



Traffic Impact Study

Hudson Street Parking Garage
Block 3809, Lots 12 and 13
Village of Ridgewood, Bergen County, New Jersey

October 15, 2015

Prepared For

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Table of Contents

I.	INTRODUCTION.....	1
II.	EXISTING CONDITIONS	4
III.	2015 EXISTING TRAFFIC CONDITIONS.....	4
IV.	HCM CAPACITY ANALYSIS	7
V.	TRIP GENERATION & DISTRIBUTION	9
VI.	2015 FULL BUILD TRAFFIC CONDITIONS	13
VII.	SITE PLAN ANALYSIS.....	20
VIII.	PARKING ANALYSIS	20
IX.	SUMMARY AND CONCLUSIONS	21

FIGURES

Figure 1 – Site Location Map	2
Figure 2 – Site Plan.....	3
Figure 3 – 2015 AM & PM Peak Hour Traffic Volumes	6
Figure 4 – 2015 AM & PM Peak Hour LOS/Delay.....	8
Figure 5 – Trip Distribution Percentages.....	11
Figure 6 – 2015 AM & PM Site Generated Trips.....	12
Figure 7 – 2015 Full Build AM & PM Peak Hour Traffic Volumes.....	14
Figure 8 – 2015 Full Build AM & PM Peak Hour LOS/Delay	15
Figure 9 – 2015 Full Build AM & PM Peak Hour Traffic Volumes (Reversed Flow)	18
Figure 10 – 2015 Full Build AM & PM Peak Hour LOS/Delay (Reversed Flow)	19

TABLES

Table 1 – 2015 Existing Traffic Volumes.....	5
Table 2 – HCM 2000: Signalized and Unsignalized LOS/Delay Criteria.....	7
Table 3 – Peak Hour Level of Service and Delay Comparison	13
Table 4– Peak Hour Level of Service and Delay Comparison	17

APPENDICES

APPENDIX A.	VILLALGE OF RIDGEWOOD TAX MAP
APPENDIX B.	MANUAL TURNING MOVEMENT COUNT DATA
APPENDIX C.	SYNCHRO HCM CAPACITY ANALYSIS SUMMARY SHEETS

I. INTRODUCTION

This Traffic Impact Study is submitted in association with the inclusion of the proposed Hudson Street Parking Garage within the existing property, known as Block 3809, Lots 12 & 13 in the Village of Ridgewood, Bergen County, New Jersey. The existing property is located along 21 – 35 Hudson Street between South Broad Street and Prospect Street. The overall property consists of approximately 0.8 acres of land and currently contains a surface parking lot. The site borders the downtown central business district to the north, some commercial/retail property to the west, another surface parking lot to the east and a church to the south. The site location map is included within **Figure 1** on the following page and the Village of Ridgewood Tax Map is included in **Appendix A** of this report.

The proposed development will consist of a single building containing five floors with a total gross square footage of 138,380 SF. The total number of parking spaces within the proposed parking garage is 412. Access to the parking garage will be from Hudson Street, via a two-way, stop controlled driveway. Based on these characteristics, the site will be classified as a parking facility for the traffic operations analysis. Since this site is neither a trip nor parking generator, the surrounding land uses and operation of the surrounding surface parking lots were examined in order to quantify the operation of the proposed facility. The overall site plan is detailed within **Figure 2** of this report.

This study presents an evaluation of the current and future traffic conditions in the vicinity of the site and provides an analysis of the traffic and parking impacts of the proposed development. Specific elements included in this study are:

- ❑ An inventory of the roadway facilities in the vicinity of the project, including the existing physical and traffic operating characteristics;
- ❑ Data Collection of the 2015 Existing Traffic Conditions;
- ❑ Site Generated Trips using the ITE Trip Generation Manual, 9th Edition;
- ❑ Trip Distribution and Assignment of the new vehicle trips;
- ❑ Full Build Traffic Volumes for the Full-Build year of 2018;
- ❑ Peak Hour Capacity Analysis for the Existing and Full Build Conditions;
- ❑ Analysis of Internal Vehicular Circulation and Safety;
- ❑ Analysis of On-Site Parking Requirements; and,
- ❑ Summary and Conclusions.

Figure 1 – Site Location Map

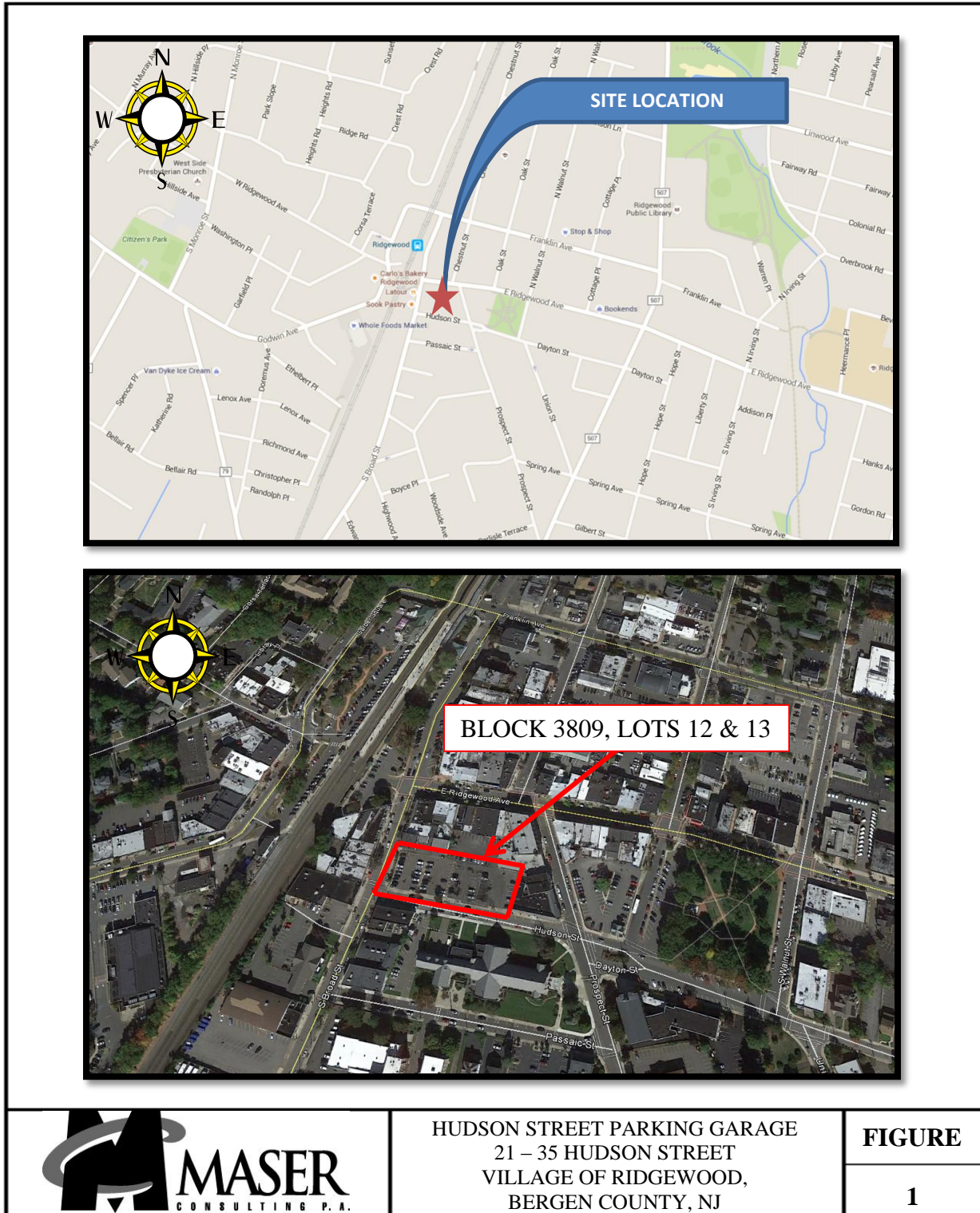
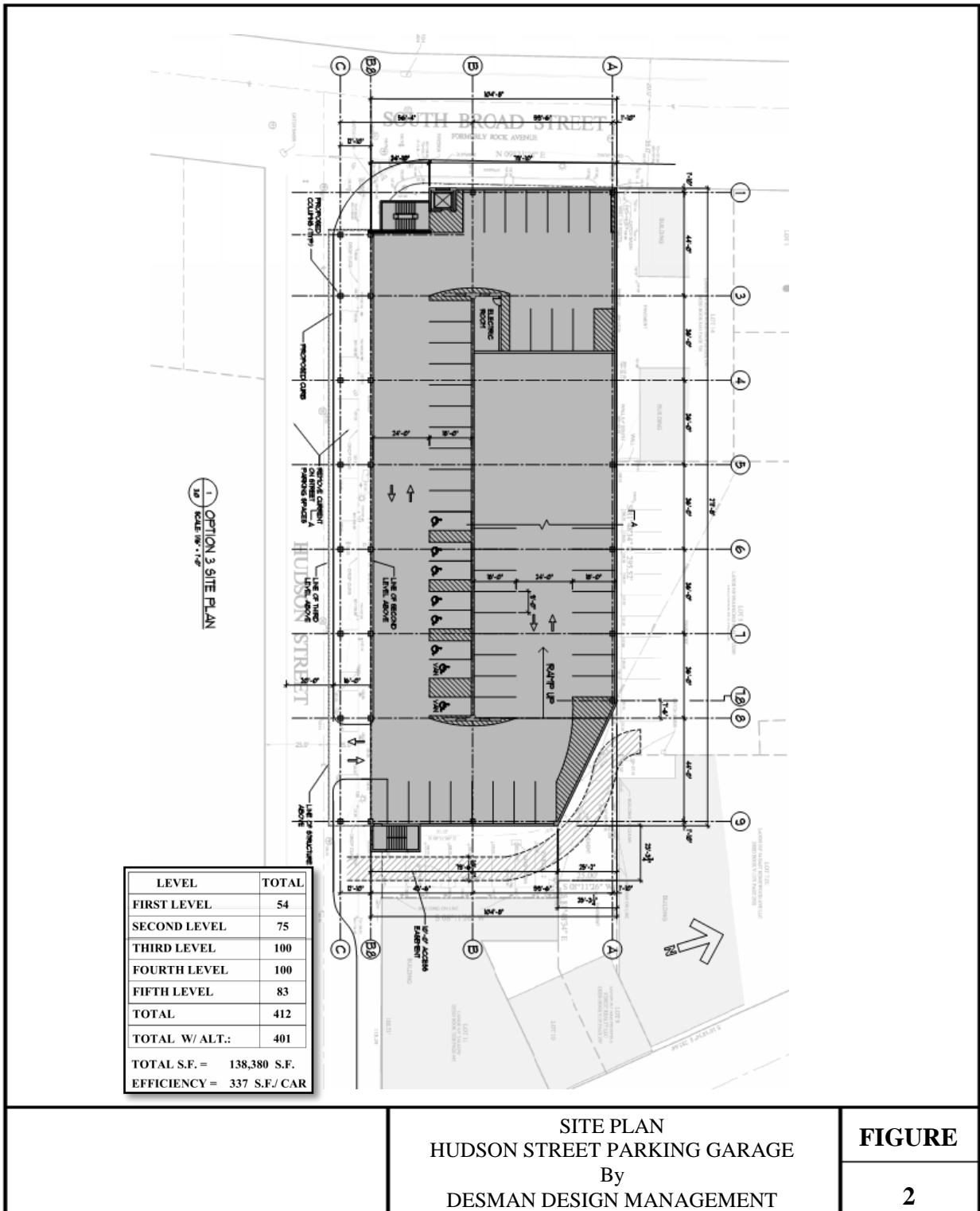


Figure 2 – Site Plan



II. EXISTING CONDITIONS

A field investigation was conducted adjacent to the project site to obtain an inventory of existing roadway conditions, posted traffic controls, adjacent land uses, lane configurations of the intersections in the study area, and existing vehicular and pedestrian traffic patterns. The following is a brief description of the roadways:

Hudson Street is an east-west oriented roadway which spans approximately 495 feet between South Broad Street and Prospect Street. In the project vicinity, the roadway provides a single, one-way travel lane in the westbound direction. Currently, the street ends at a stop controlled T-intersection with traffic allowed to make a right or left onto South Broad Street. The total roadway width measures approximately 30-feet with parking aisles on both sides of the travel way. The on-street parking is governed by parking meters. There is no posted speed limit on the roadway segment, but surrounding use dictates an enforceable speed limit of 25 MPH. It is noted that east of Prospect Street Hudson Street becomes Dayton Street. The proposed site is located on the north side of the roadway.

Prospect Street is a bi-directional, north-south oriented roadway which intersects Hudson Street / Dayton Street. In the project vicinity, the roadway provides two travel lanes, one northbound and one southbound. The total roadway width measures approximately 34-feet with parking aisles on both sides of the travel way. The on-street parking is governed by parking meters. There is no posted speed limit on the roadway segment, but surrounding use dictates an enforceable speed limit of 25 MPH. The roadway is unsignalized and flows freely at its intersection with Hudson Street / Dayton Street. Pedestrian cross walks are striped at all four corners of the aforementioned intersection.

South Broad Street is a bi-directional, north-south oriented roadway which intersects Hudson Street. The roadway forms a three-leg intersection with Hudson Street, where it is unsignalized and flows freely through the intersection. Metered street parking is present along the west side of the roadway north of Hudson Street, and along the east side of the roadway south of Hudson Street. The total roadway width measure approximately 36-feet.

III. 2015 EXISTING TRAFFIC CONDITIONS

To gain an understanding of the existing traffic conditions, Maser Consulting collected traffic data on at the intersections of **South Broad Street & Hudson Street** and **Prospect Street & Hudson Street / Dayton Street** on Wednesday, October 7, 2015. The data was collected using Manual Turning Movement Counts.

Automated Turning Movement Counts (ATCs) were conducted by Maser Consulting at both of the unsignalized intersections of **South Broad Street & Hudson Street** and **Prospect Street & Hudson Street / Dayton Street**. ATCs were counted during the weekday AM and PM peak hours of operation to coincide with the peak volumes experienced in and around the central business district area during these times. Therefore, the ATCs were conducted between the

hours of 7:00AM and 9:00AM in the morning and between the hours of 3:00PM and 6:00PM in the evening.

Based on the traffic volumes observed, the intersection peak hours occurred from 7:30AM to 8:30AM and 4:45PM to 5:45PM for Prospect Street & Hudson Street / Dayton Street, and from 7:30AM to 8:30AM and 4:00PM to 5:00PM for South Broad Street & Hudson Street. The following table details the peak hour traffic volumes observed at the study interaction.

Table 1 – 2015 Existing Traffic Volumes

Peak Hour of Operation	Prospect Street SB				Dayton Street WB				Prospect Street NB				Hudson Street EB			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
7:30AM 8:30AM	7	20	2	17	10	109	60	3	70	40	85	7	0	0	0	0
4:45PM 5:45PM	16	17	5	25	18	141	79	13	80	93	78	13	0	0	0	15

Table 1 – (continued)

Peak Hour of Operation	South Broad Street SB				Hudson Street WB				South Broad Street NB				-			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
7:30AM 8:30AM	-	234	0	17	109	-	65	11	0	160	-	19	-	-	-	-
5:00PM 6:00PM	-	305	0	15	142	-	115	14	0	149	-	3	-	-	-	-

The *peak hour factor (PHF)* is a ratio which expresses the relationship between the peak fifteen minute flow rates and the full hourly volume. The PHF is calculated by multiplying the peak 15-minute flow rate at an intersection by four and then dividing the intersection hourly volume by that value. PHFs in urban areas are usually observed between 0.80 and 0.98. These statistics indicate that the recorded traffic volumes approach the intersection consistently, with minimal interruption in the traffic stream. The formula for the peak hour factor is detailed below:

$$PHF = \frac{V}{4 \cdot V_{15}} \quad \text{Where as;}$$

PHFrepresents the Peak Hour Factor

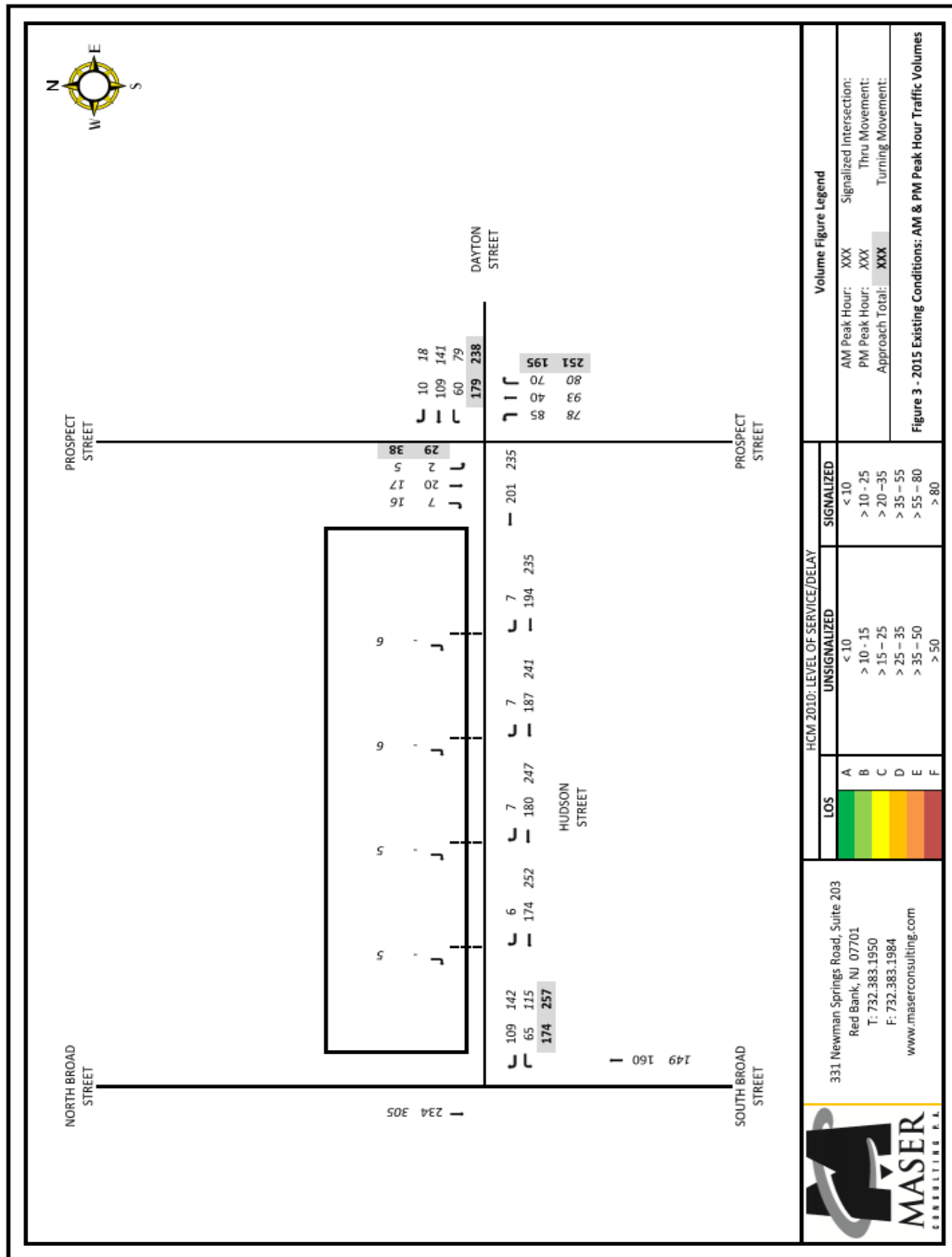
V.....represents the total hourly Volume; and,

V₁₅.....represents the peak fifteen minute Volume.

