



*Traffic and Parking Consultants
Highway and Signal Design*

MICHAEL MARIS ASSOCIATES, INC.

TRAFFIC IMPACT STUDY

PROPOSED RESIDENTIAL PROJECT LINCOLN HARBOR ATIR SITE

Weehawken Township, Hudson County, New Jersey

**Prepared For: Hartz Mountain Industries, Inc.
400 Plaza Drive
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**Project No. 19-221
November 2019**

TABLE OF CONTENTS

SECTION A – INTRODUCTION

PAGE NO.

A-1	PROPOSED PROJECT DESCRIPTION	1
A-2	LINCOLN HARBOR DESCRIPTION	2
A-3	LINCOLN HARBOR DEVELOPMENT HISTORY	3
A-4	SCOPE OF STUDY	3

SECTION B - PARKING ASSESSMENT

B-1	PARKING AVAILABILITY	6
B-2	PARKING DIMENSIONS	7

SECTION C - YEAR 2019 EXISTING AND YEAR 2022 NO-BUILD TRAFFIC VOLUMES

C-1	STUDY LOCATIONS	8
C-2	TRAFFIC COUNTS AND YEAR 2019 EXISTING TRAFFIC VOLUMES	8
C-3	DEVELOPMENTS IN YEAR 2022 NO-BUILD TRAFFIC PROJECTIONS	9
C-4	DESIGN YEAR 2022 NO-BUILD TRAFFIC VOLUMES	13

SECTION D - YEAR 2022 BUILD TRAFFIC VOLUMES

D-1	PROPOSED PROJECT TRIP GENERATIONS AND DISTRIBUTIONS	14
D-2	YEAR 2022 BUILD TRAFFIC VOLUMES	15

SECTION E - TRAFFIC ANALYSES AND FINDINGS

E-1	DESCRIPTION OF ANALYSES	16
E-2	ANALYSES SCENARIOS	17
E-3	ANALYSES FINDINGS	18
E-4	SUMMARY OF CAPACITY ANALYSES FINDINGS	35

SECTION F - PARKING ACCESS AND PORTE COCHERE ASSESSMENT

F-1	PARKING STRUCTURE ACCESS	36
F-2	PORTE COCHERE	37

SECTION G - SUMMARY OF FINDINGS AND CONCLUSIONS

G-1	SUMMARY OF FINDINGS	39
G-2	CONCLUSIONS	40

LIST OF APPENDICES

APPENDIX A: EXHIBITS

Exhibit No. 1	Peak AM Highway Hour - 2019 Existing Traffic Volumes
Exhibit No. 2	Peak PM Highway Hour - 2019 Existing Traffic Volumes
Exhibit No. 3	Port Imperial Arrival/Departure Distributions
Exhibit No. 4	Hoboken Cove & Maxwell Place Arrival/Departure Distributions
Exhibit No. 5	Unoccupied Lincoln Harbor Developments Trip Generations
Exhibit No. 6	800 Harbor Boulevard Arrival Distribution
Exhibit No. 7	800 Harbor Boulevard Departure Distribution
Exhibit No. 8	Pier Residential Arrival Distribution
Exhibit No. 9	Pier Residential Departure Distribution
Exhibit No.10	Grocery Store Arrival Distribution
Exhibit No.11	Grocery Store Departure Distribution
Exhibit No.12	Peak AM Highway Hour – 2022 No-Build Traffic Volumes
Exhibit No.13	Peak PM Highway Hour –2022 No-Build Traffic Volumes
Exhibit No.14	Atir Site Trip Generations
Exhibit No.15	Atir Site Arrival Distribution
Exhibit No.16	Atir Site Departure Distribution
Exhibit No.17	Peak AM Highway Hour – Traffic Volume Projections
Exhibit No.18	Peak PM Highway Hour – Traffic Volume Projections
Exhibit No.19	Peak AM Highway Hour – 2022 Build Traffic Volumes
Exhibit No.20	Peak PM Highway Hour – 2022 Build Traffic Volumes
Exhibit No.21	Waterfront Terrace and 19 th Street Proposed Improvements
Exhibit No.22	Peak AM Highway Hour – Levels of Service Summary
Exhibit No.23	Peak PM Highway Hour – Levels of Service Summary

APPENDIX B: HIGHWAY CAPACITY ANALYSES

- 2019 Existing Traffic Conditions
- 2022 No-Build Traffic Conditions
- 2022 Build Traffic Conditions
- 2022 Build with Improvements Traffic Conditions
- 2022 Build Conditions at Eastern Driveway Intersection

SECTION A
INTRODUCTION



MICHAEL MARIS ASSOCIATES, INC.

