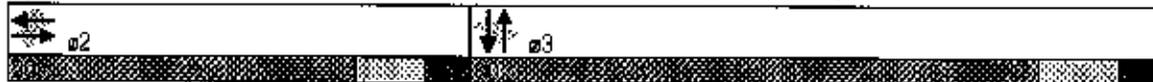


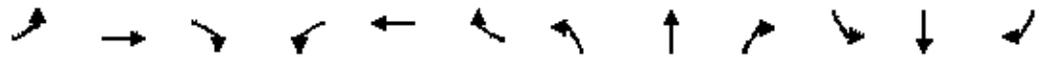
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SET	SEB
Lane Configurations	↕			↕			↕			↕		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	2076	0	1668	1900	1507	0	2005	0	0	2047	0
Flt Permitted		0.950		0.651				0.897			0.796	
Satd. Flow (perm)	0	1947	0	1143	1900	1507	0	1813	0	0	1649	0
Satd. Flow (RTOR)		28				118		88			19	
Volume (vph)	19	102	32	104	172	100	97	255	211	50	129	24
Lane Group Flow (vph)	0	191	0	135	221	118	0	701	0	0	259	0
Turn Type	Perm			Perm			Perm		Perm		Perm	
Protected Phases		2			2			3				3
Permitted Phases	2			2		2	3			3		
Total Spill (s)	20.0	20.0	0.0	20.0	20.0	20.0	30.0	30.0	0.0	30.0	30.0	0.0
Act Effct Green (s)		16.0		16.0	16.0	16.0		26.0			26.0	
Actuated g/C Ratio		0.32		0.32	0.32	0.32		0.52			0.52	
v/c Ratio		0.30		0.37	0.36	0.21		0.71			0.30	
Control Delay		12.4		16.8	15.2	4.3		12.9			7.4	
Queue Delay		0.0		0.0	0.0	0.0		0.0			0.0	
Total Delay		12.4		16.8	15.2	4.3		12.9			7.4	
LOS		B		B	B	A		B			A	
Approach Delay		12.4			13.0			12.9			7.4	
Approach LOS		B			B			B			A	

**Intersection Summary**

Cycle Length: 50  
 Actuated Cycle Length: 50  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 12.0  
 Intersection LOS: B  
 Intersection Capacity Utilization: 65.7%  
 I/O Level of Service: C  
 Analysis Period (min): 15

Splits and Phases: 3: Sweet Hollow Road & Old Walt Whitman Road



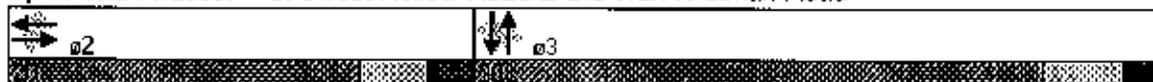


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↖			↗			↕		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	2076	0	1668	1900	1507	0	2005	0	0	2047	0
Flt Permitted	0.980			0.661			0.897			0.796		
Satd. Flow (perm)	0	1947	0	1143	1900	1507	0	1813	0	0	1649	0
Satd. Flow (RTOR)	28			118			86			19		
Volume (vph)	19	102	32	104	172	100	97	255	211	50	129	24
Lane Group Flow (vph)	0	191	0	136	221	118	0	701	0	0	259	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	2			2			3			3		
Permitted Phases	2			2			3			3		
Total Split (s)	20.0	20.0	0.0	20.0	20.0	20.0	80.0	30.0	0.0	30.0	30.0	0.0
Act Effct Green (s)	16.0			16.0			16.0			26.0		
Actuated g/C Ratio	0.32			0.32			0.32			0.52		
v/c Ratio	0.30			0.37			0.36			0.71		
Control Delay	12.4			16.8			15.2			4.3		
Queue Delay	0.0			0.0			0.0			0.0		
Total Delay	12.4			16.8			15.2			4.3		
LOS	B			B			A			B		
Approach Delay	12.4			13.0			12.9			7.4		
Approach LOS	B			B			B			A		

**Intersection Summary**

Cycle Length: 50  
 Actuated Cycle Length: 50  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 12.0      Intersection LOS: B  
 Intersection Capacity Utilization: 65.7%      ICU Level of Service: C  
 Analysis Period (min) 15

Splits and Phases: 3: Sweet Hollow Road & Old Walt Whitman Road



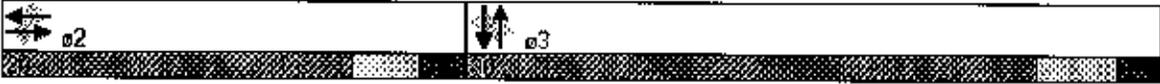


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↑	↗		↕			↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	2076	0	1668	1900	1507	0	2012	0	0	2052	0
Flt Permitted		0.930		0.651				0.896			0.805	
Satd. Flow (perm)	0	1947	0	1143	1900	1507	0	1817	0	0	1670	0
Satd. Flow (RTOR)		28				118		81			17	
Volume (vph)	19	102	32	104	172	100	97	288	211	50	154	24
Lane Group Flow (vph)	0	191	0	135	221	118	0	743	0	0	291	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			2			3			3	
Permitted Phases	2			2		2	3			3		
Total Split (s)	20.0	20.0	0.0	20.0	20.0	20.0	30.0	30.0	0.0	30.0	30.0	0.0
Act Effct Green (s)		16.0		16.0	16.0	16.0		26.0			26.0	
Actuated G/C Ratio		0.32		0.32	0.32	0.32		0.52			0.52	
v/c Ratio		0.30		0.37	0.36	0.21		0.76			0.33	
Control Delay		12.4		16.8	15.2	4.3		15.0			7.8	
Queue Delay		0.0		0.0	0.0	0.0		0.0			0.0	
Total Delay		12.4		16.8	15.2	4.3		15.0			7.8	
LOS		B		B	B	A		B			A	
Approach Delay		12.4		13.0				15.0			7.8	
Approach LOS		B		B				B			A	

**Intersection Summary**

Cycle Length: 50  
 Actuated Cycle Length: 50  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 12.9      Intersection LOS: B  
 Intersection Capacity Utilization: 68.5%      ICU Level of Service: C  
 Analysis Period (min) 15

Splits and Phases: 3: Sweet Hollow Road & Old Walt Whitman Road



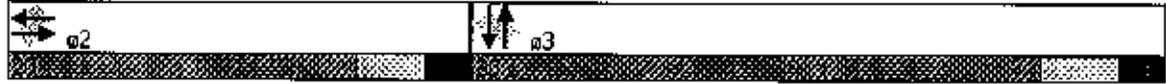


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↑	↗		↕			↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	2076	0	1668	1900	1507	0	2012	0	0	2052	0
Flt. Permitted		0.930		0.661				0.896			0.805	
Satd. Flow (perm)	0	1947	0	1143	1900	1507	0	1817	0	0	1670	0
Satd. Flow (RTOR)		28				118		81			17	
Volume (vph)	19	102	32	104	172	100	97	288	211	50	154	24
Lane Group Flow (vph)	0	191	0	135	221	118	0	743	0	0	291	0
Turn Type		Perm		Perm		Perm	Perm				Perm	
Protected Phases		2			2			3				3
Permitted Phases	2			2		2	3			3		
Total Split (s)	20.0	20.0	0.0	20.0	20.0	20.0	30.0	30.0	0.0	30.0	30.0	0.0
Act Effct Green (s)		16.0		16.0	16.0	16.0		26.0			26.0	
Actuated g/C Ratio		0.32		0.32	0.32	0.32		0.52			0.52	
v/c Ratio		0.30		0.37	0.36	0.21		0.76			0.33	
Control Delay		12.4		16.8	15.2	4.3		15.0			7.8	
Queue Delay		0.0		0.0	0.0	0.0		0.0			0.0	
Total Delay		12.4		16.8	15.2	4.3		15.0			7.8	
LOS		B		B	B	A		B			A	
Approach Delay		12.4			13.0			15.0			7.8	
Approach LOS		B			B			B			A	

**Intersection Summary**

Cycle Length: 50  
 Actuated Cycle Length: 50  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 12.9      Intersection LOS: B  
 Intersection Capacity Utilization: 68.6%      ICU Level of Service: C  
 Analysis Period (min): 15

Splits and Phases: 3: Sweet Hollow Road & Old Walt Whitman Road



---

**TECHNICAL APPENDIX**

---



**SYNCHRO ANALYSIS**

**Long Island Expressway North Service Road & Old Walt Whitman Road**

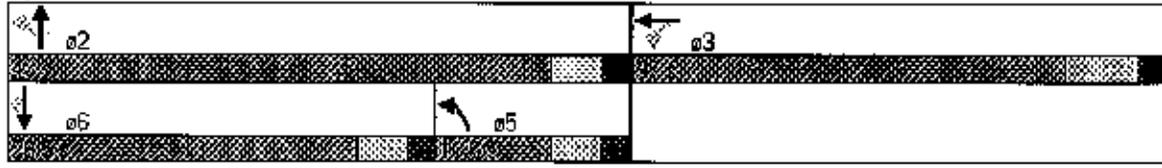


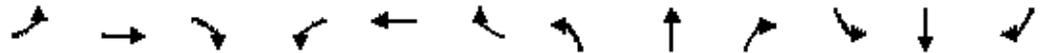
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑	↑	↑			↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3366	1583	1604	1722	0	0	1705	1574
Flt Permitted					0.998		0.416					
Satd. Flow (perm)	0	0	0	0	3366	1583	703	1722	0	0	1705	1574
Satd. Flow (RTOR)							58					94
Volume (vph)	0	0	0	56	1032	128	220	563	0	0	273	147
Lane Group Flow (vph)	0	0	0	0	1220	142	242	751	0	0	321	186
Turn Type				Perm		Free	pm+pt					Perm
Protected Phases					3		5	2			6	
Permitted Phases				3		Free	2					6
Total Split (s)	0.0	0.0	0.0	37.0	37.0	0.0	13.5	43.0	0.0	0.0	29.5	29.5
Act Effct Green (s)					33.0	80.0	39.0	39.0			25.5	25.5
Actuated g/C Ratio					0.41	1.00	0.49	0.49			0.32	0.32
v/c Ratio					0.88	0.09	0.54	0.90			0.59	0.33
Control Delay					20.9	0.0	12.7	20.1			20.2	12.3
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					20.9	0.0	12.7	20.1			20.2	12.3
LOS					C	A	B	C			C	B
Approach Delay					18.7			16.3			22.4	
Approach LOS					B			B			C	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 19.2      Intersection LOS: B  
 Intersection Capacity Utilization 84.7%      ICU Level of Service E  
 Analysis Period (min): 15

**Splits and Phases: 4: LIE North Service Road & Old Walt Whitman Road**





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑	↑	↑			↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3366	1583	1776	1783	0	0	1827	1524
Flt Permitted					0.998		0.406					
Satd. Flow (perm)	0	0	0	0	3366	1583	759	1783	0	0	1827	1524
Satd. Flow (RTOR)							58					90
Volume (vph)	0	0	0	57	1053	131	224	575	0	0	280	150
Lane Group Flow (vph)	0	0	0	0	1244	146	246	767	0	0	329	190
Turn Type				Perm		Free	pm+pt					Perm
Protected Phases					3		5	2			6	
Permitted Phases				3		Free	2					6
Total Split (s)	0.0	0.0	0.0	37.0	37.0	0.0	19.5	48.0	0.0	0.0	29.5	29.5
Act Effct Green (s)					33.0	80.0	39.0	39.0			25.5	25.5
Actuated g/C Ratio					0.41	1.00	0.49	0.49			0.32	0.32
v/c Ratio					0.90	0.09	0.50	0.88			0.57	0.35
Control Delay					21.9	0.0	11.8	21.5			27.2	19.2
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					21.9	0.0	11.8	21.5			27.2	19.2
LOS					C	A	B	C			C	B
Approach Delay					19.6			19.1			22.1	
Approach LOS					B			B			C	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 19.9      Intersection LOS: B  
 Intersection Capacity Utilization 97.1%      ICU Level of Service F  
 Analysis Period (min): 15

**Splits and Phases: 4: LIE North Service Road & Old Walt Whitman Road**





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					4↑	↑	↑	↑			↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3366	1583	1776	1783	0	0	1827	1524
Flt Permitted					0.998		0.406					
Satd. Flow (perm)	0	0	0	0	3366	1583	759	1783	0	0	1827	1524
Satd. Flow (RTOR)							58					00
Volume (vph)	0	0	0	57	1053	131	224	575	0	0	280	150
Lane Group Flow (vph)	0	0	0	0	1244	146	246	767	0	0	329	190
Turn Type				Perm		Free	pm+pt					Perm
Protected Phases					3		5	2			6	
Permitted Phases				3		Free	2					6
Total Split (s)	0.0	0.0	0.0	37.0	37.0	0.0	13.5	43.0	0.0	0.0	29.5	29.5
Act Effct Green (s)					33.0	80.0	39.0	39.0			25.5	25.5
Actuated g/C Ratio					0.41	1.00	0.49	0.49			0.32	0.32
v/c Ratio					0.90	0.09	0.50	0.88			0.57	0.35
Control Delay					19.2	0.1	11.8	21.5			27.2	13.2
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					19.2	0.1	11.8	21.5			27.2	13.2
LOS					B	A	B	C			C	B
Approach Delay					17.2			19.1			22.1	
Approach LOS					B			B			C	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Control Type: Actuated/Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 18.7

Intersection LOS: B

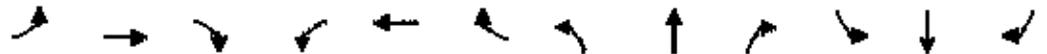
Intersection Capacity Utilization 97.1%

ICU Level of Service F

Analysis Period (min): 15

Splits and Phases: 4: LIE North Service Road & Old Walt Whitman Road





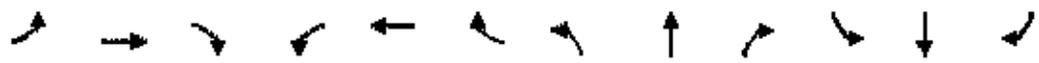
Lane Group	ECL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Lane Configurations					↕↕	↗	↖	↕			↕	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3330	1583	1776	1783	0	0	1827	1524
Flt Permitted					0.969		0.219					
Satd. Flow (perm)	0	0	0	0	3330	1583	409	1783	0	0	1827	1524
Satd. Flow (RTOR)						48						44
Volume (vph)	0	0	0	302	1053	131	301	580	0	0	414	150
Lane Group Flow (vph)	0	0	0	0	1508	146	831	773	0	0	487	190
Turn Type				Perm		Free	pm+pt					Perm
Protected Phases					3		5	2			6	
Permitted Phases				3		Free	2					6
Total Split (s)	0.0	0.0	0.0	37.0	37.0	0.0	13.5	43.0	0.0	0.0	29.5	29.5
Act Effct Green (s)					33.0	80.0	39.0	39.0			25.5	25.5
Actuated g/C Ratio					0.41	1.00	0.28	0.49			0.32	0.32
v/c Ratio					1.10	0.09	0.91	0.89			0.84	0.37
Control Delay					67.2	0.0	33.9	21.2			40.3	18.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					67.2	0.0	33.9	21.2			40.3	18.4
LOS					E	A	C	C			D	B
Approach Delay					61.3			25.0			34.1	
Approach LOS					E			C			C	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.10  
 Intersection Signal Delay: 44.3  
 Intersection LOS: D  
 Intersection Capacity Utilization 113.3%  
 ICU Level of Service H  
 Analysis Period (min) 15

**Splits and Phases: 4: LIE North Service Road & Old Wait Whitman Road**



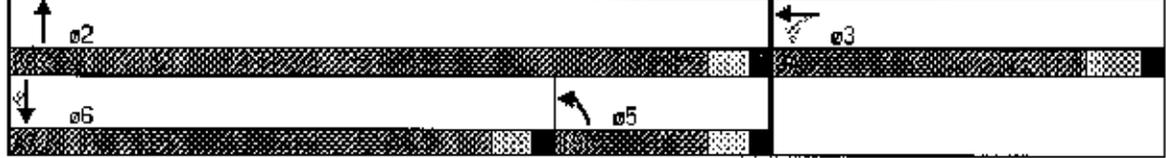


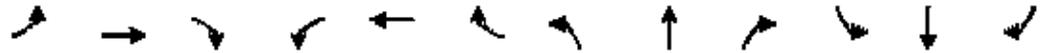
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SBT	SEB
Lane Configurations				↙	↑↑↑	↗	↙↗	↑			↑	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	1671	4848	1583	3446	1783	0	0	1827	1524
RT Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1671	4848	1583	3446	1783	0	0	1827	1524
Satd. Flow (RTOR)							70					22
Volume (vph)	0	0	0	302	1053	131	301	580	0	0	414	150
Lane Group Flow (vph)	0	0	0	325	1183	148	331	773	0	0	487	190
Turn Type				Perm		Free	Prot					Perm
Protected Phases					3		5	2				6
Permitted Phases				3		Free						6
Total Split (s)	0.0	0.0	0.0	34.0	34.0	70.0	19.0	66.0	0.0	0.0	47.0	47.0
Act Effct Green (s)				30.0	30.0	100.0	15.0	62.0			43.0	43.0
Actuated v/c Ratio				0.30	0.30	1.00	0.18	0.62			0.43	0.43
v/c Ratio				0.65	0.81	0.09	0.64	0.70			0.62	0.28
Control Delay				18.0	18.7	0.1	33.4	9.0			26.4	17.7
Queue Delay				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay				18.0	18.7	0.1	33.4	9.0			26.4	17.7
LOS				B	B	A	C	A			C	B
Approach Delay					16.9			16.4			24.0	
Approach LOS					B			B			C	

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 58 (58%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 18.1      Intersection LOS: B  
 Intersection Capacity Utilization 86.9%      ICU Level of Service E  
 Analysis Period (min): 15

Splits and Phases: 4: LIE North Service Road & Old Walt Whitman Road



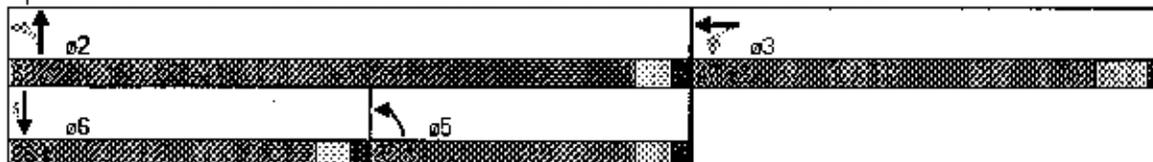


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕	↗	↖	↑			↑	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3497	1583	1652	1773	0	0	1739	1652
Flt Permitted					0.998		0.426					
Satd. Flow (perm)	0	0	0	0	3497	1583	741	1773	0	0	1739	1652
Satd. Flow (RTOR)							22					97
Volume (vph)	0	0	0	34	1103	69	447	209	0	0	222	446
Lane Group Flow (vph)	0	0	0	0	1189	77	471	299	0	0	264	519
Turn Type				Perm		Free	pm+pt					Perm
Protected Phases					3		5	2				6
Permitted Phases				3		Free	2					6
Total Split (s)	0.0	0.0	0.0	47.0	47.0	0.0	32.0	68.0	0.0	0.0	36.0	36.0
Act Effct Green (s)					43.0	115.0	64.0	64.0			32.0	32.0
Actuated g/C Ratio					0.37	1.00	0.55	0.55			0.28	0.28
v/c Ratio					0.91	0.05	0.74	0.30			0.55	0.98
Control Delay					56.8	0.0	16.5	8.6			40.3	68.5
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					56.8	0.0	16.5	8.6			40.3	68.5
LOS					E	A	B	A			D	E
Approach Delay					53.3			13.5			59.0	
Approach LOS					D			B			E	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 44.0      Intersection LOS: D  
 Intersection Capacity Utilization 93.9%      ICU Level of Service F  
 Analysis Period (min): 15

Splits and Phases: 4: LIE North Service Road & Old Walt Whitman Road



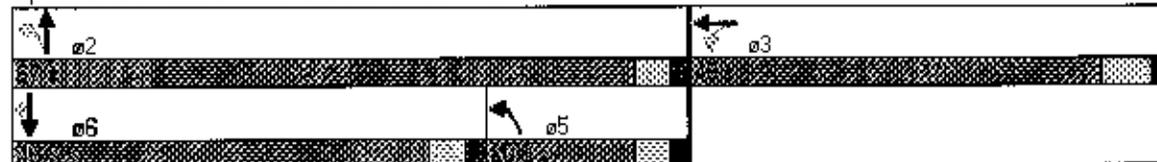


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑	↘	↑			↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3497	1583	1829	1837	0	0	1863	1599
Flt Permitted					0.998		0.483					
Satd. Flow (perm)	0	0	0	0	3497	1583	930	1837	0	0	1863	1599
Satd. Flow (RTOR)							22					60
Volume (vph)	0	0	0	35	1125	70	456	213	0	0	226	455
Lane Group Flow (vph)	0	0	0	0	1214	78	480	304	0	0	269	529
Turn Type				Perm		Free	pm+pt					Perm
Protected Phases					3		5	2			6	
Permitted Phases				3		Free	2					6
Total Split (s)	0.0	0.0	0.0	48.0	48.0	0.0	20.3	67.0	0.0	0.0	46.7	46.7
Act Effct Green (s)					44.0	115.0	63.0	63.0			42.7	42.7
Actuated g/C Ratio					0.98	1.00	0.55	0.55			0.37	0.37
v/c Ratio					0.91	0.05	0.75	0.30			0.39	0.84
Control Delay					66.7	0.0	18.0	5.5			28.7	42.6
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					66.7	0.0	18.0	5.5			28.7	42.6
LOS					E	A	B	A			C	D
Approach Delay					52.4			13.2			37.9	
Approach LOS					D			B			D	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 37.7      Intersection LOS: D  
 Intersection Capacity Utilization 97.1%      ICU Level of Service F  
 Analysis Period (min): 15

**Splits and Phases: 4: LIE North Service Road & Old Walt Whitman Road**





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB
Lane Configurations					↕↕	↗	↖	↑			↑	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3497	1583	1829	1837	0	0	1863	1599
Flt Permitted					0.998		0.419					
Satd. Flow (perm)	0	0	0	0	3497	1583	807	1837	0	0	1863	1599
Satd. Flow (RTOR)							22					93
Volume (vph)	0	0	0	35	1125	70	456	213	0	0	226	455
Lane Group Flow (vph)	0	0	0	0	1214	78	480	304	0	0	269	529
Turn Type				Perm		Free	pm+pt					Perm
Protected Phases					3		5	2				6
Permitted Phases				3		Free	2					6
Total Split (s)	0.0	0.0	0.0	47.0	47.0	0.0	32.0	68.0	0.0	0.0	36.0	36.0
Act Effct Green (s)				43.0	115.0	64.0	64.0				32.0	32.0
Actuated g/C Ratio				0.37	1.00	0.56	0.56				0.28	0.28
v/c Ratio				0.93	0.05	0.69	0.30				0.52	1.03
Control Delay				62.9	0.0	8.6	2.7				39.3	82.8
Queue Delay				0.0	0.0	0.0	0.0				0.0	0.0
Total Delay				62.9	0.0	8.6	2.7				39.3	82.8
LOS				E	A	A	A				D	F
Approach Delay				59.1			6.3				68.2	
Approach LOS				E			A				E	