The intersection of Prospect Street & Hudson Street / Dayton Street experienced a PHF of 0.851 during the AM peak period and 0.916 during the PM peak period. The intersection of South Broad Street & Hudson Street experienced a PHF of 0.928 during the AM peak period and 0.936

during the PM peak period. These PHFs indicate consistent traffic progression during the peak hour, with no sudden increases in traffic during the fifteen minute intervals counted. **Figure 3** on the following page details the 2010 existing traffic volumes.

Figure 3 – 2015 AM & PM Peak Hour Traffic Volumes



IV. HCM CAPACITY ANALYSIS

The peak hour traffic operations within the project vicinity were evaluated at the study intersection. The analyses were performed using the latest version of *Synchro Trafficware, Version 8.0*; a traffic analysis and simulation program. The results of these analyses provide Level of Service (LOS), volume/capacity descriptions and average seconds of delay for the intersection movements.

The efficiency with which an intersection operates is a function of volume and capacity. The capacity of an intersection is the volume of vehicles it can accommodate during a peak hour. Level of Service is a qualitative measure describing operational conditions within a traffic stream in terms of traffic characteristics such as freedom to maneuver, traffic interruption, comfort and convenience. Six LOS are defined for each type of facility with analysis procedures available. Levels of Service range from "A" through "F", with "A" representing excellent conditions with no delays and failure and deficient operations denoted by Level "F". The HCS 2000 LOS criteria for intersections are summarized in **Table 2**.

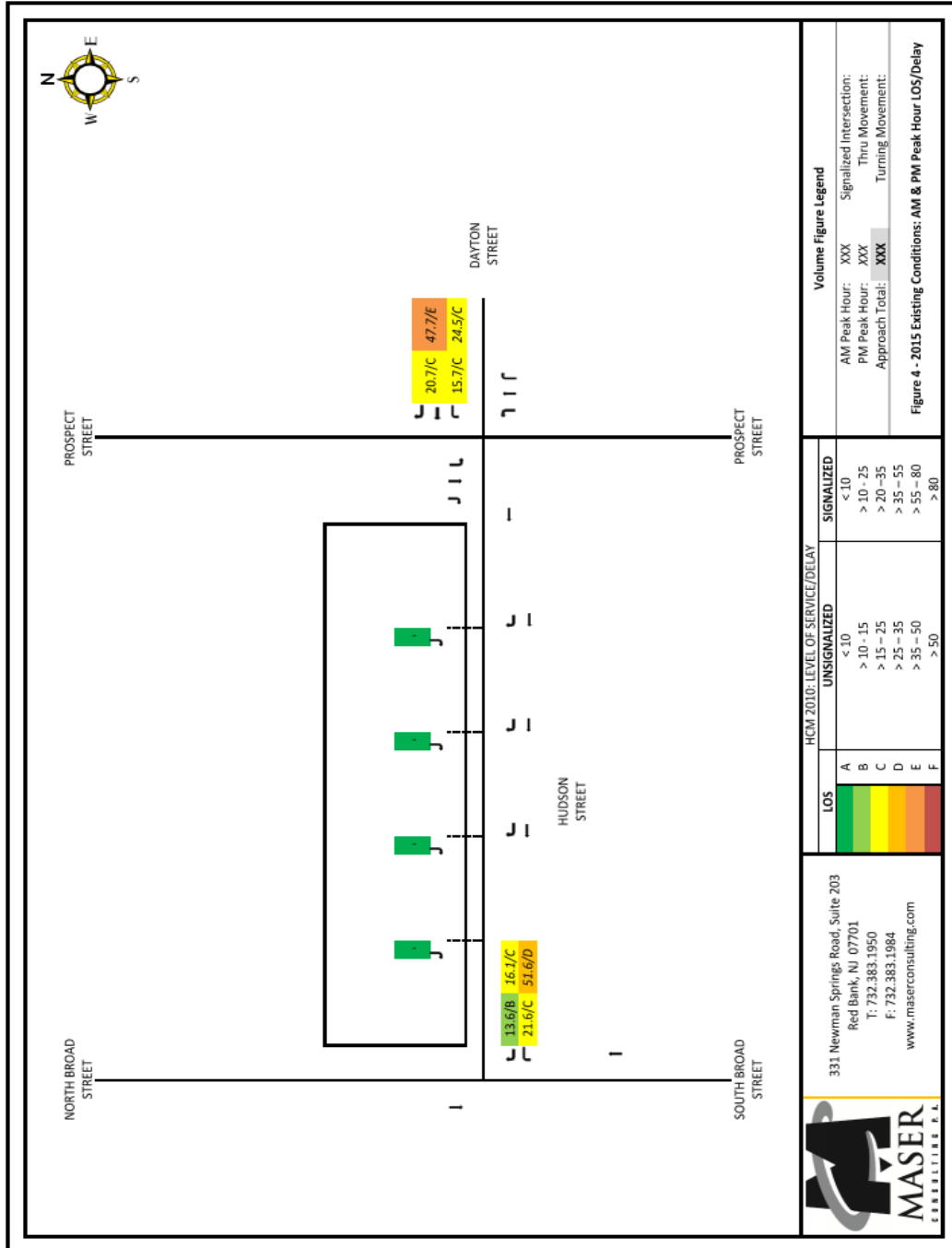
Table 2 – HCM 2000: Signalized and Unsignalized LOS/Delay Criteria

Level of Service	Average Control Delay (sec/veh)	
	Signalized Intersection	Unsignalized Intersection
A	< 10	< 10
B	> 10 - 20	> 10 - 15
C	> 20 - 35	> 15 - 25
D	> 35 - 55	> 25 - 35
E	> 55 - 80	> 35 - 50
F	> 80	> 50

2015 EXISTING CONDITIONS HCM CAPACITY ANALYSIS

The existing peak hours of operation were evaluated at the study intersection for both AM and PM traffic volumes. The results of these analyses provide Level of Service and average seconds of delay for the intersection movements. In the existing condition, the main approaches of South Broad Street operate with LOS "A" in both peak periods. The Hudson Street minor approach operates with LOS "C" in the AM peak condition and LOS "D" in the PM peak condition. The main approaches of Prospect Street operate with LOS "A" in both peak periods. While the minor approach of Dayton Street operates with LOS "C" in the AM peak condition and LOS "E" in the PM peak condition. The existing operating service levels and delay are included on **Figure 4** on the following page.

Figure 4 – 2015 AM & PM Peak Hour LOS/Delay



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V. TRIP GENERATION & DISTRIBUTION

It was noted in our site visits that the proposed site is located in close proximity to the downtown business area of the Village of Ridgewood. It was also considered that the proposed use, a multi-story parking structure, is not considered a generator of traffic or parking since users do not make trips for the sole purpose of parking. As such, we examined both the surrounding land uses as well as the surrounding surface parking lots in order to gain a better understanding as to the parking capacity and demand for those facilities in the area. Based upon our experience with parking facilities of this type in similar settings and the usage of the existing facilities in the surrounding area, we decided to utilize a factor of 0.5 trips per parking space for the proposed facility. This factor was deemed to be conservative for the purposes of our analysis as the surrounding surface lots were observed to be at approximately 50% of their capacity during peak hours and none of the surface lots appeared to approach their maximum capacity simultaneously. Thus, we justified that the site would operate at 50% capacity during both the AM and PM peak hours, or that a minimum of 206 of the proposed 412 parking spaces would be occupied during these times. This also indicates that the site could operate closer to or further from maximum capacity outside of the observed peak hours. It should also be noted that the available 84 parking stalls from the existing surface parking lot currently located at the proposed site were accounted for within our calculations for ambient traffic in our analysis.

TRIP DISTRIBUTION

Trip distribution methodology is developed based on a variety of factors. These factors include the size and type of land use generating trips, the existing travel patterns within the adjacent roadway network, adjacent land uses, and the proximity of major arterials within the project vicinity.

The location of the subject site requires all trips to enter/exit the site to/from the intersection of Prospect Street & Hudson Street / Dayton Street, with one potential access point. Based on the site location, vehicular traffic may be generated from points north, south and east of the intersection. Examining the roadway network, it is anticipated a majority of traffic will approach the site from the north and south due to the presence of C.R. 507, C.R. 509 and Route 17, the primary arterial in the project vicinity.

As a result, Maser Consulting proposed a trip distribution ratio of 60:40 for the proposed development, with 60% of trips generated to/from points north and 40% of trips generated to/from points south.

TRIP ASSIGNMENT

The proposed development only has one access driveway which is located on a one way street and will serve for both ingress and egress. This access driveway will be located along Hudson Street approximately 200 feet west from its intersection with Prospect Street. Similar to trip distribution, trip assignment is also a product of multiple factors. Characteristics such as proximity to parking, availability of traffic movements and distance from the destined external

roadway all impact a motorist's decision making process. Additionally, driver behavior varies between entering and exiting trips.

Since the site may only be accessed through Hudson Street which allows for one way circulation of traffic in a westbound travel direction, and there is only one access point to and from the site, we can say that 100% of incoming traffic will utilize the access point. As to the distribution of traffic approaching Hudson Street in order to access the site, it is observed based upon current traffic distributions adjusted for future growth that 40% of traffic would approach from northbound Prospect Street, 55% would approach from westbound Dayton Street and the remaining 5% would approach from southbound Prospect Street.

The site generated trip distribution is detailed within **Figures 5** and **6** on the following pages.

Figure 5 – Trip Distribution Percentages

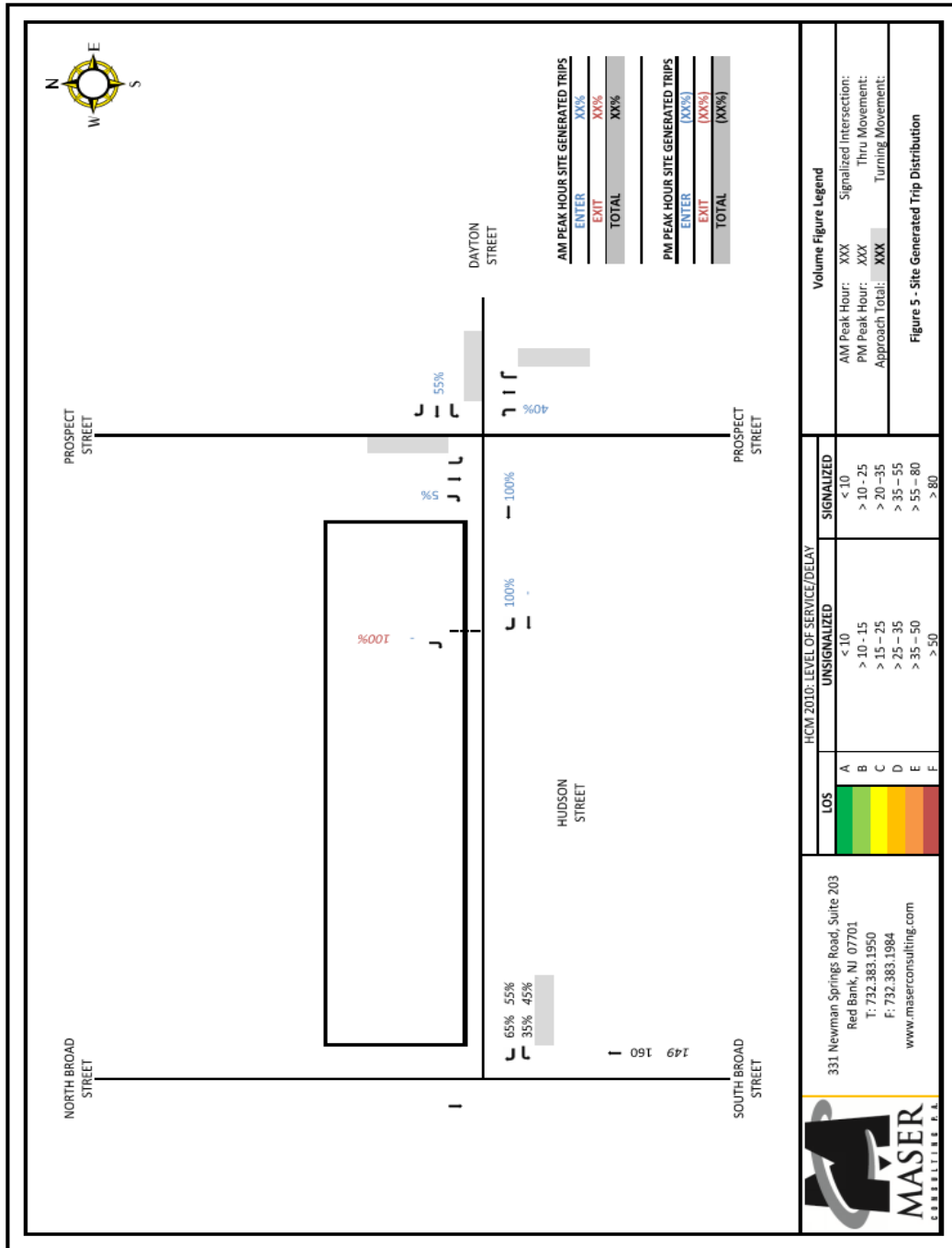
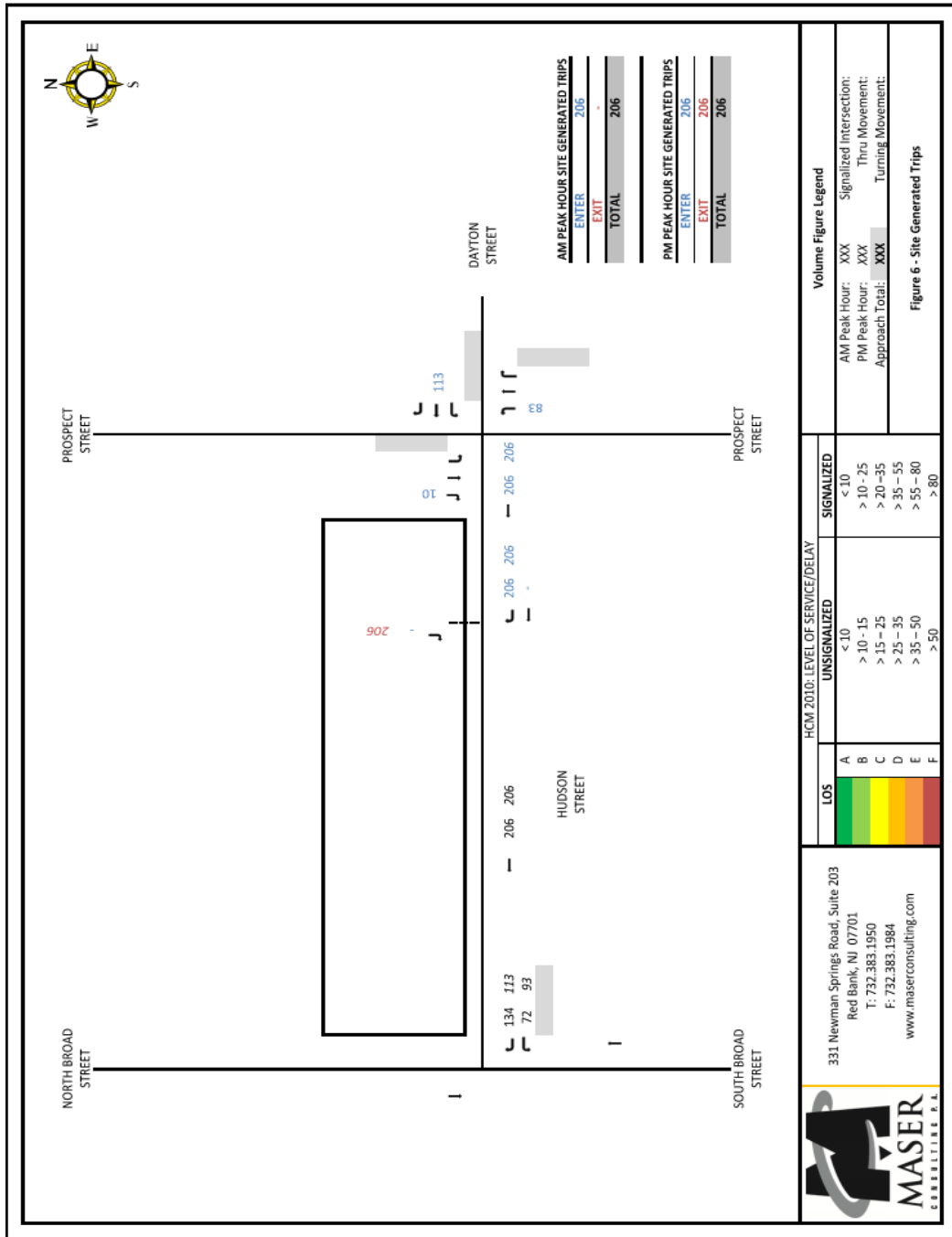


Figure 6 – 2015 AM & PM Site Generated Trips



VI. 2015 FULL BUILD TRAFFIC CONDITIONS

In the Full-Build scenario, the study intersections were analyzed using *Synchro*, a traffic analysis and simulation program. To simulate the Full-Build conditions existing traffic volumes were adjusted based upon the NJDOT Background Growth Tables and proposed housing projects near the site which would impact trip generation. These projects include the housing developments of The Dayton Apartments, The Enclave and Chestnut Village. Even if these projects are not completed by the proposed completion year of this project we believe that it would provide a more accurate analysis by including the trip generation for these sites and serve to give a better representation of future traffic conditions in the area.

