APPENDIX F

Traffic Impact Study
By: Adler Consulting
February 9, 2009

Adler Consulting, **Transportation Planning and Traffic Engineering, PLLC**

235 Main Street
White Plains, NY 10601

Tel: (914) 997-8510
Fax: (914) 997-7140

TRAFFIC IMPACT STUDY

Rockland Psychiatric Center

Town of Orangetown, New York

Prepared for:
Saccardi and Schiff

January 9, 2009
Project 108219

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Adler Consulting, Transportation Planning & Traffic Engineering, PLLC
235 Main Street
White Plains, NY 10601-2401
Tel # (914) 997-8510
Fax # (914) 997-7140

January 9, 2009

EXECUTIVE SUMMARY

A. INTRODUCTION

Adler Consulting has been retained on behalf of the Town of Orangetown, to investigate the potential traffic impacts associated with the rezoning and conceptual development of the Rockland Psychiatric Center (RPC) into a planned residential community. The proposed development generally includes the area bounded by Convent Road, Western Highway, Veterans Memorial Highway and Lake Tappan, in the Town of Orangetown, Rockland County, New York.

B. SCOPE OF STUDY

This study follows standard engineering principles and practices and examines the traffic impacts associated with the proposed redevelopment of the Rockland Psychiatric Center. Traffic volume data were collected at 24 critical intersections along Veterans Memorial Highway, Convent Avenue, Orangeburg Road and Western Highway. Intersection capacity analyses were performed to determine Existing conditions.

No-Build traffic volumes were determined by generating volumes for other developments identified in the vicinity of the Site, as well as by applying a generalized background growth factor to the existing traffic volumes.

The vehicular trips expected to be generated by the proposed Project were calculated from the data contained in the Seventh Edition of the Trip Generation Manual prepared

by the Institute of Transportation Engineers (ITE). Facility arrival/departure patterns were based on existing turning movement counts and a review of the area roadway network. The Site-generated trips were added to the No-Build traffic volumes to determine the Build traffic volumes.

The Existing, No-Build, and Build traffic volumes were analyzed with respect to current and future roadway capacities reflecting improvements to mitigate the Project's impacts.

C. FINDINGS

Generally acceptable traffic operating conditions currently exist at many of the intersections within the study area. Operating conditions are expected to deteriorate by the opening date for the Project due, in part, to the traffic expected to be generated by other developments that will become operational before the Project.

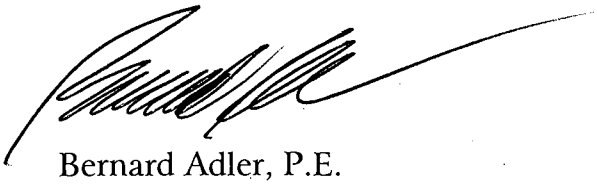
The proposed development is conservatively projected to add 51 arriving and 208 departing new trips to the surrounding roadway network during the Peak AM Highway Hour and 211 arriving and 111 departing new trips during the Peak PM Highway Hour.

It is anticipated that there will be some impacts associated with the redevelopment of the Rockland Psychiatric Center. Many of the mitigation measures proposed to address these impacts involve optimizing the traffic signals in this study area by changing signal timings. It is anticipated that constructing turning lanes on Veterans Memorial Highway at the intersection with Blaisdell Road would be needed as well as on the southbound approach of Blaisdell Road. At the intersection of Veterans Memorial Highway with Lester Drive/Edgewood Road, the construction of a left-turn lane for the eastbound Veterans Memorial Highway approach would provide improved operating conditions and Levels-of-Service.

D. CONCLUSIONS

Based on the analyses contained herein, it is the considered professional opinion of **Adler Consulting** that, with the implementation of the recommended improvements, traffic associated with the proposed redevelopment of the Rockland Psychiatric Center can be accommodated along with the passing traffic in the area.

Respectfully submitted,
Adler Consulting,
Transportation Planning & Traffic Engineering, PLLC



Bernard Adler, P.E.
President
New York Professional Engineer No. 048373

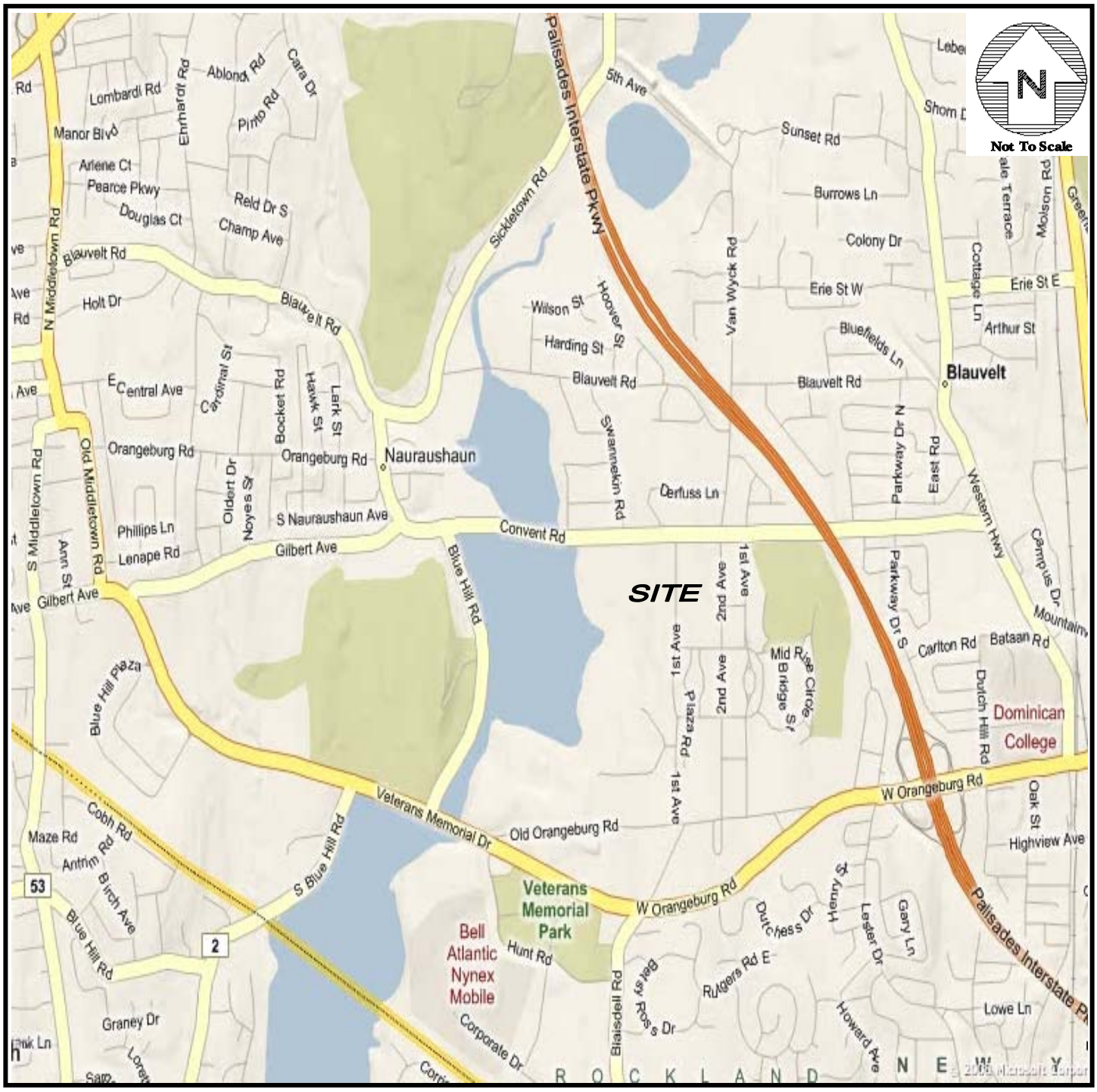
Michael P. O'Rourke, P.E., PTOE
Senior Associate
New York Professional Engineer No. 061375

A. INTRODUCTION

Adler Consulting has been working with Saccardi & Schiff on behalf of the Town of Orangetown to investigate the potential traffic impacts associated with the rezoning and conceptual development of the Rockland Psychiatric Center (RPC) into a planned residential community. The proposed development generally includes the area bounded by Convent Road, Western Highway, Veterans Memorial Highway/Orangeburg Road (Veterans Memorial Highway) and Lake Tappan, in the Town of Orangetown, Rockland County, New York. (See Figure 1, Site Location Map.)

B. PROJECT DESCRIPTION

As currently conceived, the proposed rezoning contemplates development consists of 575 dwelling units of which 478 are expected to be age-restricted (55 years or older) townhouse/condominium units; 32 affordable age-restricted units; 33 age-restricted single-family homes; 20 units available for community volunteers; and, 12 market-rate, single-family homes.



Project:

Rockland Psychiatric Center

Rockland County, NY

Title:

Site Location Map

Prepared By:

Adler Consulting, White Plains, NY

Transportation Planning & Traffic Engineering, PLLC

Figure 1

C. SCOPE OF STUDY

This study follows standard engineering principles and practices and examines the traffic impacts associated with the proposed rezoning of the Rockland Psychiatric Center. During the course of this study, **Adler Consulting** performed the following:

- Collected manual turning-movement data access during a typical weekday to establish Peak AM and PM existing conditions at the intersections of:

  Gilbert Avenue with South Middletown Road;
  Gilbert Avenue with Veterans Memorial Highway;
  Gilbert Avenue/Convent Road with Sickletown Road;
  Convent Road with Blue Hill Road North;
  Convent Road with Third Avenue;
  Convent Road with Second Avenue/Van Wyck Road;
  Convent Road with Western Highway;
  Convent Road with Swannekin Road;
  Western Highway with Mountainview Road;
  Veterans Memorial Highway with Western Highway;
  Veterans Memorial Highway with Dutch Hill Road;
  Veterans Memorial Highway with Lester Drive/Edgewood Road;
  Veterans Memorial Highway with Blaisdell Road;
  Veterans Memorial Highway with Old Orangeburg Road/Hunt Road;
  Old Orangeburg Road with Blaisdell Road;
  Old Orangeburg Road with Third Avenue;
  Veterans Memorial Highway with Blue Hill Road North;
  Veterans Memorial Highway with Blue Hill Road South;
  Veterans Memorial Highway with Blue Hill Plaza West;
  Veterans Memorial Highway with Blue Hill Plaza East;

Gilbert Avenue with Old Middletown Road;
Swannekin Road with Blauvelt Road;
Erie Street with Van Wyck Road; and,
Convent Road with Parkway Drive.

The first 20 intersections listed above were counted in May 2008 while the last four intersections on the list were counted in September 2008.

- Collected pedestrian volume data concurrent with the manual turning-movement data during the AM and PM peak periods;

- Installed Automatic Traffic Recorders (ATRs) on Veterans Memorial Highway and Convent Road in the vicinity of the access road to the Rockland Psychiatric Center to monitor two-way traffic volumes for a seven-day period. Data included speed data and vehicle classifications.

- Collected data concerning the vehicle "gaps" in the traffic volumes along sections of Convent Road and Veterans Memorial Highway in the vicinity of the Rockland Psychiatric Center;

- Visually collected traffic related information about the strategic locations and the roadway system in the near vicinity of the Site as it affects intersection capacities.

- Assembled available accident data for the most recent three years available for the Strategic Intersections as well as for the roadway segments of Gilbert Avenue, Convent Road, Western Highway, Veterans Memorial Highway in the vicinity of the proposed Site.

- Projected the existing weekday traffic volumes to the 2013 Horizon Year using a generalized growth rate of two (2) percent per year;

- Generated and assigned traffic volumes for the future developments identified by the Town of Orangetown in the vicinity of the Project that are expected to add substantial volumes of traffic within the study area;

- Developed trip patterns, based on the existing traffic volumes, to define the arrival/departure patterns for the Site-generated traffic;

- Based on the latest published standards of the Institute of Transportation Engineers (ITE), ascertained the amount of traffic that would be generated by the proposed development;

- Assigned the project-generated trips to the roadway system in accordance with arrival/departure patterns; and,

- Performed intersection capacity analyses for Existing, No-Build and Build conditions with respect to current and future roadway capacities to determine operating conditions.

D. ADJACENT ROADWAY NETWORK

The following is a description of the roadways in the vicinity of the Site:

- **Gilbert Avenue**

Gilbert Avenue is a two-way street generally running in an east-west direction. It is designated as County Route 20 which then becomes Veterans Memorial

Highway further east and forms a part of the southern boundary of the Rockland Psychiatric Center.

- **South Middletown Road**

South Middletown Road is a two-way north/south street, providing local access to the residential developments north and south of Gilbert Avenue.

- **Old Middletown Road**

Old Middletown Road is a two-way street running in a north-south direction. It generally provides local circulation within the Town of Orangetown serving the residential developments north of Gilbert Avenue.

- **Veterans Memorial Highway**

Veterans Memorial Highway operates as a four-lane road running in an east-west direction. Veterans Memorial Highway is designated as County Route 20 as the roadway extends towards the Palisades Interstate Parkway. It serves as an access to Veterans Memorial Park and the Rockland Psychiatric Center.

- **South Blue Hill Road**

South Blue Hill Road functions as a two-way north/south road. It is designated as County Route 23 and provides access into Montvale, New Jersey.

- **Blue Hill Road**

Blue Hill Road is a two-way north/south county road. It acts as a connector between Convent Road to the north and Veterans Memorial Highway to the south. Designated as County Route 23, it also serves as an access to Blue Hill Golf Course.

- **Hunt Road**

Hunt Road is a two-way Town Road, between Veterans Memorial Highway and Blaisdell Road within the Town of Orangetown. It is a part of southern boundary of Veterans Memorial Park.

- **Blaisdell Road**

Blaisdell Road operates as a two-way north/south county road and is designated as County Route 17. It runs adjacent to the Veterans Memorial Park and

provides access into Old Tappan, New Jersey in the south and the RPC campus to the north.

- **Lester Drive**

Lester Drive is a two-way north/south road, providing local access to the residential areas south of Veterans Memorial Highway .

- **Edgewood Drive**

Edgewood Drive is a two-way north/south local road providing local access to the residential areas north of Veterans Memorial Highway.

- **Dutch Hill Road**

Dutch Hill Road is a two-lane road running in north-south direction. It provides local circulation through the residential areas on both sides of Veterans Memorial Highway.

- **Western Highway**

Western Highway functions as a two-lane road running in north-south direction. Western Highway is designated as County Route 15 and extends from Washington Street in Tappan to New York Route 59.

- **Mountain View Avenue**

Mountain View Avenue operates as a two-way east/west road, providing access to the residential developments between Western Highway and New York Route 303.

- **Convent Road**

Convent Road is designated as County Route 26 running in an east/west direction north of the Rockland Psychiatric Center.

- **Parkway Drive**

Parkway Drive is a two-way north/south road, providing local circulation in the Town of Orangetown serving the residential developments.

- **Van Wyck Road**

Van Wyck Road is a two-way north/south road, providing local access to the residential developments north of Convent Road.

- **Third Avenue**

Third Avenue is a two-way north/south road through the Rockland Psychiatric Center providing access to the Site between Convent Road and Old Orangeburg Road.

- **Swannekin Road**

Swannekin Road extends from Convent Road to Old Blauvelt Road and functions as a two-way north/south road, providing local circulation in Blauvelt.

- **Sickletown Road**

Sickletown Road (County Route 23) is a two-way north/south road which provides local access to the residential developments north of Gilbert Avenue.

E. STUDY LOCATIONS

The Scoping Document adopted by the Town of Orangetown identified the critical intersections to be analyzed to assess the potential traffic impacts of the project. They include intersections along Gilbert Avenue, Veterans Memorial Highway, Western Highway, Convent Road, Old Orangeburg Road, Swannekin Road and Van Wyck Road that provide access in the immediate vicinity of the Site.

The intersection of **Gilbert Avenue** with **South Middletown Road** is controlled by a two-phase traffic signal. All approaches operate with two lanes. Parking at the curb is not permitted.

A two-phase traffic signal controls the intersection of **Gilbert Avenue** with **Old Middletown Road** which is a "T-Intersection." The eastbound approach of Gilbert Avenue is a two-lane roadway. The westbound Gilbert Avenue approach is two lanes wide with an exclusive right lane and a lane for through traffic. The southbound approach of Old Middletown Road is a two-lane roadway.