Intersection Summary

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 47.2

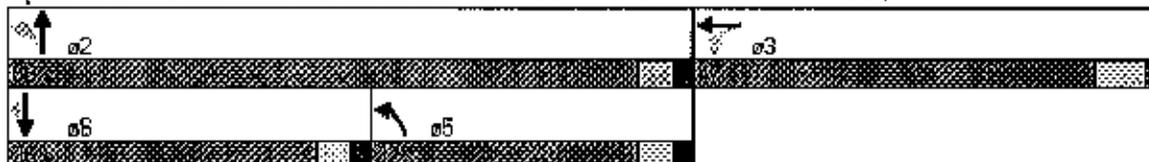
Intersection LOS: D

Intersection Capacity Utilization 97.6%

ICU Level of Service F

Analysis Period (min): 15

Splits and Phases: 4: LIE North Service Road & Old Walt Whitman Road



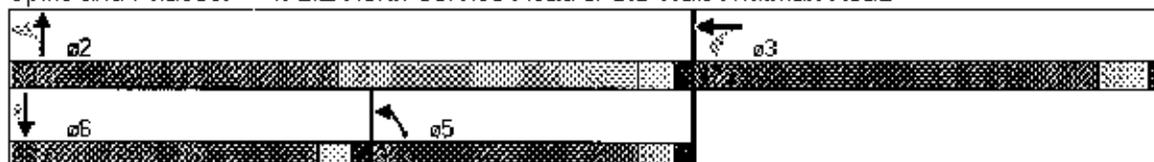


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕	↗	↖	↑			↑	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3488	1583	1829	1837	0	0	1863	1599
Flt Permitted					0.996		0.376					
Satd. Flow (perm)	0	0	0	0	3488	1583	724	1837	0	0	1863	1599
Satd. Flow (RTOR)							21					20
Volume (vph)	0	0	0	80	1125	70	959	246	0	0	251	455
Lane Group Flow (vph)	0	0	0	0	1267	78	1009	351	0	0	299	529
Turn Type				Perm		Free	pm+pt					Perm
Protected Phases					3		5	2			6	
Permitted Phases				3		Free	2					6
Total Split (s)	0.0	0.0	0.0	47.0	47.0	0.0	32.0	38.0	0.0	0.0	36.0	36.0
Act Effct Green (s)					43.0	115.0	64.0	64.0			32.0	32.0
Actuated g/C Ratio					0.37	1.00	0.66	0.66			0.28	0.28
v/c Ratio					0.97	0.05	1.50	0.34			0.58	1.15
Control Delay					62.7	0.0	248.0	10.0			41.0	127.9
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					62.7	0.0	248.0	10.0			41.0	127.9
LOS					E	A	F	A			D	F
Approach Delay					50.1			186.6			96.5	
Approach LOS					E			F			F	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.50  
 Intersection Signal Delay: 116.9      Intersection LOS: F  
 Intersection Capacity Utilization 123.3%      ICU Level of Service H  
 Analysis Period (min): 15

**Splits and Phases: 4: LIE North Service Road & Old Walt Whitman Road**



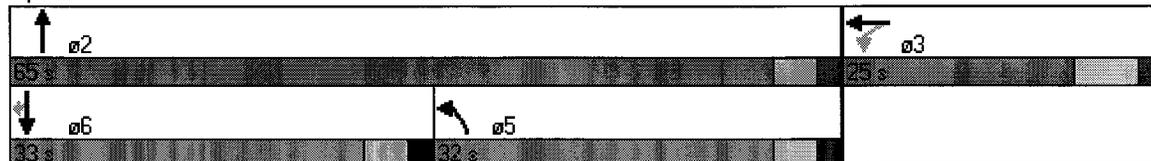


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑	↗	↙↙	↑			↑	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	1736	5036	1583	3547	1837	0	0	1863	1599
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1736	5036	1583	3547	1837	0	0	1863	1599
Satd. Flow (RTOR)							42					8
Volume (vph)	0	0	0	80	1125	70	959	246	0	0	251	455
Lane Group Flow (vph)	0	0	0	95	1172	78	1009	351	0	0	299	529
Turn Type				Perm		Free	Prot					Perm
Protected Phases					3		5	2			6	
Permitted Phases				3		Free						6
Total Split (s)	0.0	0.0	0.0	25.0	25.0	0.0	32.0	65.0	0.0	0.0	33.0	33.0
Act Effect Green (s)				21.0	21.0	90.0	28.0	61.0			29.0	29.0
Actuated g/C Ratio				0.23	0.23	1.00	0.31	0.68			0.32	0.32
v/c Ratio				0.23	1.00	0.05	0.91	0.28			0.50	1.02
Control Delay				29.9	61.3	0.1	25.4	4.0			28.1	75.2
Queue Delay				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay				29.9	61.3	0.1	25.4	4.0			28.1	75.2
LOS				C	E	A	C	A			C	E
Approach Delay					55.5			19.9			58.2	
Approach LOS					E			B			E	

**Intersection Summary**

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 25 (28%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.02  
 Intersection Signal Delay: 42.4      Intersection LOS: D  
 Intersection Capacity Utilization 103.8%      ICU Level of Service G  
 Analysis Period (min) 15

**Splits and Phases: 4: LIE North Service Road & Old Walt Whitman Road**



---

**TECHNICAL APPENDIX**

---



**SYNCHRO ANALYSIS**

**Long Island Expressway South Service Road & Old Walt Whitman Road**

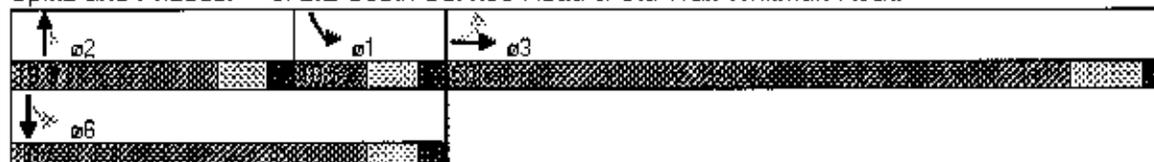


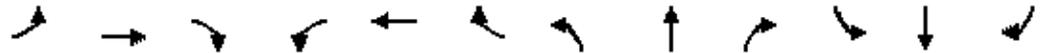
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↑	↗					↑	↗	↘	↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3387	1583	0	0	0	0	1689	1383	1743	2010	0
Flt Permitted		0.988								0.205		
Satd. Flow (perm)	0	3387	1583	0	0	0	0	1689	1383	376	2010	0
Satd. Flow (RTOR)			470									
Volume (vph)	424	1452	889	0	0	0	0	359	50	48	281	0
Lane Group Flow (vph)	0	1978	988	0	0	0	0	422	64	69	347	0
Turn Type	Perm		Free							Perm	pm+pt	
Protected Phases		3						2		1	6	
Permitted Phases	3		Free						2	6		
Total Split (s)	50.0	50.0	0.0	0.0	0.0	0.0	0.0	19.5	19.5	10.5	30.0	0.0
Act Effect Green (s)		46.0	80.0					17.6	17.6	26.0	26.0	
Actuated g/C Ratio		0.58	1.00					0.22	0.22	0.32	0.32	
v/c Ratio		1.02	0.62					1.14	0.21	0.30	0.53	
Control Delay		41.5	1.9					122.8	29.5	16.0	14.0	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		41.5	1.9					122.8	29.5	16.0	14.0	
LOS		D	A					F	C	B	B	
Approach Delay		28.3						110.5			14.3	
Approach LOS		C						F			B	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 8 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.14  
 Intersection Signal Delay: 37.1  
 Intersection LOS: D  
 Intersection Capacity Utilization: 84.7%  
 ICU Level of Service: E  
 Analysis Period (min): 15

**Splits and Phases: 5: LIE South Service Road & Old Walt Whitman Road**



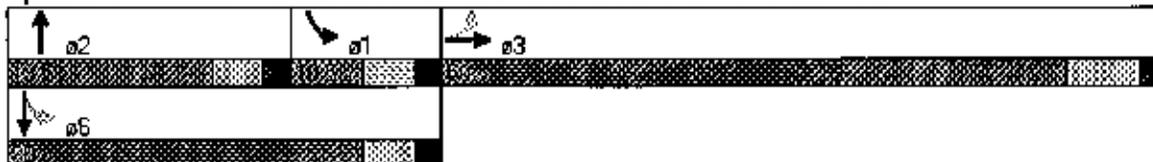


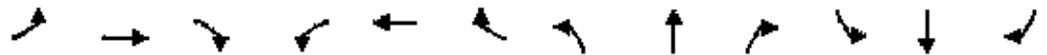
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↑	↗					↕↗		↖	↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3390	1583	0	0	0	0	3195	0	1687	1827	0
Flt Permitted		0.989								0.261		
Satd. Flow (perm)	0	3390	1583	0	0	0	0	3195	0	463	1827	0
Satd. Flow (RTOR)			457									
Volume (vph)	433	1532	907	0	0	0	0	366	87	49	287	0
Lane Group Flow (vph)	0	2072	1008	0	0	0	0	543	0	70	354	0
Turn Type	Perm		Free							pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		Free							6		
Total Spill (s)	50.0	50.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	10.5	30.0	0.0
Act Effct Green (s)		46.0	80.0					17.6		26.0	26.0	
Actuated g/C Ratio		0.56	1.50					0.22		0.32	0.32	
v/c Ratio		1.06	0.64					0.77		0.28	0.60	
Control Delay		57.3	2.0					39.6		13.9	14.4	
Queue Delay		0.0	0.0					0.0		0.0	0.0	
Total Delay		57.3	2.0					39.6		13.9	14.4	
LOS		E	A					D		B	B	
Approach Delay		39.2						39.6			14.3	
Approach LOS		D						D			B	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 8 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.06  
 Intersection Signal Delay: 36.6      Intersection LOS: D  
 Intersection Capacity Utilization 97.1%      ICU Level of Service F  
 Analysis Period (min): 15

**Splits and Phases: 5: LIE South Service Road & Old Walt Whitman Road**



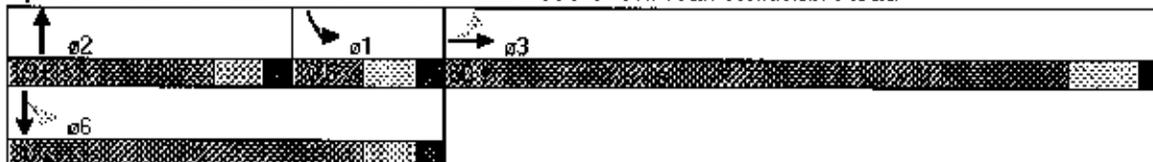


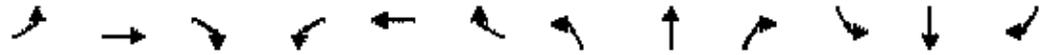
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑					↑↓		↑	↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3390	1583	0	0	0	0	3195	0	1687	1827	0
Flt Permitted		0.989								0.261		
Satd. Flow (perm)	0	3390	1583	0	0	0	0	3195	0	463	1827	0
Satd. Flow (RTOR)			457									
Volume (vph)	433	1532	907	0	0	0	0	366	87	49	287	0
Lane Group Flow (vph)	0	2072	1008	0	0	0	0	543	0	70	354	0
Turn Type	Perm		Free							pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		Free							6		
Total Split (s)	50.0	50.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	10.5	30.0	0.0
Act Effct Green (s)		46.0	80.0					17.6		26.0	26.0	
Actuated g/C Ratio		0.58	1.00					0.22		0.32	0.32	
v/c Ratio		1.06	0.64					0.77		0.28	0.60	
Control Delay		60.3	2.0					39.6		13.9	14.3	
Queue Delay		0.0	0.0					0.0		0.0	0.0	
Total Delay		60.3	2.0					39.6		13.9	14.3	
LOS		E	A					D		B	B	
Approach Delay		41.2						39.6			14.3	
Approach LOS		D						D			B	

Intersection Summary

Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 8 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 38.2	Intersection LOS: D
Intersection Capacity Utilization 97.1%	ICU Level of Service F
Analysis Period (min): 15	

Splits and Phases: 5: LIE South Service Road & Old Walt Whitman Road



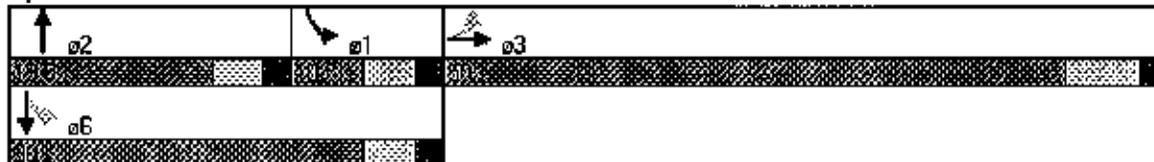


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↑	↗					↕↔		↖	↕↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3390	1583	0	0	0	0	3171	0	1687	3471	0
Flt Permitted		0.989								0.205		
Satd. Flow (perm)	0	3390	1583	0	0	0	0	3171	0	364	3471	0
Satd. Flow (RTOR)			525									
Volume (vph)	433	1532	1042	0	0	0	0	448	135	49	666	0
Lane Group Flow (vph)	0	2072	1158	0	0	0	0	700	0	70	822	0
Turn Type	Perm		Free							pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		Free							6		
Total Split (s)	50.0	50.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	10.5	30.0	0.0
Act Effct Green (s)		46.0	80.0					17.6		26.0	26.0	
Actuated g/C Ratio		0.58	1.00					0.22		0.32	0.32	
v/c Ratio		1.06	0.73					1.00		0.31	0.73	
Control Delay		60.5	3.1					70.2		21.3	19.0	
Queue Delay		0.0	0.0					0.0		0.0	0.0	
Total Delay		60.5	3.1					70.2		21.3	19.0	
LOS		E	A					E		C	B	
Approach Delay		39.9						70.2			19.2	
Approach LOS		D						E			B	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 8 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.06  
 Intersection Signal Delay: 40.5      Intersection LOS: D  
 Intersection Capacity Utilization: 113.3%      ICU Level of Service: H  
 Analysis Period (min): 15

**Splits and Phases: 5: LIE South Service Road & Old Walt Whitman Road**





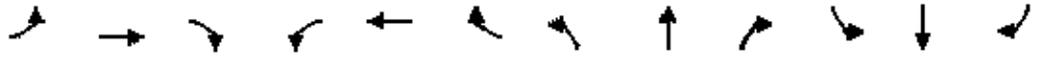
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑↓		↓	↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	4871	1583	0	0	0	0	3171	0	1687	3471	0
Flt Permitted		0.989								0.234		
Satd. Flow (perm)	0	4871	1583	0	0	0	0	3171	0	416	3471	0
Satd. Flow (RTOR)			604									
Volume (vph)	433	1532	1042	0	0	0	0	448	135	49	666	0
Lane Group Flow (vph)	0	2072	1158	0	0	0	0	700	0	70	822	0
Turn Type	Perm		Free							pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		Free							6		
Total Split (s)	55.0	85.0	0.0	0.0	0.0	0.0	0.0	35.0	0.0	10.0	45.0	0.0
Act Effct Green (s)		51.0	100.0					33.0		41.0	41.0	
Actuated g/C Ratio		0.51	1.00					0.85		0.41	0.41	
v/c Ratio		0.83	0.73					0.67		0.28	0.58	
Control Delay		24.7	3.0					23.0		17.7	17.7	
Queue Delay		0.0	0.0					0.0		0.0	0.0	
Total Delay		24.7	3.0					23.0		17.7	17.7	
LOS		C	A					C		B	B	
Approach Delay		16.9						23.0			17.7	
Approach LOS		B						C			B	

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 79 (79%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated:Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 18.0      Intersection LOS: B  
 Intersection Capacity Utilization 86.9%      ICU Level of Service E  
 Analysis Period (min): 15

**Splits and Phases: 5: LIE South Service Road & Old Walt Whitman Road**





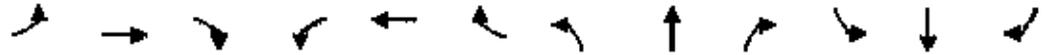
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑					↑	↑	↑	↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3381	1583	0	0	0	0	1756	1507	1865	2049	0
Flt Permitted		0.993								0.170		
Satd. Flow (perm)	0	3381	1583	0	0	0	0	1756	1507	334	2049	0
Satd. Flow (RTOR)			344									
Volume (vph)	150	1138	652	0	0	0	0	506	103	69	187	0
Lane Group Flow (vph)	0	1375	724	0	0	0	0	569	129	80	228	0
Turn Type	Perm		Free						Perm	pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		Free						2	6		
Total Split (s)	53.0	53.0	0.0	0.0	0.0	0.0	0.0	47.0	47.0	15.0	82.0	0.0
Act Effect Green (s)		49.0	115.0					46.0	46.0	58.0	58.0	
Actuated g/C Ratio		0.43	1.00					0.40	0.40	0.50	0.50	
v/c Ratio		0.95	0.46					0.81	0.21	0.26	0.22	
Control Delay		47.5	1.0					42.5	25.3	9.0	3.3	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		47.5	1.0					42.5	25.3	9.0	3.3	
LOS		D	A					D	C	A	A	
Approach Delay		31.4						39.3			4.8	
Approach LOS		C						D			A	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 12 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 30.6      Intersection LOS: C  
 Intersection Capacity Utilization: 93.9%      ICU Level of Service: F  
 Analysis Period: (min): 15

**Splits and Phases: 5: LIE South Service Road & Old Walt Whitman Road**



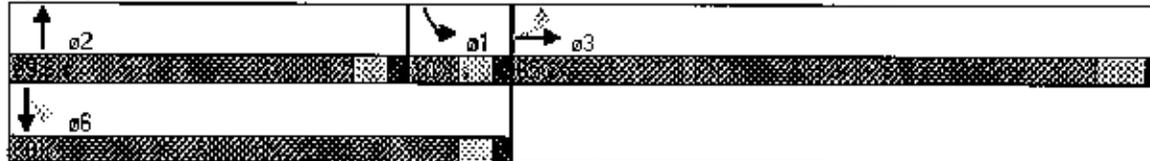


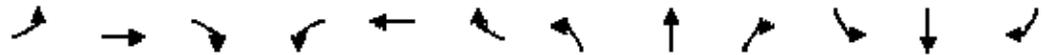
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB
Lane Configurations		4↑	↑					4↑		↑	↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3380	1583	0	0	0	0	3355	0	1805	1863	0
Flt Permitted		0.993								0.207		
Satd. Flow (perm)	0	3380	1583	0	0	0	0	3355	0	393	1863	0
Satd. Flow (RTOR)			888									
Volume (vph)	153	1185	865	0	0	0	0	516	122	70	191	0
Lane Group Flow (vph)	0	1428	739	0	0	0	0	732	0	81	233	0
Turn Type	Perm		Free							pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		Free							6		
Total Spill (s)	65.0	65.0	0.0	0.0	0.0	0.0	0.0	39.6	0.0	10.4	50.0	0.0
Act Effct Green (s)		61.0	115.0					37.7		46.0	46.0	
Actuated g/C Ratio		0.63	1.00					0.33		0.40	0.40	
v/c Ratio		0.80	0.47					0.67		0.34	0.31	
Control Delay		26.2	1.0					37.5		10.9	6.1	
Queue Delay		0.0	0.0					0.0		0.0	0.0	
Total Delay		26.2	1.0					37.5		10.9	6.1	
LOS		C	A					D		B	A	
Approach Delay		17.6						37.5		7.3		
Approach LOS		B						D		A		

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 12 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 21.1      Intersection LOS: C  
 Intersection Capacity Utilization: 97.1%      ICU Level of Service: F  
 Analysis Period (min): 15

Splits and Phases: 5: LIE South Service Road & Old Walt Whitman Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↗					↕↕		↗	↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3380	1583	0	0	0	0	3355	0	1805	1863	0
Flt Permitted		0.993								0.148		
Satd. Flow (perm)	0	3380	1583	0	0	0	0	3355	0	281	1863	0
Satd. Flow (RTOR)			338									
Volume (vph)	153	1185	885	0	0	0	0	516	122	70	191	0
Lane Group Flow (vph)	0	1428	739	0	0	0	0	732	0	81	233	0
Turn Type	Perm		Free							pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		Free							6		
Total Split (s)	53.0	53.0	0.0	0.0	0.0	0.0	0.0	27.0	0.0	15.0	62.0	0.0
Act Effct Green (s)		49.0	115.0					30.0		58.0	58.0	
Actuated g/C Ratio		0.43	1.00					0.26		0.60	0.50	
v/c Ratio		0.99	0.47					0.84		0.17	0.25	
Control Delay		55.1	1.0					52.7		7.8	3.5	
Queue Delay		0.0	0.0					0.0		0.0	0.0	
Total Delay		55.1	1.0					52.7		7.8	3.5	
LOS		E	A					D		A	A	
Approach Delay		36.6						52.7			4.6	
Approach LOS		D						D			A	

Intersection Summary

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 12 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 37.2

Intersection LOS: D

Intersection Capacity Utilization: 97.6%

ICU Level of Service: F

Analysis Period (min): 15

Splits and Phases: 5: LIE South Service Road & Old Walt Whitman Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB
Lane Configurations		↖↗	↗					↖↗		↖	↖↗	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3383	1583	0	0	0	0	3345	0	1805	3539	0
Flt Permitted		0.990								0.085		
Satd. Flow (perm)	0	3383	1583	0	0	0	0	3345	0	162	3539	0
Satd. Flow (RTOR)			216									
Volume (vph)	276	1374	775	0	0	0	0	929	245	70	261	0
Lane Group Flow (vph)	0	1780	861	0	0	0	0	1350	0	81	318	0
Turn Type	Perm		Free							pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		Free							6		
Total Split (s)	53.0	53.0	0.0	0.0	0.0	0.0	0.0	47.0	0.0	15.0	62.0	0.0
Act Effct Green (s)		49.0	115.0					46.0		58.0	58.0	
Actuated g/C Ratio		0.43	1.00					0.40		0.60	0.60	
v/c Ratio		1.24	0.54					1.01		0.36	0.18	
Control Delay		142.9	1.3					62.4		25.2	5.4	
Queue Delay		0.0	0.0					0.0		0.0	0.0	
Total Delay		142.9	1.3					62.4		25.2	5.4	
LOS		F	A					E		C	A	
Approach Delay		96.8						62.4			9.4	
Approach LOS		F						E			A	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 12 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.24  
 Intersection Signal Delay: 78.3      Intersection LOS: E  
 Intersection Capacity Utilization 123.3%      ICU Level of Service H  
 Analysis Period (min): 15