SOUTH BROAD ST & HUDSON ST AND PROSPECT ST & HUDSON ST / DAYTON ST

The results of the HCM Capacity Analysis determined that the unsignalized intersections of South Broad Street & Hudson Street and Prospect Street and Hudson Street / Dayton Street will experience a drop in their LOS for the STOP controlled movements, but otherwise will maintain efficient LOS in the 2018 Full Build Condition. **Table 6** below summarizes the LOS and delay per vehicle in seconds for each approach.

Table 3 – Peak Hour Level of Service and Delay Comparison

Roadway	App.	2015 Existing		2018 Full Build	
		AM	PM	AM	PM
South Broad St	NB	A/0.0	A/0.0	A/0.0	A/0.0
	SB	A/0.0	A/0.0	A/0.0	A/0.0
Hudson St	EB	-	-	-	-
	WB	C/16.4	D/30.4	B/14.6	F/50.9

Roadway	App.	2015 Existing		2018 Full Build	
		AM	PM	AM	PM
Prospect St	NB	A/4.9	A/4.3	A/4.2	A/4.4
	SB	A/0.5	A/0.7	A/0.4	A/0.7
Hudson St / Dayton St	EB	-	-	-	-
	WB	C/19.0	E/39.0	C/22.7	F/66.6

Roadway	App.	2015 Existing		2018 Full Build	
		AM	PM	AM	PM
Existing Driveways	NB	A/0.0	A/0.0	-	-
	SB	A/5.0*	A/5.0*	-	-
Proposed Driveway	NB	-	-	A/0.0	A/0.0
	SB	-	-	A/5.0*	B/12.5

*Note that the *Synchro* analysis reports a control delay of zero seconds for this approach; we manually adjust and report this as a 5.0 second minimum delay as the approach is governed by a STOP sign.

Figure 7 – 2015 Full Build AM & PM Peak Hour Traffic Volumes

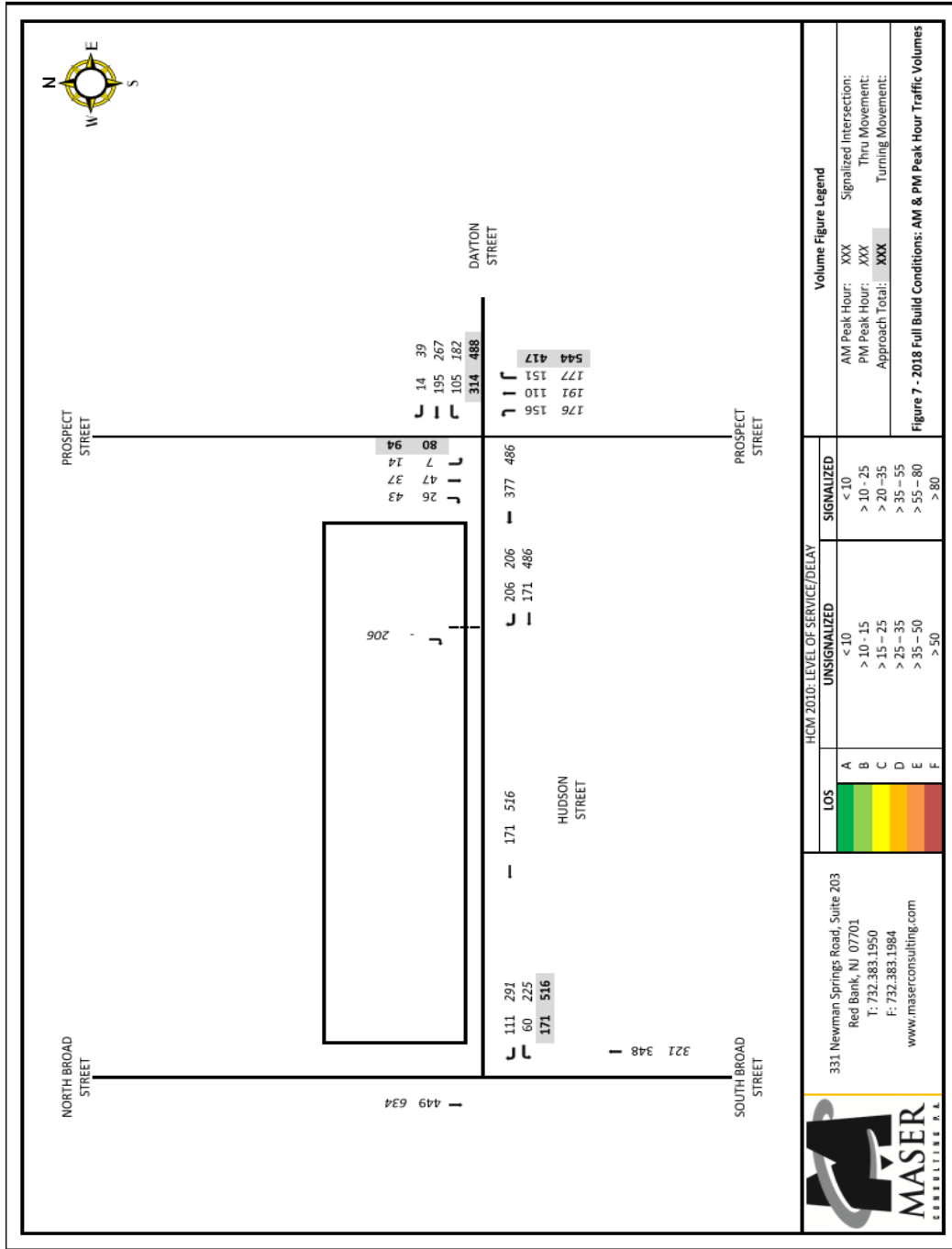
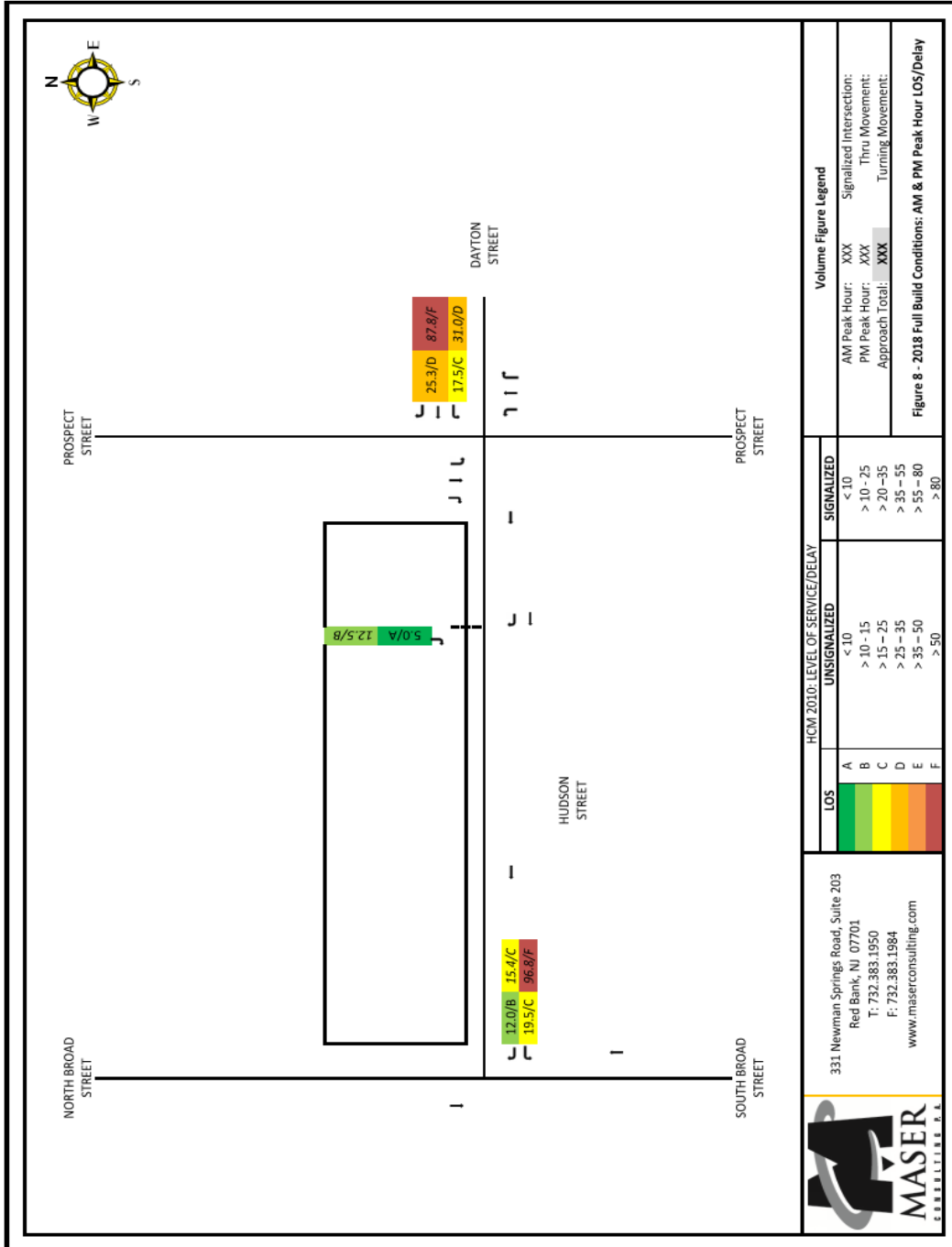


Figure 8 – 2015 Full Build AM & PM Peak Hour LOS/Delay



REVERSED TRAFFIC CIRCULATION ON HUDSON STREET

AS requested by the Village a reversed one way analysis was performed reversing the traffic circulation on Hudson Street from one way westbound to one way eastbound. This change would also eliminate the through movement from Dayton Street eastbound at its intersection with Prospect Street. Volumes from the intersection of Prospect Street which were either through or turning movements onto Hudson Street westbound were redistributed to the intersection of South Broad Street and Hudson Street utilizing the naturally occurring trip distributions observed during our turning movement counts.

With these revisions we observed the following changes to the LOS of the subject approaches:

- By switching the stop control from the intersection of South Broad Street & Hudson Street to Prospect Street & Hudson Street, delay/LOS in AM went from 14.6 (B) to 10.7 (B) and PM went from 50.9/F to 16.0/C;
- WB stop controlled approach of Dayton Street, delay/LOS in AM went from 22.7/C to 11.7/B and PM went from 66.6/F to 26.0/D;
- Operation of the access driveway at the parking deck which serves for both ingress and egress, delay/LOS in the AM maintained baseline value of 5.0/A and PM went from 12.7/B to 47.0/E.

Table 4– Peak Hour Level of Service and Delay Comparison
w/reversed one way circulation on Hudson St.

Roadway	App.	2015 Existing		2018 Full Build	
		AM	PM	AM	PM
South Broad St	NB	A/0.0	A/0.0	A/0.0	A/0.0
	SB	A/0.0	A/0.0	A/0.0	A/0.0
Hudson St	EB	-	-	-	-
	WB	C/16.4	D/30.4	B/10.7	C/16.0

Roadway	App.	2015 Existing		2018 Full Build	
		AM	PM	AM	PM
Prospect St	NB	A/4.9	A/4.3	A/4.2	A/4.4
	SB	A/0.5	A/0.7	A/0.4	A/0.7
Hudson St / Dayton St	EB	-	-	-	-
	WB	C/19.0	E/39.0	B/11.7	D/26.0

Roadway	App.	2015 Existing		2018 Full Build	
		AM	PM	AM	PM
Existing Driveways	NB	A/0.0	A/0.0	-	-
	SB	A/5.0*	A/5.0*	-	-
Proposed Driveway	NB	-	-	A/0.0	A/0.0
	SB	-	-	A/5.0*	E/47.0

Figure 9 – 2015 Full Build AM & PM Peak Hour Traffic Volumes (Reversed Flow)