A three-phase traffic signal controls the intersection of **Gilbert Avenue** with **Veterans Memorial Highway** which is a "T-Intersection." The control type is semi-actuated with roadway loop detection on southbound approach. The westbound approach of Veterans Memorial Highway is two lanes wide with a shared right and through lane and a lane for through traffic. The eastbound approach is three lanes wide with a left-turn bay and two lanes for through traffic. The southbound approach of Gilbert Avenue is two lanes wide with an exclusive left-turn lane and a right-turn lane for the turning movements. On-street parking is not permitted.

The intersection of **Veterans Memorial Highway** with **West Blue Hill Plaza** is controlled by a fully-actuated two-phase traffic signal, with roadway loop detection on all approaches. The eastbound approach of Veterans Memorial Highway is three lanes wide with a right-turn channelized lane to access the Blue Hill Plaza, a through lane and a lane for a shared left-turn and through movements. The westbound approach of Veterans Memorial Highway is two lanes wide to accommodate all movements. Both the east and westbound approaches of Blue Hill Plaza are two lanes wide with a channelized right-turn lane and a lane for the shared left-turn and through movements.

The intersection of **Veterans Memorial Highway** with **East Blue Hill Plaza** is controlled by a three-phase traffic signal. The control type is semi-actuated with roadway loop detection on the northbound approach. The eastbound approach of Veterans Memorial Highway is four lanes wide with a channelized right-turn lane to access the Blue Hill Plaza, two through lanes and an exclusive left-turn lane. The westbound approach of Veterans Memorial Highway is three lanes wide with a shared lane for the through and right-turn movements, an exclusive left-turn lane and a lane for through traffic. The northbound approach of Blue Hill Plaza is two-lanes wide with a channelized right-turn lane and a lane for the left-turn and through movements. The southbound approach is a single lane for all movements.

A three-phase traffic signal controls the intersection of **Veterans Memorial Highway** with **South Blue Hill Road** which is a "T-Intersection." The westbound approach of Veterans Memorial Highway is three lanes wide with an exclusive left-turn lane along with two lanes for through traffic. The eastbound approach is two lanes wide with a shared lane for the through and right-turn movements and one lane exclusively for through traffic. The northbound

approach is two lanes wide with an exclusive right-turn lane and an exclusive left-turn lane.

A two-phase semi-actuated traffic signal controls the intersection of **Veterans Memorial Highway** with **Blue Hill Road** which is a "T-Intersection." The southbound approach of Blue Hill Road is two-lanes wide with an exclusive right-turn lane and an exclusive left-turn lane. The eastbound approach of Veterans Memorial Highway is a two-lane road with a lane for a shared left-turn and through movements and a lane exclusively for through traffic. Similarly, the westbound approach is a two-lane road with a shared lane for the right-turn and through movements and a lane exclusively for through traffic.

The intersection of **Veterans Memorial Highway** with **Hunt Road/Old Orangeburg Road** is controlled by a STOP signs on the Hunt Road and Old Orangeburg Road approaches. Both the east-and westbound approaches of Veterans Memorial Highway are two-lanes wide to accommodate the through movements as well as turns to the left and right.

The intersection of **Veterans Memorial Highway** with **Blaisdell Road** is controlled by a three-phase traffic signal. Both the east-and westbound approaches of Veterans Memorial Highway are two-lane wide to accommodate all movements. The northbound approach of Blaisdell Road is two-lanes wide with a shared lane for the left-turn and through movements and a right-turn-only lane. The southbound approach of Blaisdell Road operates with one lane to accommodate all traffic movements.

The intersection of **Veterans Memorial Highway** with **Lester Drive/Edgewood Drive** is controlled by a three-phase traffic signal. The eastbound Veterans Memorial Highway approach is two lanes wide for all movements. The westbound approach of Veterans Memorial Highway has three travel lanes; an exclusive left-turn lane, a lane for through traffic and a shared lane for through and right-turn movements. The northbound approach is a two-lane approach, one lane for the shared left-turn and through movements and one lane for right-turn movements. The southbound approach, also designated as Edgewood Drive, is two-lanes wide with one lane for the shared left-turn and through movements and one lane for the shared right-turn and through movements.

The intersection of **Veterans Memorial Highway** with **Dutch Hill Road** is controlled by a three-phase traffic signal. The eastbound approach of Veterans Memorial Highway is four lanes wide with a right-turn lane, two through lanes and a left-turn lane. The westbound approach of Veterans Memorial Highway is three lanes wide with a shared lane for right-turn and through movements, a left-turn-only lane and a lane exclusively for through traffic. Both the north and southbound approaches of Dutch Hill Road are three-lane wide with a right-turn only lane, a left-turn-only lane and one lane for through traffic.

The intersection of **Veterans Memorial Highway** with **Western Highway** is controlled by a two-phase traffic signal. Both the east and westbound approaches of Veterans Memorial Highway are two-lanes wide to accommodate all movements. The north and southbound approaches of Western Highway contain a single lane approach to accommodate all movements.

The intersection of **Western Highway** with **Mountain View Avenue** is controlled by a three-phase traffic signal. There is also an exit from a Dominican College parking lot at the intersection which is controlled by a roadway loop. The

north and southbound approaches of Western Highway include a single lane. The westbound approach of Mountain View Avenue operates with a single lane.

The intersection of **Western Highway** with **Convent Road** is a "T-Intersection." This is a one-way STOP-controlled intersection with the STOP sign on the Convent Road approach. The north and southbound approaches of Western Highway are each a single lane wide.

The intersection of **Convent Road** with **Parkway Drive** is controlled by STOP signs on the Parkway Drive approaches, supplemented by a flashing beacon. Both the east and westbound approaches of Convent Road operate with a single lane to accommodate all movements. Similarly, the north and southbound approaches of Parkway Drive operate with one lane in each direction.

The intersection of **Van Wyck Road** with **Convent Road** is a "T-Intersection." This is a one-way STOP-controlled intersection with the STOP sign on the Van Wyck Road approach. Both approaches of Convent Road include a single lane. The southbound Van Wyck Road approach is one lane wide.

The intersection of **Van Wyck Road** with **Erie Street** is a "T-Intersection." This is a one-way STOP-controlled intersection with the STOP sign on the Erie Street approach. Both the north and southbound approaches on Van Wyck Road operate with a single lane. The westbound approach on Erie Street operates with one lane.

A two-phase traffic signal controls the intersection of **Convent Road** with **Third Avenue** which is a "T-Intersection." Both approaches of Convent Road operate with a single lane. The northbound approach of Third Avenue also operates with one lane.

The intersection of **Swannekin Road** with **Convent Road** is a "T-Intersection" controlled by a STOP sign on the Swannekin Road approach. Both the east and westbound approaches of Convent Road include a single lane. The southbound approach of Swannekin Road also operates with one lane.

The intersection of **Swannekin Road** with **Blauvelt Road** is a "T-Intersection." This is a STOP-controlled intersection with the STOP sign on Swannekin Road,

which is a single-lane approach. The east and westbound approaches of Blauvelt Road are also one-lane wide.

The intersection of **Sickletown Road** with **Blue Hill Road** is a "T-Intersection." This is a one-way STOP-controlled intersection with the STOP sign on the Blue Hill Road approach. The northbound approach of Blue Hill Road operates as a two-lane road with exclusive left and right-turn lanes. The eastbound approach of Sickletown Road is a one-lane wide with a right turn bay and a lane for through traffic. The westbound approach of Convent Road is a single lane with shared left-turn and through movements.

The intersection of **Sickletown Road** with **Gilbert Avenue** is a "T-Intersection." This is a STOP-controlled intersection with the STOP sign on the Gilbert Avenue approach. The eastbound approach on Gilbert Avenue operates as a one-lane road. Both the north and southbound approaches of Sickletown Road are also one-lane wide.

The intersection of **Old Orangeburg Road** with **Blaisdell Road** is a "T-Intersection." This is a STOP-controlled intersection with the STOP sign on the

Blaisdell Road approach, which is a single lane. The east and westbound approaches of Old Orangeburg Road are also one-lane wide.

The intersection of **Old Orangeburg Road** with **Third Avenue** is a "T-Intersection." This is a STOP-controlled intersection with the STOP sign on the Third Avenue approach, which is one-lane wide. The east and westbound approaches of Old Orangeburg Road are also one-lane wide.

F. FIELD STUDIES

The greatest demands on the roadway system typically occur on a weekday during the morning and evening peak highway periods. Manual vehicle turning-movement count data for majority of the intersections were collected on Wednesday, May 14th, 2008 while four supplemental intersections were counted on Wednesday, September 10th, 2008. The count data were collected between 7:00 a.m. and 9:30 a.m. and from 4:00 p.m. to 6:30 p.m. Data were collected for all vehicles on the roadways, including trucks and buses. Pedestrian count data were collected concurrent with the vehicle counts at the intersections. Automatic

Traffic Recorder (ATR) machines were installed on Veterans Memorial Highway and Convent Avenue to collect hourly traffic volume data for a one-week period.

G. Peak Hours

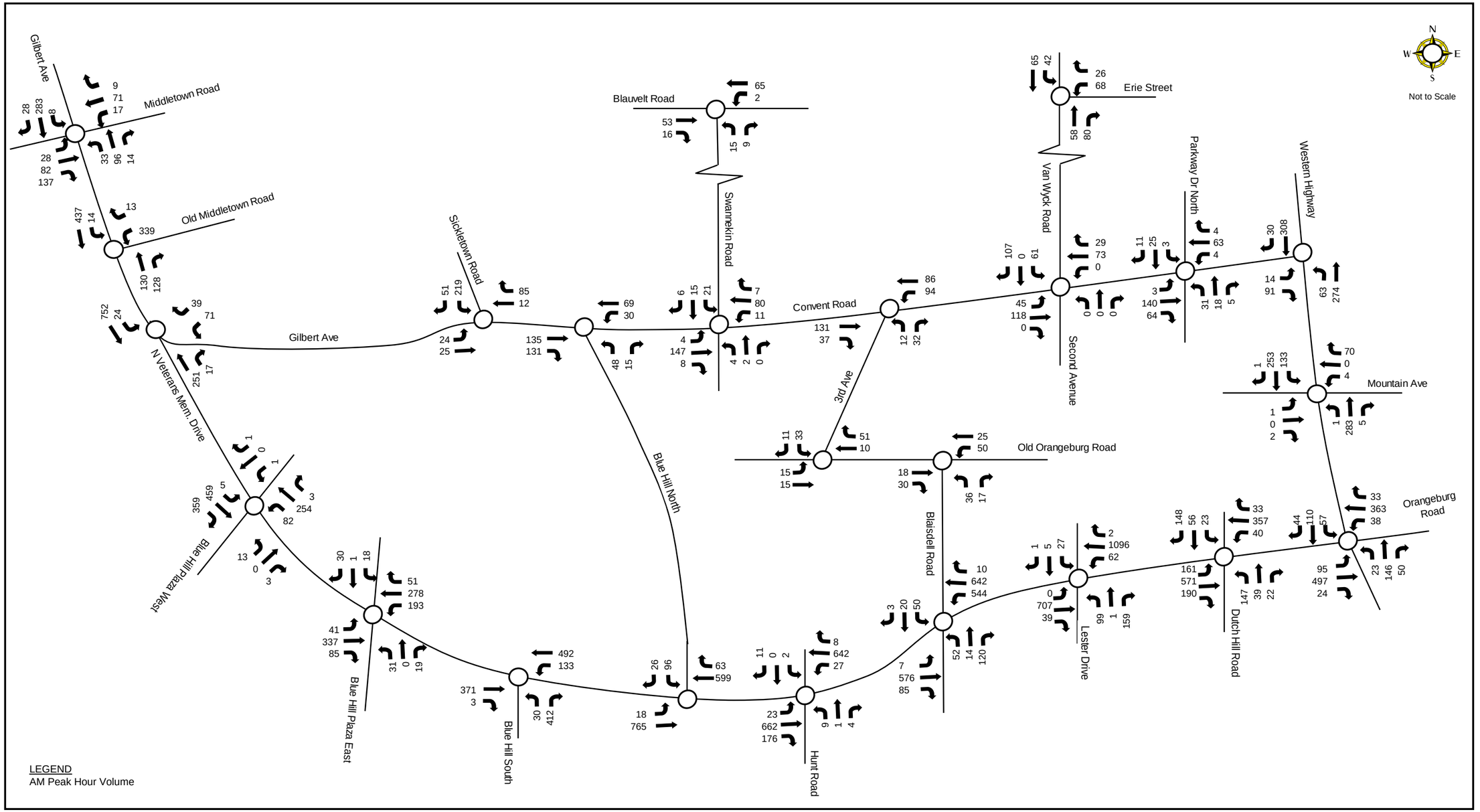
A review of the surveyed traffic data revealed the peak hours of traffic activity on the roadway system in the vicinity of the Site to be:

- Peak AM Highway Hour 8:00 a.m. to 9:00 a.m.
- Peak PM Highway Hour 5:00 p.m. to 6:00 p.m.

As expected, these weekday peak periods coincide with the peak commuter hours. A review of the ATR count data indicated that the traffic volumes during the weekday peak hours were greater than the volumes recorded during the Saturday or Sunday midday peak hours or any other time periods.

H. Existing Traffic Conditions

The Existing traffic volumes are depicted in Figure 2 for the AM Peak Hour and in Figure 3 for the PM Peak Hour.



Project:

Rockland Psychiatric Center
Town of Orangetown, NY

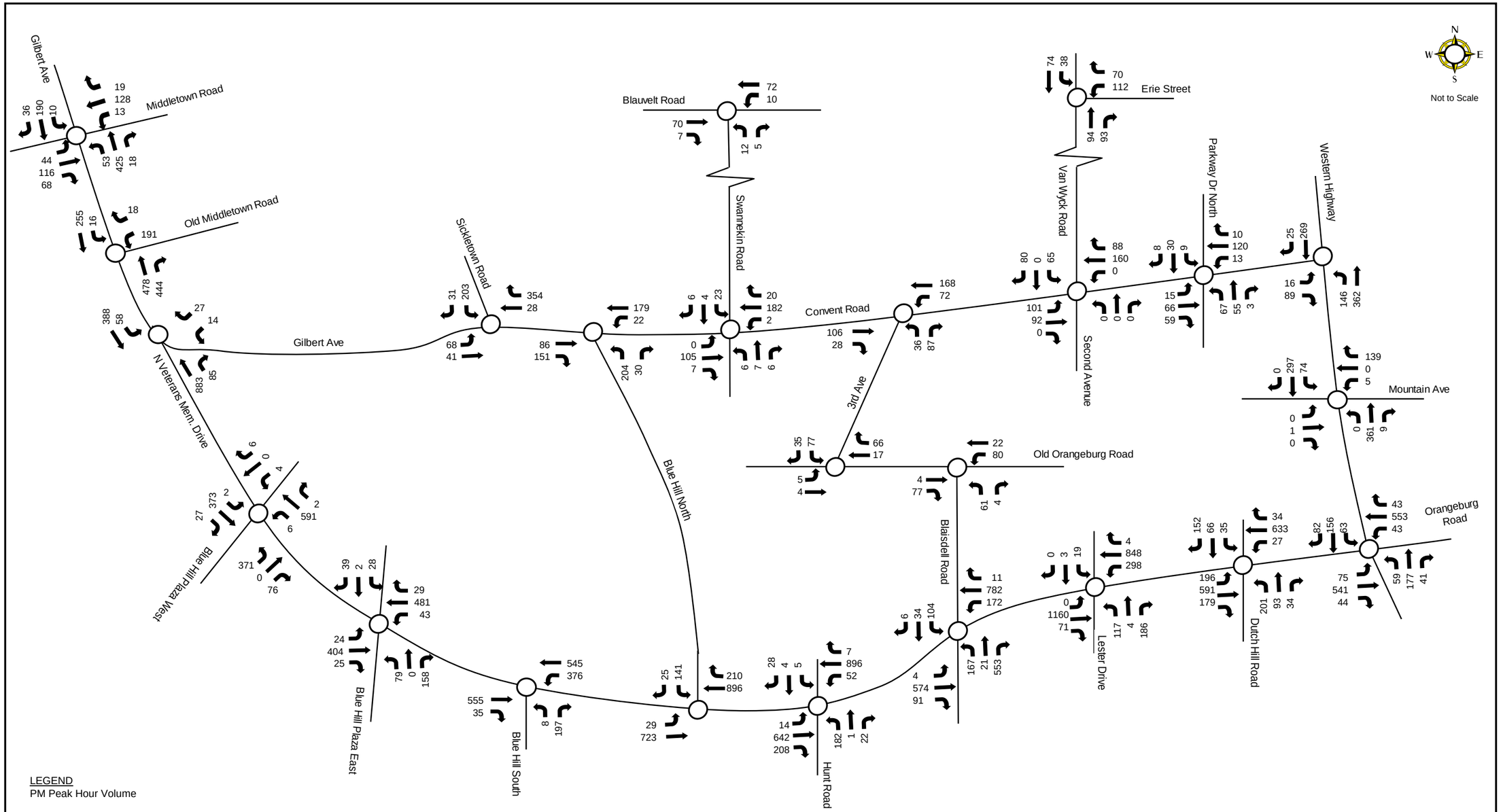
Prepared By:

Adler Consulting, White Plains, NY
Transportation Planning & Traffic Engineering, PLLC

Title:

AM Peak Hour Existing Traffic Volumes

FIGURE 2



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Adler Consulting, White Plains, NY
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Title:

PM Peak Hour Existing Traffic Volumes

FIGURE 3

1. Public Transportation

Public bus transportation within Rockland County is provided by Transport of Rockland (TOR). The Veterans Memorial Highway corridor is served by the Route 92 bus. Service is provided approximately every hour in both directions along the corridor, between 5:00 a.m. and 7:00 p.m. on weekdays. On Saturdays and Sundays, hourly service is provided between approximately 8:00 a.m. and 5:00 p.m.