**Splits and Phases: 5: LIE South Service Road & Old Walt Whitman Road**





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑↑		↑	↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	4862	1583	0	0	0	0	3345	0	1805	3539	0
Flt Permitted		0.990								0.096		
Satd. Flow (perm)	0	4862	1583	0	0	0	0	3345	0	182	3539	0
Satd. Flow (RTOR)			581									
Volume (vph)	276	1374	775	0	0	0	0	929	245	70	261	0
Lane Group Flow (vph)	0	1780	861	0	0	0	0	1350	0	81	318	0
Turn Type	Perm		Free					pm+pt				
Protected Phases		3						2		1	6	
Permitted Phases	3		Free					6				
Total Split (s)	40.0	40.0	0.0	0.0	0.0	0.0	0.0	41.5	0.0	8.5	50.0	0.0
Act Effct Green (s)		36.0	90.0					39.2		46.0	46.0	
Actuated g/C Ratio		0.40	1.00					0.44		0.51	0.51	
v/c Ratio		0.92	0.54					0.93		0.47	0.18	
Control Delay		34.4	1.3					37.3		24.1	4.0	
Queue Delay		0.0	0.0					0.0		0.0	0.0	
Total Delay		34.4	1.3					37.3		24.1	4.0	
LOS		C	A					D		C	A	
Approach Delay		23.6						37.3			8.1	
Approach LOS		C						D			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 37 (41%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 26.4

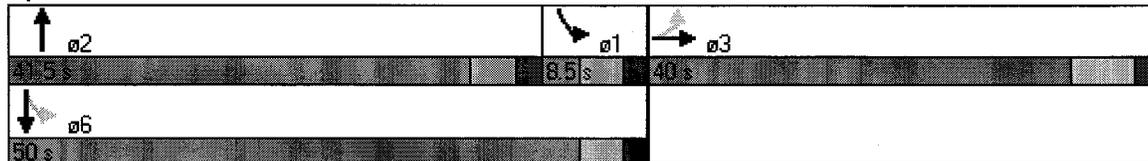
Intersection LOS: C

Intersection Capacity Utilization 103.8%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 5: LIE South Service Road & Old Walt Whitman Road



---

**TECHNICAL APPENDIX**

---



**SYNCHRO ANALYSIS**

**Pineridge Street & Old Walt Whitman Road**

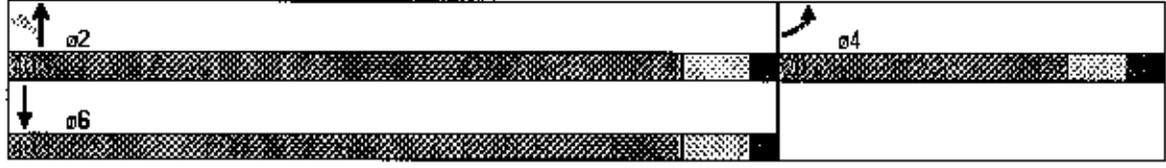


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	4	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1676	0	0	1801	1859	0
RT Permitted	0.975			0.843		
Satd. Flow (perm)	1676	0	0	1520	1859	0
Satd. Flow (RTOR)	16				2	
Volume (vph)	12	7	4	407	986	5
Lane Group Flow (vph)	33	0	0	432	1089	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases			2			
Total Split (s)	26.0	0.0	40.0	40.0	40.0	0.0
Act Effct Green (s)	12.8			74.6	74.6	
Actuated g/C Ratio	0.13			0.86	0.86	
v/c Ratio	0.14			0.33	0.65	
Control Delay	13.6			3.4	7.8	
Queue Delay	0.3			0.0	1.2	
Total Delay	13.8			3.4	9.0	
LOS	B			A	A	
Approach Delay	13.8			3.4	9.0	
Approach LOS	B			A	A	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 86.3  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 7.5      Intersection LOS: A  
 Intersection Capacity Utilization: 67.2%      ICU Level of Service: C  
 Analysis Period (min): 15

Splits and Phases: 6: Pineridge Street & Old Walt Whitman Road





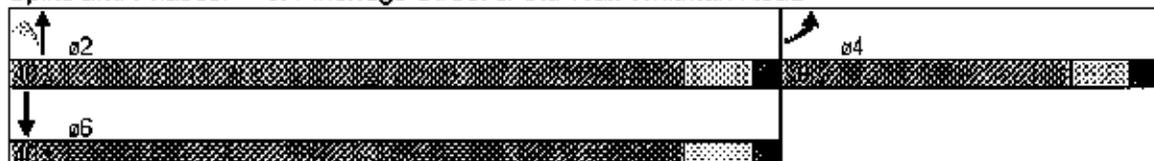
Lane Group	EBL	EBP	NBL	NBT	SBT	SBR
Lane Configurations	↖		↗		↘	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1838	0	1348	1810	1859	0
Prot Permitted	0.975		0.111			
Satd. Flow (perm)	1838	0	157	1810	1859	0
Satd. Flow (RTOR)	16				2	
Volume (vph)	12	7	4	451	1006	5
Lane Group Flow (vph)	33	0	8	470	1060	0
Turn Type	Perm					
Protected Phases	4				6	
Permitted Phases			2			
Total Split (s)	20.0	0.0	40.0	40.0	40.0	0.0
Act Effct Green (s)	12.8		74.6	74.6	74.6	
Actuated g/C Ratio	0.13		0.66	0.66	0.66	
v/c Ratio	0.13		0.06	0.30	0.66	
Control Delay	13.4		4.2	3.1	8.2	
Queue Delay	0.0		0.0	0.0	0.1	
Total Delay	13.4		4.2	3.1	8.2	
LOS	B		A	A	A	
Approach Delay	13.4			3.1	8.2	
Approach LOS	B			A	A	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 66.3  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 6.8  
 Intersection Capacity Utilization: 68.3%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICD Level of Service: C

**Splits and Phases: 6: Pineridge Street & Old Walt Whitman Road**



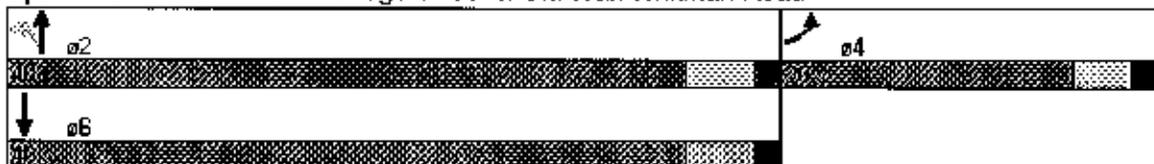


Lane Group	EBL	EBR	NBL	NBT	SEB	SEB
Lane Configurations	Y		↑		↓	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1838	0	1348	1810	1859	0
Flt Permitted	0.975		0.111			
Satd. Flow (perm)	1838	0	157	1810	1859	0
Satd. Flow (RTOR)	16				2	
Volume (vph)	12	7	4	451	1006	5
Lane Group Flow (vph)	33	0	8	470	1060	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases	2					
Total Split (s)	20.0	0.0	40.0	40.0	40.0	0.0
Act Effct Green (s)	12.8		74.6	74.6	74.6	
Actuated g/C Ratio	0.13		0.86	0.86	0.86	
v/c Ratio	0.13		0.06	0.30	0.66	
Control Delay	13.4		4.2	3.0	8.2	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	13.4		4.2	3.1	8.2	
LOS	B		A	A	A	
Approach Delay	13.4			3.1	8.2	
Approach LOS	B			A	A	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 86.3  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 6.8  
 Intersection LOS: A  
 Intersection Capacity Utilization: 68.3%  
 ICU Level of Service: C  
 Analysis Period (min): 15

**Splits and Phases: 6: Pineridge Street & Old Walt Whitman Road**



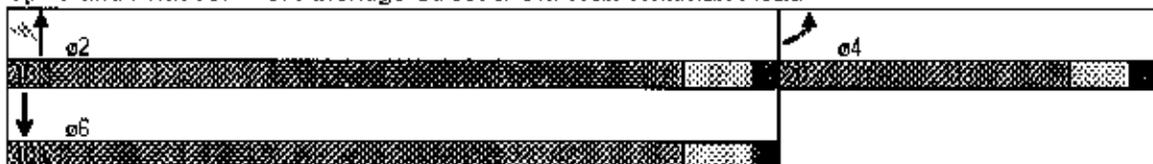


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		↑		↓	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1838	0	1348	1810	1861	0
Flt Permitted	0.976		0.111			
Satd. Flow (perm)	1838	0	157	1810	1861	0
Satd. Flow (RTOR)	16				2	
Volume (vph)	12	7	4	696	1047	5
Lane Group Flow (vph)	33	0	8	725	1103	0
Turn Type	Perm					
Protected Phases	4			2	5	
Permitted Phases			2			
Total Split (s)	20.0	0.0	40.0	40.0	40.0	0.0
Act Effct Green (s)	12.8		74.6	74.6	74.6	
Actuated g/C Ratio	0.13		0.86	0.86	0.86	
v/c Ratio	0.13		0.06	0.46	0.69	
Control Delay	13.4		4.2	4.3	8.9	
Queue Delay	0.0		0.0	0.0	0.1	
Total Delay	13.4		4.2	4.3	9.0	
LOS	B		A	A	A	
Approach Delay	13.4			4.3	9.0	
Approach LOS	B			A	A	

**Intersection Summary**

Cycle Length: 60	
Actuated Cycle Length: 88.3	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 7.2	Intersection LOS: A
Intersection Capacity Utilization: 70.4%	ICU Level of Service: C
Analysis Period (min): 15	

**Splits and Phases: 6: Pineridge Street & Old Walt Whitman Road**



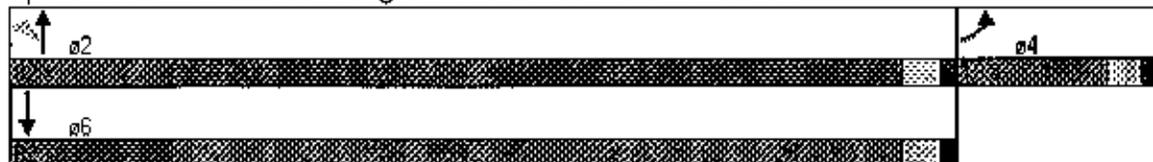


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1838	0	1348	1810	1861	0
Prot. Permitted	0.975		0.165			
Satd. Flow (perm)	1838	0	234	1810	1861	0
Satd. Flow (RTOR)	16				2	
Volume (vph)	12	7	4	696	1047	5
Lane Group Flow (vph)	33	0	8	725	1103	0
Turn Type			Perm			
Protected Phases	4			2	6	
Permitted Phases			2			
Total Split (s)	18.0	0.0	82.0	82.0	82.0	0.0
Act Effect Green (s)	14.0		78.0	78.0	78.0	
Actuated g/C Ratio	0.14		0.78	0.78	0.78	
v/c Ratio	0.12		0.04	0.51	0.76	
Control Delay	25.3		2.5	4.5	9.8	
Queue Delay	0.0		0.0	0.2	0.0	
Total Delay	25.3		2.5	4.5	9.8	
LOS	C		A	A	A	
Approach Delay	25.3			4.5	9.8	
Approach LOS	C			A	A	

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 94 (94%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Control Type: Pre-timed  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 8.0      Intersection LOS: A  
 Intersection Capacity Utilization: 70.4%      ICU Level of Service: C  
 Analysis Period (min): 15

**Splits and Phases: 6: Pineridge Street & Old Walt Whitman Road**



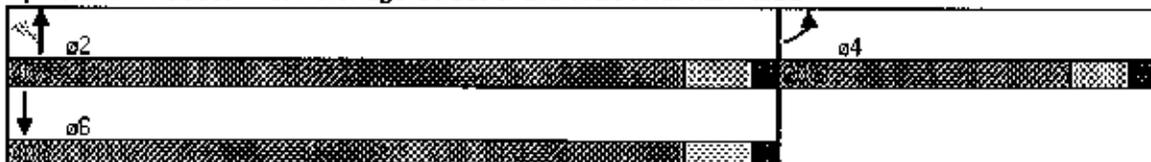


Lane Group	EBL	EBR	NBL	NBT	SEB	SEB
Lane Configurations	Y		4		B	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1821	0	0	1860	1773	0
Flt. Permitted	0.966		0.711			
Satd. Flow (perm)	1821	0	0	1325	1773	0
Satd. Flow (RTOR)	14		4			
Volume (vph)	21	9	17	501	819	16
Lane Group Flow (vph)	47	0	0	636	1012	0
Turn Type	Perm					
Protected Phases	4		2		6	
Permitted Phases	2					
Total Split (s)	20.0	0.0	40.0	40.0	40.0	0.0
Act Effct Green (s)	11.2		33.7		33.7	
Actuated g/C Ratio	0.23		0.86		0.86	
v/c Ratio	0.11		0.56		0.66	
Control Delay	14.4		7.0		8.8	
Queue Delay	0.0		0.0		0.1	
Total Delay	14.4		7.0		8.9	
LOS	B		A		A	
Approach Delay	14.4		7.0		8.9	
Approach LOS	B		A		A	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 39.1  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 8.3      Intersection LOS: A  
 Intersection Capacity Utilization: 59.1%      ICU Level of Service: B  
 Analysis Period (min): 15

**Splits and Phases: 6: Pineridge Street & Old Walt Whitman Road**





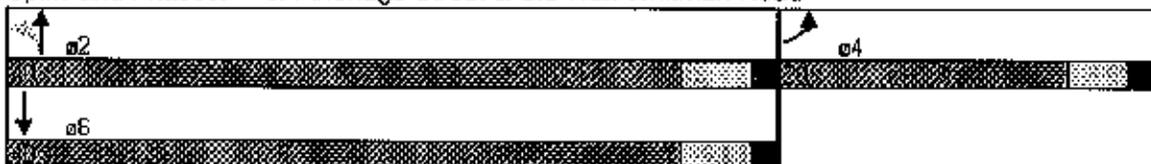


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖ ↗		↖ ↗		↖ ↗	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1997	0	1685	1863	1773	0
Flt Permitted	0.966		0.111			
Satd. Flow (perm)	1997	0	197	1863	1773	0
Satd. Flow (RTOR)	14				4	
Volume (vph)	21	9	17	528	835	16
Lane Group Flow (vph)	47	0	25	644	1031	0
Turn Type	Perm					
Protected Phases	4				6	
Permitted Phases			2			
Total Spill (s)	20.0	0.0	40.0	40.0	40.0	0.0
Act Effect Green (s)	12.9		70.1		70.1	
Actuated G/C Ratio	0.14		0.86		0.86	
v/c Ratio	0.16		0.15		0.67	
Control Delay	15.5		5.6		8.9	
Queue Delay	0.0		0.0		0.0	
Total Delay	15.5		5.6		8.9	
LOS	B		A		A	
Approach Delay	15.5				8.9	
Approach LOS	B				A	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 61.3  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.67  
 Intersection Signal Delay: 7.1  
 Intersection Capacity Utilization: 59.9%  
 Analysis Period (min): 15  
 Intersection LOS: A  
 ICU Level of Service: B

**Splits and Phases: 6: Pineridge Street & Old Walt Whitman Road**



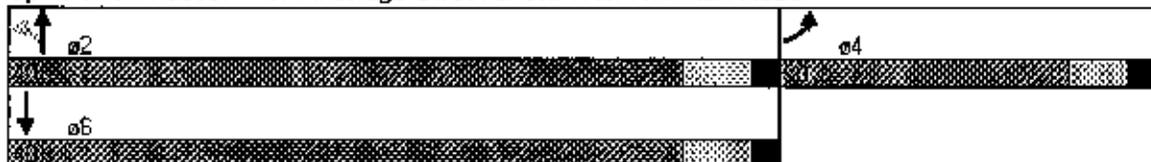


Lane Group	EBL	EBR	NBL	NBT	SBT	EBR
Lane Configurations	↘		↙		↗	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1997	0	1685	1863	1774	0
Flt Permitted	0.966		0.111			
Satd. Flow (perm)	1997	0	197	1863	1774	0
Satd. Flow (RTOR)	14		3			
Volume (vph)	21	9	17	573	1103	16
Lane Group Flow (vph)	47	0	25	699	1354	0
Turn Type	Perm					
Protected Phases	4		2		6	
Permitted Phases	2					
Total Spill (s)	20.0	0.0	40.0	40.0	40.0	0.0
Act Effct Green (s)	12.9		70.1	70.1	70.1	
Actuated g/C Ratio	0.14		0.86		0.86	
v/c Ratio	0.16		0.15		0.89	
Control Delay	15.5		5.6		4.0	
Queue Delay	0.1		0.0		1.4	
Total Delay	15.6		5.6		20.4	
LOS	B		A		C	
Approach Delay	15.6		4.1		20.4	
Approach LOS	B		A		C	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 81.3  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 14.7  
 Intersection LOS: B  
 Intersection Capacity Utilization: 74.0%  
 ICU Level of Service: D  
 Analysis Period (min) 15

**Splits and Phases: 6: Pineridge Street & Old Walt Whitman Road**





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1997	0	1685	1863	1774	0
Flt Permitted	0.966		0.052			
Satd. Flow (perm)	1997	0	92	1863	1774	0
Satd. Flow (RTOR)	14				3	
Volume (vph)	21	9	17	573	1103	16
Lane Group Flow (vph)	47	0	25	699	1354	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases			2			
Total Split (s)	17.0	0.0	83.0	83.0	83.0	0.0
Act Effect Green (s)	13.0		79.0	79.0	79.0	
Actuated g/C Ratio	0.13		0.79	0.79	0.79	
v/c Ratio	0.17		0.34	0.47	0.97	
Control Delay	31.4		14.9	3.5	30.6	
Queue Delay	0.0		0.0	0.2	1.6	
Total Delay	31.4		14.9	3.7	32.2	
LOS	C		B	A	C	
Approach Delay	31.4			4.1	32.2	
Approach LOS	C			A	C	

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 84 (84%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.97  
 Intersection Signal Delay: 22.6  
 Intersection LOS: C  
 Intersection Capacity Utilization 69.0%  
 ICU Level of Service C  
 Analysis Period (min) 15

**Splits and Phases: 6: Pineridge Street & Old Walt Whitman Road**

02	04
83 s	17 s
06	
83 s	

---

**TECHNICAL APPENDIX**

---



**ATLANTIC TRAFFIC  
& DESIGN ENGINEERS, INC.**

**SYNCHRO ANALYSIS**

**Northgate Circle/Baylis Road & Old Walt Whitman Road**



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗		↕			↖	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1885	1453	0	0	1771	1422	0	1926	0	0	1798	1507
Flt Permitted	0.708				0.751			0.645			0.746	
Satd. Flow (perm)	1256	1453	0	0	1390	1422	0	1244	0	0	1364	1507
Satd. Flow (RTOR)		18				197		20				7
Volume (vph)	19	9	9	40	4	148	2	244	30	376	614	3
Lane Group Flow (vph)	21	40	0	0	76	167	0	360	0	0	1144	12
Turn Type	Perm			Perm		Perm	Perm			Perm		Perm
Protected Phases		2			2			1				1
Permitted Phases	2			2		2	1			1		1
Total Split (s)	20.0	20.0	0.0	20.0	20.0	20.0	40.0	40.0	0.0	40.0	40.0	40.0
Act Effct Green (s)	11.9	11.9			11.9	11.9		36.9			36.9	36.9
Actuated g/C Ratio	0.21	0.21			0.21	0.21		0.65			0.65	0.65
v/c Ratio	0.08	0.13			0.26	0.44		0.44			1.29	0.01
Control Delay	19.3	13.3			20.9	6.8		6.9			155.8	3.0
Queue Delay	0.0	0.0			0.0	0.0		0.0			7.2	0.0
Total Delay	19.3	13.3			20.9	6.8		6.9			163.0	3.0
LOS	B	B			C	A		A			F	A
Approach Delay		15.0			10.8			6.9			161.3	
Approach LOS		B			B			A			F	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 56.8  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.29  
 Intersection Signal Delay: 104.2      Intersection LOS: F  
 Intersection Capacity Utilization: 88.9%      ICU Level of Service: E  
 Analysis Period (min) 15

Splits and Phases: 7: Northgate Circle & Old Walt Whitman Road



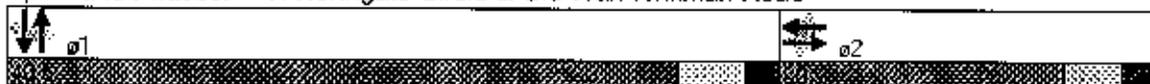


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NES	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1685	1453	0	1752	1589	0	1685	1698	0	1685	1792	1561
Flt Permitted	0.557			0.731			0.239			0.481		
Satd. Flow (perm)	988	1453	0	1348	1589	0	424	1698	0	853	1792	1561
Satd. Flow (RTOR)		18			201			18				12
Volume (vph)	19	9	9	41	4	151	2	285	31	384	626	3
Lane Group Flow (vph)	21	40	0	69	209	0	8	405	0	413	754	12
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		1
Total Spill (s)	20.0	20.0	0.0	20.0	20.0	0.0	40.0	40.0	0.0	40.0	40.0	40.0
Act Effct Green (s)	11.8	11.8		11.8	11.8		36.2	36.2		36.2	36.2	36.2
Actuated G/C Ratio	0.21	0.21		0.21	0.21		0.65	0.65		0.65	0.65	0.65
v/c Ratio	0.10	0.12		0.24	0.42		0.03	0.37		0.75	0.65	0.01
Control Delay	19.0	13.3		20.7	6.8		4.5	5.7		19.0	9.8	2.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	1.6	0.0
Total Delay	19.0	13.3		20.7	6.8		4.5	5.7		19.0	11.3	2.3
LOS	B	B		C	A		A	A		B	B	A
Approach Delay		15.3			10.2			5.6			13.9	
Approach LOS		B			B			A			B	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 56  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.75  
 Intersection Signal Delay: 11.6      Intersection LOS: B  
 Intersection Capacity Utilization: 75.4%      ICU Level of Service: D  
 Analysis Period (min) 15

Splits and Phases: 7: Northgate Circle & Old Walt Whitman Road



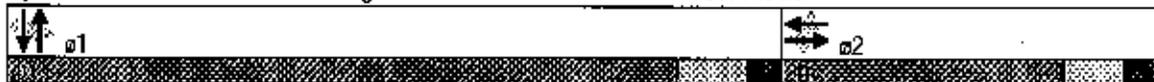


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	GBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1685	1453	0	1752	1589	0	1685	1698	0	1685	1792	1561
Flt Permitted	0.557			0.731			0.239			0.481		
Satd. Flow (perm)	988	1453	0	1348	1589	0	424	1698	0	853	1792	1561
Satd. Flow (RTOR)		18			201			18				12
Volume (vph)	19	9	9	41	4	151	2	285	31	384	626	3
Lane Group Flow (vph)	21	40	0	69	209	0	8	405	0	418	754	12
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		1
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	40.0	40.0	0.0	40.0	40.0	40.0
Act Effct Green (s)	11.8	11.8		11.8	11.8		36.2	36.2		36.2	36.2	36.2
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.65	0.65		0.65	0.65	0.65
v/c Ratio	0.10	0.12		0.24	0.42		0.03	0.37		0.75	0.65	0.01
Control Delay	19.0	13.3		20.7	6.8		4.5	5.7		19.0	10.8	2.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	1.2	0.0
Total Delay	19.0	13.3		20.7	6.8		4.5	5.7		19.0	10.8	2.3
LOS	B	B		C	A		A	A		B	B	A
Approach Delay		15.3			10.2			5.6			13.6	
Approach LOS		B			B			A			B	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 56  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.75  
 Intersection Signal Delay: 11.5      Intersection LOS: B  
 Intersection Capacity Utilization: 75.4%      ICU Level of Service: D  
 Analysis Period (min): 15