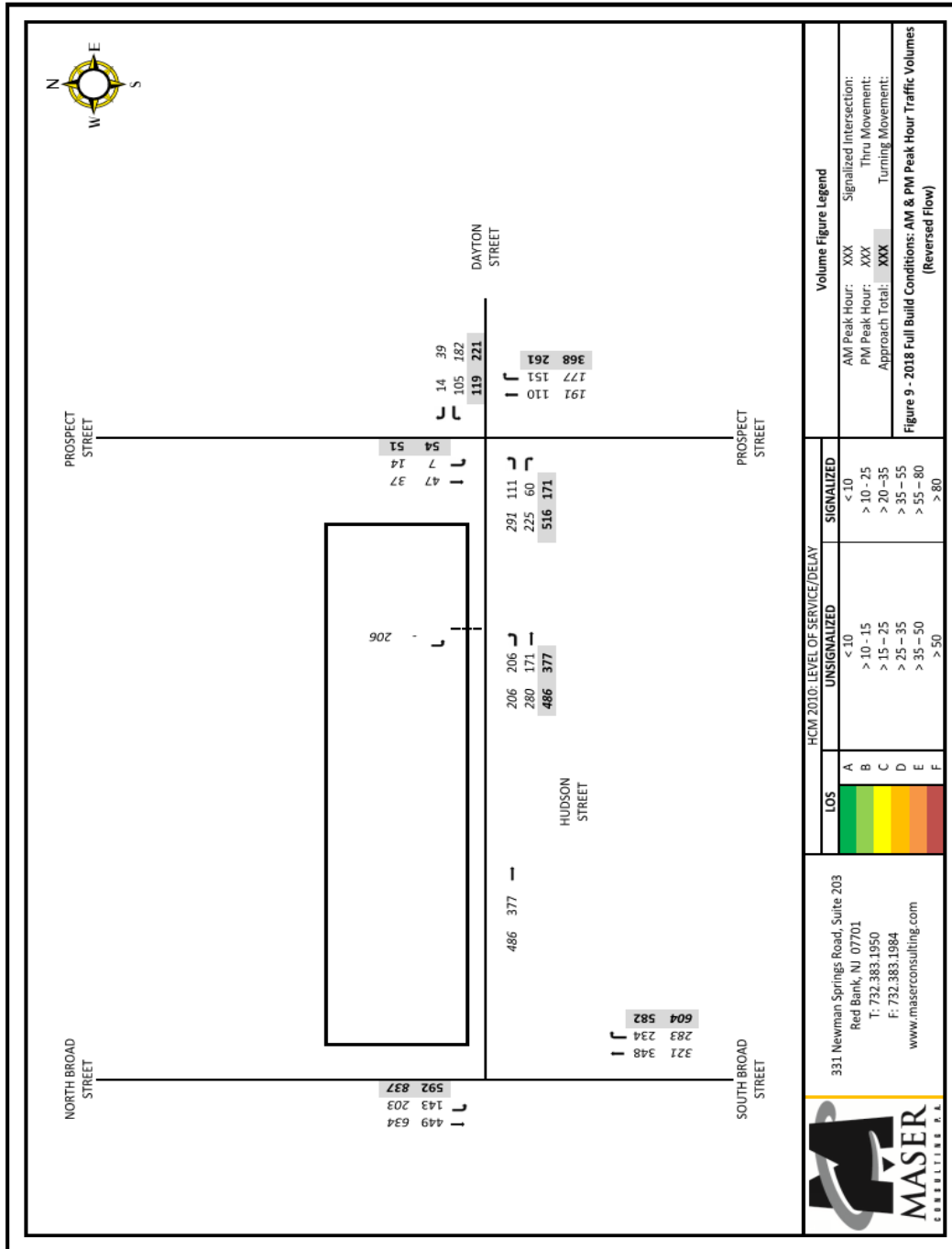
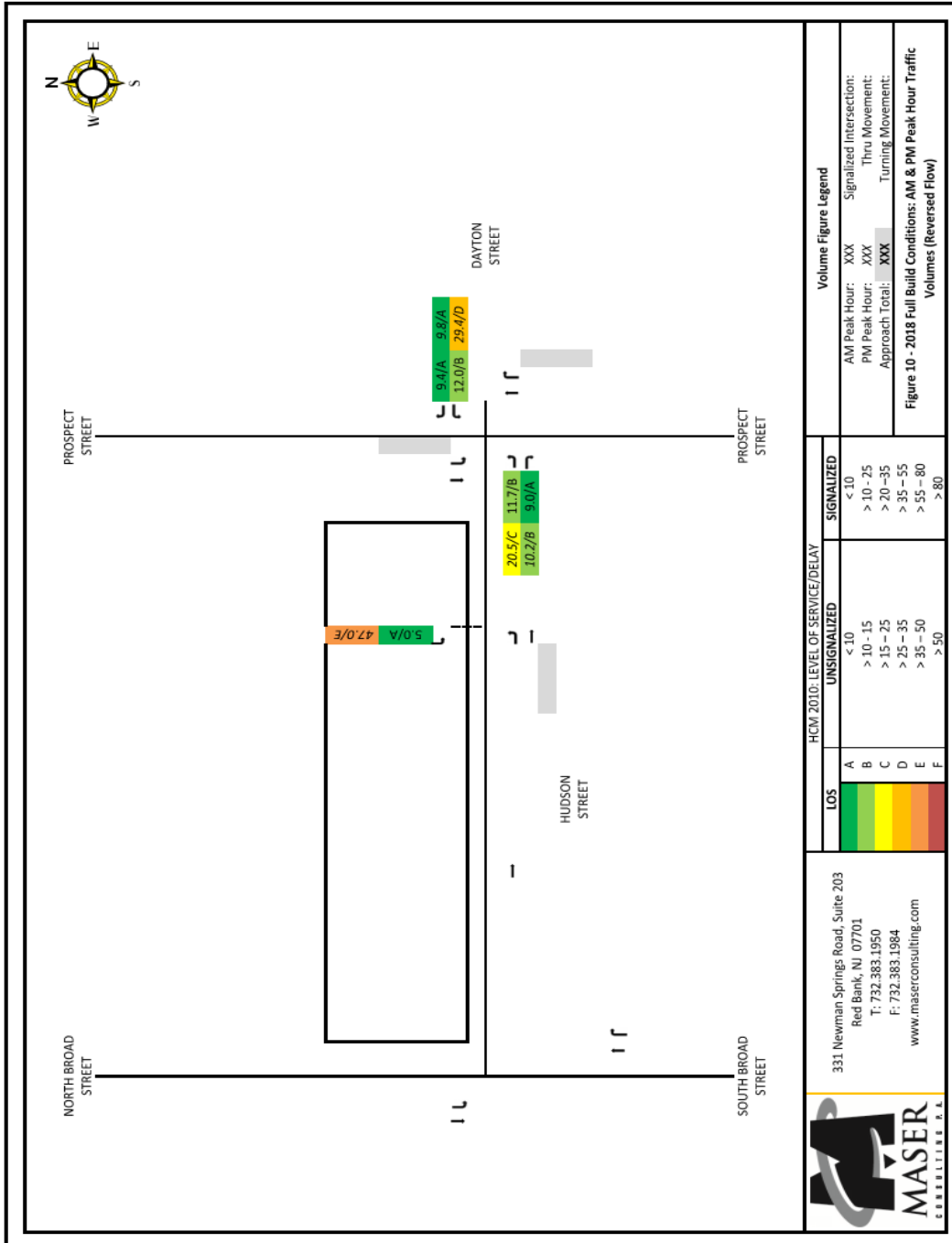


Figure 10 – 2015 Full Build AM & PM Peak Hour LOS/Delay (Reversed Flow)



VII. SITE PLAN ANALYSIS

With the adjusted traffic volumes applied to the roadway network and their impact on the existing roadways determined, the proposed site plan must be examined for compliance with local and national criteria. This section of the report will investigate the proposed site circulation, site access, parking availability, available sight distance and vehicular safety to determine compliance with the specified standard.

INTERSECTION SIGHT DISTANCE

The available sight distance required at the site access point is directly dependent to the design speed on the adjacent roadway. The speed limit on all roadways fronting the site is 25 MPH, which equates to a design speed of 30 MPH and an intersection sight distance of 290' for passenger vehicles and a stopping sight distance of 200'. The proposed access driveway would provide an intersection sight distance of approximately 220'. However, a lower sight distance maybe acceptable as the access point where vehicles will be stopped and turning from is located on a roadway which only offers one way circulation. This means that vehicles leaving the site will only be allowed to make right turns onto the roadway, thus making shorter time gaps for turning movements acceptable. It is our belief that this along with the existing street parking available on both sides of the roadway create a condition where parking movements occur with relative frequency and would serve to make drivers entering the roadway more aware of these types of turning movements. It may also be said based upon our analysis that many of the vehicles accessing Hudson Street would only do so in order to access the proposed garage, thus allowing opportunities for vehicles to exit simultaneously.

VIII. PARKING ANALYSIS

Since the proposed development is a multi-story parking facility, it is not considered a trip generator or generator of parking demand. As such, we may consider this a storage facility that will remove traffic volume from the road and increase capacity. Overall, the proposed site provides a total of 412 parking stalls which are expected to operate at 50% capacity during the AM and PM peak periods. The 84 parking stalls provided by the existing surface parking lot were accounted for within the ambient traffic in our traffic model.

To determine if the proposed site complies with the local requirements, the *Village of Ridgewood Town Code* was referenced. The site will generally conform with *Chapter 190: Land Use Development & Chapter 265: Vehicles and Traffic* as they relate to off-street parking, site access and circulation of traffic throughout the proposed site. Please note that *Chapter 265* of the town code requires that parking stalls for this application provide 20 foot deep stalls while 18 foot deep stalls are provided. As 24 foot drive aisles are also provided throughout the site we feel that this will be sufficient for safe access to parking and travel throughout the site.

ADA STANDARDS FOR ACCESSIBLE DESIGN

The requirements for handicap accessible parking availability are detailed within the *ADA Standards for Accessible Design*. As per Section 4.1.2, sites which provide a total of 412 parking stalls shall provide a total of nine (9) accessible parking stalls, with one (1) stall defined as a van accessible parking stall.

IX. SUMMARY AND CONCLUSIONS

We believe based upon our analysis and firsthand knowledge of the existing parking and traffic conditions within the Village of Ridgewood that the proposed parking garage would serve as a significant improvement to the Village's public infrastructure. This project would serve to improve the available parking capacity, quality of life of both residents and visitors to the area, and would create an overall reduction of traffic circulating throughout the Village by reducing the amount of vehicles searching for parking. We believe that by also incorporating a comprehensive automated and static wayfinding program many of the unnecessary trips circulating throughout the Village's roadway network in search of parking may be further reduced.

The traffic impact analysis of the recommended roadway network adjacent to the subject site indicated operating conditions of LOS "C" & "D" for all stop controlled approaches during the AM and PM peak periods. The minimal impact on the levels of service was noted particularly for the stop controlled approaches, at both of the westbound approaches of Dayton Street and Hudson Street.

It is our opinion that the inclusion of the parking garage will not have a negative effect on the surrounding road network. Additionally, the site access point will not degrade the existing traffic flow within the surrounding roadway network. Overall, the traffic impact analysis supports the proposed site redevelopment.

At the site access point, sufficient sight distance is available to support the turning movement exiting the site driveway. The roadway is flat and linear in the project vicinity, and the reduced speed of vehicles traveling from the adjacent intersection will increase safety for vehicles exiting the site. Examining the internal site conditions, the proposed parking stall supply of 412 stalls will serve to relieve some of the existing traffic volume already present on the road network. The parking aisles, driveways and drive aisles within the site will provide sufficient space for all anticipated vehicular traffic to maneuver safely and efficiently.

Overall, the development of the Hudson Street Parking Garage within the subject site does not negatively impact existing traffic conditions and will provide some relief to existing traffic volume and parking demand from the surrounding land uses. We recommend the Village consider the following to help mitigate the existing and proposed traffic conditions in the immediate area of our study:

- We recommend that an analysis be performed to incorporate the intersections of South Broad Street & East Ridgewood Avenue and North Broad Street & Franklin Avenue into our traffic model as these intersections are already operating at capacity and may affect access to the surrounding land uses;
- Our preliminary analysis reversing the traffic circulation on Hudson Street exhibited a positive impact on its intersections with South Broad Street and Prospect Street. We recommend that a study be performed to include Passaic Street as Hudson Street and Passaic Street operate as a pair within the roadway network. It is also our opinion that the study should include the intersections of South Broad Street & East Ridgewood Avenue and North Broad Street & Franklin Avenue as these intersections are operating near capacity and have a noticeable effect upon traffic. A revised traffic circulation pattern may provide more efficient access not only to the proposed site but also the surrounding land uses;
- Consideration should be given to eliminating a portion of on street parking present along South Broad Street and Prospect Street near their intersection with Hudson Street. Doing so may provide better traffic circulation and alleviate congestion at intersections to the north by eliminating parking movements which bottleneck through traffic during peak periods;
- If traffic circulation is reversed, a dedicated left turn lane should be incorporated into the traffic pattern for South Broad Street SB at its intersection with Hudson Street. This would allow for storage of vehicles seeking to make a left turn onto Hudson Street EB and allow through movements to pass through the intersection unhindered;
- Along with parking elimination, we believe that the Village should consider widening the sidewalks near these two intersections in order to provide better circulation of pedestrian traffic to and from parking facilities to points of interest in the village center;
- It is our understanding that the Village will be eliminating parking along Hudson Street once the parking garage is constructed and we agree that this action would provide a positive effect on traffic circulation through the roadway and on traffic seeking access to and from the parking garage;
- Roadways near the proposed site should be restriped in order to ensure proper use by motorists, increase pedestrian safety at intersections and provide a traffic calming effect;
- Consideration should be given to studying and implementing either a roundabout or traffic signal at the intersection of East Ridgewood Avenue & South Broad Street and at the intersection of Prospect Street & Hudson Street / Dayton Street. Doing so may help to alleviate congestion caused by queues at stop controlled intersections during peak periods.

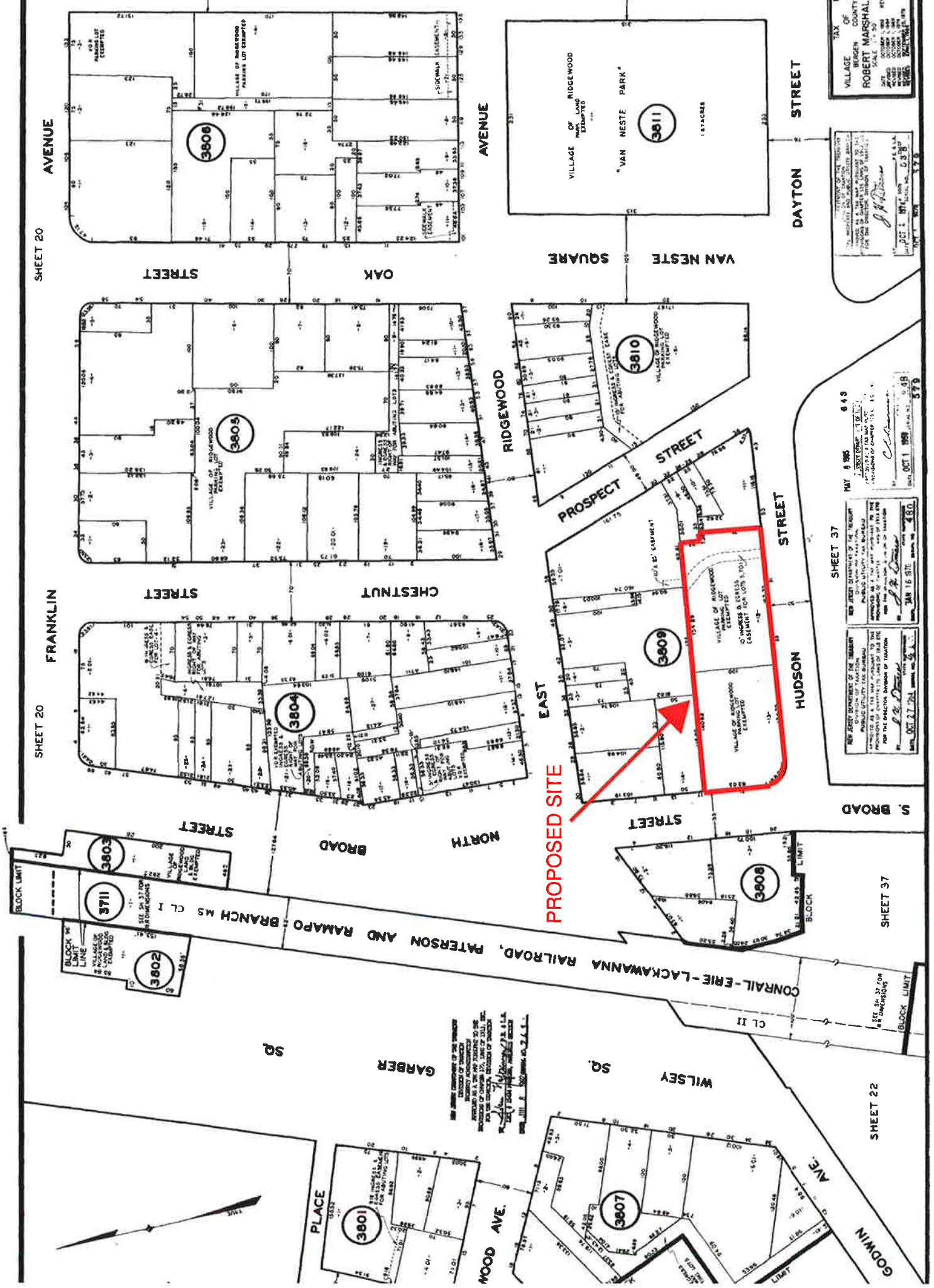
- We believe that implementation of an automated and static parking wayfinding system would serve to not only improve the operation of the proposed development but also that of the existing surface parking lots throughout the Village of Ridgewood. By providing proper signage traffic volume attributed to users searching for parking spaces may be alleviated and directed away from intersections which already operate at or near capacity, improving network flow.



***HUDSON STREET
PARKING GARAGE
TRAFFIC IMPACT STUDY***

APPENDIX A

VILLAGE OF RIDGEWOOD TAX MAP



SHEET 20

SHEET 20

SHEET 22

TAX OF BERGEN COUNTY
ROBERT MARSHAL
DATE: OCTOBER 1, 1998
ASSESSOR: ROBERT MARSHAL
ADDRESS: 10000 BOULEVARD
ROSELAND, NJ 07068

VILLAGE OF VAN NESTE
RESIDENT
ADDRESS: 10000 BOULEVARD
ROSELAND, NJ 07068
DATE: OCT 1 1998
AMOUNT: \$ 480

MAY 9 1998 8 43
NEW JERSEY DEPARTMENT OF TREASURY
PROPERTY TAX
PROPERTY: 10000 BOULEVARD
ROSELAND, NJ 07068
DATE: OCT 1 1998
AMOUNT: \$ 480

NEW JERSEY DEPARTMENT OF TREASURY
PROPERTY TAX
PROPERTY: 10000 BOULEVARD
ROSELAND, NJ 07068
DATE: JAN 16 1997
AMOUNT: \$ 480

NEW JERSEY DEPARTMENT OF TREASURY
PROPERTY TAX
PROPERTY: 10000 BOULEVARD
ROSELAND, NJ 07068
DATE: JAN 16 1997
AMOUNT: \$ 480

S. BROAD

SHEET 37

SHEET 37

SHEET 37

SHEET 37

SHEET 37



***HUDSON STREET
PARKING GARAGE
TRAFFIC IMPACT STUDY***

APPENDIX B

MANUAL TURNING MOVEMENT COUNTS

Maser Consulting

331 Newman Springs Road, #203
Red Bank, NJ 07701

Customer Loyalty through Client Satisfaction

M.C. No.: 15001714A

Intersection of Prospect St. & Hudson St./ Dayton St.