2. Pedestrian Activity

TOR permits passengers to board or exit the bus at any location that is considered to be safe on the side of the road along the route. Designated stops along the Route 92 corridor include Blue Hill Plaza, the Rockland Industrial Park, the Rockland Psychiatric Center, Western Highway (Orangetown Town Hall and Dominican College) and the Palisades Center. It is anticipated that bus operations, including providing service to the Hospital, will remain unchanged.

The pedestrian count data collected indicated that activity is generally minimal at most intersections with less than 10 pedestrians observed in an hour. At many intersections, no pedestrian activity was observed. Moderate pedestrian activity,

generally between 10 and 20 pedestrians in an hour, were observed along Orangeburg Road at the intersections with Blue Hill Plaza, Edgewood Drive and at Dutch Hill Road. The area around Dominican College also generated moderate pedestrian volumes, including the intersections of Convent Road with Western Highway, Mountain View Avenue with Western Highway and Convent Road with Parkway Drive. It is noted that the pedestrian volume data were collected during peak commuter hours, that is, between 7:00 a.m. and 9:30 a.m. and from 4:00 p.m. to 6:30 p.m. It is possible that higher pedestrian volumes may occur between 9:30 a.m. and 4:00 p.m. when classes are generally in session, but vehicular traffic will be lower.

It should be noted that two-way traffic volumes along the eastern portion of Convent Road range between approximately 300 vehicles per hour and 400 vehicles per hour. Accordingly, there appears to be sufficient gaps in the traffic flow to permit pedestrians to cross Convent Road, even in the vicinity of the retail destinations along the north side near First and Second Avenues.

I. CAPACITY ANALYSES PROCEDURES

Traffic impacts are measured by intersection capacity analyses, computed in accordance with procedures outlined in the 2000 Highway Capacity Manual, published by the Transportation Research Board. In general, analyses' results are a measure of the ability of an intersection to process vehicles. This is evaluated for each approach to the intersection as well as for the entire intersection. The analyses' results are identified as Levels-of-Service (LOS) which range from "A" through "F", with LOS "A" representing the least delays and LOS "F" representing longer delays or capacity deficient operations.

According to generally accepted practice, Levels-of-Service "A", "B" and "C" reflect clearly acceptable conditions, Level-of-Service "D" reflects the existence of delays within a generally tolerable range, Level-of-Service "E" is generally only tolerated on minor movements and Level-of-Service "F" indicates typically undesirable delays often associated with breakdown conditions.

The parameters considered in the calculations include the type of intersection control, the volumes on each approach, the distribution of vehicles by direction (left, through and right) and other factors including vehicle types, pedestrian

movements and parking constraints. Roadway parameters relate to the geometry of the intersection, specifically, the number of lanes and lane-use considerations.

The computed Level-of-Service is defined in terms of the average control delay per vehicle for the peak 15-minute period within the peak one-hour period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections, capital letters are used to indicate the Levels-of-Service. The range of delay within each Level-of-Service category are:

LEVEL-OF-SERVICE	STOPPED DELAY PER VEHICLE (Seconds)
A	Less than 10.00
B	Between 10.01 and 20.00
C	Between 20.01 and 35.00
D	Between 35.01 and 55.00
E	Between 55.01 and 80.00
F	Greater than 80.00

For unsignalized intersections, Levels-of-Service and delay are reported for the individual lane groups, in that they provide a more meaningful representation of operating conditions than the overall intersection Level-of-Service and delay.

Lower case letters are used to show that the Level-of-Service refers to unsignalized intersections. The ranges of delay within each Level-of-Service category are as follows:

LEVEL-OF-SERVICE	STOPPED DELAY PER VEHICLE (Seconds)
a	Less than 10.00
b	Between 10.01 and 15.00
c	Between 15.01 and 25.00
d	Between 25.01 and 35.00
e	Between 35.01 and 50.00
f	Greater than 50.00

These delay ranges for the unsignalized Level-of-Service categories are less than those at signalized intersections because it is assumed that motorists will tolerate longer delays at a signalized intersection in exchange for guaranteed entry into the intersection in a definite period of time.

J. EXISTING CAPACITY ANALYSIS RESULTS

The Existing traffic volumes were compared with current roadway capacities using Synchro, Version 7. The Synchro software provides analyses of the street

network, rather than individual intersections and accounts for vehicle delays based on signal timing as well as roadway congestion and the resulting vehicle queues. Detailed capacity analysis work sheets, which are included in the Appendix of this report, are summarized in Table 1.

Table 1. Level-of-Service Summary, Existing Conditions

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Gilbert Ave. at S. Middletown Road	EB l/t/r	B	16.6	B	15.2
	WB l/t/r	A	9.9	B	15.2
	NB l/t/r	A	8.5	B	12.3
	SB l/t/r	B	11.6	B	12.7
	Overall	B	12.3	B	14.3
Gilbert Avenue at Old Middletown Road	EB l/t	B	14.1	B	11.9
	WB t	A	4.3	A	6.7
	WB r	A	1.1	A	1.5
	SB l/r	F	172.2	D	48.7
	Overall	E	63.8	B	12.3
Gilbert Ave. at Veterans Memorial Highway	EB l	A	3.6	A	2.8
	EB t	A	4.1	A	2.6
	WB t/r	A	6.1	A	6.7
	SB l	C	25.7	C	21.5
	SB r	C	23.1	C	23.1
	Overall	A	6.5	A	5.9
Veterans Memorial Highway at Blue Hill Plaza (West)	EB l/t	C	20.9	D	46.0
	WB l/t	B	20.0	B	16.8
	WB r	B	16.0	B	10.3
	NB l/t/r	A	2.3	A	8.5
	SB l/t	A	2.2	A	7.7
	Overall	A	2.6	B	18.6
Veterans Memorial Highway at Blue Hill Plaza (East)	EB r	A	3.0	A	3.9
	EB t	A	5.8	A	6.6
	EB l	A	1.8	A	3.2
	WB l	A	4.5	A	3.9
	WB t/r	A	4.9	A	6.2
	NE l/t	C	26.3	C	26.6
	NE r	B	11.6	A	7.4
	SB l/t/r	B	16.8	B	16.0
	Overall	A	6.0	A	8.0
Veterans Memorial Highway at Blue Hill South	EB t/r	C	22.0	C	24.4
	WB l	B	10.3	C	31.6
	WB t	A	9.5	A	9.8
	NB l	C	22.3	C	21.8
	NB r	D	54.9	C	28.5
	Overall	C	26.1	C	21.8

Table 1. Level-of-Service Summary, Existing Conditions, Continued

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Veterans Memorial Highway at Blue Hill North	EB l/t	A	5.9	A	6.2
	WB t/r	A	5.2	A	6.8
	SB l	C	20.8	C	22.4
	SB r	B	16.6	B	16.1
	Overall	A	6.7	A	7.8
Veterans Memorial Highway at Blaisdell Road	EB l/t/r	B	18.7	B	18.4
	WB l/t/r	B	19.9	A	9.9
	NB l/t	C	23.8	D	53.2
	NB r	A	7.1	D	36.6
	SB l/t/r	C	22.4	C	33.0
	Overall	B	19.0	C	22.6
Veterans Memorial Highway at Lester Drive/Edgewood Road	EB l/t/r	B	16.9	D	44.0
	WB l	A	9.1	D	45.2
	WB t/r	B	12.8	A	8.9
	NB l/t	C	28.4	C	29.5
	NB r	A	6.1	B	11.9
	SB l/t/r	C	23.6	C	24.0
	Overall	B	14.5	C	30.1
Veterans Memorial Highway at Dutch Hill Road	EB l	C	22.6	A	4.7
	EB t	D	40.8	B	12.5
	EB r	D	39.6	B	10.8
	WB l	A	9.6	A	8.6
	WB t/r	C	21.1	C	25.0
	NB l	C	24.8	C	28.8
	NB t	C	20.3	C	22.1
	NB r	B	10.4	A	9.8
	SB l	C	20.2	C	21.4
	SB t	C	20.6	C	21.5
	SB r	B	12.0	B	11.2
	Overall	C	28.6	B	17.5
Veterans Memorial Highway at Western Highway	EB l/t/r	B	18.3	C	21.3
	WB l/t/r	B	16.4	B	19.2
	NB l/t/r	B	19.7	C	22.5
	SB l/t/r	C	20.1	C	23.4
	Overall	B	18.2	C	21.1

Table 1. Level-of-Service Summary, Existing Conditions, Continued

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Convent Road at Third Avenue	EB t/r	B	11.8	B	11.4
	WB l/t	B	13.1	B	13.8
	NB l/r	B	12.6	B	13.6
	Overall	B	12.5	B	13.1
Mountain View Ave. at Western Highway	EB l/t/r	C	29.0	C	30.0
	WB l/t/r	C	31.5	D	35.6
	NB l/t/r	B	11.2	B	13.5
	SB l/t/r	B	14.3	B	15.5
	Overall	B	14.9	B	18.0
Hunt Road/Old Orangeburg Road at Veterans Memorial Highway	EB l/t/r	a	0.5	a	0.3
	WB l/t/r	a	0.7	a	1.1
	NB l/t/r	e	40.9	f	860.2
	SB l/t/r	c	15.4	d	28.9
Gilbert Ave. at Sickletown Road	EB l/r	b	10.9	b	14.6
	NB l/t	a	1.1	a	0.8
	SB t/r	a	0.0	a	0.0
Convent Road at Blue Hill Road North	EB t/r	a	0.0	a	0.0
	WB l/t	a	2.4	a	0.9
	NB l/r	b	10.2	b	12.9
Convent Road at Swannekin Road	EB l/t/r	a	0.2	a	0.0
	WB l/t/r	a	0.9	a	0.1
	NB l/t/r	b	10.7	b	10.8
	SB l/t/r	b	10.7	b	11.4
Swannekin Road at Blauvelt Road	EB t/r	a	0.0	a	0.0
	WB l/t	a	0.2	a	1.0
	NB l/r	a	9.1	a	9.3
Convent Road at 2nd Ave/Van Wyck Road	EB l/t	a	2.3	a	4.6
	WB t/r	a	0.0	a	0.0
	SB l/r	b	10.5	b	13.5
Erie Street at Van Wyck Road	WB l/r	b	10.5	b	11.7
	NB t/r	a	0.0	a	0.0
	SB t/l	a	3.1	a	2.8

Table 1. Level-of-Service Summary, Existing Conditions, Continued

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Convent Road at Parkway Drive	EB l/t/r	a	0.1	a	0.9
	WB l/t/r	a	0.5	a	0.8
	NB l/t/r	b	11.2	b	12.8
	SB l/t/r	b	10.6	b	11.4
Convent Road at Western Highway	EB l/r	b	12.5	b	13.7
	NB l/t	a	2.0	a	3.5
	SB t/r	a	0.0	a	0.0
Old Orangeburg Road at Third Avenue	EB l/t	a	3.7	a	4.1
	WB t/r	a	0.0	a	0.0
	SB l/r	a	9.1	a	9.5
Old Orangeburg Road at Blaisdell Road	EB l/t	a	0.0	a	0.0
	WB t/r	a	5.0	a	6.0
	NB l/r	a	9.6	b	10.5

Note:
1. EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, l = Left, t = Thru and r = Right.
2. Uppercase letters represent Levels-of-Service for signalized intersections, while lowercase letters represent those of unsignalized intersections.
3. Delays are the average for each lane group in seconds per vehicle. For signalized intersections, the average delay per vehicle for the entire intersection is also included. For unsignalized intersections, the value represents the average delay per vehicle for the lane group experiencing the greatest delays.

A review of the analysis worksheets and of the information presented in Table 1 indicates that the studied intersections currently experience generally acceptable (Level-of-Service "C") or better peak-hour conditions.

For the intersection of Gilbert Avenue with South Middletown Road, the overall intersection is expected to operate at Level-of-Service "B" during the AM and PM Peak Hours.

For the intersection of Gilbert Avenue with Old Middletown Road, the intersection operates at a Level-of-Service "E" during the AM Peak Hour and Level-of-Service "B" during PM Peak Hour.

Level-of-Service "A" operations occur at the intersection of Gilbert Avenue with Veterans Memorial Highway during the AM and PM Peak Hours.

The intersection of Veterans Memorial Highway with Blue Hill Plaza West currently experiences Level-of-Service "A" conditions during AM Peak Hour. During the PM Peak Hour Level-of-Service "B" operations were calculated.

The intersection of Veterans Memorial Highway with Blue Hill Plaza East experiences Level-of-Service "A" conditions during both the AM and PM Peak Hours.

The intersection of Veterans Memorial Highway with Blue Hill South operates at Level-of-Service "C" during both the AM and PM Peak Hours.

The intersection of Veterans Memorial Highway with Blue Hill North operates at Level-of-Service "A" during the AM and PM Peak Hours.

Level-of-Service "B" and "C" conditions are observed for the intersection of Veterans Memorial Highway and Blaisdell Road during the AM and PM Peak Hours, respectively.

The intersection of Veterans Memorial Highway and Edgewood Road operates with Level-of-Service "B" conditions during the AM Peak Hour and at Level-of-Service "C" conditions during the PM Peak Hour.

The intersection of Veterans Memorial Highway and Dutch Hill Road is currently operating at Level-of-Service "C" during the AM Peak Hour and with Level-of-Service "B" conditions in the PM Peak Hour.

The intersection of Veterans Memorial Highway with Western Highway operates at Level-of-Service "B" during the AM and at Level-of-Service "C" during the PM Peak Hour.

The intersection of Convent Road with Third Avenue operates at Level-of-Service "B" conditions during AM and PM Peak Hour.

The intersection of Western Highway with Mountain View Avenue operates with Level-of-Service "B" conditions during AM and PM Peak Hours.

For the intersection of Veterans Memorial Highway with Hunt Road/Old Orangeburg Road, the northbound approach on Hunt Road is expected to operate with a Level-of-Service "e" during AM Peak Hour and the southbound Old Orangeburg Road approach operates at Level-of-Service "c". During the PM Peak Hour, the north and southbound approaches are expected to operate with a Level-of-Service "f" and Level-of-Service "d," respectively.

Good operating conditions, with Level-of-Service "b" conditions or better, are currently observed at the remaining STOP controlled intersections.

K. ACCIDENT INVESTIGATION

Accident information was obtained from New York State Department of Transportation Safety Information Management System for the roadways in the study area including Veterans Memorial Highway, Convent Road, Western Highway and Blaisdell Road. Data were provided for the three-year period between January 1, 2005 and December 31, 2007. During this time period, there

occurred a total of 61 accidents at intersections and 87 accidents on roadway segments within this study area. The accident data collected by municipal and county police departments are send to NYSDOT which summarizes the data.