SECTION A
INTRODUCTION

A-1 PROPOSED PROJECT DESCRIPTION

Hartz Mountain Industries, Inc. (Hartz) proposes to develop a new residential building (the Project) on a parcel within the Lincoln Harbor development that is generally referred to as the Atir site. This Project will consist of 259 residential units and 321 parking spaces in a parking structure under the residential component. Access to the parking structure will be provided via two driveways from South Harbor Boulevard that will permit entering and exiting traffic and a two-lane Porte Cochere will provide a drop-off and pick-up area for the Project's residents and visitors.

In the vicinity of the Project, South Harbor Boulevard traverses in a generally east-west direction and will be designed to serve two-way traffic east of the Project and only westbound traffic west of the Project. The eastern driveway to the Project will permit all movements at its intersection with South Harbor Boulevard, while the western driveway will be limited to only left turns in and right turns out.

It is noted that the exiting left-turn movement at the western driveway will be prohibited due to the height of transformers to be located just east of the driveway, which would limit the sight distance to the east and impede exiting vehicles from observing westbound traffic. It is also noted that the final location of the transformers will be decided by PSE&G and that the left-turn prohibition could be removed if the transformers are actually placed at a different location and sufficient sight distance is provided.

A-2 LINCOLN HARBOR DESCRIPTION

Lincoln Harbor is a mixed-use development by Hartz that is located along the west shore of the Hudson River in the Township of Weehawken, Hudson County, New Jersey. The development is located near the Lincoln Tunnel and is bounded by the Hudson River to the east, a NJ Transit light rail line to the west, Port Imperial to the north, and Weehawken Cove to the south.

Vehicular ingress and egress for Lincoln Harbor is provided via 19th Street, Baldwin Avenue, and Port Imperial Boulevard. Additional egress is provided by South Harbor Boulevard, a short roadway that connects Harbor Boulevard with southbound Park Avenue at 16th Street. In addition to the vehicular access, Lincoln Harbor is served by several other modes of transportation that minimize the use of private vehicles, including the NJ Transit light rail system, which has a station within the complex, NJ Transit buses with several on-site stops, and ferry service to New York City.

A-3 LINCOLN HARBOR DEVELOPMENT HISTORY

The initial approval for Lincoln Harbor contemplated a three-phase, mixed-use development totaling 2,823,000 square feet (sf). Phase I would consist of 1,750,000 sf of office, retail, restaurant, residential and hotel space, Phase II would consist of 814,000 sf of office space, and Phase III would consist of an additional 259,000 sf of office and hotel space.

The Lincoln Harbor approved development plan has been modified over the years and the following development components have been constructed and occupied or were recently approved and are under construction:

1. Phase I was modified to include approximately 1,250,000 sf of office space, some retail/restaurant space, the 245-unit Riva Pointe residential development, a marina and a hotel. These development components have been constructed and are occupied.
2. Subsequent applications and approvals have resulted in the following changes to the development components:
 - a. The Phase III office space was eliminated and replaced with the Estuary, a 584-unit residential complex with a small amount of retail space. This development component has also been constructed and is occupied.
 - b. 1500 Harbor Boulevard, a residential complex of 247 units on a pier adjacent to the marina on a site previously occupied by a three-story office building was recently constructed but has not yet been occupied.
 - c. Phase I included a 155,000-sf data center that was subsequently demolished and replaced by 800 Harbor Boulevard, a residential complex consisting of 593 rental units and 1,500 sf of retail space. This building was approved in 2017 and is currently under construction.
 - d. 1400 Harbor Boulevard, a 29,000-sf grocery store, was also approved in 2017 and is being constructed along with an expansion of the parking deck. This building is located on a parcel near the Estuary that was previously part of the approved Phase II development.