Village of Ridgewood, NJ

PM Peak Hour Data

File Name : 1-HUDSON_ST_AT_PROSPECT_ST_262468_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 1

Start Time	Groups Printed- Lights - Buses - Trucks - Pedestrians																	
	Prospect Street From North				Dayton Street From East				Prospect Street From South				Hudson Street From West					
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	7	2	2	2	6	25	25	1	36	16	25	2	79	0	0	1	2	151
04:15 PM	2	2	2	7	5	23	33	2	17	21	21	1	60	0	0	3	3	139
04:30 PM	4	2	2	5	2	26	15	0	9	24	14	1	48	0	0	4	4	108
04:45 PM	7	7	3	3	5	33	15	3	18	15	27	0	60	0	0	4	4	140
Total	20	13	9	17	18	107	88	6	80	76	87	4	247	1	0	12	13	538
05:00 PM	2	3	0	10	4	37	25	5	13	21	15	5	54	0	0	3	3	143
05:15 PM	2	2	0	5	7	32	24	1	16	30	23	5	74	0	0	5	5	152
05:30 PM	5	5	2	7	2	39	19	4	33	27	13	3	76	0	0	3	3	162
05:45 PM	2	4	2	10	5	33	14	2	22	21	21	2	66	0	0	13	13	151
Total	11	14	4	32	18	141	82	12	84	99	72	15	270	0	0	24	24	608

Maser Consulting

331 Newman Springs Road, #203
Red Bank, NJ 07701

Customer Loyalty through Client Satisfaction

File Name : 1-HUDSON_ST_AT_PROSPECT_ST_262468_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 2

	Prospect Street From North						Dayton Street From East						Prospect Street From South						Hudson Street From West							
	Right	Thru	Left	Peds	App. Total		Right	Thru	Left	Peds	App. Total		Right	Thru	Left	Peds	App. Total		Right	Thru	Left	Peds	App. Total			
Grand Total	31	27	13	49	120		36	248	170	18	472		164	175	159	19	517		1	0	0	36	37	1146		
Approch % Total %	25.8	22.5	10.8	40.8		7.6	52.5	36	3.8		31.7	33.8	30.8	3.7		2.7	0	0	97.3		0.1	0	0	3.1	3.2	
% Lights	30	27	13	0	70		34	236	168	0	438		164	171	159	0	494		1	0	0	0	1	1003		
% Buses	96.8	100	100	0	58.3		94.4	95.2	98.8	0	92.8		100	97.7	100	0	95.6		100	0	0	0	2.7	87.5		
% Trucks	0	0	0	0	0		1	8	1	0	10		0	1	0	0	1		0	0	0	0	0	11		
% Pedestrians	0	0	0	0	0		2.8	3.2	0.6	0	2.1		0	0.6	0	0	0.2		0	0	0	0	0	1		
	1	0	0	0	1		1	4	1	0	6		0	3	0	0	3		0	0	0	0	0	10		
	3.2	0	0	0	0.8		2.8	1.6	0.6	0	1.3		0	1.7	0	0	0.6		0	0	0	0	0	0.9		
	0	0	0	49	49		0	0	0	18	18		0	0	0	19	19		0	0	0	36	36	122		
	0	0	0	100	40.8		0	0	0	100	3.8		0	0	0	100	3.7		0	0	0	100	97.3	10.6		

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Red Bank, NJ 07701

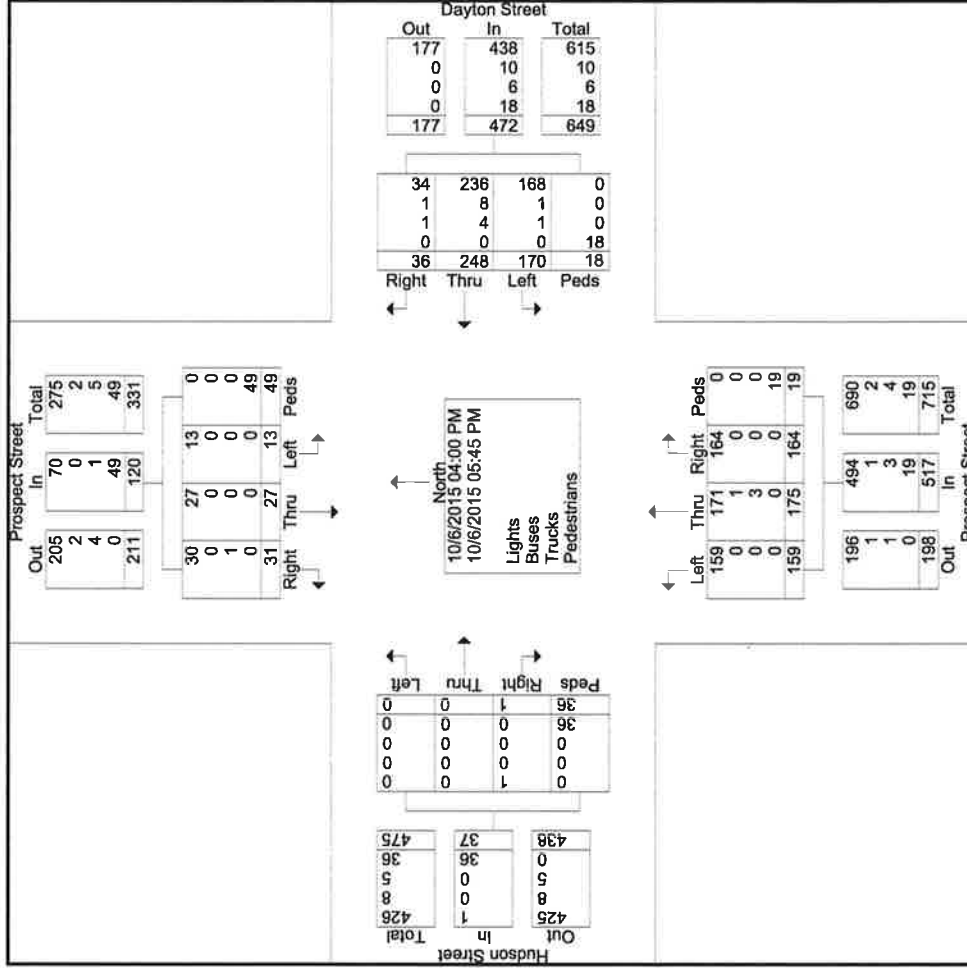
Customer Loyalty through Client Satisfaction

File Name : 1-HUDSON_ST_AT_PROSPECT_ST_262468_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 3



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331 Newman Springs Road, #203
Red Bank, NJ 07701

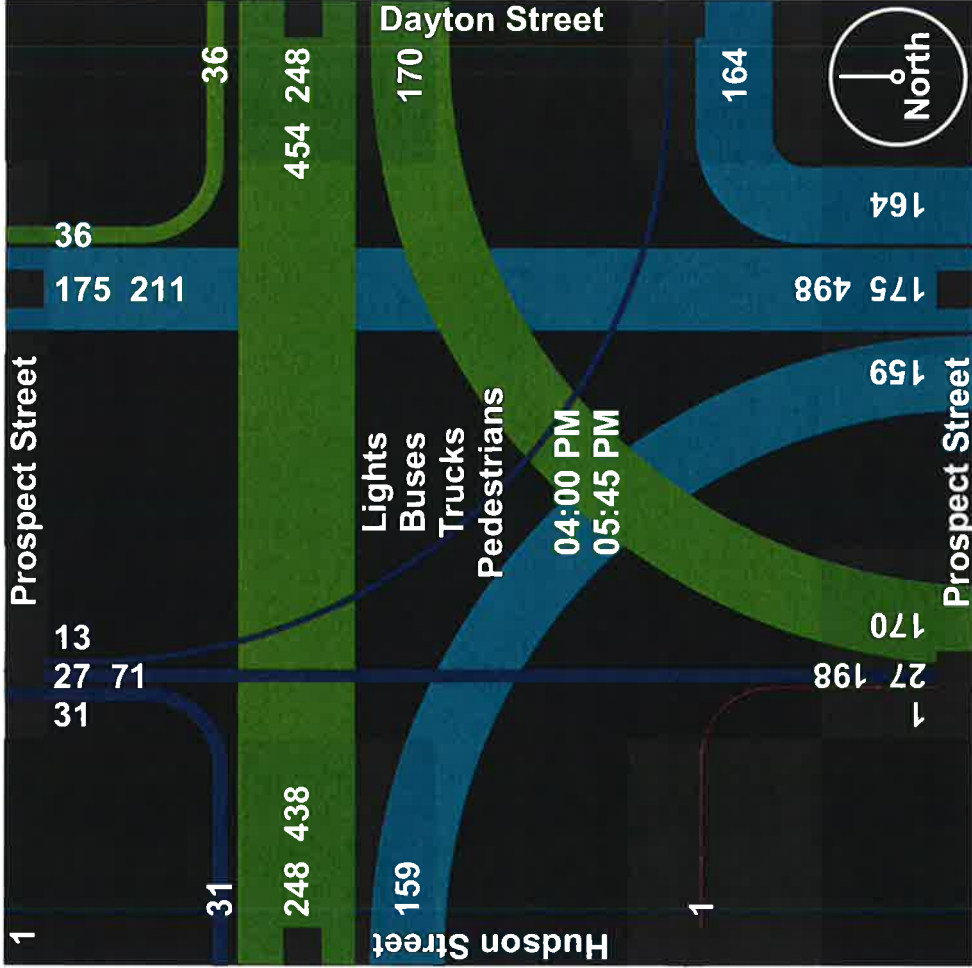
Customer Loyalty through Client Satisfaction

File Name : 1-HUDSON_ST_AT_PROSPECT_ST_262468_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 4



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331 Newnan Springs Road, #203
Red Bank, NJ 07701

Customer Loyalty through Client Satisfaction

File Name : 1-HUDSON_ST_AT_PROSPECT_ST_262468_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 5



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331 Newman Springs Road, #203
Red Bank, NJ 07701

Customer Loyalty through Client Satisfaction

M.C. No.: 15001714A

Intersection of Prospect St. & Hudson St./ Dayton St.

Village of Ridgewood, NJ

AM Peak Hour Data

File Name : 1-HUDSON_ST_AT_PROSPECT_ST_262468_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 1

Start Time	Prospect Street From North						Dayton Street From East						Prospect Street From South						Hudson Street From West					
	Right	Thru	Left	Peds	App. Total	Total	Right	Thru	Left	Peds	App. Total	Total	Right	Thru	Left	Peds	App. Total	Total	Right	Thru	Left	Peds	App. Total	Total
	07:00 AM	5	2	1	2	10	10	2	10	4	2	18	18	10	11	5	0	26	26	0	0	0	0	0
07:15 AM	3	5	0	3	11	11	0	19	7	3	29	29	18	12	18	0	48	48	0	0	0	0	0	0
07:30 AM	5	6	1	6	18	18	4	34	14	1	53	53	27	10	18	1	56	56	0	0	0	1	1	1
07:45 AM	0	4	1	0	5	5	2	27	17	2	48	48	13	8	26	4	51	51	0	0	0	1	1	1
Total	13	17	3	11	44	44	8	90	42	8	148	148	68	41	67	5	181	181	0	0	0	2	2	2
08:00 AM	1	6	0	5	12	12	2	21	14	0	37	37	12	8	26	1	47	47	0	0	0	1	1	1
08:15 AM	1	4	0	6	11	11	2	27	17	0	46	46	18	14	15	1	48	48	0	0	0	1	1	1
08:30 AM	3	2	0	4	9	9	0	11	13	1	25	25	15	9	18	0	42	42	0	0	0	3	3	3
08:45 AM	2	7	4	13	26	26	1	32	11	0	44	44	27	22	18	5	72	72	0	0	0	7	7	7
Total	7	19	4	28	58	58	5	91	55	1	152	152	72	53	77	7	209	209	0	0	0	12	12	12

File Name : 1-HUDSON_ST_AT_PROSPECT_ST_262468_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 2

Groups Printed- Lights - Buses - Trucks - Pedestrians

	Prospect Street From North						Dayton Street From East						Prospect Street From South						Hudson Street From West					
	Right	Thru	Left	Peds	App. Total		Right	Thru	Left	Peds	App. Total		Right	Thru	Left	Peds	App. Total		Right	Thru	Left	Peds	App. Total	
Grand Total	20	36	7	39	102		13	181	97	9	300		140	94	144	12	390		0	0	0	14	14	806
Approch %	19.6	35.3	6.9	38.2			4.3	60.3	32.3	3			35.9	24.1	36.9	3.1			0	0	0	100	100	
Total %	2.5	4.5	0.9	4.8	12.7		1.6	22.5	12	1.1	37.2		17.4	11.7	17.9	1.5	48.4		0	0	0	1.7	1.7	
% Lights	19	35	7	0	61		13	169	94	0	276		138	85	137	0	360		0	0	0	0	0	697
% Buses	95	97.2	100	0	59.8		100	93.4	96.9	0	92		98.6	90.4	95.1	0	92.3		0	0	0	0	0	86.5
% Trucks	0	1	0	0	1		0	10	3	0	13		1	8	3	0	12		0	0	0	0	0	26
% Pedestrians	0	2.8	0	0	1		0	5.5	3.1	0	4.3		0.7	8.5	2.1	0	3.1		0	0	0	0	0	3.2
	1	0	0	0	1		0	2	0	0	2		1	1	4	0	6		0	0	0	0	0	9
	5	0	0	0	1		0	1.1	0	0	0.7		0.7	1.1	2.8	0	1.5		0	0	0	0	0	1.1
	0	0	0	39	39		0	0	0	9	9		0	0	0	12	12		0	0	0	14	14	74
% Pedestrians	0	0	0	100	38.2		0	0	0	100	3		0	0	0	100	3.1		0	0	0	100	100	9.2

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Red Bank, NJ 07701

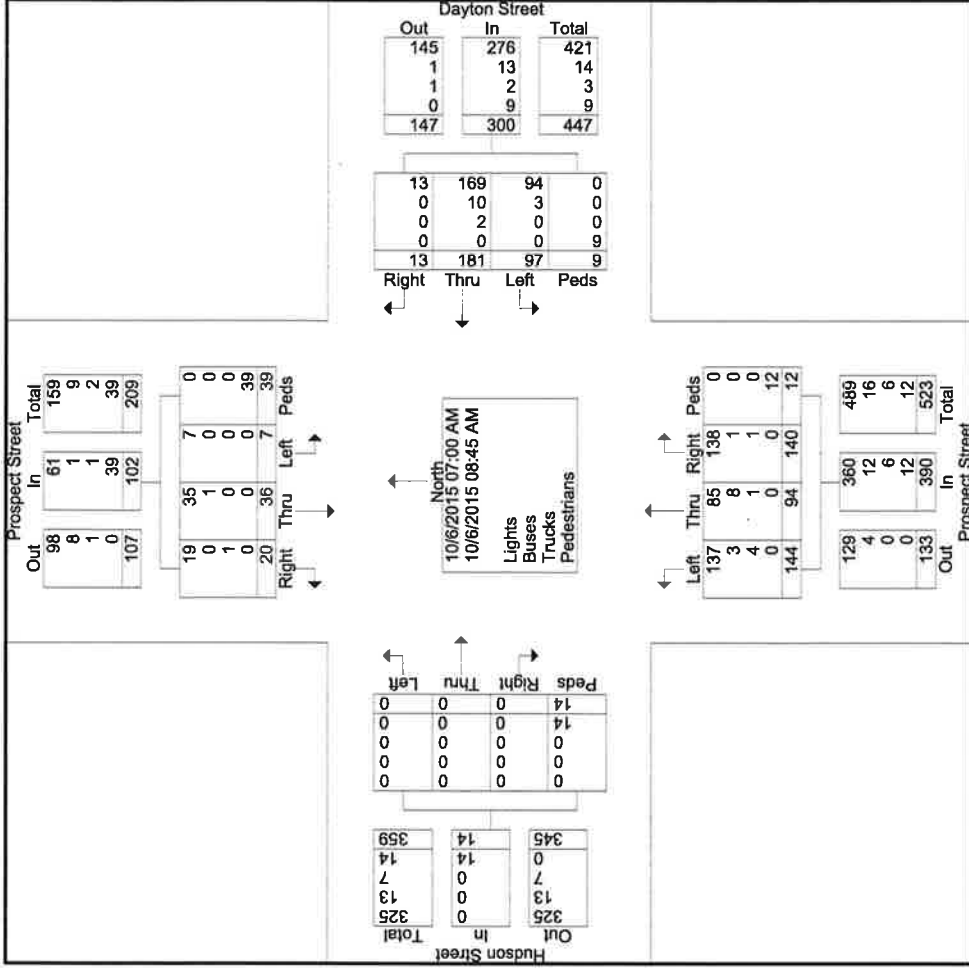
Customer Loyalty through Client Satisfaction

File Name : 1-HUDSON_ST_AT_PROSPECT_ST_262468_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 3