An accident analysis includes determining the average number of accidents that occurred for a specific intersection or section of a roadway. The average accident rate is compared with the statewide accident rate as well as a calculated critical accident rate.

The statewide accident rate is the average rate of accidents occurring at a specific type of facility or intersection in the State of New York. For example, a four-way signalized intersection would have a different average accident rate than a four-way STOP-sign controlled intersection.

The Critical Accident Rate is calculated using the Rate Quality Control Method based on the accident rates at a particular location. The accident rates were based on the number of vehicles entering an intersection or on the vehicles miles traveled along a section of roadway. Based on criteria established by NYSDOT, if the accident rate is equal to or exceeds the critical accident rate, there is a 95

percent probability that the location has a higher than average accident history. When the accident rate for a particular location is greater than the calculated critical accident rate, NYSDOT may include the location as a PILs (Priority Investigation Location), a SDL (Safety Deficient Location), or a PII (Priority Investigation Intersection), depending upon the types of accidents.

The analysis of the data for the roadway segments indicated that the average accident rate was less than the critical accident rate. For the intersections, the analysis indicated that the accident rate was less than the critical accident rate with the exception of the three intersections: Gilbert Avenue with South Middletown Road; Convent Road with Swannekin Road; and, Convent Road with Parkway Drive. The intersection of Gilbert Avenue with South Middletown Road is controlled by a traffic signal, while both the intersection of Convent Road with Swannekin Road and the intersection of Convent Road with Parkway Drive are STOP controlled intersections. Based on the guidelines of the New York State Department of Transportation (NYSDOT), the intersection of Gilbert Avenue with South Middletown Road and the intersection of Convent Road with Parkway Drive would be considered as high-accident locations.

A total of 11 accidents were identified at the intersection of Gilbert Avenue with South Middletown Road, of which eight (8) were either right angle accidents or involved a turn across traffic. Possible mitigation measures at the intersection include replacing the eight (8) inch lenses of the traffic signals with new section heads that include 12-inch lenses and/or instituting changes to the signal phasing to provide time for vehicles to complete turns without conflict with on-coming traffic.

At the intersection of Convent Road with Parkway Drive, a total of six (6) accidents were recorded of which five (5) accidents were either right angle accidents or included a turn across traffic. Additional monitoring of the intersection is recommended. A review of the Manual on Uniform Traffic Control Devices (MUTCD) indicates that the installation of four-way STOP sign control would be warranted if there are five (5) or more right angle or "turning" crashes in a 12-month period.

At the intersection of Convent Road with Swannekin Road, a total of four (4) accidents were recorded of which three (3) accidents were either right angle accidents or included a turn across traffic. Additional monitoring of the

intersection is recommended. A review of the Manual on Uniform Traffic Control Devices (MUTCD) indicates that the installation of all-way STOP sign control would be warranted if there are five (5) or more right angle or "turning" crashes in a 12-month period.

L. VICINITY DEVELOPMENTS

The County of Rockland Highway Department originally identified a total of seven (7) developments either approved or already under construction which might generate traffic in the vicinity of the Project site. Further investigation and discussion with the Town indicated that two projects could be eliminated from consideration as 'vicinity developments.' The Rockland Hospital Guild is already located on the campus of the Rockland Psychiatric Center facility and its relocation to another site on the campus would not change the number of vehicle trips it would generate onto the local roadway system. The Hunter Douglas headquarters facility is 'on hold' and therefore was not be considered as a vicinity development for this project. There are, therefore, five (5) remaining developments in the immediate vicinity of the Site which would generate a significant volume of traffic through the Study area. These developments include:

STEJ LLC; Orangetown Recreation Facilities; The Hollows (planned adult community); The Pointe at Lake Tappan (combined senior dwelling and office park); and, Orangeburg Commons (retail facilities).

Trip generation and assignment for these developments were taken directly from the traffic studies completed as part of their approval, where these studies were available, or were determined from Institute of Transportation Engineers data and a review of area traffic volumes and the surrounding roadway network.

M. NO-BUILD TRAFFIC VOLUMES

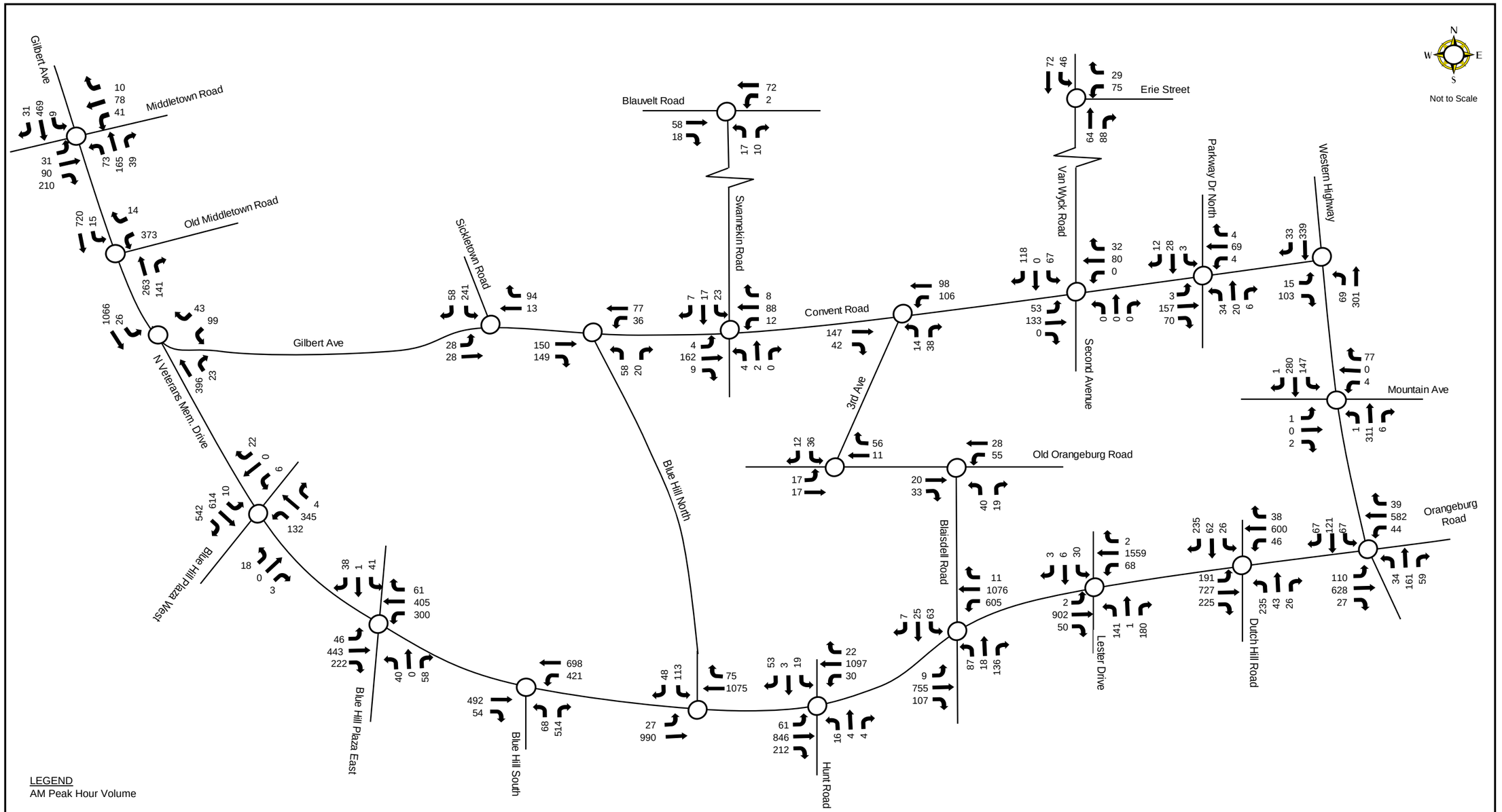
In determining future traffic volumes, Existing traffic volumes are projected forward to the Horizon Year, using a generalized growth factor. This growth factor is representative of non-development-specific, area-wide growth. Traffic anticipated to be generated by specific developments in the vicinity of the subject project are then added to these Horizon Year traffic volumes to obtain the "No-Build" traffic volumes. The No-Build traffic volumes represent future traffic operating conditions without the development of the subject project and are a

benchmark against which potential project-related traffic impacts can be measured.

Based on a review of historical traffic growth in the area as well as discussions with the Town of Orangetown Highway Department, it was determined that the use of a two (2) percent annual growth rate to account for non-development-specific growth in area traffic would be appropriate. Because it is expected that the proposed development will be operational in 2013, the 2008 Existing traffic volumes were, therefore, grown by a total of ten (10) percent. The vicinity development traffic volumes were added to the grown Existing traffic volumes, resulting in the No-Build volumes, which are presented graphically in Figure 4 for the AM Peak Hour and in Figure 5 for the PM Peak Hour.

N. NO-BUILD CAPACITY ANALYSIS RESULTS

The No-Build traffic volumes were compared with the anticipated future roadway capacities using Synchro, Version 7. The analyses also include the anticipated improvement of the installation of a traffic signal at the intersection of Veterans Memorial Highway with Hunt Road/Old Orangeburg Road which is currently



Project:

Rockland Psychiatric Center
Town of Orangetown, NY

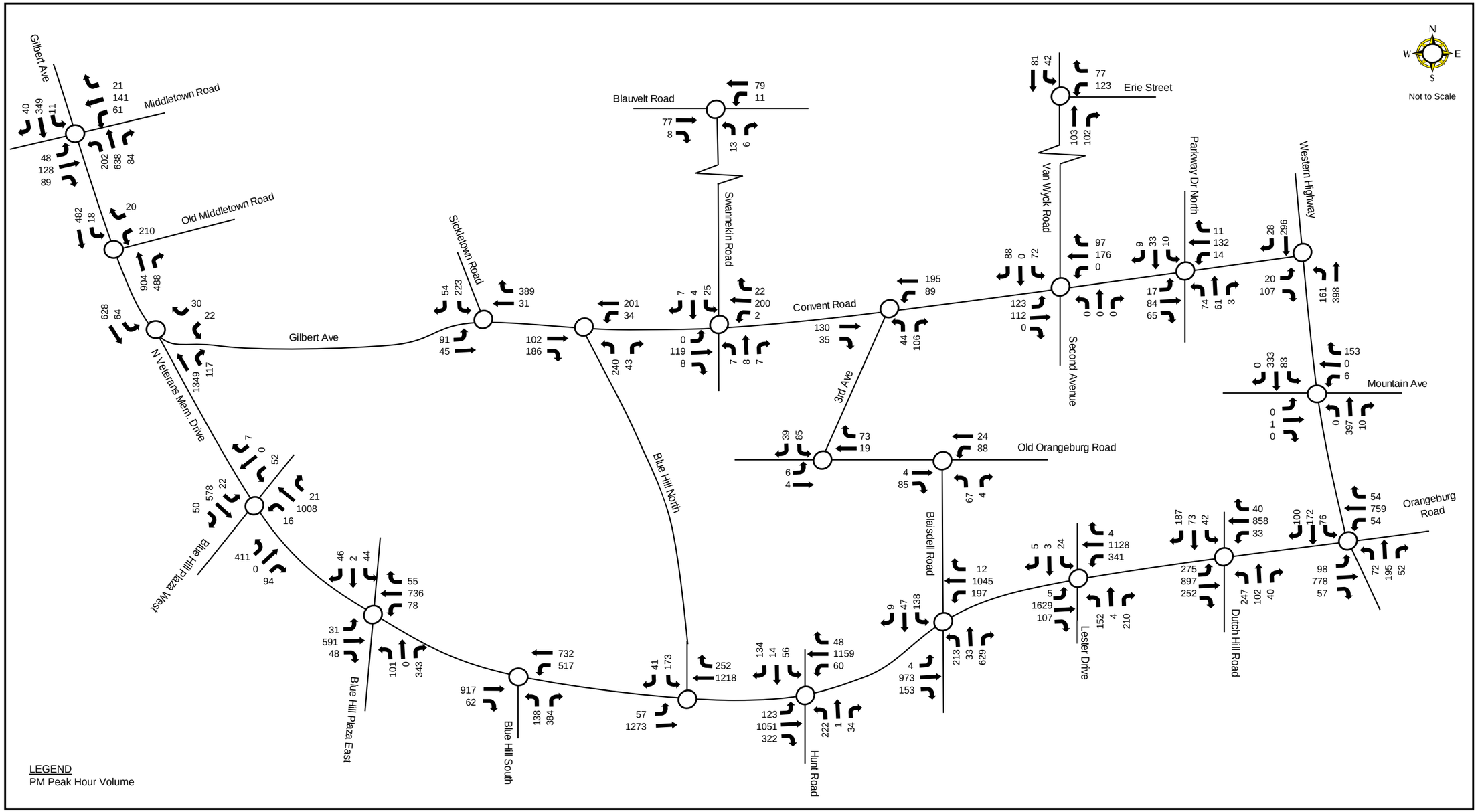
Prepared By:

Adler Consulting, White Plains, NY
Transportation Planning & Traffic Engineering, PLLC

Title:

AM Peak Hour No-Build
Traffic Volumes

FIGURE 4



Project:

Rockland Psychiatric Center
Town of Orangetown, NY

Prepared By:

Adler Consulting, White Plains, NY
Transportation Planning & Traffic Engineering, PLLC

Title:

PM Peak Hour No-Build
Traffic Volumes

FIGURE 5

under design. Detailed capacity analysis work sheets, which are included in the Appendix of this report, are summarized in Table 2.

A review of the analysis worksheets and the information presented in Table 2 reveals that the No-Build operating conditions would deteriorate at some of the intersections studied.

Table 2. Level-of-Service Summary, No-Build Conditions

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Gilbert Ave. at S. Middletown Road	EB l/t/r	C	23.1	B	19.6
	WB l/t/r	B	12.5	F	259.5
	NB l/t/r	A	9.0	B	13.0
	SB l/t/r	B	12.8	B	14.9
	Overall	B	15.9	F	140.3
Gilbert Avenue at Old Middletown Road	EB l/t	B	19.0	B	15.1
	WB t	A	4.9	B	16.0
	WB r	A	1.1	A	1.8
	SB l/r	F	222.7	E	57.7
	Overall	E	66.5	B	17.0
Gilbert Ave. at Veterans Memorial Highway	EB l	A	4.2	A	4.2
	EB t	A	5.7	A	3.7
	WB t/r	A	7.0	B	13.9
	SB l	C	27.1	C	23.1
	SB r	C	22.3	C	24.5
	Overall	A	7.7	B	11.0
Veterans Memorial Highway at Blue Hill Plaza (West)	EB l/t	B	18.8	F	135.7
	WB l/t	B	19.5	B	18.2
	WB r	A	9.6	B	10.1
	NB l/t/r	A	3.6	B	11.7
	SB l/t	A	2.7	A	9.3
	Overall	A	3.3	D	38.9
Veterans Memorial Highway at Blue Hill Plaza (East)	EB l	A	3.5	A	6.5
	EB t	A	6.5	B	10.2
	EB r	A	1.7	A	3.6
	WB l	A	9.8	A	6.8
	WB t/r	A	5.7	A	9.9
	NE l/t	C	25.6	C	25.5
	NE r	A	8.8	B	19.6
	SB l/t/r	C	20.9	B	14.9
	Overall	A	7.4	B	12.2
Veterans Memorial Highway at Blue Hill South	EB t/r	C	23.3	C	33.9
	WB l	C	30.3	F	246.6
	WB t	B	10.4	B	10.8
	NB l	C	23.2	C	25.2
	NB r	F	113.9	D	51.3
	Overall	D	41.3	E	69.7

Table 2. Level-of-Service Summary, No-Build Conditions (cont.)