**Splits and Phases: 7: Northgate Circle & Old Walt Whitman Road**



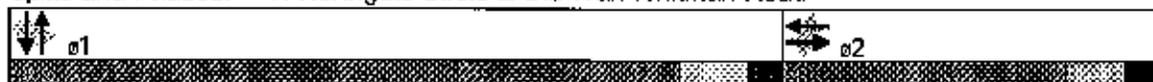


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SBT	SEB
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1685	1453	0	1752	1589	0	1685	1711	0	1685	1792	1561
Flt. Permitted	0.657			0.731			0.207			0.264		
Satd. Flow (perm)	988	1453	0	1348	1589	0	367	1711	0	468	1792	1561
Satd. Flow (RTOR)		18			201			10				12
Volume (vph)	19	9	9	41	4	151	2	530	31	384	667	3
Lane Group Flow (vph)	21	40	0	69	209	0	8	715	0	413	804	12
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		1
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	40.0	40.0	0.0	40.0	40.0	40.0
Act Effct Green (s)	11.8	11.8		11.8	11.8		36.2	36.2		36.2	36.2	36.2
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.65	0.65		0.65	0.65	0.65
v/c Ratio	0.10	0.12		0.24	0.42		0.03	0.64		1.36	0.69	0.01
Control Delay	19.0	13.3		20.7	6.6		4.5	9.6		202.2	10.6	2.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	2.2	0.0
Total Delay	19.0	13.3		20.7	6.6		4.5	9.6		202.2	12.9	2.3
LOS	B	B		C	A		A	A		F	B	A
Approach Delay		15.3			10.3			9.5			76.4	
Approach LOS		B			B			A			E	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 56  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.36  
 Intersection Signal Delay: 45.7  
 Intersection LOS: D  
 Intersection Capacity Utilization: 77.6%  
 CU Level of Service: D  
 Analysis Period (min): 15

**Splits and Phases: 7: Northgate Circle & Old Walt Whitman Road**





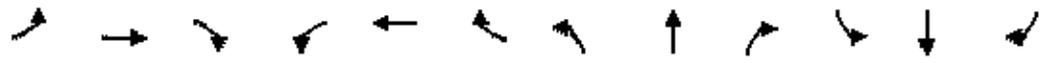
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1685	1453	0	1752	1589	0	1685	1711	0	1685	1792	1561
Flt Permitted	0.301			0.731			0.301			0.343		
Satd. Flow (perm)	534	1453	0	1348	1589	0	534	1711	0	608	1792	1561
Satd. Flow (RTOR)		18			201			11				12
Volume (vph)	19	9	9	41	4	151	2	530	31	384	667	3
Lane Group Flow (vph)	21	40	0	69	209	0	8	715	0	413	804	12
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		1
Total Split (s)	17.3	17.3	0.0	17.3	17.3	0.0	82.7	82.7	0.0	82.7	82.7	82.7
Act Effect Green (s)	12.2	12.2		12.2	12.2		79.8	79.8		79.8	79.8	79.8
Actuated v/c Ratio	0.12	0.12		0.12	0.12		0.80	0.80		0.80	0.80	0.80
v/c Ratio	0.32	0.21		0.42	0.56		0.02	0.52		0.85	0.56	0.01
Control Delay	53.8	28.2		48.8	13.1		1.5	4.6		18.2	2.1	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.6	0.0
Total Delay	53.8	28.2		48.8	13.1		1.5	4.6		18.2	2.1	0.0
LOS	D	C		D	B		A	A		B	A	A
Approach Delay		37.0			22.0			4.6			7.5	
Approach LOS		D			C			A			A	

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green, Master Intersection  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 9.1  
 Intersection LOS: A  
 Intersection Capacity Utilization 77.6%  
 ICU Level of Service D  
 Analysis Period (min): 15

Splits and Phases: 7: Northgate Circle & Old Walt Whitman Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1685	1635	0	0	1728	1478	0	2064	0	0	1809	1507
Flt. Permitted	0.716				0.609			0.986			0.791	
Satd. Flow (perm)	1270	1635	0	0	1451	1478	0	2037	0	0	1448	1507
Satd. Flow (RTOR)		13				213		13				16
Volume (vph)	11	5	9	28	7	198	5	309	28	190	621	17
Lane Group Flow (vph)	24	25	0	0	63	213	0	450	0	0	856	21
Turn Type	Perm			Perm		Perm	Perm			Perm		Perm
Protected Phases		2			2			1				1
Permitted Phases	2			2		2	1			1		1
Total Split (s)	20.0	20.0	0.0	20.0	20.0	20.0	40.0	40.0	0.0	40.0	40.0	40.0
Act Effct Green (s)	11.9	11.9			11.9	11.9		36.0			36.0	36.0
Actuated g/C Ratio	0.21	0.21			0.21	0.21		0.64			0.64	0.64
v/c Ratio	0.09	0.07			0.21	0.44		0.34			0.92	0.02
Control Delay	18.5	12.9			20.0	6.6		5.4			27.2	2.5
Queue Delay	0.0	0.0			0.0	0.0		0.0			5.8	0.0
Total Delay	18.5	12.9			20.0	6.6		5.4			33.0	2.5
LOS	B	B			B	A		A			C	A
Approach Delay		15.6			9.7			5.4			32.3	
Approach LOS		B			A			A			C	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 55.9  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 20.7      Intersection LOS: C  
 Intersection Capacity Utilization: 80.0%      ICU Level of Service: D  
 Analysis Period (min): 15

**Splits and Phases: 7: Northgate Circle & Old Walt Whitman Road**



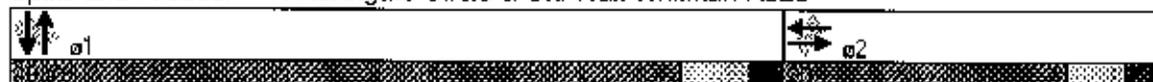


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1685	1635	0	1671	1658	0	1404	1828	0	1636	1827	1561
Flt Permitted	0.516			0.741			0.301			0.430		
Satd. Flow (perm)	915	1635	0	1304	1658	0	445	1828	0	740	1827	1561
Satd. Flow (RTOR)		13			217			12				21
Volume (vph)	11	5	9	29	7	202	5	332	29	194	633	17
Lane Group Flow (vph)	24	25	0	49	233	0	8	473	0	213	659	21
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		1
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	40.0	40.0	0.0	40.0	40.0	40.0
Act Effct Green (s)	11.9	11.9		11.9	11.9		36.0	36.0		36.0	36.0	36.0
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.64	0.64		0.64	0.64	0.64
v/c Ratio	0.12	0.07		0.18	0.45		0.03	0.40		0.45	0.56	0.02
Control Delay	19.5	12.9		19.8	7.0		4.2	6.0		8.9	9.0	2.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	1.0	0.0
Total Delay	19.5	12.9		19.8	7.0		4.2	6.0		8.9	9.0	2.1
LOS	B	B		B	A		A	A		A	A	A
Approach Delay		16.1			9.3			6.0			8.8	
Approach LOS		B			A			A			A	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 55.9  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 8.3      Intersection LOS: A  
 Intersection Capacity Utilization: 72.8%      IGV Level of Service: C  
 Analysis Period (min): 15

Splits and Phases: 7: Northgate Circle & Old Walt Whitman Road



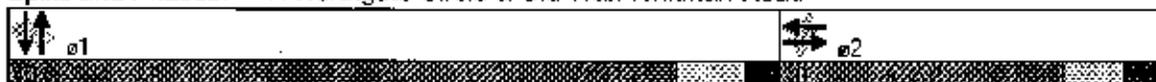


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1685	1635	0	1671	1658	0	1404	1828	0	1636	1827	1561
Flt. Permitted	0.516			0.741			0.301			0.430		
Satd. Flow (perm)	915	1635	0	1304	1658	0	445	1828	0	740	1827	1561
Satd. Flow (RTOR)		13			217			12				21
Volume (vph)	11	5	9	29	7	202	5	332	29	194	633	17
Lane Group Flow (vph)	24	25	0	49	233	0	8	473	0	213	659	21
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		1
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	40.0	40.0	0.0	40.0	40.0	40.0
Act Effct Green (s)	18.0	18.0		18.0	16.0		36.0	36.0		36.0	36.0	36.0
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.60	0.60		0.60	0.60	0.60
v/c Ratio	0.10	0.06		0.14	0.39		0.03	0.43		0.48	0.60	0.02
Control Delay	17.9	12.0		18.1	5.9		5.4	7.8		11.3	11.6	2.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	1.1	0.0
Total Delay	17.9	12.0		18.1	5.9		5.4	7.8		11.3	11.6	2.5
LOS	B	B		B	A		A	A		B	B	A
Approach Delay		14.9			8.0		5.3	7.7			11.3	
Approach LOS		B			A			A			B	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.60  
 Intersection Signal Delay: 9.8      Intersection LOS: A  
 Intersection Capacity Utilization: 72.8%      ICU Level of Service: C  
 Analysis Period (min): 15

**Splits and Phases: 7: Northgate Circle & Old Walt Whitman Road**

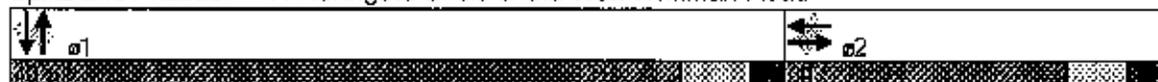


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SBT	SEB
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1685	1635	0	1671	1658	0	1404	1830	0	1636	1827	1561
Flt Permitted	0.516			0.741			0.123			0.388		
Satd. Flow (perm)	915	1635	0	1304	1658	0	182	1830	0	668	1827	1561
Satd. Flow (RTOR)		13			217			11				21
Volume (vph)	11	5	9	29	7	202	5	377	29	194	901	17
Lane Group Flow (vph)	24	25	0	49	233	0	8	532	0	213	939	21
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		1
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	40.0	40.0	0.0	40.0	40.0	40.0
Act Effct Green (s)	11.9	11.9		11.9	11.9		36.0	36.0		36.0	36.0	36.0
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.64	0.64		0.64	0.64	0.64
v/c Ratio	0.12	0.07		0.18	0.45		0.07	0.45		0.49	0.80	0.02
Control Delay	19.5	12.9		19.8	7.0		5.8	6.5		10.4	19.4	2.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	4.6	0.0
Total Delay	19.5	12.9		19.8	7.1		5.8	6.5		10.4	19.4	2.1
LOS	B	B		B	A		A	A		B	B	A
Approach Delay		16.1			9.3			6.8			17.4	
Approach LOS		B			A			A			B	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 55.9  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 13.4      Intersection LOS: B  
 Intersection Capacity Utilization: 87.0%      ICU Level of Service: E  
 Analysis Period (min): 15

Splits and Phases: 7: Northgate Circle & Old Walt Whitman Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1685	1635	0	1671	1658	0	1404	1830	0	1636	1827	1561
Flt Permitted	0.402			0.741			0.188			0.409		
Satd. Flow (perm)	713	1635	0	1304	1658	0	278	1830	0	704	1827	1561
Satd. Flow (RTOR)		13			217			9				20
Volume (vph)	11	5	9	29	7	202	5	377	29	194	901	17
Lane Group Flow (vph)	24	25	0	49	233	0	8	532	0	213	939	21
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		3			3			2			2	
Permitted Phases	3			3			2			2		2
Total Split (s)	26.0	26.0	0.0	26.0	26.0	0.0	74.0	74.0	0.0	74.0	74.0	74.0
Act Effct Green (s)	22.0	22.0		22.0	22.0		70.0	70.0		70.0	70.0	70.0
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.70	0.70		0.70	0.70	0.70
v/c Ratio	0.15	0.07		0.17	0.44		0.04	0.41		0.43	0.73	0.02
Control Delay	34.5	20.6		33.6	8.6		5.8	8.4		2.4	3.5	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	5.3	0.0
Total Delay	34.5	20.6		33.6	8.6		5.8	8.4		2.4	8.8	0.2
LOS	C	C		C	A		A	A		A	A	A
Approach Delay		27.5			12.9			8.4			7.5	
Approach LOS		C			B			A			A	

**Intersection Summary**

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 9.0

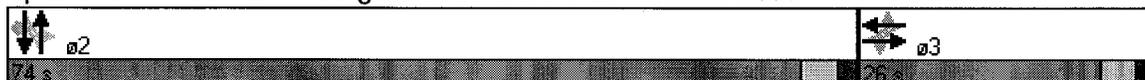
Intersection LOS: A

Intersection Capacity Utilization 87.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 7: Northgate Circle & Old Walt Whitman Road



---

**TECHNICAL APPENDIX**

---



**SYNCHRO ANALYSIS**

**Old Walt Whitman Road & Park Drive**



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘ ↙			↑	↑	↗
Satd. Flow (prot)	1662	0	0	1842	1863	1583
Flt Permitted	0.985			0.989		
Satd. Flow (perm)	1662	0	0	1842	1863	1583
Volume (vph)	5	13	87	298	594	70
Lane Group Flow (vph)	20	0	0	426	660	78
Sign Control	Stop			Free	Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 66.1%      IGD Level of Service: C  
 Analysis Period (min): 15





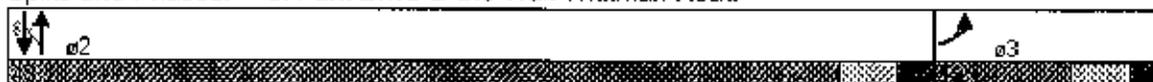
Lane Group	EBL	EBR	NBL	NBT	SEB	SEB
Lane Configurations						
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1662	0	1770	1863	1863	1583
Flt Permitted	0.965		0.358			
Satd. Flow (perm)	1662	0	667	1863	1863	1583
Satd. Flow (RTOR)	14					79
Volume (vph)	5	13	89	340	605	71
Lane Group Flow (vph)	20	0	99	378	672	79
Turn Type			Perm			Perm
Protected Phases	3			2	2	
Permitted Phases			2			2
Total Split (s)	12.0	0.0	48.0	48.0	48.0	48.0
Act Effct Green (s)	8.0		92.6	92.6	92.6	92.6
Actuated g/C Ratio	0.08		0.95	0.95	0.95	0.95
v/c Ratio	0.15		0.16	0.21	0.38	0.05
Control Delay	16.3		1.7	1.2	1.8	0.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	16.3		1.7	1.2	1.8	0.5
LOS	B		A	A	A	A
Approach Delay	16.3			1.3	1.6	
Approach LOS	B			A	A	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 97.8  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.38  
 Intersection Signal Delay: 1.7  
 Intersection Capacity Utilization: 50.1%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service: A

Splits and Phases: 8: Park Drive & Old Walt Whitman Road





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖		↙	↑	↑	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1662	0	1770	1863	1863	1583
Flt Permitted	0.965		0.333			
Satd. Flow (perm)	1662	0	620	1863	1863	1583
Satd. Flow (RTOR)	14					74
Volume (vph)	5	13	89	585	646	71
Lane Group Flow (vph)	20	0	99	650	718	79
Turn Type			Perm			Perm
Protected Phases	3			2	2	
Permitted Phases			2			2
Total Split (s)	12.0	0.0	48.0	48.0	48.0	48.0
Act Effct Green (s)	8.0		92.6	92.6	92.6	92.6
Actuated g/C Ratio	0.06		0.95	0.95	0.95	0.95
v/c Ratio	0.15		0.17	0.37	0.41	0.05
Control Delay	16.3		1.8	1.7	1.9	0.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	16.3		1.8	1.7	1.9	0.6
LOS	B		A	A	A	A
Approach Delay	16.3			1.7	1.8	
Approach LOS	B			A	A	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 97.8  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.41  
 Intersection Signal Delay: 1.9      Intersection LOS: A  
 Intersection Capacity Utilization: 52.3%      ICU Level of Service: A  
 Analysis Period (min): 15

Splits and Phases: 8: Park Drive & Old Walt Whitman Road



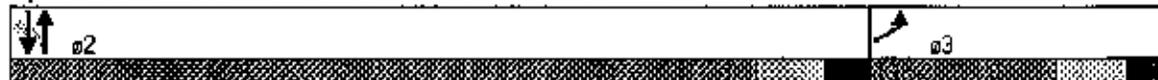


Lane Group	EBL	EBR	NBL	NBT	SEB	SEB
Lane Configurations						
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1662	0	1770	1863	1863	1583
Flt Permitted	0.985		0.306			
Satd. Flow (perm)	1662	0	570	1863	1863	1583
Satd. Flow (RTOR)	14					70
Volume (vph)	5	13	89	585	646	71
Lane Group Flow (vph)	20	0	99	650	718	79
Turn Type			Perm			Perm
Protected Phases	3			2	2	
Permitted Phases			2			2
Total Split (s)	13.0	0.0	37.0	37.0	37.0	37.0
Act Effect Green (s)	6.8		46.8	46.8	46.8	46.8
Actuated g/C Ratio	0.14		0.94	0.94	0.94	0.94
v/c Ratio	0.08		0.19	0.37	0.41	0.05
Control Delay	13.2		2.4	2.1	1.8	0.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	13.2		2.4	2.1	1.8	0.5
LOS	B		A	A	A	A
Approach Delay	13.2			2.1	1.7	
Approach LOS	B			A	A	

**Intersection Summary**

Cycle Length: 50  
 Actuated Cycle Length: 50  
 Offset: 3 (6%), Referenced to phase 2:NBSB, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.41  
 Intersection Signal Delay: 2.0      Intersection LOS: A  
 Intersection Capacity Utilization 52.3%      ICU Level of Service A  
 Analysis Period (min): 15

Splits and Phases: 8: Park Drive & Old Walt Whitman Road





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	↑
Satd. Flow (prot)	1676	0	0	1859	1883	1583
Flt Permitted	0.981			0.998		
Satd. Flow (perm)	1676	0	0	1859	1883	1583
Volume (vph)	61	98	16	350	599	13
Lane Group Flow (vph)	177	0	0	407	886	14
Sign Control	Stop			Free	Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 47.6%      ICU Level of Service: A  
 Analysis Period (min): 15

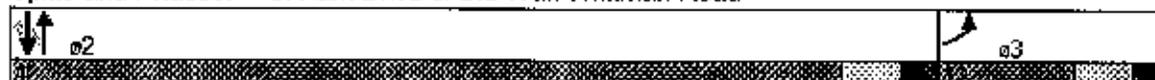


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1676	0	1770	1863	1863	1583
Flt Permitted	0.981		0.354			
Satd. Flow (perm)	1676	0	659	1863	1863	1583
Satd. Flow (RTOR)	1.11					1.14
Volume (vph)	62	100	18	375	611	13
Lane Group Flow (vph)	180	0	18	417	679	13
Turn Type			Perm			Perm
Protected Phases	3			2	2	
Permitted Phases			2			2
Total Split (s)	12.0	0.0	48.0	48.0	48.0	48.0
Act Effct Green (s)	7.5		44.7	44.7	44.7	44.7
Actuated g/C Ratio	0.12		0.74	0.74	0.74	0.74
v/c Ratio	0.59		0.04	0.30	0.49	0.01
Control Delay	19.3		2.4	3.3	4.7	1.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	19.3		2.4	3.3	4.7	1.2
LOS	B		A	A	A	A
Approach Delay	19.3			3.3	4.6	
Approach LOS	B			A	A	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 60.2  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.59  
 Intersection Signal Delay: 6.2  
 Intersection LOS: A  
 Intersection Capacity Utilization: 48.4%  
 ICU Level of Service: A  
 Analysis Period (min): 15

Splits and Phases: 8: Park Drive & Old Walt Whitman Road







Lane Group	EBL	EBR	NBL	NBT	SBL	SBR
Lane Configurations						
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1676	0	1770	1863	1863	1583
Flt Permitted	0.981		0.203			
Satd. Flow (perm)	1676	0	378	1863	1863	1583
Satd. Flow (RTOR)	111					10
Volume (vph)	62	100	16	420	879	13
Lane Group Flow (vph)	180	0	18	467	977	14
Turn Type			Perm			Perm
Protected Phases	3			2	2	
Permitted Phases			2			2
Total Split (s)	12.0	0.0	48.0	48.0	48.0	48.0
Act Effct Green (s)	7.5		44.7	44.7	44.7	44.7
Actuated v/c Ratio	0.12		0.74	0.74	0.74	0.74
v/c Ratio	0.59		0.06	0.34	0.71	0.01
Control Delay	19.3		2.9	3.5	7.9	1.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	19.3		2.9	3.5	7.9	1.5
LOS	B		A	A	A	A
Approach Delay	19.3			3.5	7.8	
Approach LOS	B			A	A	

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 60.2  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 7.8      Intersection LOS: A  
 Intersection Capacity Utilization: 62.5%      ICU Level of Service: B  
 Analysis Period (min) 15

Splits and Phases: 8: Park Drive & Old Walt Whitman Road





---

**TECHNICAL APPENDIX**

---



**SYNCHRO ANALYSIS**

**NYS Route 110 & Long Island Expressway North Service Road**

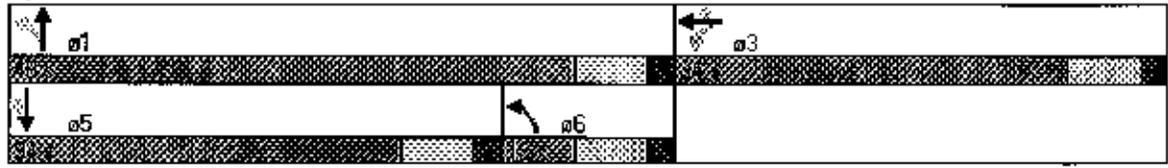


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	EBR
Lane Configurations					↑↑	↑	↘	↑↑↑			↑↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3150	1436	1793	4567	0	0	3438	1477
Flt. Permitted					0.991		0.118					
Satd. Flow (perm)	0	0	0	0	3150	1436	223	4567	0	0	3438	1477
Satd. Flow (RTOR)						61						46
Volume (vph)	0	0	0	189	900	81	199	1166	0	0	1167	119
Lane Group Flow (vph)	0	0	0	0	1201	103	246	1202	0	0	1228	145
Turn Type				Perm	Perm	pm+pt						Perm
Protected Phases					3		6	1			5	
Permitted Phases				3		3	1					5
Total Split (s)	0.0	0.0	0.0	34.0	34.0	34.0	12.0	46.0	0.0	0.0	34.0	34.0
Act Effct Green (s)					30.0	30.0	42.0	42.0			30.0	30.0
Actuated v/c Ratio					0.38	0.38	0.52	0.52			0.38	0.38
v/c Ratio					1.02	0.18	0.90	0.50			0.95	0.25
Control Delay					57.1	10.3	36.6	5.1			41.7	13.1
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					57.1	10.3	36.6	5.1			41.7	13.1
LOS					E	B	D	A			D	B
Approach Delay					53.4			10.4			38.7	
Approach LOS					D			B			D	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 54 (68%), Referenced to phase 1:NBT and 5:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.02  
 Intersection Signal Delay: 33.4      Intersection LOS: C  
 Intersection Capacity Utilization: 83.7%      ICU Level of Service: E  
 Analysis Period (min): 15