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Red Bank, NJ 07701

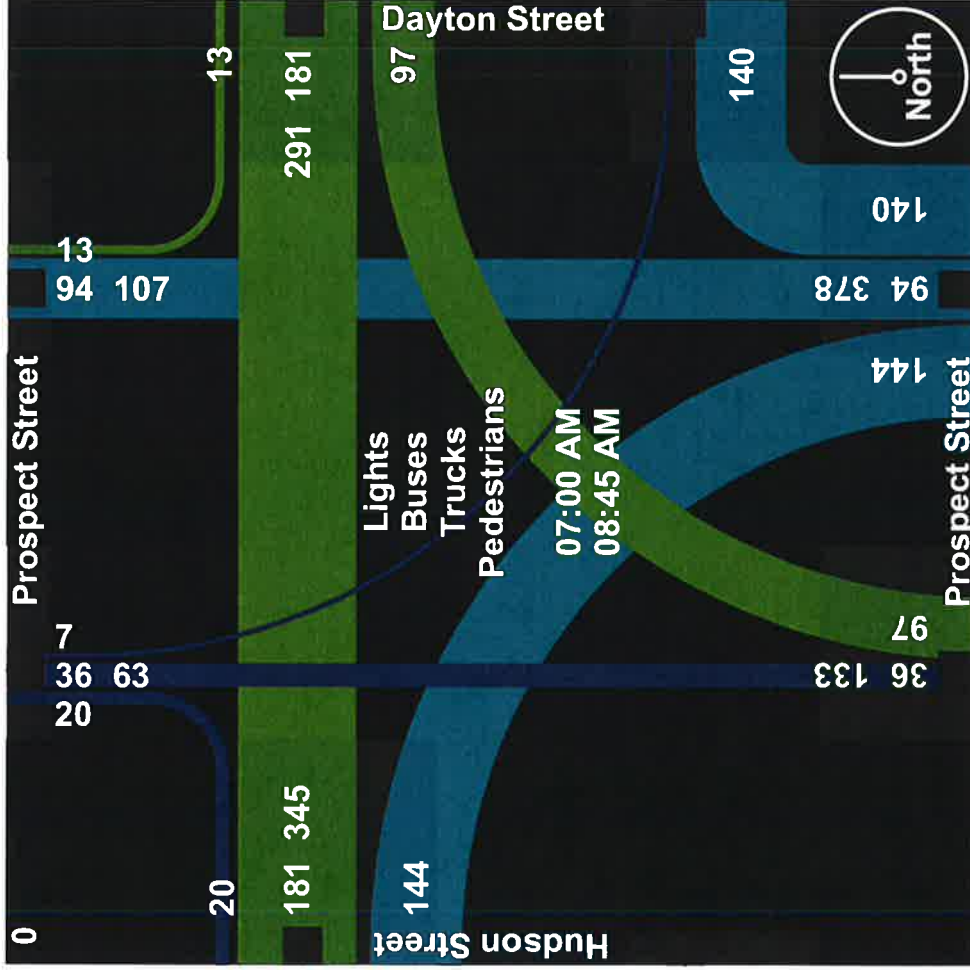
Customer Loyalty through Client Satisfaction

File Name : 1-HUDSON_ST_AT_PROSPECT_ST_262468_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 4



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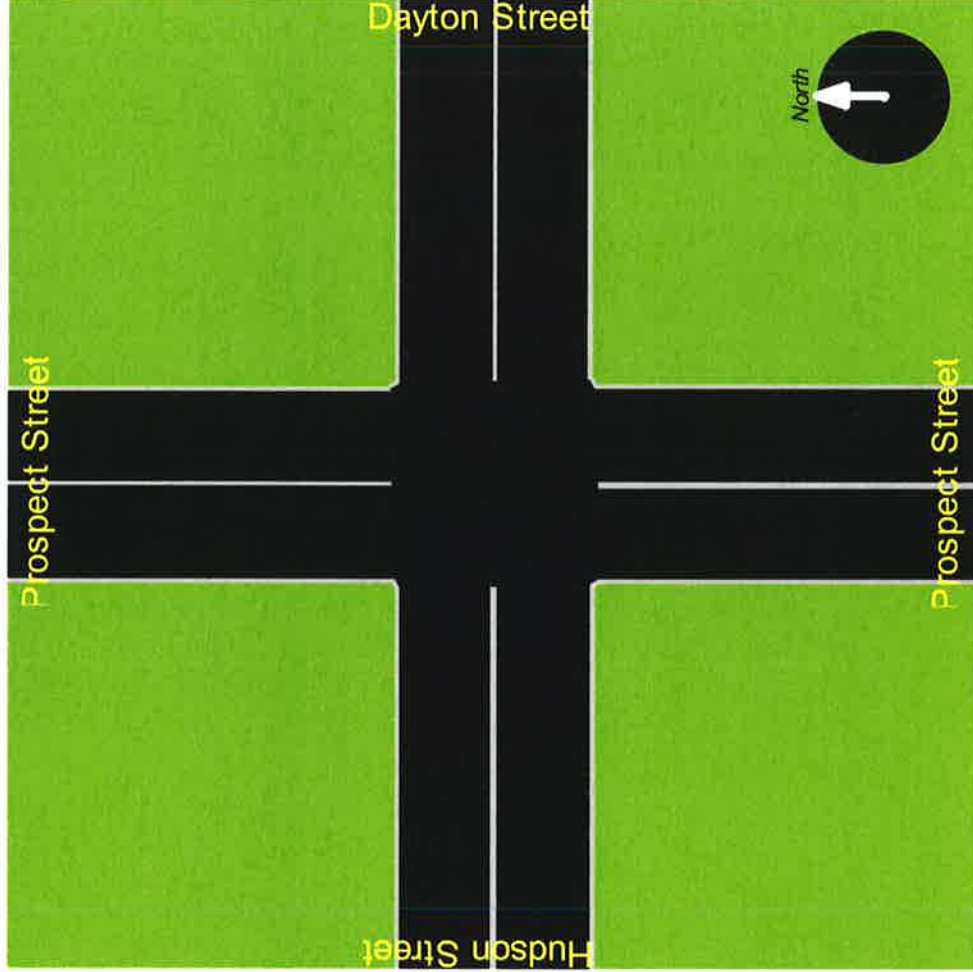
Customer Loyalty through Client Satisfaction

File Name : 1-HUDSON_ST_AT_PROSPECT_ST_262468_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 5



331 Newman Springs Road, #203
Red Bank, NJ 07701

Customer Loyalty through Client Satisfaction

M.C. No.: 15001714A

Intersection of S. Broad St. & Hudson St.

Village of Ridgewood, NJ

AM Peak Hour Data

File Name : 2-HUDSON_ST_AT_S_BROAD_ST_262469_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 1

Groups Printed- Lights - Buses - Trucks - Pedestrians

Start Time	South Broad Street From North				Hudson Street From East				South Broad Street From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
07:00 AM	29	0	2	31	16	3	0	19	0	21	3	24	74
07:15 AM	28	0	5	33	21	8	3	32	0	39	1	40	105
07:30 AM	53	0	6	59	30	15	4	49	0	43	5	48	156
07:45 AM	68	0	10	78	27	21	4	52	0	37	5	42	172
Total	178	0	23	201	94	47	11	152	0	140	14	154	507
08:00 AM	54	0	1	55	31	13	1	45	0	35	4	39	139
08:15 AM	59	0	0	59	21	16	2	39	0	45	5	50	148
08:30 AM	61	0	5	66	24	12	1	37	0	41	2	43	146
08:45 AM	55	0	8	63	30	27	6	63	0	58	0	58	184
Total	229	0	14	243	106	68	10	184	0	179	11	190	617

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331 Newman Springs Road, #203
Red Bank, NJ 07701

Customer Loyalty through Client Satisfaction

File Name : 2-HUDSON_ST_AT_S_BROAD_ST_262469_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 2

Groups Printed- Lights - Buses - Trucks - Pedestrians

	South Broad Street From North					Hudson Street From East					South Broad Street From South					Int. Total	
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Right	Thru	Peds		App. Total
Grand Total	407	0	37	444	200	115	21	336	0	319	25	344	0	319	25	344	
Approch % Total %	91.7	0	8.3		59.5	34.2	6.2		0	92.7	7.3		0	92.7	7.3		
% Lights	36.2	0	3.3	39.5	17.8	10.2	1.9	29.9	0	28.4	2.2	30.6	0	28.4	2.2	30.6	
% Buses	395	0	0	395	185	111	0	296	0	302	0	302	0	302	0	302	
% Trucks	97.1	0	0	89	92.5	96.5	0	88.1	0	94.7	0	87.8	0	94.7	0	87.8	
% Pedestrians	4	0	0	4	10	3	0	13	0	5	0	5	0	5	0	5	
	1	0	0	0.9	5	2.6	0	3.9	0	1.6	0	1.5	0	1.6	0	1.5	
	8	0	0	8	5	1	0	6	0	12	0	12	0	12	0	12	
	2	0	0	1.8	2.5	0.9	0	1.8	0	3.8	0	3.5	0	3.8	0	3.5	
	0	0	37	37	0	0	21	21	0	0	25	25	0	0	25	25	
	0	0	100	8.3	0	0	100	6.2	0	0	100	7.3	0	0	100	7.3	

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Red Bank, NJ 07701

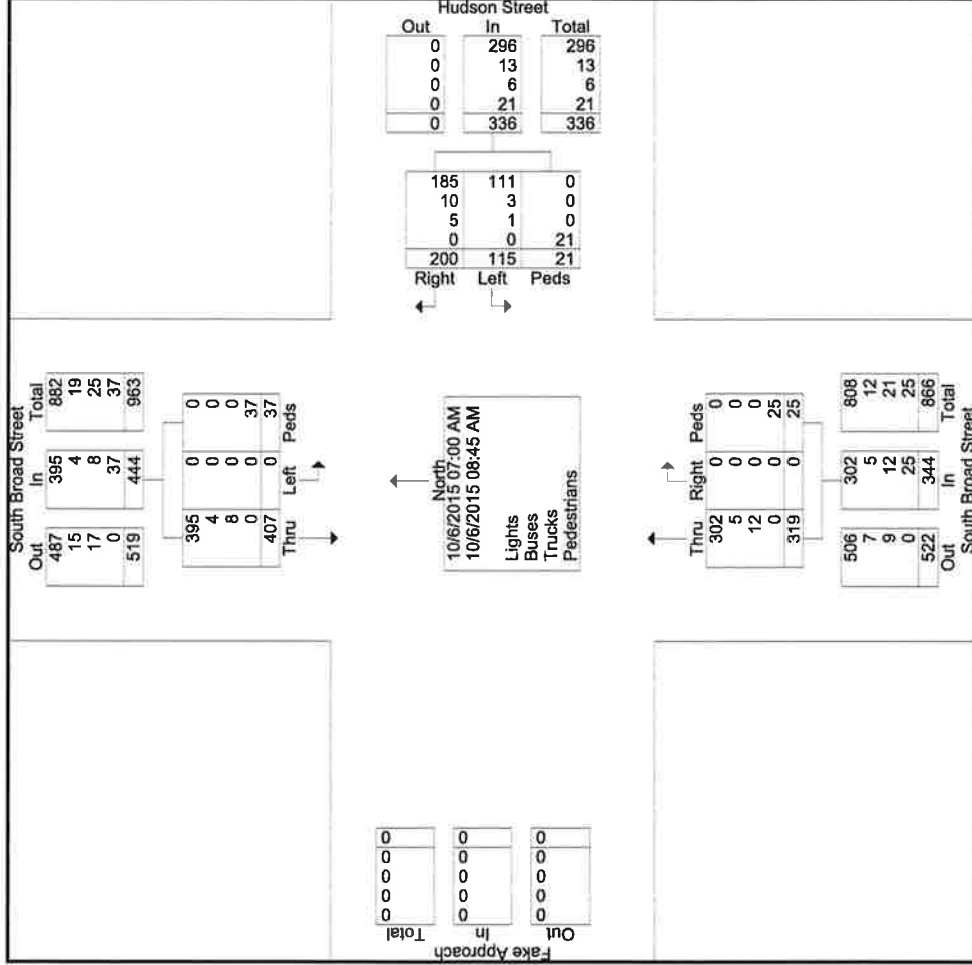
Customer Loyalty through Client Satisfaction

File Name : 2-HUDSON_ST_AT_S_BROAD_ST_262469_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 3

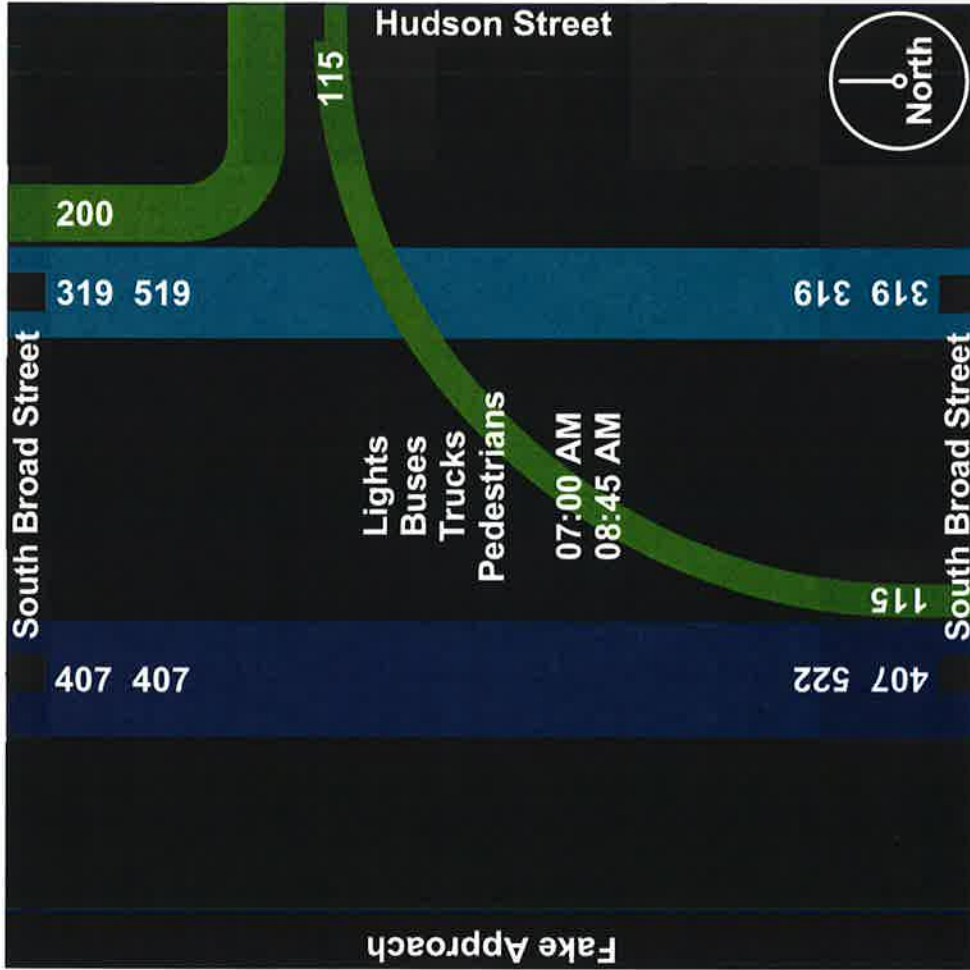


File Name : 2-HUDSON_ST_AT_S_BROAD_ST_262469_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 4



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331 Newnan Springs Road, #203
Red Bank, NJ 07701

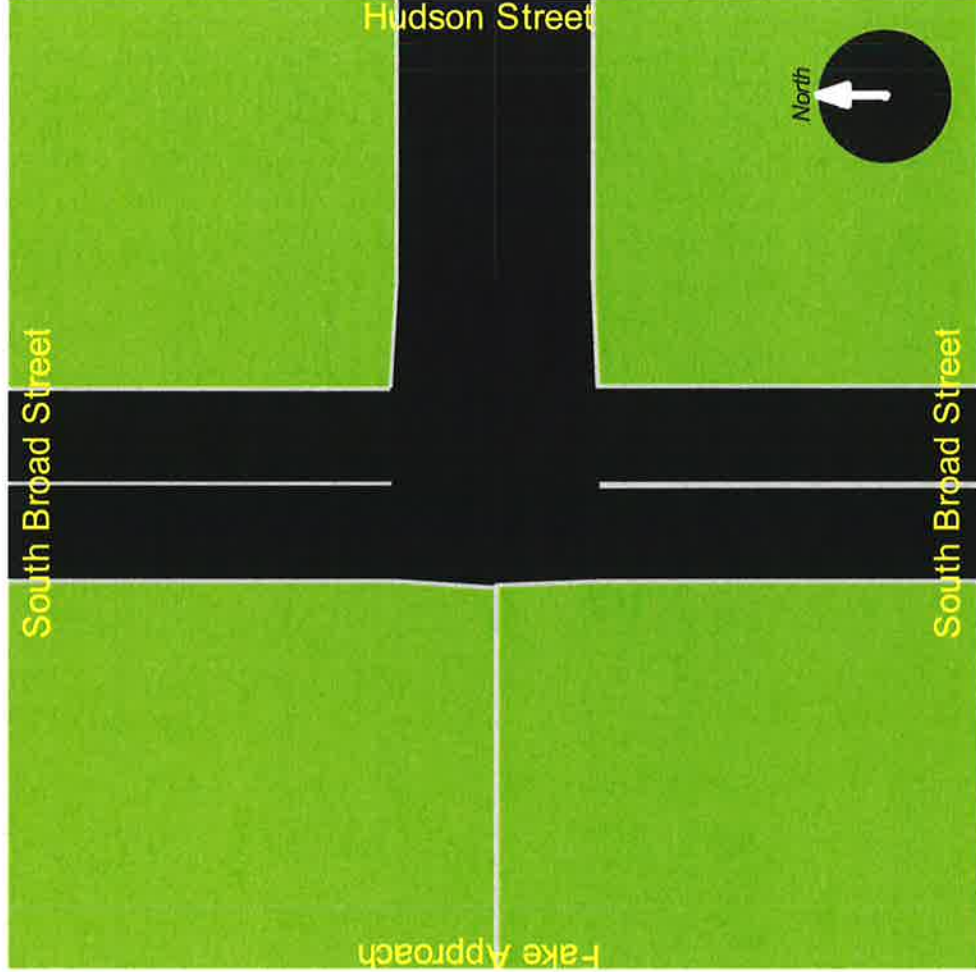
Customer Loyalty through Client Satisfaction