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Veterans Memorial Highway at Blue Hill North	EB l/t	A	7.4	B	13.2
	WB t/r	A	7.6	A	10.0
	SB l	C	21.4	C	24.3
	SB r	B	17.5	B	16.6
	Overall	A	8.4	B	12.3
Veterans Memorial Highway at Blaisdell Road	EB l/t/r	C	22.5	E	64.9
	WB l/t/r	F	147.5	C	30.1
	NB l/t	C	28.4	F	122.8
	NB r	A	7.1	F	107.3
	SB l/t/r	C	24.6	F	106.1
	Overall	F	95.0	E	66.4
Veterans Memorial Highway at Lester Drive/Edgewood Road	EB l/t/r	B	19.7	F	222.4
	WB l	B	11.7	E	55.4
	WB t/r	C	21.7	A	9.1
	NB l/t	C	31.2	C	32.1
	NB r	B	12.2	B	12.9
	SB l/t/r	C	23.0	C	21.5
	Overall	C	20.7	F	117.6
Veterans Memorial Highway at Dutch Hill Road	EB l	C	23.3	C	20.8
	EB t	D	41.7	B	14.8
	EB r	D	39.1	B	11.3
	WB l	A	9.9	A	9.0
	WB t/r	C	24.1	C	30.1
	NB l	C	29.8	C	32.6
	NB t	C	20.4	C	22.3
	NB r	B	10.5	A	9.9
	SB l	C	20.3	C	21.7
	SB t	C	20.7	C	21.6
	SB r	B	13.3	B	11.7
	Overall	C	29.6	C	21.2
Veterans memorial Highway at Western Highway	EB l/t/r	C	24.0	F	88.9
	WB l/t/r	B	18.7	D	36.0
	NB l/t/r	C	20.5	C	25.7
	SB l/t/r	C	21.1	C	27.2
	Overall	C	21.4	D	53.5

Table 2. Level-of-Service Summary, No-Build Conditions (cont.)

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Convent Road at Third Avenue	EB t/r	B	12.1	B	11.9
	WB l/t	B	13.9	B	15.2
	NB l/r	B	14.4	B	14.5
	Overall	B	13.2	B	14.1
Mountain View Ave. at Western Highway	EB l/t/r	C	29.3	C	30.0
	WB l/t/r	C	31.5	D	36.6
	NB l/t/r	B	11.5	B	14.2
	SB l/t/r	B	15.4	B	17.7
	Overall	B	15.5	B	19.3
Hunt Road/Old Orangeburg Road at Veterans Memorial Highway	EB l	A	7.9	D	47.4
	EB t/r	A	4.1	A	9.9
	WB l	A	4.3	B	27.2
	WB t/r	A	4.7	B	9.3
	NB l	C	24.5	E	59.4
	NB t/r	B	18.8	A	7.7
	SB l/t/r	B	15.2	B	17.1
	Overall	A	5.0	B	15.3
Gilbert Ave. at Sickletown Road	EB l/r	b	11.3	c	17.5
	NB l/t	a	1.1	a	0.9
	SB t/r	a	0.0	a	0.0
Convent Road at Blue Hill Road North	EB t/r	a	0.0	a	0.0
	WB l/t	a	2.6	a	1.3
	NB l/r	b	10.5	c	15.0
Convent Road at Swannekin Road	EB l/t/r	a	0.2	a	0.0
	WB l/t/r	a	0.9	a	0.1
	NB l/t/r	b	11.0	b	11.1
	SB l/t/r	b	10.9	b	11.8
Swannekin Road at Blauvelt Road	EB t/r	a	0.0	a	0.0
	WB l/t	a	0.2	a	1.0
	NB l/r	a	9.2	a	9.4
Convent Road at 2nd Ave/Van Wyck Road	EB l/t	a	2.4	a	4.8
	WB t/r	a	0.0	a	0.0
	SB l/r	b	11.0	c	15.3
Erie Street at Van Wyck Road	WB l/r	b	10.8	b	12.4
	NB t/r	a	0.0	a	0.0
	SB t/l	a	3.2	a	2.8

Table 2. Level-of-Service Summary, No-Build Conditions (cont.)

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Convent Road at Parkway Drive	EB l/t/r	a	0.1	a	0.9
	WB l/t/r	a	0.4	a	0.8
	NB l/t/r	b	11.6	b	13.9
	SB l/t/r	b	10.9	b	12.0
Convent Road at Western Highway	EB l/r	b	13.4	c	15.8
	NB l/t	a	2.1	a	3.7
	SB t/r	a	0.0	a	0.0
Old Orangeburg Road at Third Avenue	EB l/t	a	3.7	a	4.5
	WB t/r	a	0.0	a	0.0
	SB l/r	a	9.2	a	9.7
Old Orangeburg Road at Blaisdell Road	EB l/t	a	0.0	a	0.0
	WB t/r	a	5.0	a	6.0
	NB l/r	a	9.7	b	10.8

Note:
1. EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, l = Left, t = Thru and r = Right.
2. Uppercase letters represent Levels-of-Service for signalized intersections, while lowercase letters represent those of unsignalized intersections.
3. Delays are the average for each lane group in seconds per vehicle. For signalized intersections, the average delay per vehicle for the entire intersection is also included. For unsignalized intersections, the value represents the average delay per vehicle for the lane group experiencing the greatest delays.

For the intersection of Gilbert Avenue with Middletown Road, the overall intersection is expected to operate at Level-of-Service "B" conditions during the AM Peak Hours and Level-of-Service "F" conditions during the PM Peak Hours.

For the intersection of Gilbert Avenue with Old Middletown Road, the intersection would be expected to experience Level-of-Service "E" conditions during the AM Peak Hour and Level-of-Service "B" conditions during the PM Peak Hour.

For the intersection of Gilbert Avenue with Veterans Memorial Highway , the intersection is expected to operate at Level-of-Service "A" during the AM Peak Hour and Level-of-Service "B" during the PM Peak Hour.

The intersection of Veterans Memorial Highway with Blue Hill Plaza West is expected to experience Level-of-Service "A" conditions during the AM Peak Hour. During the PM Peak Hour, Level-of-Service "D" operations are anticipated.

It is anticipated that the intersection of Veterans Memorial Highway with Blue Hill Plaza East would operate with Level-of-Service "A" conditions in the AM Peak Hour and Level-of-Service "B" conditions for the PM Peak Hour.

The intersection of Veterans Memorial Highway with Blue Hill South is expected to operate at Level-of-Service "D" conditions during the AM Peak Hour and Level-of-Service "E" conditions during the PM Peak Hours.

The intersection of Veterans Memorial Highway with Blue Hill North is expected to experience Level-of-Service "A" conditions during the AM Peak Hour and Level-of-Service "B" conditions during the PM Peak Hour.

With the installation of a traffic signal, the intersection of Veterans Memorial Highway and Hunt Road/Old Orangeburg Road would operate with Level-of-Service "A" conditions during the AM Peak Hour and at Level-of-Service "B" conditions during the PM Peak Hour.

At the intersection of Veterans Memorial Highway and Blaisdell Road, Level-of-Service "F" conditions and Level-of-Service "E" conditions are anticipated during the AM and PM Peak Hours, respectively.

The intersection of Veterans Memorial Highway and Lester Drive/Edgewood Road is expected to operate with Level-of-Service "C" conditions during the AM Peak Hour and at Level-of-Service "F" conditions during the PM Peak Hour.

The intersection of Veterans Memorial Highway and Dutch Hill Road is anticipated to experience Level-of-Service "C" conditions during both the AM Peak Hour and PM Peak Hour.

It is expected that the intersection of Veterans Memorial Highway with Western Highway would operate at Level-of-Service "C" during the AM and at Level-of-Service "D" during the PM Peak Hour.

The intersection of Convent Road with Third Avenue would experience Level-of-Service "B" conditions during the AM and PM Peak Hours.

The intersection of Western Highway with Mountain View Avenue is anticipated to operate with Level-of-Service "B" conditions during AM and PM Peak Hours.

It is anticipated that acceptable operating conditions with Level-of-Service "c" or better would be expected at the intersections where one or more approaches are controlled by STOP signs.

O. SITE-GENERATED TRAFFIC VOLUMES

As currently proposed, the redevelopment of the Rockland Psychiatric Center will include will consist of up to 575 dwelling units of which 478 are expected to be age-restricted (55 years or older) townhouse/condominium units; 32 affordable

age-restricted units; 33 age-restricted single-family homes; 20 units available for community volunteers; and, 12 market-rate, single-family homes. Trips anticipated to be generated by the proposed project were determined using trip generation information contained in Trip Generation, Seventh Edition, published by the ITE.

The resultant trip generation data are contained in Table 3.

Table 3. Peak Hour New Site-Generated Traffic Volumes

Development	AM		PM	
	In	Out	In	Out
Condominiums	31	150	145	72
Single-family homes	20	58	66	39
TOTAL	51	208	211	111

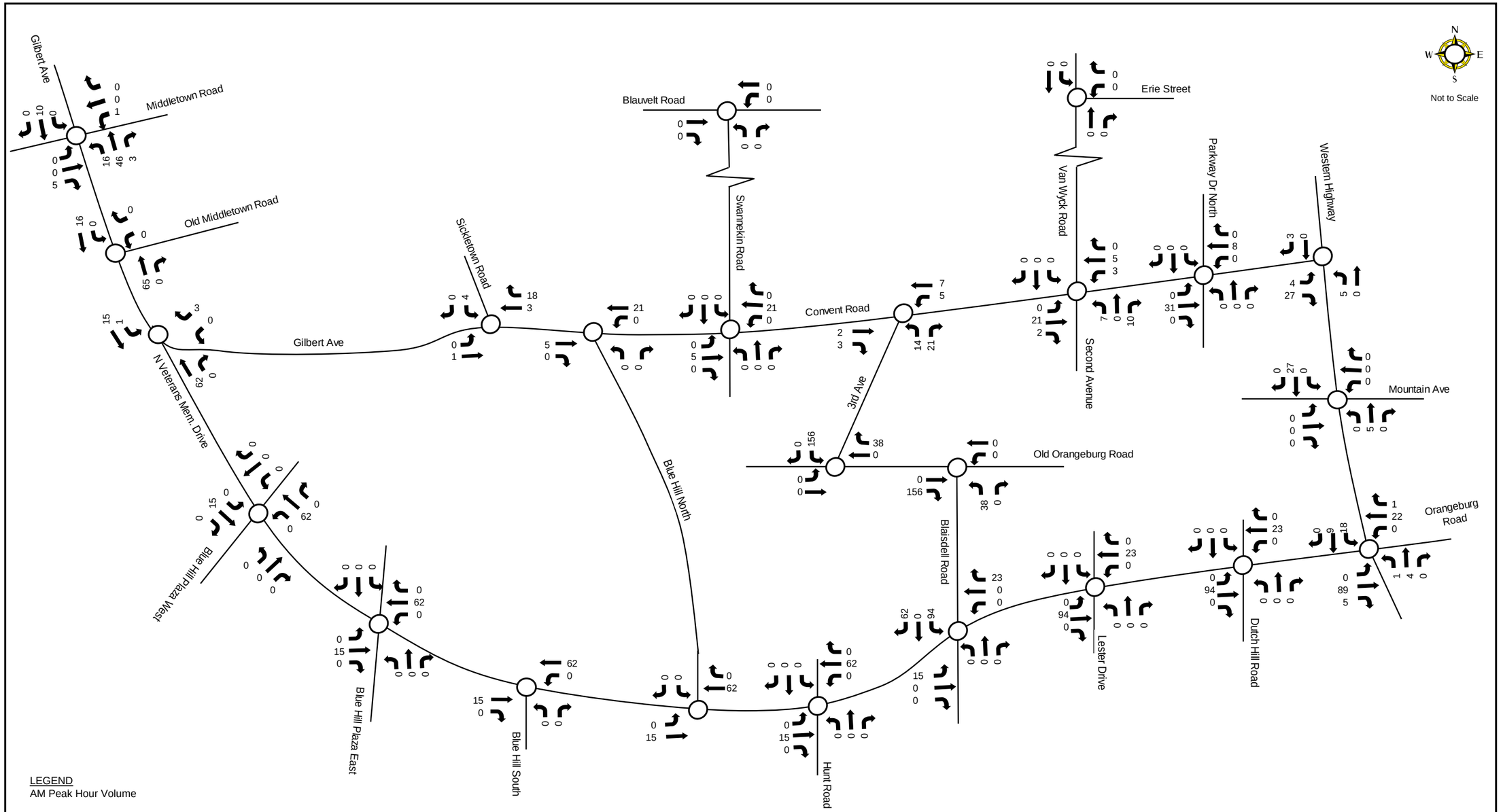
As can be seen from Table 3, the proposed project is conservatively projected to add 51 arriving and 208 departing new trips to the surrounding roadway network during the Peak AM Highway Hour and 211 arriving and 111 departing new trips during the Peak PM Highway Hour.

P. ARRIVAL/DEPARTURE PATTERNS

The determination of the trip assignment for traffic generated by the proposed project was based on the existing traffic flows in the area, particularly along Veterans Memorial Highway and Convent Road. It is anticipated that approximately three-quarters of the Site-generated traffic would travel on Veterans Memorial Highway while the remaining 25 percent of the traffic would utilize Convent Road. Based on the current traffic flows, it is expected that approximately 60 percent of traffic generated by the Site would travel to or arrive from the easterly direction including the Palisades Parkway and NY Route 303 and that 40 percent of the Site-generated traffic would travel to and from the westerly direction and the general vicinity of the Garden State Parkway.

Q. ASSIGNED SITE-GENERATED TRAFFIC VOLUMES

The assignment of traffic volumes onto the roadway system is accomplished by multiplying the trips generated from the proposed development by the arrival/departure patterns. The Site-generated trips are shown in Figure 6 for the



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Town of Orangetown, NY

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Transportation Planning & Traffic Engineering, PLLC

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AM Peak Hour Site-Generated Traffic Volumes

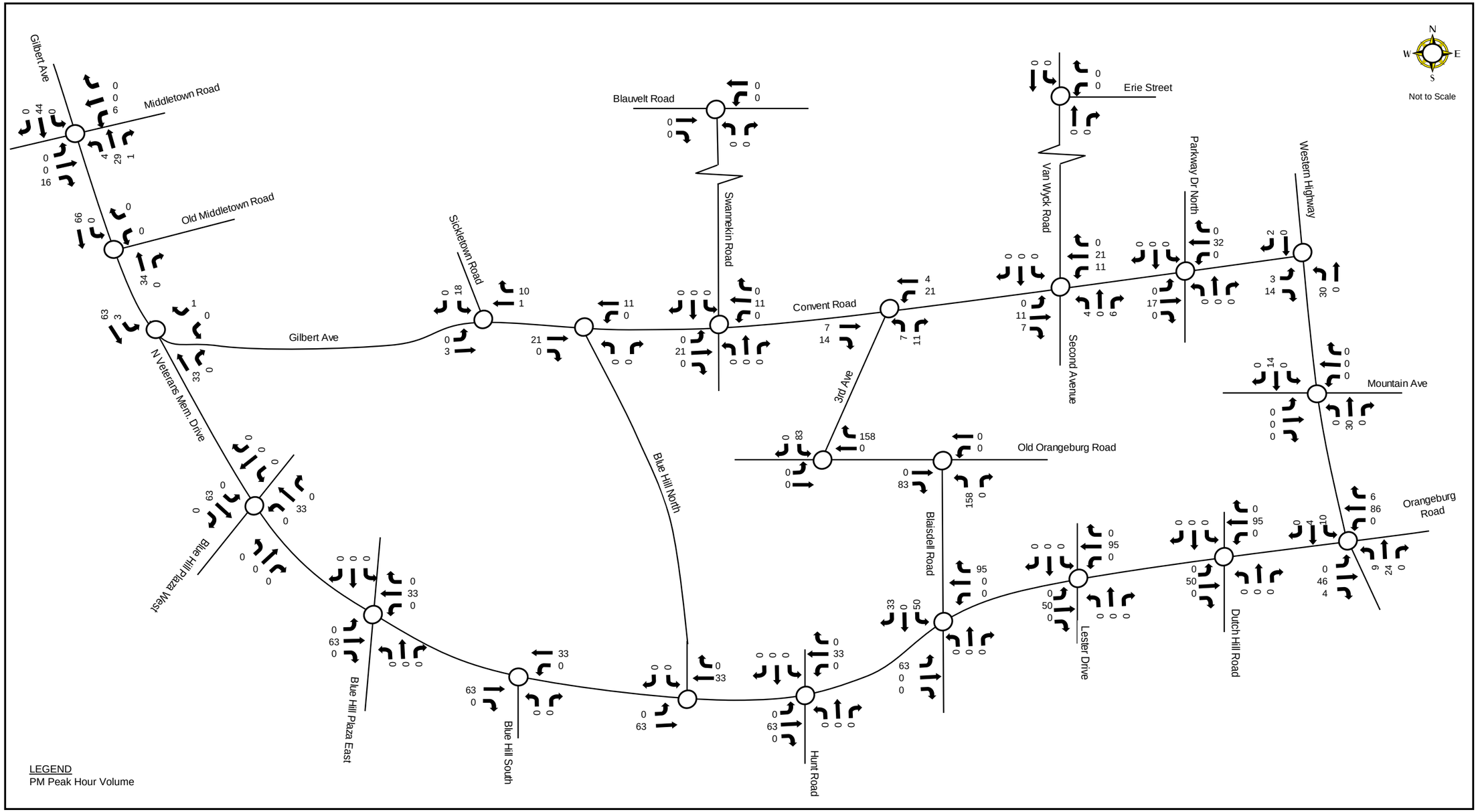
FIGURE 6

AM Peak Hour. The anticipated Site-generated trips for the PM Peak Hour are depicted in Figure 7.