A-4 SCOPE OF STUDY

Michael Maris Associates, Inc. (MMA) has been working with Hartz on the development of Lincoln Harbor since its early planning stages and has performed traffic and parking studies for many of its components. MMA was previously retained to assess the parking sufficiency and perform a Traffic Impact Study (TIS) for a larger Project on the Atir site. The Project was subsequently reduced, and MMA was requested to update the TIS to identify the existing and future traffic conditions in the area under the current Project. The following tasks were performed during the preparation of this TIS:

1. The Project's parking requirements were estimated using accepted data and compared to the proposed number of parking spaces.
2. The Study Locations to be analyzed for capacity were identified based on past experience and knowledge of the area.
3. Turning movement traffic counts were performed at the Study Locations during the peak morning and evening commuter periods of a typical weekday in order to identify the Year 2019 Existing Traffic Volumes during the busiest hours of the day.
4. The Design Year 2022 No-Build Traffic Volumes (without the Project) were estimated by increasing the Year 2019 Existing Traffic Volumes by an appropriate annual traffic growth rate and by adding the trip generations of previously approved components of Lincoln Harbor, as well as approved residential buildings at Maxwell Place and Hoboken Cove in Hoboken and anticipated development at Port Imperial.

5. The traffic generations of the Project were estimated using accepted data and added to the No-Build Traffic Volumes, resulting in the 2022 Build Traffic Volumes.
6. The Existing, No-Build and Build Traffic Volumes were compared to the existing intersection capacities in order to identify the existing and future traffic flow conditions and potential traffic delay locations.
7. Where the analyses indicated existing or future traffic delays, feasible improvements were identified, and additional analyses were performed to identify traffic conditions with the improvements.
8. Traffic conditions at the Project's parking access and Porte Cochere were analyzed for adequacy.

SECTION B
PARKING ASSESSMENT

SECTION B
PARKING ASSESSMENT

B-1 PARKING AVAILABILITY

The Project's parking needs were estimated in order to determine whether it will have sufficient parking using data published by the Institute of Transportation Engineers (ITE) in a publication entitled Parking Generation, 5th Edition. The ITE publication provides parking demand rates based on surveys at existing residential developments that can be applied to proposed developments to estimate their parking needs.

ITE parking demand rates for Land Use Code 222 "Multifamily Housing (High-Rise)" were used to estimate the parking needs of the Project and, in order to be conservatively high, the rates for "Occupied Dwelling Units, General Urban/Suburban (no nearby rail transit)" were used. These ITE rates show that the surveyed developments had a peak period parking demand averaging 1.01 parking spaces per occupied unit. Application of the Average rate to the proposed 259 residential units, assuming full occupancy, indicates that the Project will require 262 parking spaces. Since 321 parking spaces are proposed, it is concluded that there will be more than sufficient parking to serve the Project's needs.

It is important to note that a survey of the residents at the existing Estuary residential building in Lincoln Harbor determined that most residents work in New York City and use mass transit (bus, light rail and ferry) to/from work. While it would have been appropriate to assume that many residents of the Project will also take advantage of the available mass transit and not own any vehicles, the parking estimate for the Project presented above does not reflect any mass transit reductions.

B-2 PARKING DIMENSIONS

The proposed parking spaces for the Project would be 8'-6" wide and 18'-0" long, whereas the Ordinance requires 9'-0" wide and 19'-0" long spaces. Available data was researched in order to determine whether the proposed parking space dimensions will be adequate.

A publication by the Urban Land Institute and the National Parking Association entitled Parking Dimensions, Fifth Edition identifies recommended minimum widths and lengths for parking spaces based on their anticipated turnover rates and proposed use. This publication recommends parking space widths for low turnover developments ranging between 8'-3" and 8'-6" and a parking space length of 18'-0". It is MMA's opinion that parking spaces in residential buildings have a low turnover rate since residents typically enter and exit parking spaces infrequently and, based on the publication, it is concluded that the proposed parking space dimensions will be adequate.