File Name : 2-HUDSON_ST_AT_S_BROAD_ST_262469_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 5



331 Newman Springs Road, #203
 Red Bank, NJ 07701
 Customer Loyalty through Client Satisfaction

M.C. No.: 15001714A
 Intersection of S. Broad St. & Hudson St.
 Village of Ridgewood, NJ
 PM Peak Hour Data

File Name : 2-HUDSON_ST_AT_S_BROAD_ST_262469_10-06-2015
 Site Code :
 Start Date : 10/6/2015
 Page No : 1

Start Time	South Broad Street From North					Hudson Street From East					South Broad Street From South						
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
04:00 PM	72	0	11	83	38	23	3	64	0	28	2	30	0	28	2	30	177
04:15 PM	62	0	7	69	34	18	6	58	0	35	9	44	0	35	9	44	171
04:30 PM	67	1	8	76	37	14	5	56	0	43	10	53	0	43	10	53	185
04:45 PM	71	0	5	76	40	26	9	75	0	33	1	34	0	33	1	34	185
Total	272	1	31	304	149	81	23	253	0	139	22	161	0	139	22	161	718
05:00 PM	84	0	6	90	33	28	6	67	0	45	1	46	0	45	1	46	203
05:15 PM	67	0	6	73	35	29	7	71	0	34	1	35	0	34	1	35	179
05:30 PM	73	0	12	85	35	32	8	75	0	38	2	40	0	38	2	40	200
05:45 PM	81	0	6	87	39	26	0	65	0	32	1	33	0	32	1	33	185
Total	305	0	30	335	142	115	21	278	0	149	5	154	0	149	5	154	767

	South Broad Street						Hudson Street						South Broad Street								
	From North			From East			From East			From South			From South			From South					
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Right	Thru	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Grand Total	577	1	61	639	291	196	44	531	0	288	27	315	0	288	27	315	0	288	27	315	1485
Approch % Total	90.3	0.2	9.5	43	54.8	36.9	8.3	35.8	0	91.4	8.6	21.2	0	91.4	8.6	21.2	0	91.4	8.6	21.2	
% Lights	38.9	0.1	4.1	567	19.6	13.2	3	471	0	19.4	1.8	285	0	19.4	1.8	285	0	19.4	1.8	285	1323
% Buses	566	1	0	88.7	278	193	0	88.7	0	285	0	90.5	0	285	0	90.5	0	285	0	90.5	89.1
% Trucks	98.1	100	0	0	95.5	98.5	0	10	0	0	0	0	0	99	0	0	0	0	0	0	10
% Pedestrians	0	0	0	0	3.4	0	0	1.9	0	0	0	0	0	0	0	0	0	0	0	0	0.7
	11	0	0	11	3	3	0	6	0	3	0	3	0	3	0	3	0	3	0	3	20
	1.9	0	0	1.7	1	1.5	0	1.1	0	1	0	1	0	1	0	1	0	1	0	1	1.3
% Pedestrians	0	0	61	61	0	0	44	44	0	0	44	44	0	0	27	27	0	0	27	27	132
% Pedestrians	0	0	100	9.5	0	0	100	8.3	0	0	100	8.6	0	0	100	8.6	0	0	100	8.6	8.9

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331 Newman Springs Road, #203
Red Bank, NJ 07701

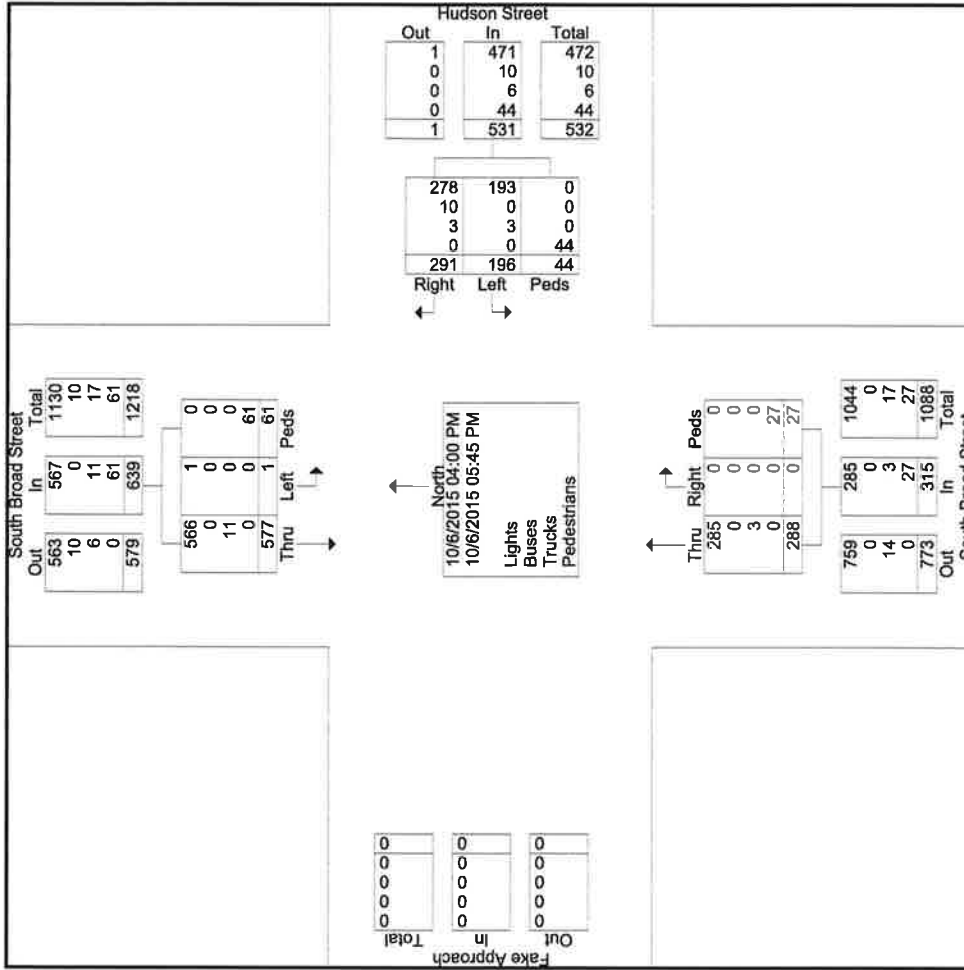
Customer Loyalty through Client Satisfaction

File Name : 2-HUDSON_ST_AT_S_BROAD_ST_262469_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 3



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331 Newnan Springs Road, #203
Red Bank, NJ 07701

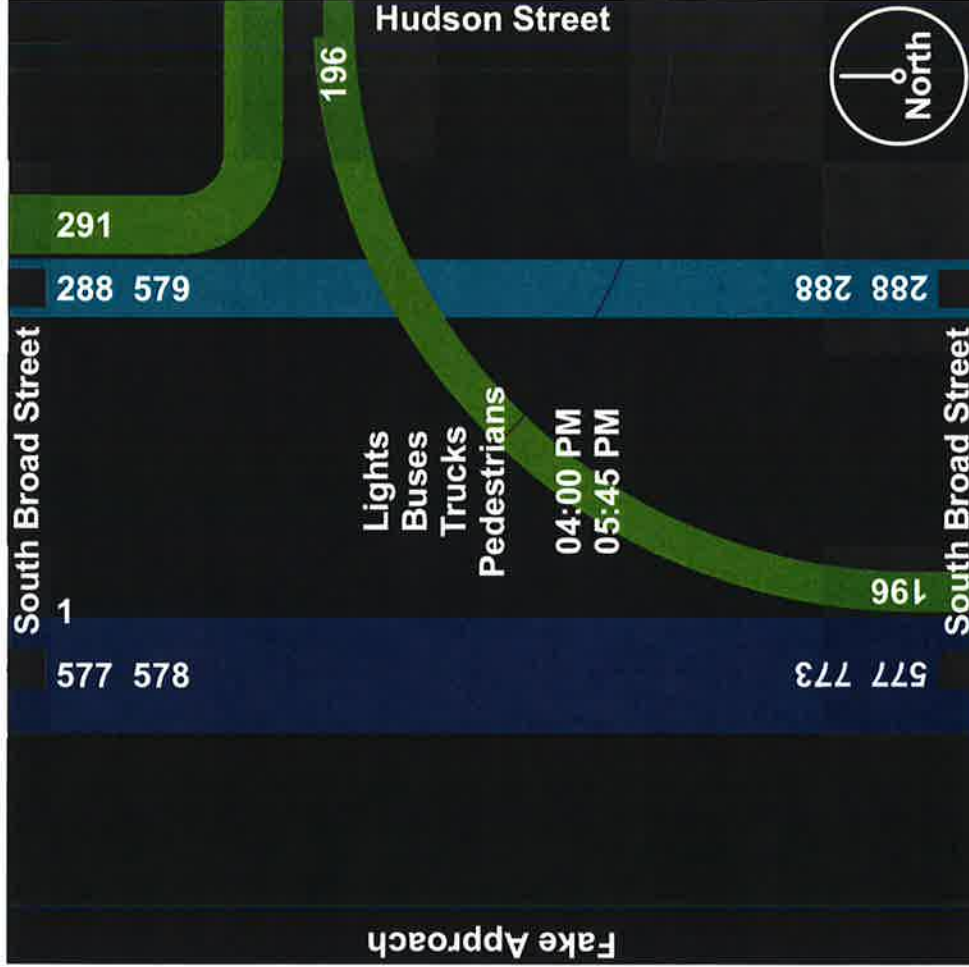
Customer Loyalty through Client Satisfaction

File Name : 2-HUDSON_ST_AT_S_BROAD_ST_262469_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 4



Maser Consulting

331 Newnan Springs Road, #203
Red Bank, NJ 07701

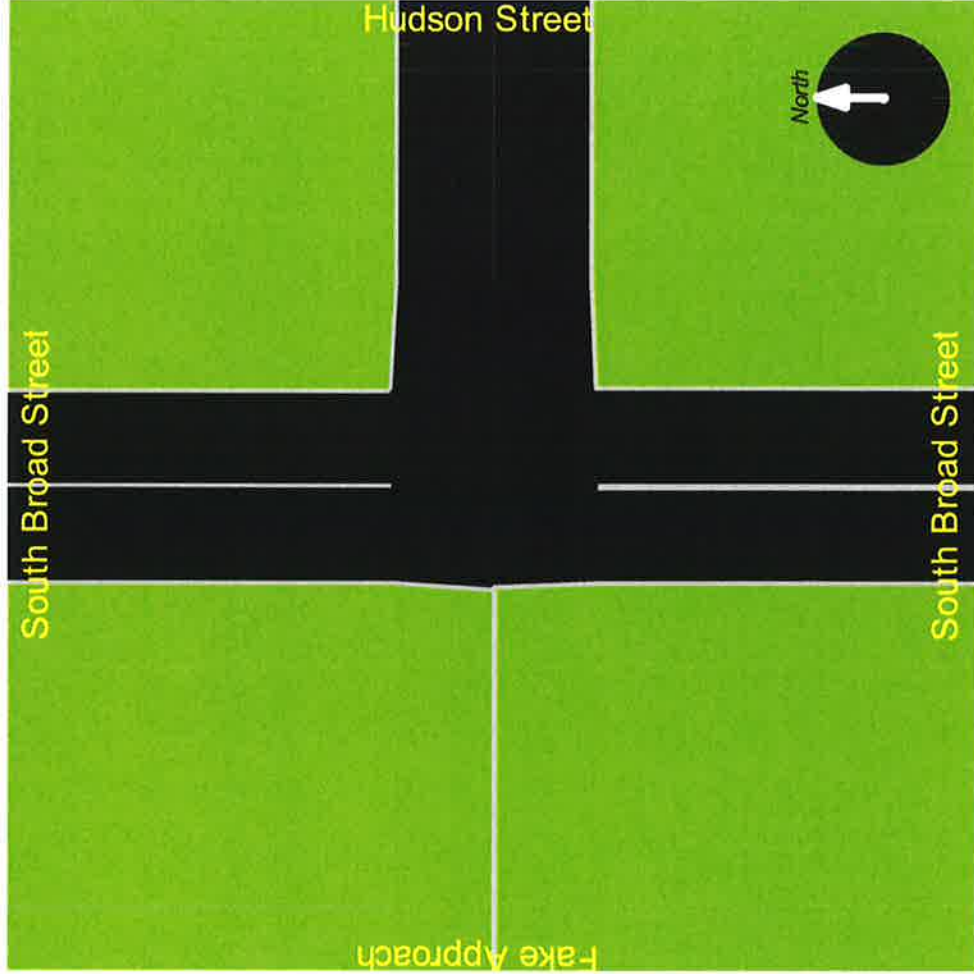
Customer Loyalty through Client Satisfaction

File Name : 2-HUDSON_ST_AT_S_BROAD_ST_262469_10-06-2015

Site Code :

Start Date : 10/6/2015

Page No : 5





***HUDSON STREET
PARKING GARAGE
TRAFFIC IMPACT STUDY***

APPENDIX C

**SYNCHRO HCM CAPACITY ANALYSIS
SUMMARY SHEETS**

S Broad St & Hudson St
Existing Conditions

AM Peak Model Hudson Street Parking Deck
10/14/2015



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	115	206	319	0	0	407
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				
Frt Protected	0.950					
Satd. Flow (prot)	1593	1425	1676	0	0	1676
Frt Permitted	0.950					
Satd. Flow (perm)	1593	1425	1676	0	0	1676
Link Speed (mph)	25		25			30
Link Distance (ft)	77		252			301
Travel Time (s)	2.1		6.9			6.8
Confl. Peds. (#/hr)	25	37				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)	0	0	0			0
Adj. Flow (vph)	125	224	347	0	0	442
Shared Lane Traffic (%)						
Lane Group Flow (vph)	125	224	347	0	0	442
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.4%
Analysis Period (min)	15
	ICU Level of Service A

S Broad St & Hudson St
Existing Conditions

AM Peak Model Hudson Street Parking Deck
10/14/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↘	↑			↘
Volume (veh/h)	115	206	319	0	0	407
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	125	224	347	0	0	442
Pedestrians			25			37
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			2			3
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	814	384			347	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	814	384			347	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	63	65			100	
cM capacity (veh/h)	340	643			1212	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	125	224	347	442
Volume Left	125	0	0	0
Volume Right	0	224	0	0
cSH	340	643	1700	1700
Volume to Capacity	0.37	0.35	0.20	0.26
Queue Length 95th (ft)	41	39	0	0
Control Delay (s)	21.6	13.6	0.0	0.0
Lane LOS	C	B		
Approach Delay (s)	16.4		0.0	0.0
Approach LOS	C			

Intersection Summary			
Average Delay		5.0	
Intersection Capacity Utilization		39.4%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↔			↔
Volume (vph)	0	0	238	140	7	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.950			
Flt Protected						0.997
Satd. Flow (prot)	0	0	1770	0	0	1857
Flt Permitted						0.997
Satd. Flow (perm)	0	0	1770	0	0	1857
Link Speed (mph)	30		25			30
Link Distance (ft)	119		188			74
Travel Time (s)	2.7		5.1			1.7
Confl. Peds. (#/hr)				9	12	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	259	152	8	145
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	411	0	0	153
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.7%
Analysis Period (min)	15
	ICU Level of Service A

Prospect St & Hudson/Dayton St EB
Existing Conditions

AM Peak Model Hudson Street Parking Deck
10/14/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↔			↔
Volume (veh/h)	0	0	238	140	7	133
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	259	152	8	145
Pedestrians	12					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	507	347			423	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	507	347			423	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	522	696			1136	

Direction, Lane #	NB 1	SB 1
Volume Total	411	152
Volume Left	0	8
Volume Right	152	0
cSH	1700	1136
Volume to Capacity	0.24	0.01
Queue Length 95th (ft)	0	1
Control Delay (s)	0.0	0.5
Lane LOS		A
Approach Delay (s)	0.0	0.5
Approach LOS		

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		24.7%	ICU Level of Service A
Analysis Period (min)		15	

Prospect St & Hudson/Dayton St WB
Existing Conditions

AM Peak Model Hudson Street Parking Deck
10/14/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	97	181	13	144	94	0	0	36	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.990						0.951	
Flt Protected				0.950				0.971				
Satd. Flow (prot)	0	0	0	1770	1844	0	0	1809	0	0	1594	0
Flt Permitted				0.950				0.971				
Satd. Flow (perm)	0	0	0	1770	1844	0	0	1809	0	0	1594	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		201			153			74			347	
Travel Time (s)		5.5			4.2			1.7			9.5	
Confl. Peds. (#/hr)				12		39	14		9			14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)											0	
Adj. Flow (vph)	0	0	0	105	197	14	157	102	0	0	39	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	105	211	0	0	259	0	0	61	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 38.8% ICU Level of Service A
 Analysis Period (min) 15











Prospect St & Hudson/Dayton St WB
Existing Conditions

AM Peak Model Hudson Street Parking Deck
10/14/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	97	181	13	144	94	0	0	36	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	105	197	14	157	102	0	0	39	22
Pedestrians		14			9			12			39	
Lane Width (ft)		0.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			3	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	631	488	76	486	499	150	75			111		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	631	488	76	486	499	150	75			111		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	76	53	98	90			100		
cM capacity (veh/h)	219	427	975	442	421	861	1524			1468		
Direction, Lane #	WB 1	WB 2	NB 1	SB 1								
Volume Total	105	211	259	61								
Volume Left	105	0	157	0								
Volume Right	0	14	0	22								
cSH	442	436	1524	1700								
Volume to Capacity	0.24	0.48	0.10	0.04								
Queue Length 95th (ft)	23	64	9	0								
Control Delay (s)	15.7	20.7	4.9	0.0								
Lane LOS	C	C	A									
Approach Delay (s)	19.0		4.9	0.0								
Approach LOS	C											
Intersection Summary												
Average Delay			11.5									
Intersection Capacity Utilization			38.8%		ICU Level of Service					A		
Analysis Period (min)			15									