**Splits and Phases: 1: LIE North Service Road & Route 110**



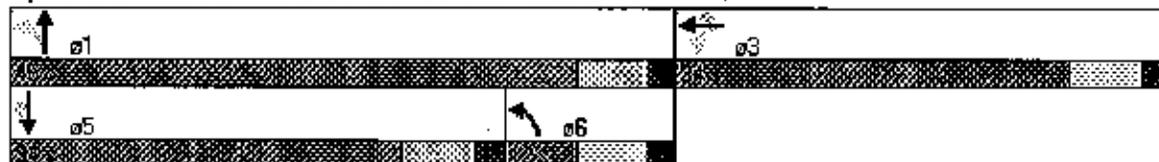


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB
Lane Configurations					↑↑	↑	↓	↑↑↑			↑↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3150	1436	1793	4567	0	0	3438	1477
Flt Permitted					0.991		0.118					
Satd. Flow (perm)	0	0	0	0	3150	1436	223	4567	0	0	3438	1477
Satd. Flow (RTOR)						47						44
Volume (vph)	0	0	0	194	918	83	203	1195	0	0	1220	121
Lane Group Flow (vph)	0	0	0	0	1227	105	251	1232	0	0	1284	148
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases					3		6	1				5
Permitted Phases				3		3	1					5
Total Split (s)	0.0	0.0	0.0	34.0	34.0	34.0	12.0	46.0	0.0	0.0	34.0	34.0
Act Effct Green (s)					30.0	30.0	42.0	42.0			30.0	30.0
Actuated g/C Ratio					0.38	0.38	0.52	0.52			0.38	0.38
v/c Ratio					1.04	0.18	0.92	0.51			1.00	0.25
Control Delay					63.4	11.0	38.4	5.1			50.7	13.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					63.4	11.0	38.4	5.1			50.7	13.4
LOS					E	B	D	A			D	B
Approach Delay					59.3			10.8			46.8	
Approach LOS					E			B			D	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 54 (68%), Referenced to phase 1:NBTL and 5:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.04  
 Intersection Signal Delay: 38.1      Intersection LOS: D  
 Intersection Capacity Utilization 86.0%      ICU Level of Service E  
 Analysis Period (min): 15

Splits and Phases: 1: LIE North Service Road & Route 110



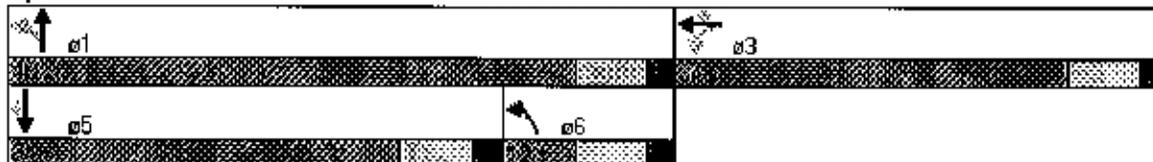


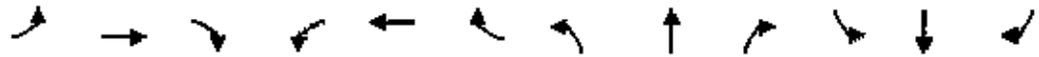
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑	↓	↑↑↑			↑↑↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	4526	1436	1793	4567	0	0	4940	1477
Flt Permitted					0.991		0.122					
Satd. Flow (perm)	0	0	0	0	4526	1436	230	4567	0	0	4940	1477
Satd. Flow (RTOR)						47						44
Volume (vph)	0	0	0	194	918	83	203	1195	0	0	1220	121
Lane Group Flow (vph)	0	0	0	0	1227	105	251	1232	0	0	1234	148
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases					3		6	1			5	
Permitted Phases				3		3	1					5
Total Spill (s)	0.0	0.0	0.0	34.0	34.0	34.0	12.0	46.0	0.0	0.0	34.0	34.0
Act Effect Green (s)					30.0	30.0	42.0	42.0			30.0	30.0
Actuated g/C Ratio					0.38	0.38	0.52	0.52			0.38	0.38
v/c Ratio					0.72	0.18	0.91	0.51			0.69	0.25
Control Delay					24.4	11.0	37.4	5.2			23.5	13.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					24.4	11.0	37.4	5.2			23.5	13.4
LOS					C	B	D	A			C	B
Approach Delay					23.4			10.7			22.5	
Approach LOS					C			B			C	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 54 (68%), Referenced to phase 1:NBTL and 5:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 18.6      Intersection LOS: B  
 Intersection Capacity Utilization 66.5%      ICU Level of Service C  
 Analysis Period (min): 15

**Splits and Phases: 1: LIE North Service Road & Route 110**



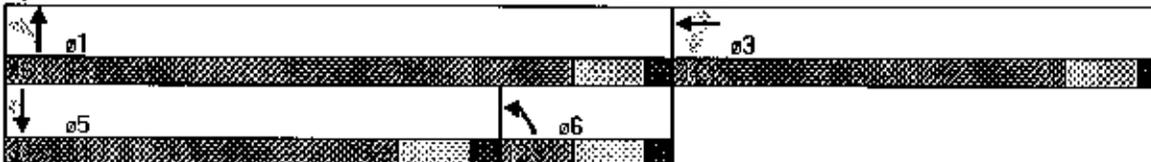


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					4↑	↑	↘	↑↑↑			↑↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3156	1436	1793	4567	0	0	3438	1477
Flt Permitted					0.993		0.116					
Satd. Flow (perm)	0	0	0	0	3156	1436	223	4567	0	0	3438	1477
Satd. Flow (RTOR)						44						30
Volume (vph)	0	0	0	194	1126	83	203	1214	0	0	1220	158
Lane Group Flow (vph)	0	0	0	0	1455	105	251	1252	0	0	1284	193
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases					3		6	1			6	
Permitted Phases				3		3	1					5
Total Split (s)	0.0	0.0	0.0	34.0	34.0	34.0	12.0	46.0	0.0	0.0	34.0	34.0
Act Effect Green (s)					30.0	30.0	42.0	42.0			30.0	30.0
Actuated g/C Ratio					0.88	0.88	0.52	0.52			0.88	0.88
v/c Ratio					1.23	0.19	0.92	0.52			1.00	0.34
Control Delay					136.4	1.4	38.1	5.2			50.7	17.0
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					136.4	1.4	38.1	5.2			50.7	17.0
LOS					F	B	D	A			D	B
Approach Delay					128.0			10.7			46.3	
Approach LOS					F			B			D	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 60  
 Offset: 54 (68%), Referenced to phase 1:NBT and 5:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.23  
 Intersection Signal Delay: 62.6      Intersection LOS: E  
 Intersection Capacity Utilization 91.7%      ICU Level of Service: F  
 Analysis Period (min): 15

**Splits and Phases: 1: LIE North Service Road & Route 110**



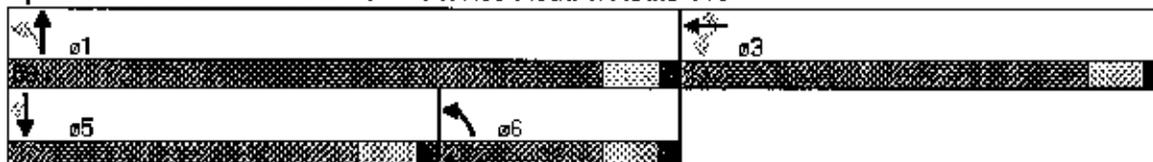


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Lane Configurations					↑↑↑	↑	↑	↑↑↑			↑↑↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	4535	1436	1793	4567	0	0	4940	1477
Flt Permitted					0.993		0.108					
Satd. Flow (perm)	0	0	0	0	4535	1436	204	4567	0	0	4940	1477
Satd. Flow (RTOR)						49						75
Volume (vph)	0	0	0	194	1126	83	203	1214	0	0	1220	158
Lane Group Flow (vph)	0	0	0	0	1486	105	251	1252	0	0	1284	193
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases					3		6	1				5
Permitted Phases				3		3	1					5
Total Spill (s)	0.0	0.0	0.0	42.0	42.0	42.0	21.0	56.0	0.0	0.0	37.0	37.0
Act Effct Green (s)					38.0	38.0	54.0	54.0			33.0	33.0
Actuated g/C Ratio					0.38	0.38	0.54	0.54			0.33	0.33
v/c Ratio					0.84	0.18	0.66	0.51			0.79	0.36
Control Delay					34.0	12.6	16.3	5.6			34.6	17.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					34.0	12.6	16.3	5.6			34.6	17.4
LOS					C	B	B	A			C	B
Approach Delay					32.5			7.4			32.3	
Approach LOS					C			A			C	

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 21 (21%), Referenced to phase 1:NBT and 5:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 24.1      Intersection LOS: C  
 Intersection Capacity Utilization 70.5%      ICU Level of Service C  
 Analysis Period (min): 15

**Splits and Phases: 1: LIE North Service Road & Route 110**



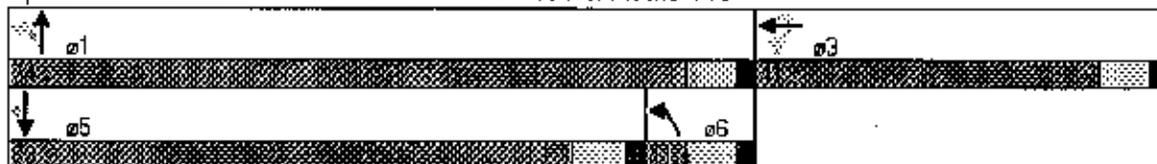


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑	↓	↑↑↑			↑↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3234	1478	1847	4793	0	0	3539	1589
Flt Permitted					0.986		0.063					
Satd. Flow (perm)	0	0	0	0	3234	1478	122	4793	0	0	3539	1589
Satd. Flow (RTOR)						40						47
Volume (vph)	0	0	0	216	712	65	174	1371	0	0	1387	211
Lane Group Flow (vph)	0	0	0	0	1062	89	205	1490	0	0	1508	251
Turn Type				Perm		Perm	pm+pt				Perm	
Protected Phases					3		6	1			5	
Permitted Phases				3		3	1					5
Total Split (s)	0.0	0.0	0.0	41.0	41.0	41.0	11.0	74.0	0.0	0.0	63.0	63.0
Act Effct Green (s)					37.0	37.0	70.0	70.0			59.0	59.0
Actuated g/C Ratio					0.32	0.32	0.61	0.61			0.51	0.51
v/c Ratio					1.02	0.18	1.15	0.51			0.83	0.30
Control Delay					72.1	17.4	94.9	0.5			28.8	14.0
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					72.1	17.4	94.9	0.5			28.8	14.0
LOS					E	B	F	A			C	B
Approach Delay					67.9			11.9			25.7	
Approach LOS					E			B			C	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 1 (1%), Referenced to phase 1:NBT and 5:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.15  
 Intersection Signal Delay: 31.6      Intersection LOS: C  
 Intersection Capacity Utilization: 83.9%      ICU Level of Service: E  
 Analysis Period (min): 15

Splits and Phases: 1: LIE North Service Road & Route 110





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↑	↗	↖	↑↑↑			↑↑	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3234	1478	1847	4793	0	0	3539	1589
Flt Permitted					0.986		0.063					
Satd. Flow (perm)	0	0	0	0	3234	1478	122	4793	0	0	3539	1589
Satd. Flow (RTOR)						35						44
Volume (vph)	0	0	0	222	726	66	177	1428	0	0	1432	215
Lane Group Flow (vph)	0	0	0	0	1086	90	208	1552	0	0	1557	256
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases					3		6	1			5	
Permitted Phases				3		3	1					5
Total Split (s)	0.0	0.0	0.0	41.0	41.0	41.0	11.0	74.0	0.0	0.0	63.0	63.0
Act Effct Green (s)					37.0	37.0	70.0	70.0			59.0	59.0
Actuated o/c Ratio					0.32	0.32	0.61	0.61			0.51	0.51
v/c Ratio					1.04	0.18	1.16	0.53			0.86	0.31
Control Delay					78.1	18.6	100.3	0.7			30.4	14.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					78.1	18.6	100.3	0.7			30.4	14.4
LOS					E	B	F	A			C	B
Approach Delay					73.5			12.5			28.1	
Approach LOS					E			B			C	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 1 (1%), Referenced to phase 1:NBT and 5:SBT, Start of Green  
 Control Type: Actuated Coordinated  
 Maximum v/c Ratio: 1.16  
 Intersection Signal Delay: 33.6      Intersection LOS: C  
 Intersection Capacity Utilization: 85.9%      ICU Level of Service: E  
 Analysis Period (min): 15

Splits and Phases: 1: LIE North Service Road & Route 110





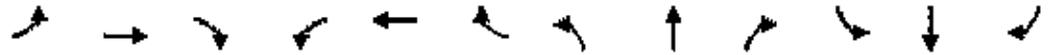
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑	↓	↑↑↑			↑↑↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	4647	1478	1847	4793	0	0	5085	1589
Flt-Permitted					0.886		0.099					
Satd. Flow (perm)	0	0	0	0	4647	1478	192	4793	0	0	5085	1589
Satd. Flow (RTOR)						35						48
Volume (vph)	0	0	0	222	726	66	177	1428	0	0	1432	215
Lane Group Flow (vph)	0	0	0	0	1085	90	208	1552	0	0	1557	256
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases					3		6	1			6	
Permitted Phases				3		3	1					5
Total Split (s)	0.0	0.0	0.0	41.0	41.0	41.0	11.0	74.0	0.0	0.0	68.0	68.0
Act Effct Green (s)					37.0	37.0	70.0	70.0			59.0	59.0
Actuated g/C Ratio					0.92	0.92	0.61	0.61			0.61	0.61
v/c Ratio					0.73	0.18	0.95	0.53			0.60	0.31
Control Delay					37.9	18.8	32.5	1.5			20.9	14.1
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					37.9	18.8	32.5	1.5			20.9	14.1
LOS					D	B	C	A			C	B
Approach Delay					36.4			5.2			19.9	
Approach LOS					D			A			B	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 10 (9%), Referenced to phase 1:NBT and 5:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 18.5      Intersection LOS: B  
 Intersection Capacity Utilization: 66.0%      ICU Level of Service: C  
 Analysis Period (min): 15

**Splits and Phases: 1: LIE North Service Road & Route 110**



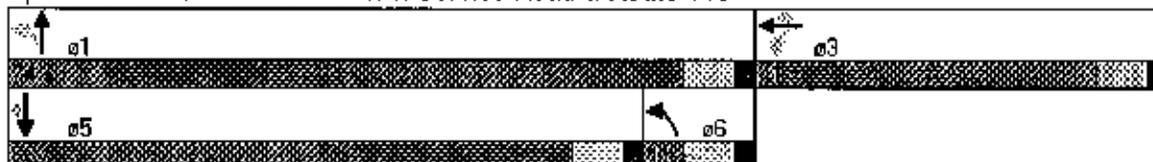


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑	↑	↑↑↑			↑↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	3237	1478	1847	4793	0	0	3539	1589
Flt Permitted					0.987		0.083					
Satd. Flow (perm)	0	0	0	0	3237	1478	122	4793	0	0	3539	1589
Satd. Flow (RTOR)							25	3				38
Volume (vph)	0	0	0	222	764	66	177	1551	0	0	1432	222
Lane Group Flow (vph)	0	0	0	0	1126	90	208	1686	0	0	1557	264
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases					3		6	1			5	
Permitted Phases				3		3	1					5
Total Split (s)	0.0	0.0	0.0	41.0	41.0	41.0	11.0	74.0	0.0	0.0	63.0	63.0
Act Effct Green (s)					37.0	37.0	70.0	70.0			59.0	59.0
Actuated g/C Ratio					0.32	0.32	0.61	0.61			0.51	0.51
v/c Ratio					1.08	0.18	1.16	0.58			0.86	0.32
Control Delay					90.4	21.5	101.1	1.2			30.4	15.0
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					90.4	21.5	101.1	1.2			30.4	15.0
LOS					F	C	F	A			C	B
Approach Delay					85.3			12.1			28.1	
Approach LOS					F			B			C	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 1 (1%), Referenced to phase 1.NBTL and 5.SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.16  
 Intersection Signal Delay: 35.1      Intersection LOS: D  
 Intersection Capacity Utilization 87.0%      ICU Level of Service E  
 Analysis Period (min): 15

Splits and Phases: 1: LIE North Service Road & Route 110



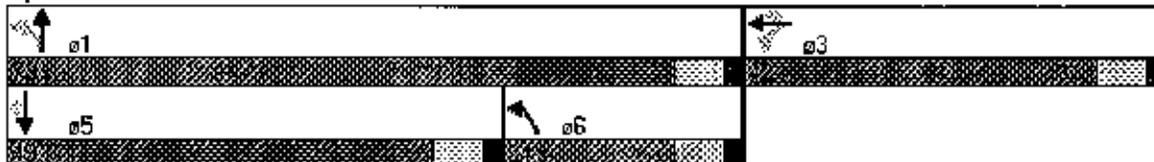


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB
Lane Configurations					↑↑↑	↑	↑	↑↑↑			↑↑↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	0	0	0	4651	1478	1847	4793	0	0	5085	1589
Flt Permitted					0.987		0.082					
Satd. Flow (perm)	0	0	0	0	4651	1478	159	4793	0	0	5085	1589
Satd. Flow (RTOR)							24					125
Volume (vph)	0	0	0	222	764	66	177	1551	0	0	1432	222
Lane Group Flow (vph)	0	0	0	0	1126	90	208	1686	0	0	1557	264
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases					3		6	1			5	
Permitted Phases				3		3	1					5
Total Split (s)	0.0	0.0	0.0	42.0	42.0	42.0	24.0	73.0	0.0	0.0	49.0	49.0
Act Effct Green (s)					35.9	35.9	71.1	71.1			47.1	47.1
Actuated g/C Ratio					0.31	0.31	0.62	0.62			0.41	0.41
v/c Ratio					0.77	0.19	0.53	0.57			0.75	0.36
Control Delay					39.9	21.6	11.1	2.5			32.1	14.1
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					39.9	21.6	11.1	2.5			32.1	14.1
LOS					D	C	B	A			C	B
Approach Delay					38.6			3.4			29.6	
Approach LOS					D			A			C	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 78 (68%), Referenced to phase 1:NBT and 5:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 2.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 66.7%  
 ICU Level of Service C  
 Analysis Period (min): 15

**Splits and Phases: 1: LIE North Service Road & Route 110**



---

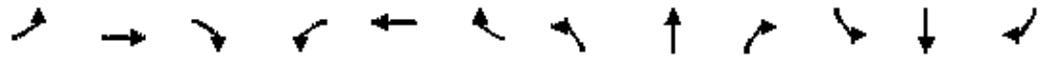
**TECHNICAL APPENDIX**

---



**SYNCHRO ANALYSIS**

**Long Island Expressway South Service Road & NYS Route 110**

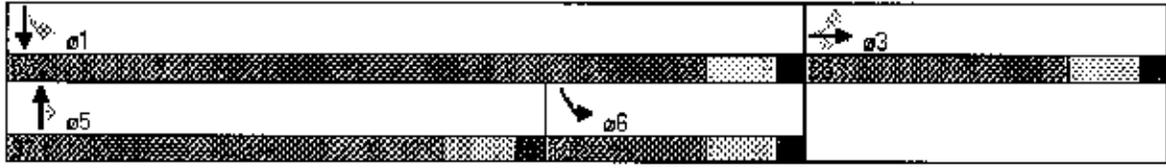


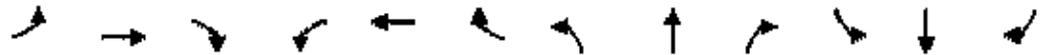
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB
Lane Configurations		↑↑	↑↑					↑↑↑	↑	↓	↑↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3135	2608	0	0	0	0	4401	1335	1604	4655	0
Flt Permitted		0.997								0.106		
Satd. Flow (perm)	0	3135	2608	0	0	0	0	4401	1335	182	4655	0
Satd. Flow (RTOR)									55			
Volume (vph)	49	734	630	0	0	0	0	1333	273	258	2012	0
Lane Group Flow (vph)	0	872	715	0	0	0	0	1515	329	349	2118	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		3						5		6	1	
Permitted Phases	3		3						5	1		
Total Split (s)	25.0	25.0	25.0	0.0	0.0	0.0	0.0	37.0	37.0	19.0	55.0	0.0
Act Effct Green (s)		21.0	21.0					33.0	33.0	51.0	51.0	
Actuated g/C Ratio		0.26	0.26					0.41	0.41	0.64	0.64	
v/c Ratio		1.06	1.05					0.83	0.58	0.96	0.71	
Control Delay		60.4	57.1					26.2	18.5	64.6	14.5	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		60.4	57.1					26.2	18.5	64.6	14.5	
LOS		E	E					C	B	E	B	
Approach Delay		58.9						24.9			21.6	
Approach LOS		E						C			C	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 42 (53%), Referenced to phase 1:SBTL and 5:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.06  
 Intersection Signal Delay: 32.7      Intersection LOS: C  
 Intersection Capacity Utilization 71.8%      ICU Level of Service C  
 Analysis Period (min): 15

Splits and Phases: 2: LIE South Service Road & Route 110



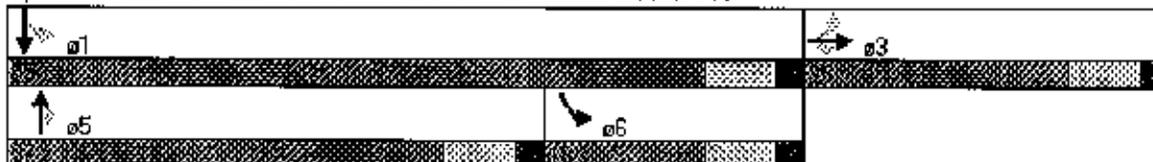


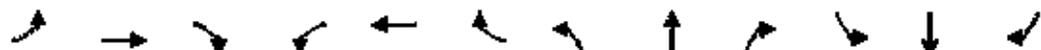
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Lane Configurations		↕↕	↗↗					↕↕↕	↗	↘	↕↕↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3123	2608	0	0	0	0	4401	1335	1604	4655	0
Flt Permitted		0.996								0.108		
Satd. Flow (perm)	0	3123	2608	0	0	0	0	4401	1335	182	4655	0
Satd. Flow (RTOR)									61			
Volume (vph)	66	759	643	0	0	0	0	1360	278	263	2145	0
Lane Group Flow (vph)	0	918	731	0	0	0	0	1545	335	355	2258	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		3						5		6	1	
Permitted Phases	3		3						5	1		
Total Split (s)	25.0	25.0	25.0	0.0	0.0	0.0	0.0	37.0	37.0	18.0	55.0	0.0
Act Effct Green (s)		21.0	21.0					33.0	33.0	51.0	51.0	
Actuated v/c Ratio		0.26	0.26					0.41	0.41	0.64	0.64	
v/c Ratio		1.12	1.07					0.85	0.57	0.97	0.76	
Control Delay		85.8	67.1					27.1	19.2	68.1	15.4	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		85.8	67.1					27.1	19.2	68.1	15.4	
LOS		F	E					C	B	E	B	
Approach Delay		77.5						26.7			22.6	
Approach LOS		E						C			C	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 42 (53%), Referenced to phase 1:SBTL and 5:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.12  
 Intersection Signal Delay: 38.3      Intersection LOS: D  
 Intersection Capacity Utilization: 73.7%      ICU Level of Service: D  
 Analysis Period (min): 15