R. BUILD TRAFFIC VOLUMES

The Build traffic volumes are the addition of the Project-generated traffic volumes and the No-Build traffic volumes. The Site Plan indicates that access to and from the Site will be onto Convent Road at 3rd Avenue with additional access from 2nd Avenue. Traffic to and from the Site would also utilize 3rd Avenue for access onto Old Orangeburg Road and then onto Veterans Memorial Highway . The Build traffic volumes for the subject intersections are shown graphically in Figure 8 for the AM Peak Hour and in Figure 9 for the PM Peak Hour.

Reconnecting the intersection of Veterans Memorial Highway with Old Orangeburg Road is not recommended at this time. It is already possible to travel from Veterans Memorial Highway to Old Orangeburg Road, either via the short connecting roadway located approximately 800 feet west of the previous connection or via Blaisdell Road. Veterans Memorial Highway operates with two



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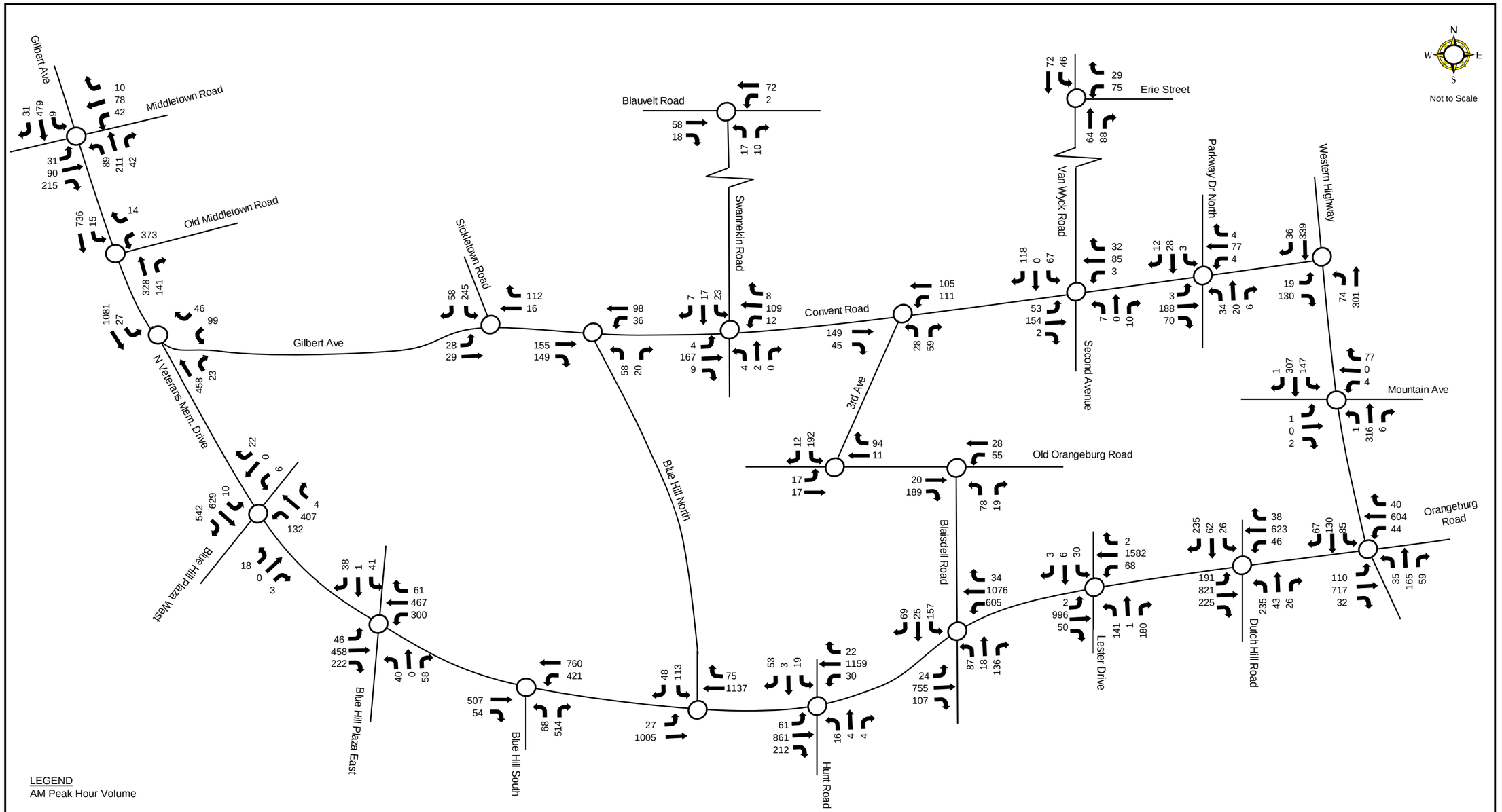
PM Peak Hour Site-Generated Traffic Volumes

FIGURE 7



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Town of Orangetown, NY

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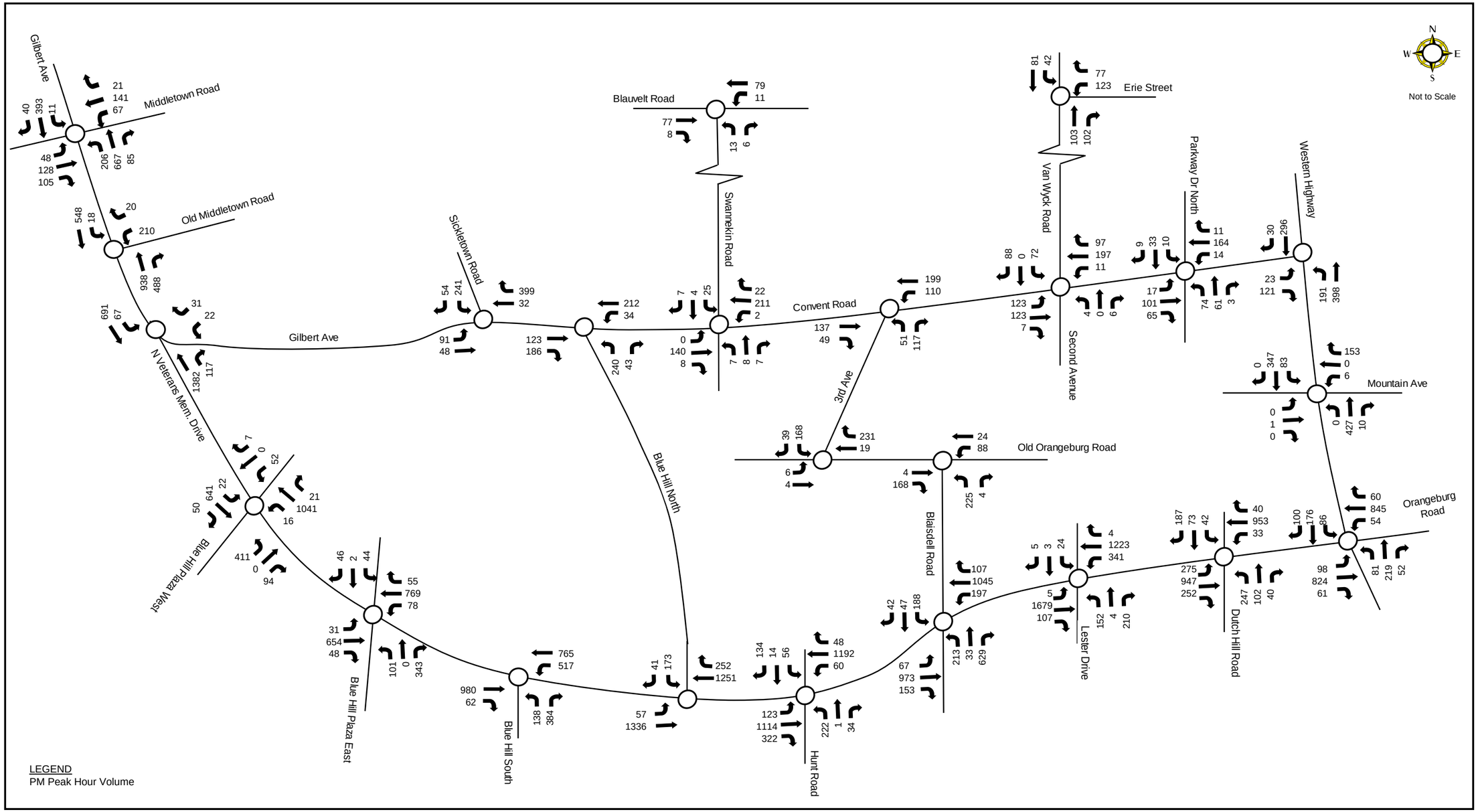
Title:

AM Peak Hour Build Traffic Volumes

FIGURE 8



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Town of Orangetown, NY

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Title:

PM Peak Hour Build Traffic Volumes

FIGURE 9

travel lanes in each direction, with exclusive turn lanes at several intersections as appropriate. Old Orangeburg Road operates with one lane in each direction and provides access to the Rockland Psychiatric Center as well as neighborhood recreational facilities. Reconnecting the two roadways may lead to increased traffic volumes on Old Orangeburg Road as well as increased travel speeds. Given the nature of the land uses abutting Old Orangeburg Road, higher traffic volumes and speeds would not be desirable.

S. BUILD CAPACITY ANALYSIS RESULTS

The Build traffic volumes were compared with anticipated roadway capacities using Synchro, Version 7. Detailed capacity analysis work sheets are included in the Appendix and are summarized in Table 4.

Table 4. Level-of-Service Summary, Build Conditions

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Gilbert Ave. at S. Middletown Road	EB l/t/r	C	23.8	C	21.2
	WB l/t/r	B	14.8	F	311.1
	NB l/t/r	A	9.0	B	13.0
	SB l/t/r	B	12.9	B	15.2
	Overall	B	16.7	F	164.4
Gilbert Avenue at Old Middletown Road	EB l/t	B	19.3	B	16.3
	WB t	A	5.3	B	18.4
	WB r	A	1.1	A	1.8
	SB l/r	F	222.7	E	57.7
	Overall	E	63.8	B	18.3
Gilbert Ave. at Veterans Memorial Highway	EB l	A	4.2	A	4.3
	EB t	A	5.8	A	3.8
	WB t/r	A	7.2	B	14.5
	SB l	C	27.1	C	23.0
	SB r	C	22.6	C	24.5
	Overall	A	7.8	B	11.2
Veterans Memorial Highway at Blue Hill Plaza (West)	EB l/t	B	18.8	F	135.7
	WB l/t	B	19.5	B	18.2
	WB r	A	9.6	B	10.1
	NB l/t/r	A	3.7	B	12.1
	SB l/t	A	2.8	A	9.7
	Overall	A	3.4	D	38.0
Veterans Memorial Highway at Blue Hill Plaza (East)	EB r	A	3.5	A	6.9
	EB t	A	6.5	B	11.0
	EB l	A	1.7	A	3.7
	WB l	B	10.3	A	7.4
	WB t/r	A	5.9	B	10.5
	NE l/t	C	25.6	C	24.8
	NE r	A	8.8	C	20.8
	SB l/t/r	C	20.9	B	14.4
	Overall	A	7.5	B	12.8
Veterans Memorial Highway at Blue Hill South	EB t/r	C	23.5	D	37.7
	WB l	C	31.4	F	246.6
	WB t	B	10.7	B	10.9
	NB l	C	23.2	C	25.2
	NB r	F	113.9	D	51.3
	Overall	D	40.8	E	69.7

Table 4. Level-of-Service Summary, Build Conditions (cont.)

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Veterans Memorial Highway at Blue Hill North	EB l/t	A	7.5	B	15.3
	WB t/r	A	8.0	B	10.5
	SB l	C	21.4	C	24.3
	SB r	B	17.5	B	16.6
	Overall	A	8.6	B	13.5
Veterans Memorial Highway at Blaisdell Road	EB l/t/r	D	44.5	F	236.4
	WB l/t/r	F	155.5	D	51.6
	NB l/t	C	30.0	F	133.2
	NB r	A	7.1	F	107.3
	SB l/t/r	D	54.2	F	246.9
	Overall	F	104.7	F	140.9
Veterans Memorial Highway at Lester Drive/Edgewood Road	EB l/t/r	C	21.0	F	240.3
	WB l	B	12.6	D	54.6
	WB t/r	C	22.5	A	9.1
	NB l/t	C	31.2	C	32.1
	NB r	B	14.0	B	13.0
	SB l/t/r	C	22.9	C	21.5
	Overall	C	21.7	F	124.8
Veterans Memorial Highway at Dutch Hill Road	EB l	C	22.9	C	23.2
	EB t	D	43.1	B	15.6
	EB r	D	38.6	B	11.2
	WB l	B	10.1	A	9.0
	WB t/r	C	24.4	C	34.1
	NB l	C	29.8	C	32.6
	NB t	C	20.4	C	22.3
	NB r	B	10.5	A	9.9
	SB l	C	20.3	C	21.7
	SB t	C	20.7	C	21.6
	SB r	B	13.3	B	11.7
	Overall	C	30.4	C	23.0
Veterans Memorial Highway at Western Highway	EB l/t/r	C	27.5	F	139.5
	WB l/t/r	B	19.4	E	61.7
	NB l/t/r	C	20.7	C	28.5
	SB l/t/r	C	22.4	C	30.2
	Overall	C	23.3	F	81.8

Table 4. Level-of-Service Summary, Build Conditions (cont.)

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Convent Road at Third Avenue	EB t/r	B	12.2	B	12.2
	WB l/t	B	14.2	B	16.6
	NB l/r	B	14.3	B	14.5
	Overall	B	13.5	B	14.8
Mountain View Ave. at Western Highway	EB l/t/r	C	29.3	C	30.0
	WB l/t/r	C	31.5	D	36.6
	NB l/t/r	B	11.5	B	14.7
	SB l/t/r	B	15.8	B	18.7
	Overall	B	15.7	B	19.8
Hunt Road/Old Orangeburg Road at Veterans Memorial Highway	EB l	A	8.1	E	57.0
	EB t/r	A	3.7	B	10.6
	WB l	A	4.3	C	27.2
	WB t/r	A	4.3	A	9.5
	NB l	C	24.5	E	59.4
	NB l/t/r	B	18.8	A	7.7
	SB l/t/r	B	15.3	B	17.7
	Overall	A	4.7	B	15.9
Gilbert Ave. at Sickletown Road	EB l/r	b	11.5	c	18.3
	NB l/t	a	1.1	a	0.9
	SB t/r	a	0.0	a	0.0
Convent Road at Blue Hill Road North	EB t/r	a	0.0	a	0.0
	WB l/t	a	2.2	a	1.2
	NB l/r	b	10.7	c	15.9
Convent Road at Swannekin Road	EB l/t/r	a	0.2	a	0.0
	WB l/t/r	a	0.8	a	0.1
	NB l/t/r	b	11.2	b	11.5
	SB l/t/r	b	11.2	b	12.2
Swannekin Road at Blauvelt Road	EB t/r	a	0.0	a	0.0
	WB l/t	a	0.2	a	1.0
	NB l/r	a	9.2	a	9.4
Convent Road at 2nd Ave/Van Wyck Road	EB l/t/r	a	2.2	a	4.6
	WB l/t/r	a	0.2	a	0.3
	NB l/t/r	b	11.3	b	13.9
	SB l/t/r	b	11.6	c	18.2
Erie Street at Van Wyck Road	WB l/r	b	10.8	b	12.4
	NB t/r	a	0.0	a	0.0
	SB t/l	a	3.2	a	2.8

Table 4. Level-of-Service Summary, Build Conditions (cont.)