S Broad St & Hudson St
Existing Conditions

PM Peak Model Hudson Street Parking Deck
10/14/2015

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	196	291	288	0	0	577
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1593	1425	1676	0	0	1676
Flt Permitted	0.950					
Satd. Flow (perm)	1593	1425	1676	0	0	1676
Link Speed (mph)	25		25			30
Link Distance (ft)	77		252			301
Travel Time (s)	2.1		6.9			6.8
Confl. Peds. (#/hr)	27	61				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)	0	0	0			0
Adj. Flow (vph)	213	316	313	0	0	627
Shared Lane Traffic (%)						
Lane Group Flow (vph)	213	316	313	0	0	627
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.0% ICU Level of Service A
Analysis Period (min)	15

S Broad St & Hudson St
Existing Conditions

PM Peak Model Hudson Street Parking Deck
10/14/2015

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑			↑
Volume (veh/h)	196	291	288	0	0	577
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	213	316	313	0	0	627
Pedestrians			27			61
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			2			5
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	967	374			313	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	967	374			313	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	23	50			100	
cM capacity (veh/h)	276	638			1247	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1		
Volume Total	213	316	313	627		
Volume Left	213	0	0	0		
Volume Right	0	316	0	0		
cSH	276	638	1700	1700		
Volume to Capacity	0.77	0.50	0.18	0.37		
Queue Length 95th (ft)	146	69	0	0		
Control Delay (s)	51.6	16.1	0.0	0.0		
Lane LOS	F	C				
Approach Delay (s)	30.4		0.0	0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			10.9			
Intersection Capacity Utilization			50.0%	ICU Level of Service		
Analysis Period (min)			15	A		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑			↓
Volume (vph)	0	0	334	164	13	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.956			
Flt Protected						0.997
Satd. Flow (prot)	0	0	1781	0	0	1857
Flt Permitted						0.997
Satd. Flow (perm)	0	0	1781	0	0	1857
Link Speed (mph)	30		25			30
Link Distance (ft)	119		188			74
Travel Time (s)	2.7		5.1			1.7
Confl. Peds. (#/hr)				18	18	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	363	178	14	214
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	541	0	0	228
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 31.5% ICU Level of Service A
 Analysis Period (min) 15

Prospect St & Hudson/Dayton St EB
Existing Conditions

PM Peak Model Hudson Street Parking Deck
10/14/2015



















Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↕			↕
Volume (veh/h)	0	0	334	164	13	197
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	363	178	14	214
Pedestrians	18					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	713	470			559	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	713	470			559	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	393	593			1012	

Direction, Lane #	NB 1	SB 1
Volume Total	541	228
Volume Left	0	14
Volume Right	178	0
cSH	1700	1012
Volume to Capacity	0.32	0.01
Queue Length 95th (ft)	0	1
Control Delay (s)	0.0	0.7
Lane LOS		A
Approach Delay (s)	0.0	0.7
Approach LOS		

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		31.5%	ICU Level of Service A
Analysis Period (min)		15	

Prospect St & Hudson/Dayton St WB
Existing Conditions

PM Peak Model Hudson Street Parking Deck
10/14/2015

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	170	248	36	164	170	0	0	27	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.981						0.927	
Flt Protected				0.950				0.976				
Satd. Flow (prot)	0	0	0	1770	1827	0	0	1818	0	0	1554	0
Flt Permitted				0.950				0.976				
Satd. Flow (perm)	0	0	0	1770	1827	0	0	1818	0	0	1554	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		201			153			74			347	
Travel Time (s)		5.5			4.2			1.7			9.5	
Confl. Peds. (#/hr)				19		49	37					37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)											0	
Adj. Flow (vph)	0	0	0	185	270	39	178	185	0	0	29	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	185	309	0	0	363	0	0	63	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.1%
Analysis Period (min)	15
	ICU Level of Service A

Prospect St & Hudson/Dayton St WB
Existing Conditions

PM Peak Model Hudson Street Parking Deck
10/14/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	170	248	36	164	170	0	0	27	31
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	185	270	39	178	185	0	0	29	34
Pedestrians		37						19			49	
Lane Width (ft)		0.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						2			4	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	847	624	102	606	641	234	100			185		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	847	624	102	606	641	234	100			185		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	49	22	95	88			100		
cM capacity (veh/h)	85	354	938	365	346	772	1493			1390		
Direction, Lane #	WB 1	WB 2	NB 1	SB 1								
Volume Total	185	309	363	63								
Volume Left	185	0	178	0								
Volume Right	0	39	0	34								
cSH	365	372	1493	1700								
Volume to Capacity	0.51	0.83	0.12	0.04								
Queue Length 95th (ft)	68	188	10	0								
Control Delay (s)	24.5	47.7	4.3	0.0								
Lane LOS	C	E	A									
Approach Delay (s)	39.0		4.3	0.0								
Approach LOS	E											
Intersection Summary												
Average Delay			22.7									
Intersection Capacity Utilization			47.1%	ICU Level of Service						A		
Analysis Period (min)			15									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↙	↑	↘	↘	↓
Volume (vph)	60	111	348	0	0	449
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1593	1425	1676	0	0	1676
Flt Permitted	0.950					
Satd. Flow (perm)	1593	1425	1676	0	0	1676
Link Speed (mph)	25		25			30
Link Distance (ft)	255		252			301
Travel Time (s)	7.0		6.9			6.8
Confl. Peds. (#/hr)	14	24				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)	0	0	0			0
Adj. Flow (vph)	65	121	378	0	0	488
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	121	378	0	0	488
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.1%
Analysis Period (min)	15
	ICU Level of Service A

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑			↑
Volume (veh/h)	60	111	348	0	0	449
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	121	378	0	0	488
Pedestrians			14			24
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			1			2
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	880	402			378	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	880	402			378	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	79	81			100	
cM capacity (veh/h)	314	635			1180	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1		
Volume Total	65	121	378	488		
Volume Left	65	0	0	0		
Volume Right	0	121	0	0		
cSH	314	635	1700	1700		
Volume to Capacity	0.21	0.19	0.22	0.29		
Queue Length 95th (ft)	19	17	0	0		
Control Delay (s)	19.5	12.0	0.0	0.0		
Lane LOS	C	B				
Approach Delay (s)	14.6		0.0	0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			39.1%	ICU Level of Service		
Analysis Period (min)			15	A		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↕			↕
Volume (vph)	0	0	258	151	7	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.950			
Flt Protected						0.998
Satd. Flow (prot)	0	0	1770	0	0	1859
Flt Permitted						0.998
Satd. Flow (perm)	0	0	1770	0	0	1859
Link Speed (mph)	30		25			30
Link Distance (ft)	119		188			74
Travel Time (s)	2.7		5.1			1.7
Confl. Peds. (#/hr)				8		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	280	164	8	165
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	444	0	0	173
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.4%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↔			↔
Volume (veh/h)	0	0	258	151	7	152
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	280	164	8	165
Pedestrians	8					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	551	370			453	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	551	370			453	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	492	675			1108	

Direction, Lane #	NB 1	SB 1
Volume Total	445	173
Volume Left	0	8
Volume Right	164	0
cSH	1700	1108
Volume to Capacity	0.26	0.01
Queue Length 95th (ft)	0	1
Control Delay (s)	0.0	0.4
Lane LOS		A
Approach Delay (s)	0.0	0.4
Approach LOS		

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

Prospect St & Hudson/Dayton St WB
2018 Build Conditions

AM Peak Model Hudson Street Parking Deck
10/14/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↗			↖			↗	
Volume (vph)	0	0	0	105	195	14	156	110	0	0	47	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.990						0.952	
Flt Protected				0.950				0.972				
Satd. Flow (prot)	0	0	0	1770	1844	0	0	1811	0	0	1596	0
Flt Permitted				0.950				0.972				
Satd. Flow (perm)	0	0	0	1770	1844	0	0	1811	0	0	1596	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		241			153			74			347	
Travel Time (s)		6.6			4.2			1.7			9.5	
Confl. Peds. (#/hr)				12		40	14		9			14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)											0	
Adj. Flow (vph)	0	0	0	114	212	15	170	120	0	0	51	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	114	227	0	0	290	0	0	79	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.6%
Analysis Period (min)	15
	ICU Level of Service A

Prospect St & Hudson/Dayton St WB
2018 Build Conditions

AM Peak Model Hudson Street Parking Deck
10/14/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	105	195	14	156	110	0	0	47	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	114	212	15	170	120	0	0	51	28
Pedestrians		14			9			12			40	
Lane Width (ft)		0.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			3	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	699	547	91	545	561	169	93			129		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	699	547	91	545	561	169	93			129		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	72	45	98	89			100		
cM capacity (veh/h)	174	391	957	401	384	840	1501			1446		
Direction, Lane #	WB 1	WB 2	NB 1	SB 1								
Volume Total	114	227	289	79								
Volume Left	114	0	170	0								
Volume Right	0	15	0	28								
cSH	401	399	1501	1700								
Volume to Capacity	0.28	0.57	0.11	0.05								
Queue Length 95th (ft)	29	86	10	0								
Control Delay (s)	17.5	25.3	4.9	0.0								
Lane LOS	C	D	A									
Approach Delay (s)	22.7		4.9	0.0								
Approach LOS	C											
Intersection Summary												
Average Delay			12.9									
Intersection Capacity Utilization			40.6%		ICU Level of Service					A		
Analysis Period (min)			15									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	225	291	321	0	0	634
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1593	1425	1676	0	0	1676
Flt Permitted	0.950					
Satd. Flow (perm)	1593	1425	1676	0	0	1676
Link Speed (mph)	25		25			30
Link Distance (ft)	255		252			301
Travel Time (s)	7.0		6.9			6.8
Confl. Peds. (#/hr)	14	24				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)	0	0	0			0
Adj. Flow (vph)	245	316	349	0	0	689
Shared Lane Traffic (%)						
Lane Group Flow (vph)	245	316	349	0	0	689
Sign Control	Stop		Free			Free

Intersection Summary









Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↘	↑			↘
Volume (veh/h)	225	291	321	0	0	634
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	245	316	349	0	0	689
Pedestrians			14			24
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			1			2
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1052	373			349	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1052	373			349	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	1	52			100	
cM capacity (veh/h)	248	660			1210	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	245	316	349	689
Volume Left	245	0	0	0
Volume Right	0	316	0	0
cSH	248	660	1700	1700
Volume to Capacity	0.99	0.48	0.21	0.41
Queue Length 95th (ft)	234	65	0	0
Control Delay (s)	96.8	15.4	0.0	0.0
Lane LOS	F	C		
Approach Delay (s)	50.9		0.0	0.0
Approach LOS	F			

Intersection Summary			
Average Delay		17.8	
Intersection Capacity Utilization		53.0%	ICU Level of Service A
Analysis Period (min)		15	

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	360	177	14	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.956			
Flt Protected						0.997
Satd. Flow (prot)	0	0	1781	0	0	1857
Flt Permitted						0.997
Satd. Flow (perm)	0	0	1781	0	0	1857
Link Speed (mph)	30		25			30
Link Distance (ft)	119		188			74
Travel Time (s)	2.7		5.1			1.7
Confl. Peds. (#/hr)				8		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	391	192	15	237
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	583	0	0	252
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 33.3% ICU Level of Service A
 Analysis Period (min) 15



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↕			↕
Volume (veh/h)	0	0	360	177	14	218
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	391	192	15	237
Pedestrians	8					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	763	496			592	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	763	496			592	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			98	
cM capacity (veh/h)	367	574			984	
Direction, Lane #	NB 1	SB 1				
Volume Total	584	252				
Volume Left	0	15				
Volume Right	192	0				
cSH	1700	984				
Volume to Capacity	0.34	0.02				
Queue Length 95th (ft)	0	1				
Control Delay (s)	0.0	0.7				
Lane LOS		A				
Approach Delay (s)	0.0	0.7				
Approach LOS						
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			33.3%		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												
Volume (vph)	0	0	0	182	267	39	176	191	0	0	37	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frts					0.981						0.927	
Flt Protected				0.950				0.977				
Satd. Flow (prot)	0	0	0	1770	1827	0	0	1820	0	0	1554	0
Flt Permitted				0.950				0.977				
Satd. Flow (perm)	0	0	0	1770	1827	0	0	1820	0	0	1554	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		241			153			74			347	
Travel Time (s)		6.6			4.2			1.7			9.5	
Confl. Peds. (#/hr)				5		11	38		8			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)												0
Adj. Flow (vph)	0	0	0	198	290	42	191	208	0	0	40	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	198	332	0	0	399	0	0	87	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 49.7% ICU Level of Service A
 Analysis Period (min) 15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	182	267	39	176	191	0	0	37	43
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	198	290	42	191	208	0	0	40	47
Pedestrians		38			8			5			11	
Lane Width (ft)		0.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	890	700	107	667	723	227	125			216		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	890	700	107	667	723	227	125			216		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	40	5	95	87			100		
cM capacity (veh/h)	33	314	944	330	304	800	1462			1345		
Direction, Lane #	WB 1	WB 2	NB 1	SB 1								
Volume Total	198	333	399	87								
Volume Left	198	0	191	0								
Volume Right	0	42	0	47								
cSH	330	330	1462	1700								
Volume to Capacity	0.60	1.01	0.13	0.05								
Queue Length 95th (ft)	92	283	11	0								
Control Delay (s)	31.0	87.8	4.4	0.0								
Lane LOS	D	F	A									
Approach Delay (s)	66.6		4.4	0.0								
Approach LOS	F											
Intersection Summary												
Average Delay			36.5									
Intersection Capacity Utilization			49.7%		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												
Volume (vph)	111	0	60	105	0	14	0	110	0	0	47	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.850			0.850								
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1770	0	1583	1770	0	1583	0	1863	0	0	1676	0
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1770	0	1583	1770	0	1583	0	1863	0	0	1676	0
Link Speed (mph)	25				25			30			25	
Link Distance (ft)	241				153			74			347	
Travel Time (s)	6.6				4.2			1.7			9.5	
Confl. Peds. (#/hr)				12			40	14			9	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)												0
Adj. Flow (vph)	121	0	65	114	0	15	0	120	0	0	51	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	121	0	65	114	0	15	0	120	0	0	51	0
Sign Control	Stop			Stop			Free			Free		

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	111	0	60	105	0	14	0	110	0	0	47	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	121	0	65	114	0	15	0	120	0	0	51	0
Pedestrians		14			9			12			40	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			1			3	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240	194	77	257	194	169	65			129		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240	194	77	257	194	169	65			129		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	82	100	93	82	100	98	100			100		
cM capacity (veh/h)	660	688	963	628	688	840	1519			1446		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	121	65	114	15	120	51
Volume Left	121	0	114	0	0	0
Volume Right	0	65	0	15	0	0
cSH	660	963	628	840	1700	1700
Volume to Capacity	0.18	0.07	0.18	0.02	0.07	0.03
Queue Length 95th (ft)	17	5	16	1	0	0
Control Delay (s)	11.7	9.0	12.0	9.4	0.0	0.0
Lane LOS	B	A	B	A		
Approach Delay (s)	10.7		11.7		0.0	0.0
Approach LOS	B		B			

Intersection Summary		
Average Delay		7.2
Intersection Capacity Utilization	34.8%	ICU Level of Service
Analysis Period (min)		15
		A



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	291	0	225	182	0	39	0	191	0	0	37	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.850			0.850								
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1770	0	1583	1770	0	1583	0	1863	0	0	1676	0
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1770	0	1583	1770	0	1583	0	1863	0	0	1676	0
Link Speed (mph)	25				25			30			25	
Link Distance (ft)	241				153			74			347	
Travel Time (s)	6.6				4.2			1.7			9.5	
Confl. Peds. (#/hr)				5	11		38	8				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)												0
Adj. Flow (vph)	316	0	245	198	0	42	0	208	0	0	40	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	316	0	245	198	0	42	0	208	0	0	40	0
Sign Control	Stop			Stop			Free			Free		

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.5%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	291	0	225	182	0	39	0	191	0	0	37	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	316	0	245	198	0	42	0	208	0	0	40	0
Pedestrians		38			8			5			11	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			1			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	339	294	83	505	294	227	78			216		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	339	294	83	505	294	227	78			216		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	42	100	74	42	100	95	100			100		
cM capacity (veh/h)	542	594	941	339	594	800	1472			1345		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	316	245	198	42	208	40
Volume Left	316	0	198	0	0	0
Volume Right	0	245	0	42	0	0
cSH	542	941	339	800	1700	1700
Volume to Capacity	0.58	0.26	0.58	0.05	0.12	0.02
Queue Length 95th (ft)	93	26	88	4	0	0
Control Delay (s)	20.5	10.2	29.4	9.8	0.0	0.0
Lane LOS	C	B	D	A		
Approach Delay (s)	16.0		26.0		0.0	0.0
Approach LOS	C		D			

Intersection Summary		
Average Delay		14.5
Intersection Capacity Utilization	43.5%	ICU Level of Service
Analysis Period (min)		15
		A