**Splits and Phases: 2: LIE South Service Road & Route 110**





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NET	NBR	SEB	SEB	SBR
Lane Configurations		↑↑↑	↑↑					↑↑↑	↑	↓	↑↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	4487	2608	0	0	0	0	4401	1335	1604	4655	0
Flt Permitted		0.996								0.108		
Satd. Flow (perm)	0	4487	2608	0	0	0	0	4401	1335	182	4655	0
Satd. Flow (RTOR)									61			
Volume (vph)	66	759	643	0	0	0	0	1360	278	263	2145	0
Lane Group Flow (vph)	0	918	731	0	0	0	0	1545	335	355	2258	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		3						5		6	1	
Permitted Phases	3		3						5	1		
Total Split (s)	25.0	25.0	25.0	0.0	0.0	0.0	0.0	37.0	37.0	18.0	55.0	0.0
Act Effct Green (s)		21.0	21.0					33.0	33.0	51.0	51.0	
Actuated g/C Ratio		0.26	0.26					0.41	0.41	0.64	0.64	
v/c Ratio		0.78	1.07					0.85	0.57	0.97	0.76	
Control Delay		23.5	67.1					27.1	19.2	67.6	15.2	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		23.5	67.1					27.1	19.2	67.6	15.2	
LOS		C	E					C	B	E	B	
Approach Delay		42.8						25.7			22.3	
Approach LOS		D						C			C	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 42 (53%), Referenced to phase 1:SBTL and 5:NBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 28.8

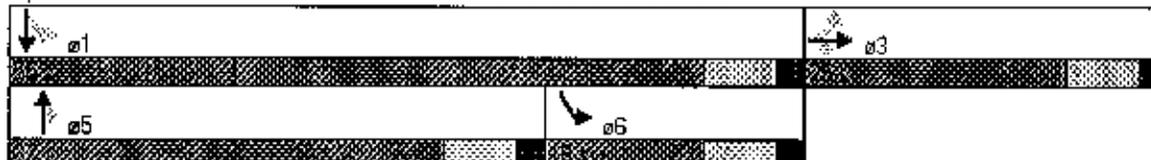
Intersection LOS: C

Intersection Capacity Utilization 70.6%

ICU Level of Service C

Analysis Period (min): 15

Splits and Phases: 2: LIE South Service Road & Route 110



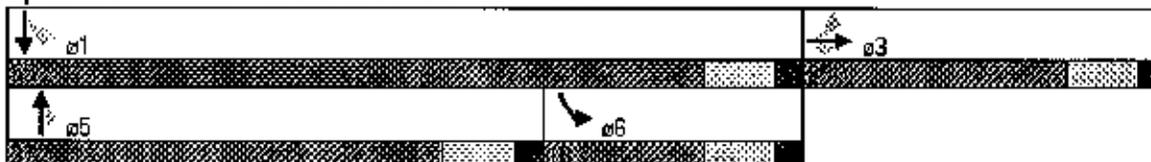


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↗↗					↕↕↕	↗	↘	↕↕↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3110	2608	0	0	0	0	4401	1335	1604	4655	0
Flt Permitted		0.995								0.108		
Satd. Flow (perm)	0	3110	2608	0	0	0	0	4401	1335	182	4655	0
Satd. Flow (RTOR)									60			
Volume (vph)	85	788	643	0	0	0	0	1360	278	263	2145	0
Lane Group Flow (vph)	0	973	731	0	0	0	0	1545	338	355	2288	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		3						5		6	1	
Permitted Phases	3		3						5	1		
Total Split (s)	25.0	25.0	25.0	0.0	0.0	0.0	0.0	37.0	37.0	18.0	55.0	0.0
Act Effct Green (s)		21.0	21.0					33.0	33.0	51.0	51.0	
Actuated g/C Ratio		0.26	0.26					0.41	0.41	0.64	0.64	
v/c Ratio		1.19	1.07					0.85	0.57	0.97	0.76	
Control Delay		116.5	66.6					27.1	19.2	67.9	15.4	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		116.5	66.6					27.1	19.2	67.9	15.4	
LOS		F	E					C	B	E	B	
Approach Delay		95.2						25.7			22.6	
Approach LOS		F						C			C	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 42 (53%), Referenced to phase 1:SBTL and 5:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.19  
 Intersection Signal Delay: 43.5  
 Intersection LOS: D  
 Intersection Capacity Utilization 75.1%  
 ICU Level of Service D  
 Analysis Period (min): 15

**Splits and Phases: 2: LIE South Service Road & Route 110**



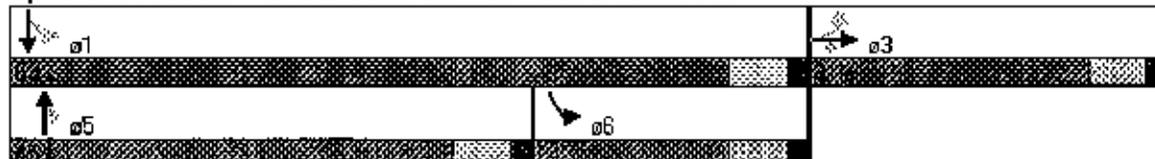


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑↑					↑↑↑	↑	↑	↑↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	4469	2608	0	0	0	0	4401	1335	1604	4655	0
Flt Permitted		0.995								0.089		
Satd. Flow (perm)	0	4469	2608	0	0	0	0	4401	1335	150	4655	0
Satd. Flow (RTOR)									73			
Volume (vph)	85	788	643	0	0	0	0	1360	278	263	2145	0
Lane Group Flow (vph)	0	973	731	0	0	0	0	1545	335	355	2258	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		5						5		6	1	
Permitted Phases	3		3						5	1		
Total Spill (s)	31.0	31.0	31.0	0.0	0.0	0.0	0.0	45.0	45.0	24.0	69.0	0.0
Act Effct Green (s)		27.0	27.0					41.0	41.0	65.0	65.0	
Actuated g/C Ratio		0.27	0.27					0.41	0.41	0.65	0.65	
v/c Ratio		0.81	1.04					0.86	0.57	0.91	0.75	
Control Delay		30.4	68.0					32.7	21.9	48.3	7.9	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		30.4	68.0					32.7	21.9	48.3	7.9	
LOS		C	E					C	C	D	A	
Approach Delay		26.6						30.8			13.4	
Approach LOS		D						C			B	

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 14 (14%), Referenced to phase 1:SBTL and 5:NBT. Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.04  
 Intersection Signal Delay: 27.8      Intersection LOS: C  
 Intersection Capacity Utilization: 70.6%      ICU Level of Service: C  
 Analysis Period (min): 15

**Splits and Phases: 2: LIE South Service Road & Route 110**



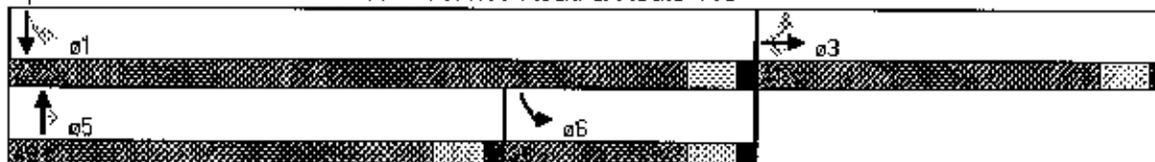


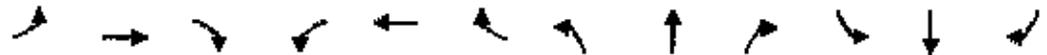
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑↑					↑↑↑	↑	↑	↑↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3200	2472	0	0	0	0	4700	1553	1685	4655	0
Flt Permitted		0.994								0.082		
Satd. Flow (perm)	0	3200	2472	0	0	0	0	4700	1553	145	4655	0
Satd. Flow (RTOR)										41		
Volume (vph)	115	950	212	0	0	0	0	1739	521	347	2047	0
Lane Group Flow (vph)	0	1298	238	0	0	0	0	1890	559	390	2201	0
Turn Type		Perm	Perm							Perm	pm+pt	
Protected Phases		3						5		3	1	
Permitted Phases		3	3						5	1		
Total Split (s)	41.0	41.0	41.0	0.0	0.0	0.0	0.0	49.0	49.0	25.0	74.0	0.0
Act Effct Green (s)		37.0	37.0					45.0	45.0	70.0	70.0	
Actuated g/C Ratio		0.32	0.32					0.39	0.39	0.61	0.61	
v/c Ratio		1.26	0.30					1.03	0.95	1.08	0.78	
Control Delay		168.4	48.7					63.3	57.2	92.0	14.3	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		168.4	48.7					63.3	57.2	92.0	14.3	
LOS		F	D					E	E	F	B	
Approach Delay		149.9						61.9			26.0	
Approach LOS		F						E			C	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 110 (96%), Referenced to phase 1: SBT and 5: NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.26  
 Intersection Signal Delay: 88.2      Intersection LOS: E  
 Intersection Capacity Utilization 92.4%      ICU Level of Service F  
 Analysis Period (min): 15

**Splits and Phases: 2: LIE South Service Road & Route 110**



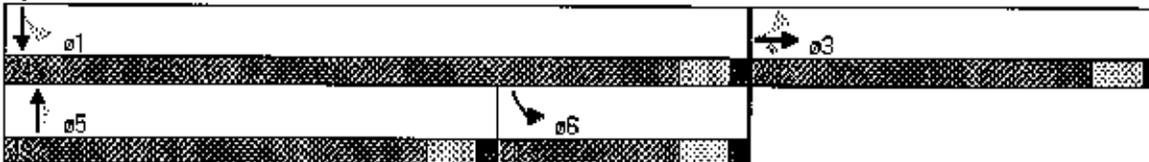


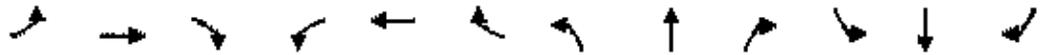
Lane Group	EBL	EST	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SBR
Lane Configurations		↑↑	↑↑					↑↑↑	↑	↓	↑↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3196	2472	0	0	0	0	4700	1553	1685	4655	0
Flt Permitted		0.991								0.082		
Satd. Flow (perm)	0	3196	2472	0	0	0	0	4700	1553	146	4655	0
Satd. Flow (RTOR)									37			
Volume (vph)	195	1034	216	0	0	0	0	1774	531	354	2128	0
Lane Group Flow (vph)	0	1506	243	0	0	0	0	1928	610	398	2288	0
Turn Type	Perm		Perm							Perm pm+pt		
Protected Phases		3						5		6	1	
Permitted Phases	3		3						5	1		
Total Spill (s)	41.0	41.0	41.0	0.0	0.0	0.0	0.0	49.0	49.0	25.0	74.0	0.0
Act Effct Green (s)		37.0	37.0					45.0	45.0	70.0	70.0	
Actuated g/C Ratio		0.32	0.32					0.39	0.39	0.61	0.61	
v/c Ratio		1.46	0.31					1.05	0.97	1.08	0.81	
Control Delay		246.5	36.9					69.6	62.0	98.8	15.4	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		246.5	36.9					69.6	62.0	98.8	15.4	
LOS		F	D					E	E	F	B	
Approach Delay		217.4						67.8			27.8	
Approach LOS		F						E			C	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 110 (96%), Referenced to phase 1:SBTL and 5:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.46  
 Intersection Signal Delay: 89.9  
 Intersection LOS: F  
 Intersection Capacity Utilization: 98.1%  
 ICU Level of Service: F  
 Analysis Period (min): 15

**Splits and Phases: 2: LIE South Service Road & Route 110**



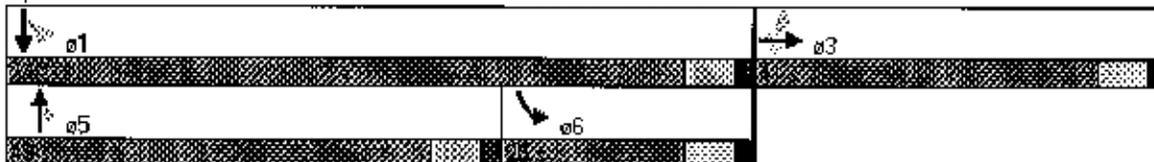


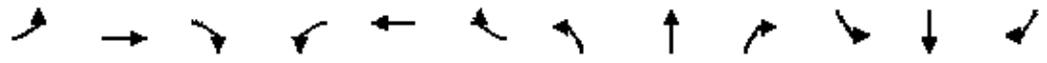
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SBR
Lane Configurations		↑↑↑	↑↑					↑↑↑	↑	↑	↑↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	4592	2472	0	0	0	0	4700	1553	1685	4655	0
Flt Permitted		0.991								0.082		
Satd. Flow (perm)	0	4592	2472	0	0	0	0	4700	1553	145	4655	0
Satd. Flow (RTOR)									37			
Volume (vph)	195	1034	216	0	0	0	0	1774	531	354	2128	0
Lane Group Flow (vph)	0	1505	243	0	0	0	0	1928	610	398	2288	0
Turn Type	Perm		Perm							Perm	pm+pt	
Protected Phases		3						5		6	1	
Permitted Phases	3		3						5	1		
Total Split (s)	41.0	41.0	41.0	0.0	0.0	0.0	0.0	49.0	49.0	25.0	74.0	0.0
Act Effct Green (s)		37.0	37.0					45.0	45.0	70.0	70.0	
Actuated g/C Ratio		0.32	0.32					0.39	0.39	0.61	0.61	
v/c Ratio		1.02	0.31					1.05	0.97	1.08	0.81	
Control Delay		78.1	46.3					69.6	62.0	99.4	15.6	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		78.1	46.3					69.6	62.0	99.4	15.6	
LOS		E	D					E	E	F	B	
Approach Delay		73.7						67.8			28.0	
Approach LOS		E						E			C	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 110 (96%), Referenced to phase 1:SBTL and 5:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.08  
 Intersection Signal Delay: 53.9  
 Intersection LOS: D  
 Intersection Capacity Utilization 87.8%  
 ICU Level of Service E  
 Analysis Period (min): 15

**Splits and Phases: 2: LIE South Service Road & Route 110**

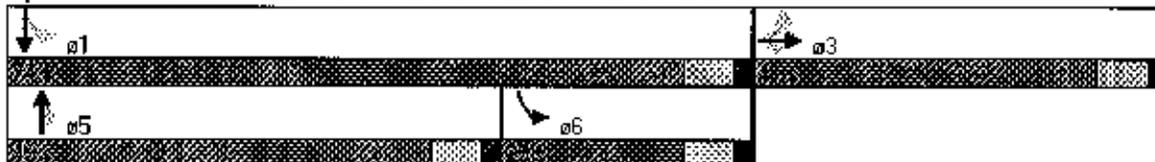


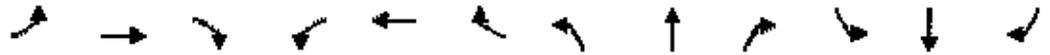


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑↑					↑↑↑	↑	↑	↑↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	3194	2472	0	0	0	0	4700	1553	1685	4655	0
Flt Permitted		0.989								0.082		
Satd. Flow (perm)	0	3194	2472	0	0	0	0	4700	1553	145	4655	0
Satd. Flow (RTOR)									35			
Volume (vph)	318	1223	216	0	0	0	0	1774	531	354	2128	0
Lane Group Flow (vph)	0	1897	243	0	0	0	0	1928	610	398	2288	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		3						5		6	1	
Permitted Phases	3		3						5		1	
Total Split (s)	41.0	41.0	41.0	0.0	0.0	0.0	0.0	49.0	49.0	25.0	74.0	0.0
Act Effct Green (s)		37.0	37.0					45.0	45.0	70.0	70.0	
Actuated v/c Ratio		0.32	0.32					0.39	0.39	0.61	0.61	
v/c Ratio		1.85	0.31					1.05	0.97	1.08	0.81	
Control Delay		412.1	43.2					69.6	62.5	98.8	15.4	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		412.1	43.2					69.6	62.5	98.8	15.4	
LOS		F	D					E	E	F	B	
Approach Delay		370.2						67.9			27.8	
Approach LOS		F						E			C	

**Intersection Summary:**  
 Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 110 (96%), Referenced to phase 1:SBTL and 5:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.85  
 Intersection Signal Delay: 141.1      Intersection LOS: F  
 Intersection Capacity Utilization: 106.9%      ICU Level of Service: G  
 Analysis Period: (min) 15

**Splits and Phases: 2: LIE South Service Road & Route 110**



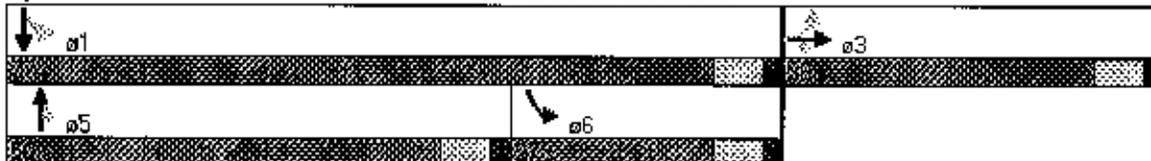


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑↑					↑↑↑	↑	↑	↑↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	4589	2472	0	0	0	0	4700	1553	1685	4655	0
Flt Permitted		0.989								0.080		
Satd. Flow (perm)	0	4589	2472	0	0	0	0	4700	1553	142	4655	0
Satd. Flow (RTOR)									47			
Volume (vph)	318	1223	216	0	0	0	0	1774	531	354	2128	0
Lane Group Flow (vph)	0	1897	243	0	0	0	0	1928	610	398	2288	0
Turn Type		Perm	Perm						Perm	pm+pt		
Protected Phases		3						5		6		1
Permitted Phases		3	3						5	1		
Total Split (s)	38.0	38.0	38.0	0.0	0.0	0.0	0.0	50.0	50.0	27.0	77.0	0.0
Act Effect Green (s)		34.0	34.0					46.0	46.0	73.0	73.0	
Actuated v/c Ratio		0.30	0.30					0.40	0.40	0.63	0.63	
v/c Ratio		1.40	0.33					1.03	0.94	1.00	0.77	
Control Delay		216.6	83.2					62.0	54.8	69.0	7.2	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		216.6	83.2					62.0	54.8	69.0	7.2	
LOS		F	C					E	D	E	A	
Approach Delay		195.7						60.3			16.4	
Approach LOS		F						E			B	

**Intersection Summary**

Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 76 (66%), Referenced to phase 1:SBTL and 5:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.40  
 Intersection Signal Delay: 83.6      Intersection LOS: F  
 Intersection Capacity Utilization: 94.0%      ICU Level of Service: F  
 Analysis Period (min): 15

**Splits and Phases: 2: LIE South Service Road & Route 110**



---

**TECHNICAL APPENDIX**

---



**SYNCHRO ANALYSIS**

**Long Island Expressway South Service Road & Round Swamp Road**

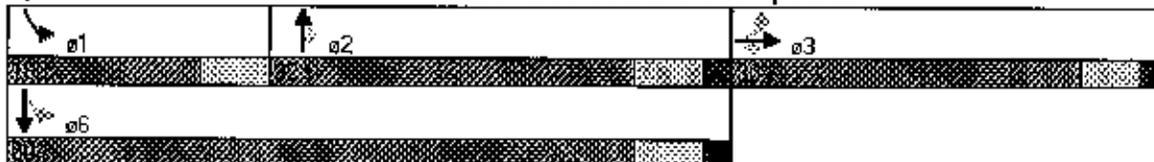


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Lane Configurations	↖	↖↗	↗					↗↖	↖	↖	↖↗	↖↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1507	3262	1392	0	0	0	0	3149	1311	1668	3240	0
Flt. Permitted	0.950									0.254		
Satd. Flow (perm)	1507	3262	1392	0	0	0	0	3149	1311	446	3240	0
Satd. Flow (RTOR)									108			
Volume (vph)	160	630	183	0	0	0	0	444	387	329	1013	0
Lane Group Flow (vph)	216	741	247	0	0	0	0	643	426	354	1078	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		3						2	6		
Total Split (s)	30.0	30.0	30.0	0.0	0.0	0.0	0.0	32.0	32.0	18.0	50.0	0.0
Act Effct Green (s)	26.0	26.0	26.0					28.6	28.6	46.0	46.0	
Actuated g/C Ratio	0.32	0.32	0.32					0.36	0.36	0.58	0.58	
v/c Ratio	0.44	0.70	0.55					0.57	0.79	0.77	0.58	
Control Delay	24.6	27.6	27.7					23.4	30.0	22.6	12.4	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	24.6	27.6	27.7					23.4	30.0	22.6	12.4	
LOS	C	C	C					C	C	C	B	
Approach Delay		27.2						26.0			14.9	
Approach LOS		C						C			B	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 11.6 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 22.1  
 Intersection LOS: C  
 Intersection Capacity Utilization: 69.6%  
 ICU Level of Service: C  
 Analysis Period (min): 15

**Splits and Phases: 9: LIE South Service Road & Round Swamp Road**



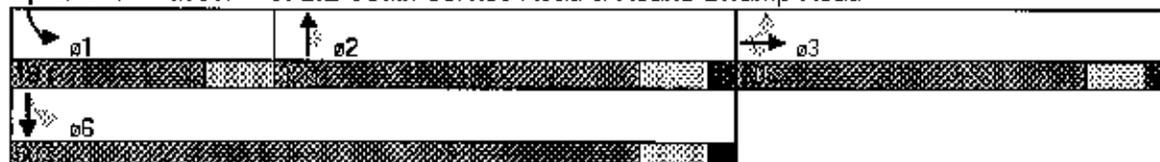


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SBT	SEB
Lane Configurations	↖	↕	↗					↕	↗	↖	↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1507	3262	1392	0	0	0	0	3149	1311	1668	3240	0
Flt. Permitted	0.950									0.247		
Satd. Flow (perm)	1507	3262	1392	0	0	0	0	3149	1311	434	3240	0
Satd. Flow (RTOR)									103			
Volume (vph)	163	643	187	0	0	0	0	453	395	336	1033	0
Lane Group Flow (vph)	220	756	253	0	0	0	0	657	434	361	1099	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		3						2	6		
Total Split (s)	30.0	30.0	30.0	0.0	0.0	0.0	0.0	32.0	32.0	18.0	50.0	0.0
Act Effct Green (s)	26.0	26.0	26.0					28.5	28.5	46.0	46.0	
Actuated g/C Ratio	0.32	0.32	0.32					0.36	0.36	0.58	0.58	
v/c Ratio	0.45	0.71	0.56					0.59	0.81	0.79	0.59	
Control Delay	25.0	28.2	28.0					28.7	32.3	24.3	12.6	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	25.0	28.2	28.0					28.7	32.3	24.3	12.6	
LOS	C	C	C					C	C	C	B	
Approach Delay		27.6						27.1			15.5	
Approach LOS		C						C			B	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 11.6 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 22.8      Intersection LOS: C  
 Intersection Capacity Utilization: 70.8%      ICU Level of Service: C  
 Analysis Period (min): 15