Intersection	Approach[1]	Peak AM		Peak PM	
		LOS[2]	Delay[3]	LOS	Delay
Convent Road at Parkway Drive	EB l/t/r	a	0.1	a	0.8
	WB l/t/r	a	0.4	a	0.7
	NB l/t/r	b	12.0	b	14.9
	SB l/t/r	b	11.2	b	12.5
Convent Road at Western Highway	EB l/r	b	14.2	c	17.8
	NB l/t	a	2.3	a	4.2
	SB t/r	a	0.0	a	0.0
Old Orangeburg Road at Third Avenue	EB l/t	a	3.8	a	4.8
	WB t/r	a	0.0	a	0.0
	SB l/r	b	10.6	b	11.7
Old Orangeburg Road at Blaisdell Road	EB l/t	a	0.0	a	0.0
	WB t/r	a	5.3	a	6.2
	NB l/r	b	11.0	b	14.0

Note:
1. EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, l = Left, t = Thru and r = Right.
2. Uppercase letters represent Levels-of-Service for signalized intersections, while lowercase letters represent those of unsignalized intersections.
3. Delays are the average for each lane group in seconds per vehicle. For signalized intersections, the average delay per vehicle for the entire intersection is also included. For unsignalized intersections, the value represents the average delay per vehicle for the lane group experiencing the greatest delays.

For the intersection of Gilbert Avenue with Middletown Road, the overall intersection is expected to operate at Level-of-Service "B" conditions during the AM Peak Hours and Level-of-Service "F" conditions during the PM Peak Hours.

For the intersection of Gilbert Avenue with Old Middletown Road, the intersection would be expected to experience Level-of-Service "E" conditions during the AM Peak Hour and Level-of-Service "B" conditions during the PM Peak Hour.

For the intersection of Gilbert Avenue with Veterans Memorial Highway, the intersection is expected to operate at Level-of-Service "A" during the AM Peak Hour and Level-of-Service "B" during the PM Peak Hour.

The intersection of Veterans Memorial Highway with Blue Hill Plaza West is expected to experience Level-of-Service "A" conditions during the AM Peak Hour. During the PM Peak Hour, Level-of-Service "D" operations are anticipated.

It is anticipated that the intersection of Veterans Memorial Highway with Blue Hill Plaza East would operate with Level-of-Service "A" conditions in the AM Peak Hour and Level-of-Service "B" conditions for the PM Peak Hour.

The intersection of Veterans Memorial Highway with Blue Hill South is expected to operate at Level-of-Service "D" conditions during the AM Peak Hour and Level-of-Service "E" conditions during the PM Peak Hours.

The intersection of Veterans Memorial Highway with Blue Hill North is expected to experience Level-of-Service "A" conditions during the AM Peak Hour and Level-of-Service "B" conditions during the PM Peak Hour.

At the intersection of Veterans Memorial Highway and Blaisdell Road, Level-of-Service "F" conditions are anticipated during the AM and PM Peak Hours.

The intersection of Veterans Memorial Highway and Lester Drive/Edgewood Road is expected to operate with Level-of-Service "C" conditions during the AM Peak Hour and at Level-of-Service "F" conditions during the PM Peak Hour.

The intersection of Veterans Memorial Highway and Dutch Hill Road is expected to experience Level-of-Service "C" conditions during both the AM Peak Hour and PM Peak Hour.

It is anticipated that the intersection of Veterans Memorial Highway with Western Highway would operate at Level-of-Service "C" during the AM and at Level-of-Service "F" during the PM Peak Hour.

The intersection of Convent Road with Third Avenue would experience Level-of-Service "B" conditions during the AM and PM Peak Hours.

The intersection of Western Highway with Mountain View Avenue is anticipated to operate with Level-of-Service "B" conditions during AM and PM Peak Hours.

It is anticipated that the intersection of Veterans Memorial Highway and Hunt Road /Old Orangeburg Road would operate with Level-of-Service "A" conditions during the AM Peak Hour and at Level-of-Service "B" conditions during the PM Peak Hour.

It is anticipated that acceptable operating conditions with Level-of-Service "c" or better would be expected at the intersections where one or more approaches are controlled by STOP signs.

T. ANTICIPATED IMPROVEMENT MEASURES

Based on a comparison of the No-Build and Build conditions, mitigation measures are recommended at some, but not all, intersections. There are also intersections which do not require mitigation, but where minimal changes to the signal timing would result in less delay for motorists. Because the Synchro analysis considers the entire network in calculating the effects of proposed mitigation measures, all intersections will be discussed in this Section. Many of the mitigation measures discussed here involve optimizing the traffic signals in this study by changing signal timings.

1. Traffic Mitigation

For the intersection of Gilbert Avenue with South Middletown Road, the overall intersection is expected to operate at Level-of-Service "B" conditions during the AM Peak Hour. A shift of 10 seconds of green time from the north-and southbound approaches to the east-and westbound approaches would result in Level-of-Service "D" conditions during the PM Peak Hour.

For the intersection of Gilbert Avenue with Old Middletown Road, a shift of five (5) seconds of green time from the Gilbert Avenue approaches to the Middletown

Road approach in the AM Peak Hour would result in Level-of-Service "C" conditions. For the PM Peak Hour, a shift of three (3) seconds of green time from the Gilbert Avenue approaches to the Middletown Road approach would result in Level-of-Service "C" conditions.

For the intersection of Gilbert Avenue with Veterans Memorial Highway, the intersection is expected to operate at Level-of-Service "A" during the AM Peak Hour and Level-of-Service "B" during the PM Peak Hour. No mitigation is, therefore, required.

The intersection of Veterans Memorial Highway with Blue Hill Plaza West is expected to experience Level-of-Service "A" conditions during the AM Peak Hour. During the PM Peak Hour, a shift of five (5) seconds of green time from the Blue Hill Plaza approaches to the Veterans Memorial Highway approaches would result in Level-of-Service "C" conditions.

It is anticipated that the intersection of Veterans Memorial Highway with Blue Hill Plaza East would operate with Level-of-Service "A" conditions in the AM

Peak Hour and Level-of-Service "B" conditions for the PM Peak Hour. No mitigation is, therefore, required.

For the intersection of Veterans Memorial Highway with Blue Hill South, additional changes to the signal timing would result in improved Levels-of-Service. In the AM Peak Hour, a shift of five (5) seconds of green time from the Veterans Memorial Highway approaches to the Blue Hill South approach would result in Level-of-Service "C" conditions. In the PM Peak Hour, a shift of two (2) seconds of green time from the east- and westbound through movement to the westbound left-turn movement would result in Level-of-Service "E" conditions, with an anticipated delay of approximately nine (9) seconds less than expected in the No-Build conditions. In addition, the expected delay for the westbound left-turn movement is approximately 80 seconds less than the delay anticipated for the No-Build Condition. Further modifications to the signal timing would not be expected to improve the Levels-of-Service. In addition, with the intersection located adjacent to Lake Tappan, it does not appear to be feasible to construct an additional lane on the Blue Hill South approach.

The intersection of Veterans Memorial Highway with Blue Hill North is expected to experience Level-of-Service "A" conditions during the AM Peak Hour and Level-of-Service "B" conditions during the PM Peak Hour.

The construction of left-turn lanes on both approaches of Veterans Memorial Highway as well as the construction of an additional southbound approach lane for Blaisdell Road is recommended. With the construction of these additional lanes, together with changes to the signal timing, Level-of-Service "D" conditions are anticipated during the AM Peak Hour. In the PM Peak Hour, Level-of-Service "C" operating conditions are expected.

The construction of an exclusive left-turn lane for the eastbound Veterans Memorial Highway approach with the intersection of Lester Drive and Edgewood Drive would result in improved operating conditions. The signal phasing at the intersection already includes an exclusive phase to permit the westbound left-turn movement and the northbound right-turn movement. It would be possible to permit a left-turn for the eastbound approach during the same signal phase. In addition, a shift of eleven (11) seconds of green time from the westbound through movement to the exclusive turning phases would provide acceptable Levels-of-

Service in the AM Peak Hour and improve operations to Level-of-Service "D" in the PM Peak Hour.

The intersection of Veterans Memorial Highway and Dutch Hill Road is expected to experience Level-of-Service "C" conditions during both the AM Peak Hour and PM Peak Hour. No mitigation is, therefore, required.

With the shifting of four (4) seconds of green time from the Western Highway approaches to the east- and westbound Veterans Memorial Highway approaches, it is anticipated that the intersection of Veterans Memorial Highway with Western Highway would operate at Level-of-Service "C" during the AM and at Level-of-Service "D" during the PM Peak Hour.

The intersection of Convent Road with Third Avenue would experience Level-of-Service "B" conditions during the AM and PM Peak Hours. No mitigation is, therefore, required.

The intersection of Western Highway with Mountain View Avenue is anticipated to operate with Level-of-Service "B" conditions during AM and PM Peak Hours. No mitigation is, therefore, required.

It is anticipated that the intersection of Veterans Memorial Highway and Hunt Road/Old Orangeburg Road would operate with Level-of-Service "A" conditions during the AM Peak Hour. Allowing traffic in the northbound "choice" lane to turn left onto westbound Veterans Memorial Highway would improve overall operating conditions. In the PM Peak Hour, the intersection is expected to operate with Level-of-Service "B" conditions.

It is noted that the intersection of Old Orangeburg Road with Third Avenue and the intersection of Old Orangeburg Road with Blaisdell Avenue are currently offset from each other by approximately 160 feet. As a conservative measure, the analyses were performed assuming that this minor offset would be retained. The capacity analysis indicated that acceptable operating conditions with Level-of-Service "c" or better would be expected at both the intersections. If the intersections were to be realigned, it is anticipated that acceptable operating conditions would also occur.

The capacity analysis performed for the intersection of Convent Road with Second Avenue anticipated that the intersection would provide access into the proposed Site. The capacity analysis indicated that acceptable operating conditions with Level-of-Service "c" or better would be expected. It is recommended that future traffic volumes at the intersection be monitored to determine when it may be appropriate to install a traffic signal at this intersection.

It is anticipated that acceptable operating conditions with Level-of-Service "c" or better would be expected at the remaining unsignalized intersections.

2. Traffic Calming

Although not required as a mitigation measure to ameliorate the impacts of the proposed re-development of the Rockland Psychiatric Center, instituting traffic calming measures along Swannekin Road between Convent Road and Blauvelt Road was also investigated. In this area, Swannekin Road is approximately 30 feet wide and generally does not have pavement markings. Applying white roadway pavement markings to define roadway shoulders as well as instituting a yellow center line would have the effect of defining the traveled way and

narrowing the amount of roadway pavement available for vehicles use. When a roadway is defined by centerline and edge of pavement markings, motorists generally reduce their speed when traveling along the roadway section. In addition, a parking lane could be striped further reducing the travel lane. Additional traffic calming measures that may be applied may include roadway narrowing or roadway neckdowns. The roadway narrowing or neckdowns could be prepared using pavement markings or may be created using planters to physically narrow the pavement area available for vehicle use. In addition, the installation of a series of speed humps along Swannekin Road could be considered to reduce operating speeds.

U. LEVEL-OF-SERVICE COMPARISON

Intersection capacity analyses were performed for the Build traffic volumes with the identified improvement measures using Synchro, Version 7. The results of these analyses are compared to the Existing, No-Build and Build traffic operating conditions in Table 5 .

Table 5. Level-of-Service Comparison

Intersection	App.[1]	AM				PM			
		Existing	No-Build	Build	Miti-gated	Existing	No-Build	Build	Miti-gated
Gilbert Avenue at S. Middletown Road	EB l/t/r	B (16.6)	C (23.1)	C (23.8)	C (23.8)	B (15.2)	B (19.6)	C (21.2)	A (9.7)
	WB l/t/r	A (9.9)	B (12.5)	B (14.8)	B (12.3)	B (15.2)	F (259.5)	F (311.1)	D (47.5)
	NB l/t/r	A (8.5)	A (9.0)	A (9.0)	A (9.0)	B (12.3)	B (13.0)	B (13.0)	C (27.1)
	SB l/t/r	B (11.6)	B (12.8)	B (12.9)	B (12.9)	B (12.7)	B (14.9)	B (15.2)	D (36.5)
	Overall	B (12.3)	B (15.9)	B (16.7)	B (16.0)	B (14.3)	F (140.3)	F (164.4)	C (34.4)
Gilbert Ave at Old Middletown Road	EB l/t	B (14.1)	B (19.0)	B (19.3)	C (23.5)	B (11.9)	B (15.1)	B (16.3)	B (17.4)
	WB t	A (4.3)	A (4.9)	A (5.3)	A (8.3)	A (6.7)	B (16.0)	B (18.4)	C (28.6)
	WB r	A (1.1)	A (1.1)	A (1.1)	A (1.7)	A (1.5)	A (1.8)	A (1.8)	A (2.0)
	SB l/r	F (172.2)	F (222.7)	F (222.7)	D (53.6)	D (48.7)	E (57.7)	E (57.7)	D (36.2)
	Overall	E (63.8)	E (66.5)	E (63.8)	C (25.7)	B (12.3)	B (17.0)	B (18.3)	C (20.7)
Gilbert Avenue at Veterans Memorial Highway	EB l	A (3.6)	A (4.2)	A (4.2)	A (4.2)	A (2.8)	A (4.2)	A (4.3)	A (4.3)
	EB t	A (4.1)	A (5.7)	A (5.8)	A (5.8)	A (2.6)	A (3.7)	A (3.8)	A (3.8)
	WB t/r	A (6.1)	A (7.0)	A (7.2)	A (7.2)	A (6.7)	B (13.9)	B (14.5)	B (14.5)
	NB t/r	C (25.7)	C (27.1)	C (27.1)	C (27.1)	C (21.5)	C (23.1)	C (23.0)	C (23.0)
	SB l/r	C (23.1)	C (22.3)	C (22.6)	C (22.6)	C (23.1)	C (24.5)	C (24.5)	C (24.5)
	Overall	A (6.5)	A (7.7)	A (7.8)	A (7.8)	A (5.9)	B (11.0)	B (11.2)	B (11.2)
Veterans Memorial Highway at Blue Hill Plaza (West)	EB l/t	C (20.9)	B (18.8)	B (18.8)	B (18.8)	D (46.0)	F (135.7)	F (135.7)	D (46.0)
	WB l/t	B (20.0)	B (19.5)	B (19.5)	B (19.5)	B (16.8)	B (18.2)	B (18.2)	B (13.4)
	WB r	B (16.0)	A (9.6)	A (9.6)	A (9.6)	B (10.3)	B (10.1)	B (10.1)	A (7.4)
	NB l/t/r	A (2.3)	A (3.6)	A (3.7)	A (3.7)	A (8.5)	B (11.7)	B (12.1)	B (18.7)
	SB l/t	A (2.2)	A (2.7)	A (2.8)	A (2.8)	A (7.7)	A (9.3)	A (9.7)	B (14.7)
	Overall	A (2.6)	A (3.3)	A (3.4)	A (3.4)	B (18.6)	D (38.9)	D (38.0)	C (23.2)

Table 5. Level-of-Service Comparison (cont.)