**Splits and Phases: 9: LIE South Service Road & Round Swamp Road**



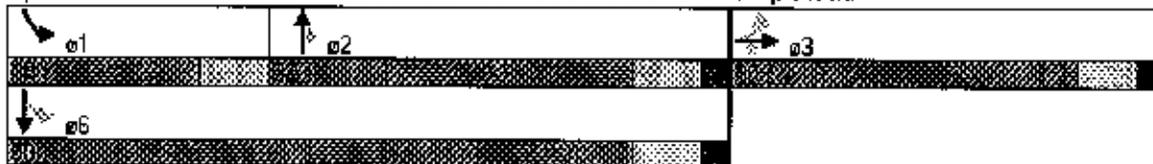


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕	↗					↕	↗	↖	↕	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1507	3262	1392	0	0	0	0	3149	1311	1668	3240	0
Flt Permitted	0.950									0.247		
Satd. Flow (perm)	1507	3262	1392	0	0	0	0	3149	1311	434	3240	0
Satd. Flow (RTOR)									103			
Volume (vph)	163	643	187	0	0	0	0	453	395	336	1033	0
Lane Group Flow (vph)	220	756	263	0	0	0	0	687	434	361	1099	0
Turn Type	Perm		Perm							Perm	pm+pt	
Protected Phases		3						2		1	6	
Permitted Phases	3		3						2		6	
Total Split (s)	30.0	30.0	30.0	0.0	0.0	0.0	0.0	32.0	32.0	18.0	50.0	0.0
Act Effct Green (s)	26.0	26.0	26.0					28.5	28.5	46.0	46.0	
Actuated g/C Ratio	0.32	0.32	0.32					0.36	0.36	0.56	0.58	
v/c Ratio	0.45	0.71	0.56					0.59	0.81	0.79	0.59	
Control Delay	25.0	28.2	28.0					23.7	32.3	24.3	12.6	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	25.0	28.2	28.0					23.7	32.3	24.3	12.6	
LOS	C	C	C					C	C	C	B	
Approach Delay		27.6						27.1			15.6	
Approach LOS		C						C			B	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 32 (40%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 22.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 70.8%  
 ICU Level of Service C  
 Analysis Period (min): 15

**Splits and Phases: 9: LIE South Service Road & Round Swamp Road**



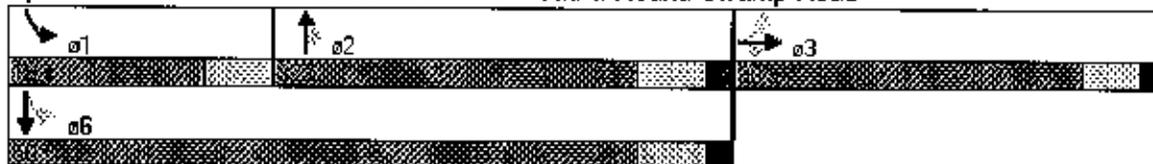


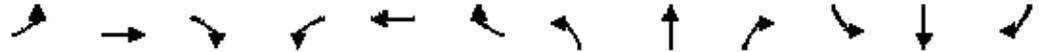
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NBT	NBR	SBL	SBT	EBR
Lane Configurations	↘	↙↑	↗					↑↑	↗	↘	↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1507	3262	1392	0	0	0	0	3149	1311	1668	3240	0
Flt Permitted	0.950									0.247		
Satd. Flow (perm)	1507	3262	1392	0	0	0	0	3149	1311	434	3240	0
Satd. Flow (RTOR)									75			
Volume (vph)	163	1059	187	0	0	0	0	453	444	336	1033	0
Lane Group Flow (vph)	220	1246	253	0	0	0	0	657	488	361	1099	0
Turn Type	Perm		Perm							Perm	pm+pt	
Protected Phases		3						2		1	6	
Permitted Phases	3		3						2	6		
Total Split (s)	30.0	30.0	30.0	0.0	0.0	0.0	0.0	32.0	32.0	18.0	50.0	0.0
Act Effct Green (s)	26.0	26.0	26.0					28.5	28.5	46.0	46.0	
Actuated g/C Ratio	0.32	0.32	0.32					0.36	0.36	0.58	0.58	
v/c Ratio	0.45	1.18	0.56					0.59	0.95	0.79	0.59	
Control Delay	25.0	116.5	28.0					23.7	52.4	24.3	12.6	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	25.0	116.5	28.0					23.7	52.4	24.3	12.6	
LOS	C	F	C					C	D	C	B	
Approach Delay		91.6						35.0			15.5	
Approach LOS		F						D			B	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 60  
 Offset: 32 (40%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.18  
 Intersection Signal Delay: 51.2      Intersection LOS: D  
 Intersection Capacity Utilization 83.2%      ICU Level of Service E  
 Analysis Period (min): 15

**Splits and Phases: 9: LIE South Service Road & Round Swamp Road**

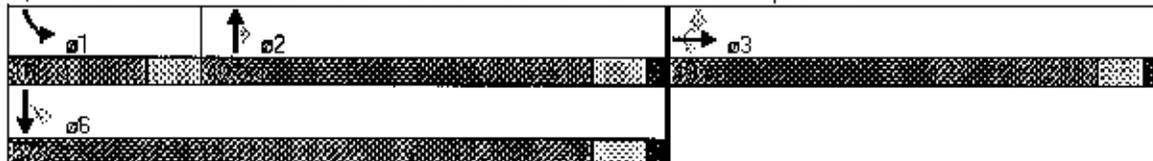




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕	↗					↕	↗	↖	↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1507	3262	1392	0	0	0	0	3149	1311	1668	3240	0
Flt Permitted	0.950									0.251		
Satd. Flow (perm)	1507	3262	1392	0	0	0	0	3149	1311	441	3240	0
Satd. Flow (RTOR)									45			
Volume (vph)	163	1059	187	0	0	0	0	453	444	336	1033	0
Lane Group Flow (vph)	220	1246	258	0	0	0	0	687	486	361	1099	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		3						2		6	
Total Split (s)	43.0	43.0	43.0	0.0	0.0	0.0	0.0	40.3	40.3	16.7	57.0	0.0
Act Effct Green (s)	39.0	39.0	39.0					36.3	36.3	53.0	53.0	
Actuated v/c Ratio	0.39	0.39	0.39					0.36	0.36	0.53	0.53	
v/c Ratio	0.37	0.98	0.47					0.57	0.97	0.93	0.64	
Control Delay	24.1	51.8	26.3					28.1	62.5	48.4	18.9	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	24.1	51.8	26.3					28.1	62.5	48.4	18.9	
LOS	C	D	C					C	E	D	B	
Approach Delay		44.5						42.8			26.2	
Approach LOS		D						D			C	

**Intersection Summary**  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 37.9  
 Intersection LOS: D  
 Intersection Capacity Utilization: 83.2%  
 ICU Level of Service: E  
 Analysis Period (min) 15

Splits and Phases: 9: LIE South Service Road & Round Swamp Road



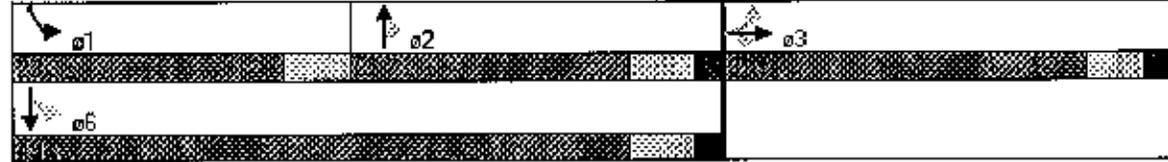


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕	↗					↕	↗	↖	↕	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1610	3350	1524	0	0	0	0	3336	1463	1560	3303	0
Flt Permitted	0.950	0.989								0.156		
Satd. Flow (perm)	1610	3350	1524	0	0	0	0	3336	1463	258	3303	0
Satd. Flow (RTOR)									280			
Volume (vph)	566	602	252	0	0	0	0	851	474	110	878	0
Lane Group Flow (vph)	456	960	319	0	0	0	0	896	692	149	865	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		3						2		1	6	
Permitted Phases	3		3						2	6		
Total Split (s)	31.0	31.0	31.0	0.0	0.0	0.0	0.0	25.7	25.7	23.3	49.0	0.0
Act Effct Green (s)	27.0	27.0	27.0					31.0	31.0	45.0	45.0	
Actuated g/C Ratio	0.34	0.34	0.34					0.39	0.39	0.56	0.56	
v/c Ratio	0.84	0.85	0.62					0.69	0.80	0.49	0.52	
Control Delay	40.7	33.5	28.6					24.4	21.9	14.1	12.1	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	40.7	33.5	28.6					24.4	21.9	14.1	12.1	
LOS	D	C	C					C	C	B	B	
Approach Delay		34.5						23.4			12.3	
Approach LOS		C						C			B	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 32 (40%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 25.0      Intersection LOS: C  
 Intersection Capacity Utilization: 67.5%      ICU Level of Service: C  
 Analysis Period: (min) 15

**Splits and Phases: 9: LIE South Service Road & Round Swamp Road**



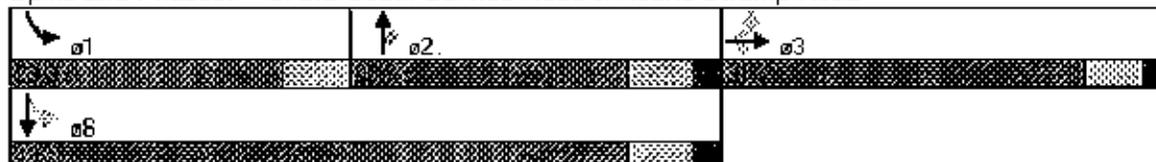


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↕	↗					↕	↗	↙	↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1610	3346	1524	0	0	0	0	3336	1463	1560	3303	0
Flt Permitted	0.950	0.987								0.156		
Satd. Flow (perm)	1610	3346	1524	0	0	0	0	3336	1463	256	3303	0
Satd. Flow (RTOR)									276			
Volume (vph)	577	614	257	0	0	0	0	868	484	112	896	0
Lane Group Flow (vph)	454	979	325	0	0	0	0	914	606	151	986	0
Turn Type	Perm		Perm							Perm	pm+pt	
Protected Phases		3						2		1		6
Permitted Phases	3		3						2		6	
Total Split (s)	31.0	31.0	31.0	0.0	0.0	0.0	0.0	28.7	26.7	28.3	49.0	0.0
Act Effct Green (s)	27.0	27.0	27.0					31.0	31.0	45.0	45.0	
Actuated g/C Ratio	0.34	0.34	0.34					0.39	0.39	0.66	0.66	
v/c Ratio	0.85	0.87	0.63					0.71	0.82	0.49	0.53	
Control Delay	42.1	34.8	28.9					24.9	23.7	14.3	12.2	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	42.1	34.8	28.9					24.9	23.7	14.3	12.2	
LOS	D	C	C					C	C	B	B	
Approach Delay		35.6						24.4			12.6	
Approach LOS		D						C			B	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 32 (40%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 25.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 68.7%  
 ICU Level of Service C  
 Analysis Period (min): 15

Splits and Phases: 9: LIE South Service Road & Round Swamp Road

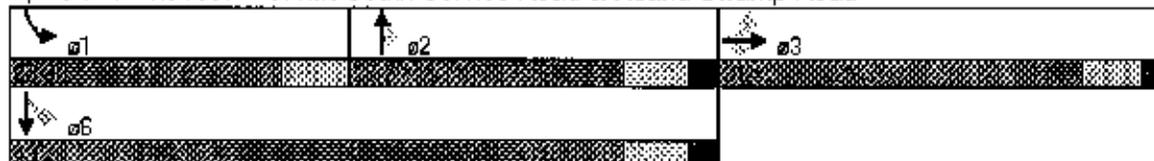


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	4↑	↗					↑↑	↗	↘	↑↑	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1610	3346	1524	0	0	0	0	3336	1463	1560	3303	0
Flt Permitted	0.950	0.987								0.156		
Satd. Flow (perm)	1610	3346	1524	0	0	0	0	3336	1463	256	3303	0
Satd. Flow (RTOR)									276			
Volume (vph)	577	614	257	0	0	0	0	868	484	112	896	0
Lane Group Flow (vph)	464	979	325	0	0	0	0	914	666	151	985	0
Turn Type	Perm		Perm							Perm	pm+pt	
Protected Phases		3						2		1		6
Permitted Phases	3		3						2	6		
Total Split (s)	31.0	31.0	31.0	0.0	0.0	0.0	0.0	25.7	25.7	23.5	49.0	0.0
Act Effct Green (s)	27.0	27.0	27.0					31.0	31.0	45.0	45.0	
Actuated g/C Ratio	0.94	0.94	0.94					0.99	0.99	0.56	0.56	
v/c Ratio	0.85	0.87	0.63					0.71	0.82	0.49	0.53	
Control Delay	42.1	34.8	28.9					24.9	23.7	14.3	12.2	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	42.1	34.8	28.9					24.9	23.7	14.3	12.2	
LOS	D	C	C					C	C	B	B	
Approach Delay		35.6						24.4			12.5	
Approach LOS		D						C			B	

**Intersection Summary:**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 32 (40%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 25.8      Intersection LOS: C  
 Intersection Capacity Utilization 68.7%      ICU Level of Service C  
 Analysis Period (min): 15

Splits and Phases: 9: LIE South Service Road & Round Swamp Road



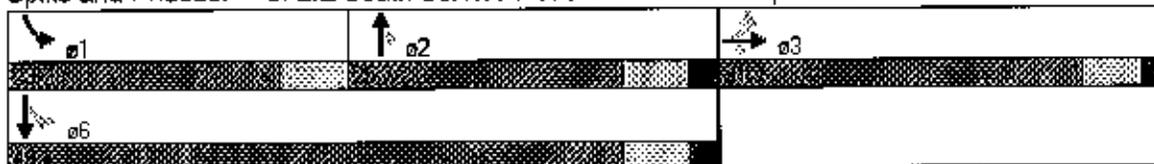


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕	↗					↕	↗	↘	↕	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1610	3356	1524	0	0	0	0	3336	1463	1560	3303	0
Flt Permitted	0.950	0.980							0.156			
Satd. Flow (perm)	1610	3356	1524	0	0	0	0	3336	1463	256	3303	0
Satd. Flow (RTOR)								265				
Volume (vph)	577	690	257	0	0	0	0	868	493	112	896	0
Lane Group Flow (vph)	493	1040	325	0	0	0	0	914	616	151	985	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		3						2		1		6
Permitted Phases	3		3						2		6	
Total Split (s)	31.0	31.0	31.0	0.0	0.0	0.0	0.0	25.7	25.7	23.3	49.0	0.0
Act Effct Green (s)	27.0	27.0	27.0					31.0	31.0	45.0	45.0	
Actuated g/C Ratio	0.34	0.34	0.34					0.39	0.39	0.56	0.56	
v/c Ratio	0.91	0.92	0.63					0.71	0.84	0.49	0.53	
Control Delay	49.0	39.7	28.9					24.9	26.1	14.3	12.2	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	49.0	39.7	28.9					24.9	26.1	14.3	12.2	
LOS	D	D	C					C	C	B	B	
Approach Delay		40.3						25.4			12.5	
Approach LOS		D						C			B	

**Intersection Summary**

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 32 (40%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Control Type: Actuated Coordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 28.3      Intersection LOS: C  
 Intersection Capacity Utilization: 70.6%      ICU Level of Service: C  
 Analysis Period (min): 15

**Splits and Phases: 9: LIE South Service Road & Round Swamp Road**

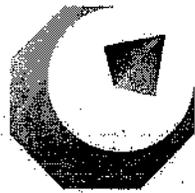




---

**TECHNICAL APPENDIX**

---



**ATLANTIC TRAFFIC  
& DESIGN ENGINEERS, INC.**

**SYNCHRO ANALYSIS**

**Old Walt Whitman Road & Cottontail Road**



Lane Group	NBL	NET	SBT	SPR	NEL	NER
Lane Configurations		↑	↑↓		↓	
Satd. Flow (prot)	0	1879	3599	0	1686	0
Flt. Permitted		0.999			0.987	
Satd. Flow (perm)	0	1879	3599	0	1686	0
Volume (vph)	12	679	399	7	9	21
Lane Group Flow (vph)	0	835	472	0	51	0
Sign Control		Free	Free		Stop	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 55.3%      ICU Level of Service B  
 Analysis Period (min) 15



Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↕	↕↔		↕	
Satd. Flow (prot)	0	1879	3603	0	1686	0
Flt Permitted		0.999			0.987	
Satd. Flow (perm)	0	1879	3603	0	1686	0
Volume (vph)	12	694	409	7	9	21
Lane Group Flow (vph)	0	853	484	0	51	0
Sign Control		Free	Free		Stop	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 56.1% ICU Level of Service: B  
 Analysis Period (min): 15



Lane Group	EBL	EBR	NBL	NBT	SEB	SEB
Lane Configurations	Y			↑	↑↑	
Satd. Flow (prot)	1686	0	0	1879	3603	0
Flt Permitted	0.987			0.999		
Satd. Flow (perm)	1686	0	0	1879	3603	0
Volume (vph)	9	21	12	694	409	7
Lane Group Flow (vph)	51	0	0	853	484	0
Sign Control	Stop			Free	Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 56.1%      ICU Level of Service: B  
 Analysis Period (min): 15



Lane Group	NBL	NET	SET	SBR	NEL	NER
Lane Configurations		↕	↕↕		↕↕	
Satd. Flow (prot)	0	1880	3603	0	1686	0
Flt Permitted		0.999			0.987	
Satd. Flow (perm)	0	1880	3603	0	1686	0
Volume (vph)	12	699	543	7	9	21
Lane Group Flow (vph)	0	859	639	0	51	0
Sign Control		Free	Free		Stop	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 56.4%      ICU Level of Service: B  
 Analysis Period (min): 15



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑↑	
Satd. Flow (prot)	1688	0	0	1880	3603	0
Flt Permitted	0.987			0.999		
Satd. Flow (pam)	1688	0	0	1880	3603	0
Volume (vph)	9	21	12	699	543	7
Lane Group Flow (vph)	51	0	0	859	639	0
Sign Control	Stop			Free	Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 56.4% ICU Level of Service B  
 Analysis Period (min) 15



Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↓	↑↑		↑↑	
Satd. Flow (prot)	0	1887	3603	0	1705	0
Flt Permitted		0.993			0.982	
Satd. Flow (perm)	0	1887	3603	0	1705	0
Volume (vph)	34	244	654	7	7	14
Lane Group Flow (vph)	0	357	830	0	44	0
Sign Control		Free	Free		Stop	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 46.4% ICU Level of Service A  
 Analysis Period (min) 15



Lane Group	NEL	NBT	SBT	SBH	NEL	NER
Lane Configurations		↕	↕		↕	
Satd. Flow (prot)	0	1887	3603	0	1705	0
Flt Permitted		0.993			0.982	
Satd. Flow (perm)	0	1887	3603	0	1705	0
Volume (vph)	35	248	667	7	7	14
Lane Group Flow (vph)	0	354	846	0	44	0
Sign Control		Free	Free		Stop	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 47.0%      IGV Level of Service A  
 Analysis Period (min) 15



Lane Group	EBL	EBR	NBL	NBT	SBT	SEB
Lane Configurations	Y			↑	↑↑	
Satd. Flow (prot)	1705	0	0	1887	3603	0
Flt Permitted	0.982			0.993		
Satd. Flow (perm)	1705	0	0	1887	3603	0
Volume (vph)	7	14	35	248	667	7
Lane Group Flow (vph)	44	0	0	364	846	0
Sign Control	Stop			Free	Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 47.0%      ICU Level of Service A  
 Analysis Period (min) 15



Lane Group	EBL	EBR	NBL	NBT	SEB	SEB
Lane Configurations	Y			↑	↑↓	
Satd. Flow (prot)	1705	0	0	1887	3603	0
Flt Permitted	0.982			0.993		
Satd. Flow (perm)	1705	0	0	1887	3603	0
Volume (vph)	7	14	35	281	692	7
Lane Group Flow (vph)	44	0	0	408	877	0
Sign Control	Stop			Free	Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 49.4% (CU Level of Service: A)  
 Analysis Period (min): 15



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Satd. Flow (prot)	1705	0	0	1887	3603	0
Flt Permitted	0.982			0.993		
Satd. Flow (perm)	1705	0	0	1887	3603	0
Volume (vph)	7	14	35	281	692	7
Lane Group Flow (vph)	44	0	0	405	877	0
Sign Control	Stop		Free		Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 49.4% ICU Level of Service A  
 Analysis Period (min) 15

---

**TECHNICAL APPENDIX**

---



**SYNCHRO ANALYSIS**

**Old Walt Whitman Road & Existing FedEx Driveway North**



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑	↘	↙	↘
Satd. Flow (prot)	1888	0	1892	0	0	1896
Flt Permitted	0.988					0.998
Satd. Flow (perm)	1888	0	1892	0	0	1896
Volume (vph)	1	5	404	10	27	1143
Lane Group Flow (vph)	16	0	451	0	0	1324
Sign Control	Stop		Free			Free

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 91.8% | ICU Level of Service F  
 Analysis Period (min) 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		↑↓			↓
Satd. Flow (prot)	1688	0	3596	0	0	1898
Flt Permitted	0.988					0.999
Satd. Flow (perm)	1688	0	3596	0	0	1898
Volume (vph)	1	5	448	10	27	1166
Lane Group Flow (vph)	16	0	496	0	0	1350
Sign Control	Stop		Free			Free

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 88.9%      ICU Level of Service: E  
 Analysis Period (min): 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	LT		TH	RT		RT
Satd. Flow (prot)	1688	0	3596	0	0	1898
Flt Permitted	0.988					0.999
Satd. Flow (perm)	1688	0	3596	0	0	1898
Volume (vph)	1	5	448	10	27	1166
Lane Group Flow (vph)	16	0	499	0	0	1350
Sign Control	Stop		Free			Free

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 88.9%      ICU Level of Service: E  
 Analysis Period (min): 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBR
Lane Configurations		↗	↕	↕	↖	↕
Satd. Flow (prot)	0	1644	3599	0	1805	3610
Flt Permitted					0.950	
Satd. Flow (perm)	0	1644	3599	0	1805	3610
Volume (vph)	0	5	578	10	27	1680
Lane Group Flow (vph)	0	12	640	0	40	1888
Sign Control	Stop		Free		Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 49.8%      ICU Level of Service A  
 Analysis Period (min) 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕	↕	↖	↕
Satd. Flow (prot)	0	1644	3599	0	1805	3610
Flt Permitted					0.950	
Satd. Flow (perm)	0	1644	3599	0	1805	3610
Volume (vph)	0	5	578	10	27	1680
Lane Group Flow (vph)	0	12	640	0	40	1888
Sign Control	Stop		Free		Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 49.8%      ICU Level of Service A  
 Analysis Period (min) 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑		↓	
Satd. Flow (prot)	1701	0	1894	0	0	1898
Flt Permitted	0.984				0.999	
Satd. Flow (perm)	1701	0	1894	0	0	1898
Volume (vph)	5	13	696	8	8	831
Lane Group Flow (vph)	24	0	743	0	0	994
Sign Control	Stop		Free		Free	

**Intersection Summary**

Control Type: Unsignalized

Intersection Capacity Utilization 60.1% ICU Level of Service B

Analysis Period (min) 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBR
Lane Configurations	Y		↑↓			↑
Satd. Flow (prot)	1701	0	3599	0	0	1898
Flt Permitted	0.984					0.999
Satd. Flow (perm)	1701	0	3599	0	0	1898
Volume (vph)	5	13	625	8	8	848
Lane Group Flow (vph)	24	0	778	0	0	1014
Sign Control	Stop		Free			Free

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 61.0%      LOS Level of Service: B  
 Analysis Period (min): 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBR
Lane Configurations	Y		↑↓			↓
Satd. Flow (prot)	1701	0	3599	0	0	1898
Flt Permitted	0.984					0.999
Satd. Flow (perm)	1701	0	3599	0	0	1898
Volume (vph)	5	13	625	8	8	848
Lane Group Flow (vph)	24	0	778	0	0	1014
Sign Control	Stop		Free			Free

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 61.0%      ICU Level of Service: B  
 Analysis Period (min): 15



Lane Group	WBL	WBR	NBT	NBR	SEL	SBT
Lane Configurations		↗	↕	↕	↖	↕
Satd. Flow (prot)	0	1644	3603	0	1805	3610
Flt Permitted					0.950	
Satd. Flow (perm)	0	1644	3603	0	1805	3610
Volume (vph)	0	13	1161	8	8	1028
Lane Group Flow (vph)	0	16	1432	0	16	1209
Sign Control	Stop		Free		Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 42.3% ICU Level of Service A  
 Analysis Period (min) 15



Lane Group	WBL	WBR	NBT	NBP	SEL	SBT
Lane Configurations		↗	↕	↕	↖	↕
Satd. Flow (prot)	0	1644	3603	0	1805	3610
Flt Permitted					0.950	
Satd. Flow (perm)	0	1644	3603	0	1805	3610
Volume (vph)	0	13	1161	8	8	1028
Lane Group Flow (vph)	0	16	1432	0	16	1209
Sign Control	Stop		Free			Free

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 42.3% ICU Level of Service A  
 Analysis Period (min) 15

---

**TECHNICAL APPENDIX**

---



**ATLANTIC TRAFFIC  
& DESIGN ENGINEERS, INC.**

**SYNCHRO ANALYSIS**

**Old Walt Whitman Road & Existing FedEx Driveway South/Proposed  
Canon Main Entrance**



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Satd. Flow (prot)	1176	0	1885	0	0	1900
Flt Permitted	0.984					
Satd. Flow (perm)	1176	0	1885	0	0	1900
Volume (vph)	1	3	411	21	6	1138
Lane Group Flow (vph)	12	0	515	0	0	1315
Sign Control	Stop		Free			Free

**Intersection Summary**  
 Control Type: Unsignalized  
 Intersection Capacity Utilization 74.7%      ICU Level of Service D  
 Analysis Period (min) 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P		T	T
Satd. Flow (prot)	1176	0	1885	0	1805	1900
Flt Permitted	0.984				0.950	
Satd. Flow (perm)	1176	0	1885	0	1805	1900
Volume (vph)	1	3	455	21	6	1161
Lane Group Flow (vph)	12	0	567	0	8	1334
Sign Control	Stop		Free		Free	

**Intersection Summary**

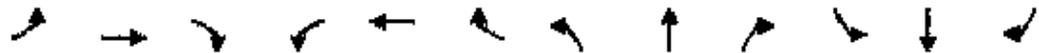
Control Type: Unsignalized  
 Intersection Capacity Utilization 71.1% | ICU Level of Service C  
 Analysis Period (min) 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↑	↗	↘	↑
Satd. Flow (prot)	1176	0	1885	0	1805	1900
Flt Permitted	0.984				0.950	
Satd. Flow (perm)	1176	0	1885	0	1805	1900
Volume (vph)	1	3	455	21	6	1161
Lane Group Flow (vph)	12	0	567	0	8	1834
Sign Control	Stop		Free		Free	

**Intersection Summary:**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 71.1% (CU Level) of Service: C  
 Analysis Period (min): 15

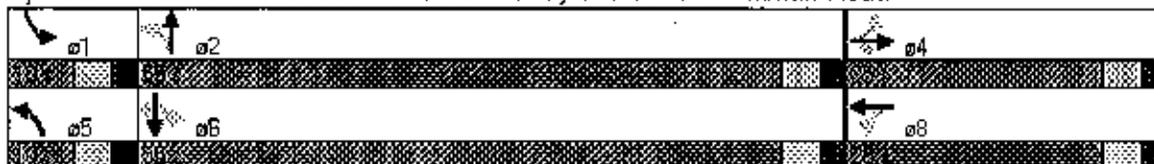


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑		↑		↑	↑		↑	↑	↑
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1770	1583	0	1694	0	1770	1848	0	1770	3539	1583
Flt Permitted		0.747			0.879		0.121			0.328		
Satd. Flow (perm)	0	1391	1583	0	1526	0	225	1848	0	611	3539	1583
Satd. Flow (RTOR)			32		8			6				142
Volume (vph)	130	0	24	2	0	3	123	455	21	6	1160	128
Lane Group Flow (vph)	0	173	32	0	16	0	137	567	0	6	1333	142
Turn Type	Perm		Perm	Perm			pm+pt			pm+pt		Perm
Protected Phases		4			8		6	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	25.0	25.0	25.0	25.0	25.0	0.0	10.0	55.0	0.0	10.0	55.0	55.0
Act Effect Green (s)		21.0	21.0		21.0		60.2	59.0		57.0	51.0	51.0
Actuated g/C Ratio		0.23	0.23		0.23		0.67	0.66		0.63	0.57	0.57
v/c Ratio		0.53	0.08		0.04		0.54	0.47		0.02	0.66	0.15
Control Delay		37.2	10.5		19.6		14.8	9.9		4.8	15.6	2.1
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		37.2	10.5		19.6		14.8	9.9		4.8	15.6	2.1
LOS		D	B		B		B	A		A	B	A
Approach Delay		33.0			19.6			10.8			14.3	
Approach LOS		C			B			B			B	

**Intersection Summary**

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 42 (47%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 14.9      Intersection LOS: B  
 Intersection Capacity Utilization: 85.0%      ICU Level of Service: E  
 Analysis Period (min): 15

Splits and Phases: 13: Canon Main Driveway & Old Walt Whitman Road



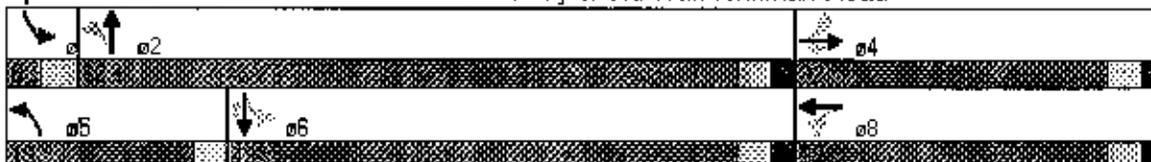


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↗		↖	↗	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1770	1583	0	1683	0	1770	1850	0	1770	3539	1583
Flt Permitted		0.753			0.926		0.082			0.462		
Satd. Flow (perm)	0	1403	1583	0	1592	0	153	1850	0	861	3539	1583
Satd. Flow (RTOR)			32		4			4				123
Volume (vph)	130	0	24	2	0	3	123	455	21	6	1160	128
Lane Group Flow (vph)	0	173	32	0	7	0	137	429	0	7	1289	142
Turn Type	Perm		Perm	Perm			pm+pt			pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	32.0	32.0	32.0	32.0	32.0	0.0	19.0	62.0	0.0	6.0	49.0	49.0
Act Effct Green (s)		28.0	28.0		28.0		64.0	62.8		52.7	50.7	50.7
Actuated g/C Ratio		0.28	0.28		0.28		0.64	0.63		0.53	0.51	0.51
v/c Ratio		0.44	0.07		0.02		0.55	0.45		0.01	0.72	0.16
Control Delay		33.9	9.9		19.8		22.6	18.9		6.5	14.3	2.1
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		33.9	9.9		19.8		22.6	18.9		6.5	14.3	2.1
LOS		C	A		B		C	B		A	B	A
Approach Delay		30.1			19.8			19.7			13.0	
Approach LOS		C			B			B			B	

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 76 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 16.5      Intersection LOS: B  
 Intersection Capacity Utilization 75.4%      ICU Level of Service D  
 Analysis Period (min): 15

**Splits and Phases: 13: Canon Main Driveway & Old Walt Whitman Road**





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T		T	
Satd. Flow (prot)	1646	0	1889	0	0	1889
Flt Permitted	0.966					0.999
Satd. Flow (perm)	1646	0	1889	0	0	1889
Volume (vph)	10	4	600	21	5	831
Lane Group Flow (vph)	26	0	786	0	0	1001
Sign Control	Stop		Free		Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization: 57.7%      ICU Level of Service: B  
 Analysis Period (min): 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBR
Lane Configurations						
Satd. Flow (prot)	1646	0	1889	0	1289	1900
Flt Permitted	0.988				0.950	
Satd. Flow (perm)	1646	0	1889	0	1289	1900
Volume (vph)	10	4	629	21	5	848
Lane Group Flow (vph)	28	0	622	0	12	1010
Sign Control	Stop		Free		Free	

**Intersection Summary**

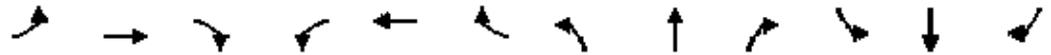
Control Type: Unsignalized  
 Intersection Capacity Utilization 54.6% ICU Level of Service A  
 Analysis Period (min) 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SRT
Lane Configurations						
Satd. Flow (prot)	1646	0	1889	0	1289	1900
Flt Permitted	0.966				0.950	
Satd. Flow (perm)	1646	0	1889	0	1289	1900
Volume (vph)	10	4	629	21	5	848
Lane Group Flow (vph)	28	0	822	0	12	1010
Sign Control	Stop		Free			Free

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 54.6% ICU Level of Service A  
 Analysis Period (min) 15

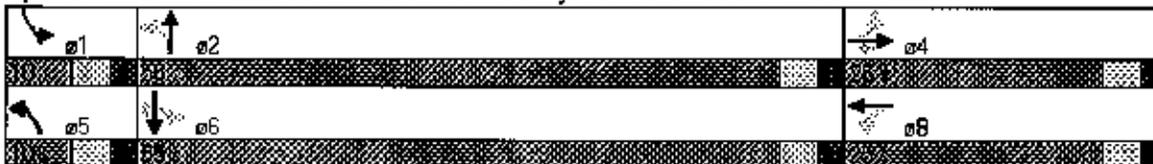


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖		↖	↕↕	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1770	1583	0	1744	0	1770	1853	0	1770	3539	1583
Flt Permitted		0.741			0.356		0.241			0.221		
Satd. Flow (perm)	0	1380	1583	0	645	0	449	1853	0	412	3539	1583
Satd. Flow (RTOR)			167		5			3				200
Volume (vph)	536	0	156	15	0	4	23	629	21	5	843	180
Lane Group Flow (vph)	0	715	208	0	25	0	26	722	0	6	937	200
Turn Type	Perm		Perm	Perm			pm+pt			pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	25.0	25.0	25.0	25.0	25.0	0.0	10.0	58.0	0.0	10.0	55.0	55.0
Act Effct Green (s)		21.0	21.0		21.0		60.2	59.0		59.4	57.0	57.0
Actuated g/C Ratio		0.23	0.23		0.23		0.67	0.66		0.66	0.63	0.63
v/c Ratio		2.22	0.42		0.16		0.07	0.59		0.02	0.42	0.19
Control Delay		58.1	10.6		26.7		5.2	12.1		4.8	9.7	1.9
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		58.1	10.6		26.7		5.2	12.1		4.8	9.7	1.9
LOS		F	B		C		A	B		A	A	A
Approach Delay		452.5			26.7			11.5			6.3	
Approach LOS		F			C			B			A	

**Intersection Summary**

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 42 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 2.22  
 Intersection Signal Delay: 153.8      Intersection LOS: F  
 Intersection Capacity Utilization 85.0%      ICU Level of Service E  
 Analysis Period (min): 15

**Splits and Phases: 13: Canon Main Driveway & Old Walt Whitman Road**

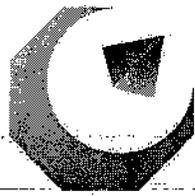




---

**TECHNICAL APPENDIX**

---



**ATLANTIC TRAFFIC  
& DESIGN ENGINEERS, INC.**

**SYNCHRO ANALYSIS**

**Old Walt Whitman Road & Canon South Driveway**



Lane Group	EBL	EBR	NBL	NBT	SBT	SEB
Lane Configurations	Y		Y	↑	↑↑	↑
Satd. Flow (prot)	1611	0	1770	1863	3539	1863
Flt Permitted			0.950			
Satd. Flow (perm)	1611	0	1770	1863	3539	1863
Volume (vph)	0	17	122	599	1186	0
Lane Group Flow (vph)	23	0	136	666	1316	0
Sign Control	Stop		Free		Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 52.9%      ICU Level of Service A  
 Analysis Period (min) 15



Lane Group	EBL	EBR	NBL	NBT	SBT	EBR
Lane Configurations	Y		Y	↑	↑↑	↗
Satd. Flow (prot)	1611	0	1770	1863	3539	1863
Flt Permitted			0.950			
Satd. Flow (perm)	1611	0	1770	1863	3539	1863
Volume (vph)	0	112	22	673	1014	0
Lane Group Flow (vph)	149	0	24	748	1127	0
Sign Control	Stop		Free		Free	

**Intersection Summary**

Control Type: Unsignalized  
 Intersection Capacity Utilization 49.0% ICU Level of Service A  
 Analysis Period (min) 15

---

**TECHNICAL APPENDIX**

---



**CONCEPTUAL ROADWAY DESIGN PLANS**



**ATLANTIC TRAFFIC  
& DESIGN ENGINEERS, INC.**

TRAFFIC & TRANSPORTATION  
ENGINEERING,  
SITE PLANNING & ROADWAY  
DESIGN CONSULTANTS

2002 Oville Drive North  
Ronkonkoma, New York 11779  
Tel: (631) 738-1919  
Fax: (631) 738-1177  
www.atlantictraffic.com

THE EDUCATION LAW OF THE STATE OF NEW YORK  
REQUIRES THAT ALL PROFESSIONAL ENGINEERING  
DRAWINGS AND/OR THE ACCOMPANYING SPECIFICATIONS,  
AND/OR CONTRACT DOCUMENTS, BE PREPARED BY A  
PROFESSIONAL ENGINEER WHERE SUCH ATTRACTIONS ARE  
REQUIRED BY LAW. THE SIGNATURE OF THE ENGINEER  
AND DESCRIBE THE FULL EXTENT OF THE ALTERATION  
ON THE DRAWINGS AND/OR IN THE SPECIFICATIONS,  
AND SIGNATURE AND SEAL OF THE REGISTERED  
PROFESSIONAL ENGINEER.

**LEGEND**

← FUTURE LANES  
→ EXISTING LANES

**REVISIONS:**

#	DATE	DESCRIPTION

**PAUL B. GOING**  
PROFESSIONAL ENGINEER  
NEW YORK LICENSE NO. 021241

DATE: 08/26/08	DRAWN BY: BZ
SCALE: 1" = 120'	CHECKED BY: PAF
REVISE:	IN CHARGE:

**AN08003**

**NOT FOR CONSTRUCTION**

CLIENT:  
PROJECT:

PROPOSED  
**CANON AMERICAS  
HEADQUARTERS**  
LIE SOUTH SERVICE ROAD &  
WALT WHITMAN ROAD  
MELVILLE, TOWN OF  
HUNTINGTON  
SUFFOLK COUNTY, NEW YORK

TITLE:

CONCEPTUAL ROADWAY  
IMPROVEMENT PLANS

SHEET NO.

1 of 7



**ATLANTIC TRAFFIC  
& DESIGN ENGINEERS, INC.**

TRAFFIC & TRANSPORTATION  
ENGINEERING,  
SITE PLANNING & ROADWAY  
DESIGN CONSULTANTS

2002 Oville Drive North  
Ronkonkoma, New York 11779  
Tel: (631) 738-1919  
Fax: (631) 738-1177  
www.atlanticttraffic.com

THE EDUCATION LAW OF THE STATE OF NEW YORK  
REQUIRES THAT ALL ENGINEERING DRAWINGS AND  
DRAWINGS AND/OR THE ACCOMPANYING SPECIFICATIONS,  
BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER  
PROFESSIONAL ENGINEER WHERE SUCH A TRADE OR  
ART IS REGULATED BY LAW. THE ENGINEER'S NAME  
AND DESCRIBE THE FULL EXTENT OF THE ALTERATION  
ON THE DRAWING AND/OR IN THE SPECIFICATIONS,  
PROFESSIONAL LAW DESIGNATION.

**LEGEND**

← FUTURE LANES  
→ EXISTING LANES

**REVISIONS:**

#	DATE	DESCRIPTION

**PAUL B. GOING**  
PROFESSIONAL ENGINEER  
NEW YORK LICENSE NO. 021241

DATE:	08/26/08	DRAWING NO.:	82
SCALE:	1" = 120'	SHEET NO.:	PAF
REV. NO.:		ISSUE DATE:	

**AN08003**

**NOT FOR CONSTRUCTION**

CLIENT:

PROJECT:

**PROPOSED  
CANON AMERICAS  
HEADQUARTERS**

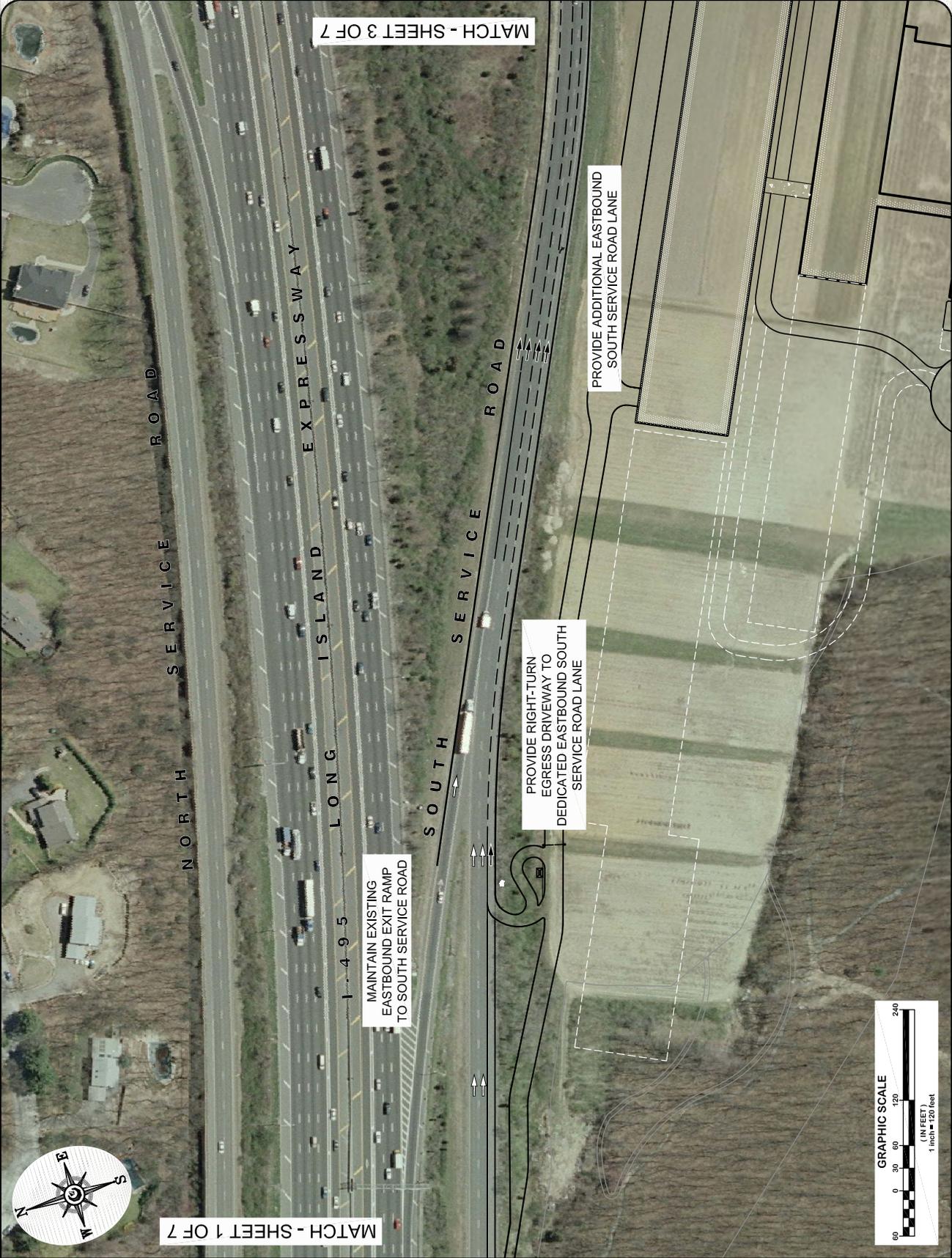
100 SOUTH SERVICE ROAD &  
WALT WHITMAN ROAD  
MELVILLE, TOWN OF  
HUNTINGTON  
SUFFOLK COUNTY, NEW YORK

TITLE:

CONCEPTUAL ROADWAY  
IMPROVEMENT PLANS

SHEET NO.:

2 of 7



MATCH - SHEET 1 OF 7

MATCH - SHEET 3 OF 7

MANTAIN EXISTING  
EASTBOUND EXIT RAMP  
TO SOUTH SERVICE ROAD

PROVIDE RIGHT-TURN  
EGRESS DRIVEWAY TO  
DEDICATED EASTBOUND SOUTH  
SERVICE ROAD LANE

PROVIDE ADDITIONAL EASTBOUND  
SOUTH SERVICE ROAD LANE