Intersection	App.[1]	AM				PM			
		Existing	No-Build	Build	Mitigated	Existing	No-Build	Build	Mitigated
Veterans Memorial Highway at Blue Hill Plaza (East)	EB r	A (3.0)	A (3.5)	A (3.5)	A (3.5)	A (3.9)	A (6.5)	A (6.9)	A (6.9)
	EB t	A (5.8)	A (6.5)	A (6.5)	A (6.5)	A (6.6)	B (10.2)	B (11.0)	B (11.0)
	EB l	A (1.8)	A (1.7)	A (1.7)	A (1.7)	A (3.2)	A (3.6)	A (3.7)	A (3.7)
	WB l	A (4.5)	A (9.8)	B (10.3)	B (10.3)	A (3.9)	A (6.8)	A (7.4)	A (7.4)
	WB t/r	A (4.9)	A (5.7)	A (5.9)	A (5.9)	A (6.2)	A (9.9)	B (10.5)	B (10.5)
	NE l/t	C (26.3)	C (25.6)	C (25.6)	C (25.6)	C (26.6)	C (25.5)	C (24.8)	C (24.8)
	NE r	B (11.6)	A (8.8)	A (8.8)	A (8.8)	A (7.4)	B (19.6)	C (20.8)	C (20.8)
	SB l/t/r	B (16.8)	C (20.9)	C (20.9)	C (20.9)	B (16.0)	B (14.9)	B (14.4)	B (14.4)
	Overall	A (6.0)	A (7.4)	A (7.5)	A (7.5)	A (8.0)	B (12.2)	B (12.8)	B (12.8)
Veterans Memorial Highway at Blue Hill South	EB t/r	C (22.0)	C (23.3)	C (23.5)	C (29.5)	C (24.4)	C (33.9)	D (37.7)	D (54.4)
	WB l	B (10.3)	C (30.3)	C (31.4)	D (45.5)	C (31.6)	F (246.6)	F (246.6)	F (164.4)
	WB t	A (9.5)	B (10.4)	B (10.7)	B (14.5)	A (9.8)	B (10.8)	B (10.9)	B (10.9)
	NB l	C (22.3)	C (23.2)	C (23.2)	B (18.9)	C (21.8)	C (25.2)	C (25.2)	C (25.2)
	NB r	D (54.9)	F (113.9)	F (113.9)	D (52.7)	C (28.5)	D (51.3)	D (51.3)	D (51.3)
	Overall	C (26.1)	D (41.3)	D (40.8)	C (32.3)	C (21.8)	E (69.7)	E (69.7)	E (60.9)
Veterans Memorial Highway at Blue Hill North	EB l/t	A (5.9)	A (7.4)	A (7.5)	A (7.5)	A (6.2)	B (13.2)	B (15.3)	B (15.3)
	WB t/r	A (5.2)	A (7.6)	A (8.0)	A (8.0)	A (6.8)	A (10.0)	B (10.5)	B (10.5)
	SB l	C (20.8)	C (21.4)	C (21.4)	C (21.4)	C (22.4)	C (24.3)	C (24.3)	C (24.3)
	SB r	B (16.6)	B (17.5)	B (17.5)	B (17.5)	B (16.1)	B (16.6)	B (16.6)	B (16.6)
	Overall	A (6.7)	A (8.4)	A (8.6)	A (8.6)	A (7.8)	B (12.3)	B (13.5)	B (13.5)
Veterans Memorial Highway at Blaisdell Road	EB l	N.A.	N.A.	N.A.	C (22.2)	N.A.	N.A.	N.A.	D (40.4)
	EB l/t/r	B (18.7)	C (22.5)	D (44.5)	D (54.7)	B (18.4)	E (64.9)	F (236.4)	D (47.7)
	WB l	N.A.	N.A.	N.A.	E (68.5)	N.A.	N.A.	N.A.	D (47.6)
	WB l/t/r	B (19.9)	F (147.5)	F (155.5)	A (7.0)	A (9.9)	C (30.1)	D (51.6)	B (13.8)
	NB l/t	C (23.8)	C (28.4)	C (30.0)	D (35.6)	D (53.2)	F (122.8)	F (133.2)	C (33.6)
	NB r	A (7.1)	A (7.1)	A (7.1)	A (8.2)	D (36.6)	F (107.3)	F (107.3)	D (44.8)
	SB l	N.A.	N.A.	N.A.	D (54.9)	N.A.	N.A.	N.A.	C (31.7)
	SB l/t/r	C (22.4)	C (24.6)	D (54.2)	B (11.5)	C (33.0)	F (106.1)	F (246.9)	B (10.4)
	Overall	B (19.0)	F (95.0)	F (104.7)	D (36.1)	C (22.6)	E (66.4)	F (140.9)	C (33.8)

Table 5. Level-of-Service Comparison (cont.)

Intersection	App.[1]	AM				PM			
		Existing	No-Build	Build	Mitigated	Existing	No-Build	Build	Mitigated
Veterans Memorial Highway at Lester Drive/Edgewood Road	EB l/t/r	B (16.9)	B (19.7)	C (21.0)	N.A.	D (44.0)	F (222.4)	F (240.3)	N.A.
	EB l	N.A.	N.A.	N.A.	A (6.5)	N.A.	N.A.	N.A.	A (3.8)
	EB t/r	N.A.	N.A.	N.A.	B (19.2)	N.A.	N.A.	N.A.	E (71.5)
	WB l	A (9.1)	B (11.7)	B (12.6)	B (11.9)	D (45.2)	E (55.4)	D (54.6)	E (62.8)
	WB t/r	B (12.8)	C (21.7)	C (22.5)	D (48.4)	A (8.9)	A (9.1)	A (9.1)	C (23.4)
	NB l/t	C (28.4)	C (31.2)	C (31.2)	C (32.5)	C (29.5)	C (32.1)	C (32.1)	E (61.5)
	NB r	A (6.1)	B (12.2)	B (14.0)	B (14.2)	B (11.9)	B (12.9)	B (13.0)	C (20.9)
	SB l/t/r	C (23.6)	C (22.9)	C (22.9)	C (23.7)	C (24.0)	C (21.5)	C (21.5)	C (28.8)
	Overall	B (14.5)	C (20.7)	C (21.7)	C (34.5)	C (30.1)	F (117.6)	F (124.8)	D (51.3)
Veterans Memorial Highway at Dutch Hill Road	EB l	C (22.6)	C (23.3)	C (22.9)	C (23.2)	A (4.7)	C (20.8)	C (23.2)	B (18.3)
	EB t	D (40.8)	D (41.7)	D (43.1)	D (43.3)	B (12.5)	B (14.8)	B (15.6)	C (33.4)
	EB r	D (39.6)	D (39.1)	D (38.6)	D (38.9)	B (10.8)	B (11.3)	B (11.2)	C (28.1)
	WB l	A (9.6)	A (9.9)	B (10.1)	B (10.1)	A (8.6)	A (9.0)	A (9.0)	A (9.0)
	WB t/r	C (21.1)	C (24.1)	C (24.4)	C (24.4)	C (25.0)	C (30.1)	C (34.1)	C (34.1)
	NB l	C (24.8)	C (29.8)	C (29.8)	C (29.8)	C (28.8)	C (32.6)	C (32.6)	C (32.6)
	NB t	C (20.3)	C (20.4)	C (20.4)	C (20.4)	C (22.1)	C (22.3)	C (22.3)	C (22.3)
	NB r	B (10.4)	B (10.5)	B (10.5)	B (10.5)	A (9.8)	A (9.9)	A (9.9)	A (9.9)
	SB l	C (20.2)	C (20.3)	C (20.3)	C (20.3)	C (21.4)	C (21.7)	C (21.7)	C (21.7)
	SB t	C (20.6)	C (20.7)	C (20.7)	C (20.7)	C (21.5)	C (21.6)	C (21.6)	C (21.6)
	SB r	B (12.0)	B (13.3)	B (13.3)	B (13.3)	B (11.2)	B (11.7)	B (11.7)	B (11.7)
	Overall	C (28.6)	C (29.6)	C (30.4)	C (30.5)	B (17.5)	C (21.2)	C (23.0)	C (29.2)
Veterans Memorial Highway at Western Hwy.	EB l/t/r	B (18.3)	C (24.0)	C (27.5)	C (27.5)	C (21.3)	F (88.9)	F (139.5)	D (52.7)
	WB l/t/r	B (16.4)	B (18.7)	B (19.4)	B (19.4)	B (19.2)	D (36.0)	E (61.7)	C (26.3)
	NB l/t/r	B (19.7)	C (20.5)	C (20.7)	C (20.7)	C (22.5)	C (25.7)	C (28.5)	D (44.8)
	SB l/t/r	C (20.1)	C (21.1)	C (22.4)	C (22.4)	C (23.4)	C (27.2)	C (30.2)	D (51.4)
	Overall	B (18.2)	C (21.4)	C (23.3)	C (23.3)	C (21.1)	D (53.5)	F (81.8)	D (42.0)

Table 5. Level-of-Service Comparison (cont.)

Intersection	App.[1]	AM				PM			
		Existing	No-Build	Build	Mitigated	Existing	No-Build	Build	Mitigated
Convent Road at Third Avenue	EB t/r	B (11.8)	B (12.1)	B (12.2)	B (12.2)	B (11.4)	B (11.9)	B (12.2)	B (12.2)
	WB l/t	B (13.1)	B (13.9)	B (14.2)	B (14.2)	B (13.8)	B (15.2)	B (16.6)	B (16.6)
	NB l/r	B (12.6)	B (14.4)	B (14.3)	B (13.0)	B (13.6)	B (14.5)	B (14.5)	B (14.3)
	Overall	B (12.5)	B (13.2)	B (13.5)	B (13.2)	B (13.1)	B (14.1)	B (14.8)	B (14.8)
Mountain View Ave. at Western Hwy.	EB l/t/r	C (29.0)	C (29.3)	C (29.3)	C (29.3)	C (30.0)	C (30.0)	C (30.0)	C (30.0)
	WB l/t/r	C (31.5)	C (31.5)	C (31.5)	C (31.5)	D (35.6)	D (36.6)	D (36.6)	D (36.6)
	NB l/t/r	B (11.2)	B (11.5)	B (11.5)	B (11.5)	B (13.5)	B (14.2)	B (14.7)	B (14.7)
	SB l/t/r	B (14.3)	B (15.4)	B (15.8)	B (15.8)	B (15.5)	B (17.7)	B (18.7)	B (18.7)
	Overall	B (14.9)	B (15.5)	B (15.7)	B (15.7)	B (18.0)	B (19.3)	B (19.8)	B (19.8)
Hunt Road/Old Orangeburg Road at Veterans Memorial Highway	EB l/t/r	a (0.5)	N.A.	N.A.	N.A.	a (0.3)	N.A.	N.A.	N.A.
	EB l	N.A.	A (7.9)	A (8.1)	A (8.1)	a (0.3)	D (47.4)	D (57.0)	C (41.2)
	EB t/r	N.A.	A (4.1)	A (3.7)	A (3.7)	N.A.	A (9.9)	A (10.6)	A (9.3)
	WB l/t/r	a (0.7)	N.A.	N.A.	N.A.	a (1.1)	N.A.	N.A.	N.A.
	WB l	N.A.	A (4.5)	A (4.3)	A (4.3)	N.A.	C (27.2)	C (27.2)	C (25.0)
	WB t/r	N.A.	A (4.7)	A (4.3)	A (4.3)	N.A.	A (9.3)	A (9.5)	A (8.3)
	NB l	N.A.	C (24.5)	C (24.5)	C (24.2	N.A.	E (59.4)	E (59.4)	D (37.1)
	NB l/t/r	e (40.9)	B (18.8)	B (18.8)	C (20.6)	f (860.2)	A (7.7)	A (7.7)	C (25.2)
	SB l/t/r	c (15.4)	B (15.2)	B (15.3)	B (15.3)	d (28.9)	B (17.1)	B (17.7)	C (20.6)
	Overall	N.A.	A (5.0)	A (4.7)	A (4.7)	N.A.	B (15.3)	B (15.9)	B (12.8)
Gilbert Ave at Sickletown Road	EB l/r	b (10.9)	b (11.3)	b (11.5)	b (11.5)	b (14.6)	c (17.5)	c (18.3)	c (18.3)
	NB l/t	a (1.1)	a (1.1)	a (1.1)	a (1.1)	a (0.8)	a (0.9)	a (0.9)	a (0.9)
	SB t/r	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)
Convent Road at Blue Hill Road North	EB t/r	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)
	WB l/t	a (2.4)	a (2.6)	a (2.2)	a (2.2)	a (0.9)	a (1.3)	a (1.2)	a (1.2)
	NB l/r	b (10.2)	b (10.5)	b (10.7)	b (10.7)	b (12.9)	c (15.0)	c (15.9)	c (15.9)
Convent Road at Swannekin Road	EB l/t/r	a (0.2)	a (0.2)	a (0.2)	a (0.2)	a (0.0)	a (0.0)	a (0.0)	a (0.0)
	WB l/t/r	a (0.9)	a (0.9)	a (0.8)	a (0.8)	a (0.1)	a (0.1)	a (0.1)	a (0.1)
	NB l/t/r	b (10.7)	b (11.0)	b (11.2)	b (11.2)	b (10.8)	b (11.1)	b (11.5)	b (11.5)
	SB l/t/r	b (10.7)	b (10.9)	b (11.2)	b (11.2)	b (11.4)	b (11.8)	b (12.2)	b (12.2)
Swannekin Road at Blauvelt Road	EB t/r	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)
	WB l/t	a (0.2)	a (0.2)	a (0.2)	a (0.2)	a (1.0)	a (1.0)	a (1.0)	a (1.0)
	NB l/r	a (9.1)	a (9.2)	a (9.2)	a (9.2)	a (9.3)	a (9.4)	a (9.4)	a (9.4)

Table 5. Level-of-Service Comparison (cont.)

Intersection	App.[1]	AM				PM			
		Existing	No-Build	Build	Mitigated	Existing	No-Build	Build	Mitigated
Convent Road at Second Ave/Van Wyck Road	EB l/t	a (2.3)	a (2.4)	N.A.	N.A.	a (4.6)	a (4.8)	N.A.	N.A.
	EB l/t/r	N.A.	N.A.	a (2.2)	a (2.2)	N.A.	N.A.	a (4.6)	a (4.6)
	WB t/r	a (0.0)	a (0.0)	N.A.	N.A.	a (0.0)	a (0.0)	N.A.	N.A.
	WB l/t/r	N.A.	N.A.	a (0.2)	a (0.2)	N.A.	N.A.	a (0.3)	a (0.3)
	NB l/t/r	N.A.	N.A.	b (11.3)	b (11.3)	N.A.	N.A.	b (13.9)	b (13.9)
	SB l/r	b (10.5)	b (11.0)	N.A.	N.A.	b (13.5)	c (15.3)	N.A.	N.A.
	SB l/t/r	N.A.	N.A.	b (11.6)	b (11.6)	N.A	N.A	c (18.2)	c (18.2)
Erie Street at Van Wyck Road	WB l/r	b (10.5)	b (10.8)	b (10.8)	b (10.8)	b (11.7)	b (12.4)	b (12.4)	b (12.4)
	NB t/r	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)
	SB t/l	a (3.1)	a (3.2)	a (3.2)	a (3.2)	a (2.8)	a (2.8)	a (2.8)	a (2.8)
Convent Road at Parkway Drive	EB l/t/r	a (0.1)	a (0.1)	a (0.1)	a (0.1)	a (0.9)	a (0.9)	a (0.8)	a (0.8)
	WB l/t/r	a (0.5)	a (0.4)	a (0.4)	a (0.4)	a (0.8)	a (0.8)	a (0.7)	a (0.7)
	NB l/t/r	b (11.2)	b (11.6)	b (12.0)	b (12.0)	b (12.8)	b (13.9)	b (14.9)	b (14.9)
	SB l/t/r	b (10.6)	b (10.9)	b (11.2)	b (11.2)	b (11.4)	b (12.0)	b (12.5)	b (12.5)
Convent Road at Western Highway	EB l/r	b (12.5)	b (13.4)	b (14.2)	b (14.2)	b (13.7)	c (15.8)	c (17.8)	c (17.8)
	NB l/t	a (2.0)	a (2.1)	a (2.3)	a (2.3)	a (3.5)	a (3.7)	a (4.2)	a (4.2)
	SB t/r	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)
Old Orangeburg Road at Third Avenue	EB l/t	a (3.7)	a (3.7)	a (3.8)	a (3.8)	a (4.1)	a (4.5)	a (4.8)	a (4.8)
	WB t/r	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)
	SB l/r	a (9.1)	a (9.2)	b (10.6)	b (10.6)	a (9.5)	a (9.7)	b (11.7)	b (11.7)
Old Orangeburg Road at Blaisdell Road	EB l/t	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (0.0)
	WB t/r	a (5.0)	a (5.0)	a (5.3)	a (5.3)	a (6.0)	a (6.0)	a (6.2)	a (6.2)
	NB l/r	a (9.6)	a (9.7)	b (11.0)	b (11.0)	b (10.5)	b (10.8)	b (14.0)	b (14.0)

V. CONCLUSIONS

Based on these findings, it is the considered professional opinion of **Adler Consulting** that, with the implementation of the recommended improvement measures, the impacts of the proposed re-development of the Rockland Psychiatric Center to include residential uses would be mitigated.

APPENDIX
INTERSECTION CAPACITY ANALYSES

Existing Conditions

No-Build Conditions

Build Conditions

Build (Mitigated) Conditions