SECTION C

YEAR 2019 EXISTING AND YEAR 2022 NO-BUILD TRAFFIC VOLUMES

SECTION C

YEAR 2019 EXISTING AND YEAR 2022 NO-BUILD TRAFFIC VOLUMES

C-1 STUDY LOCATIONS

Based on extensive knowledge of Lincoln Harbor and traffic conditions in the surrounding area, the following Study Locations were analyzed in order to identify the potential traffic impact of the Proposed Project:

- Willow Avenue and 16th Street
- Park Avenue and 16th Street
- Hackensack Plank Road and 19th Street
- Willow Avenue and 19th Street
- Park Avenue and 19th Street
- 19th Street and Parking Deck Ramp
- 19th Street and Waterfront Terrace
- Baldwin Avenue/Harbor Boulevard and Port Imperial Boulevard/Waterfront Terrace
- JFK Boulevard and Baldwin Avenue

C-2 TRAFFIC COUNTS AND YEAR 2019 EXISTING TRAFFIC VOLUMES

Turning movement traffic counts were performed during the peak commuter periods on Tuesday, March 5, 2019 from 6:30 through 9:30 AM and from 4:00 through 7:00 PM. A summary of the traffic counts shows that the highest one-hour traffic volumes during the morning commuter period were counted between 7:15 and 8:15 AM (Peak AM Highway Hour) and the highest one-hour traffic volumes during the evening commuter period were counted between 4:45 and 5:45 PM (Peak PM Highway Hour).

It is noted that South Harbor Boulevard was closed to the public at the time of the traffic counts due to ongoing construction. Since prior traffic counts show that this roadway is used by many drivers destined to the south in order to bypass the busy intersections of 19th Street with Park and Willow Avenues, it was necessary to adjust the counted volumes using the prior traffic count data to reflect the expected traffic volumes when the roadway is reopened. The resulting Existing Traffic Volumes during the Peak AM and PM Highway Hours are presented on Exhibits No. 1 and 2 in Appendix A of this report.

The following is noted regarding the counted traffic volumes with the South Harbor Boulevard closure:

- The roadway closure only affected the traffic volumes through some of the intersections and the traffic volumes at the affected intersections were adjusted based on traffic count data collected in 2016 when Harbor Boulevard was open.
- The findings of the capacity Analyses described in a subsequent Section of this report are very similar to the findings of a TIS performed in 2016.
- Hartz has agreed to perform new traffic counts at the 19th Street and Waterfront Terrace intersection when the South Harbor Boulevard is reopened and to analyze traffic conditions with the new traffic volumes.

C-3 DEVELOPMENTS IN YEAR 2022 NO-BUILD TRAFFIC PROJECTIONS

It is anticipated that the Project will be constructed and occupied by the Design Year 2022. The Year 2022 No-Build Traffic Volumes were estimated by increasing the Year 2019 Existing Traffic Volumes by an annual growth rate of two percent (six percent total). This rate is based on the Annual Background Growth Table published by the New Jersey Department

of Transportation (NJDOT) which shows that traffic projections for Urban Local roadways in Hudson County should be made based on an annual growth rate of two percent.

In addition to the application of an annual growth rate, the trip generations of the following developments, which were not occupied when the traffic counts were performed, were estimated and added to the increased traffic volumes:

1. **Areawide Developments**

Three large residential developments in the area have been under construction for a number of years, including Port Imperial, Hoboken Cove and Maxwell Place. These developments have components that are expected to be constructed and occupied by the Design Year 2022. Since some of their traffic generations are estimated to pass through one or more of the Study Locations, the following additional trip generations were added to the No-Build Traffic Projections:

a. **Port Imperial Trip Generations**

Port Imperial is situated to the north of Lincoln Harbor and is an on-going development that has been constructed in stages and, when completed, is expected to exceed 4,000 residential units. While most units have been constructed and occupied, for this study it was assumed that 500 additional units will be occupied by the Design Year.

Per trip generation rates published by the ITE in its publication entitled Trip Generation, 10th Edition, "Multifamily Housing (High-Rise)" and a 50-percent mass

transit use, the 500 units are estimated to generate 76 new trips (18 arriving/58 departing) during the Peak AM Highway Hour and 89 new trips (54 arriving/35 departing) during the Peak PM Highway Hour. It is estimated that approximately 25 percent of these generations will be oriented to and from the south and pass through the Study Locations, as shown on the attached Exhibit No 3 in Appendix A.

b. Hoboken Cove Building D Trip Generations

Building D at Hoboken Cove is located south of 15th Street and east of Hudson Street in Hoboken. The building will consist of 99 rental units and 4,100 sf of retail space.

The Traffic Impact Study for Harmon Cove Building D show that, after reductions for mass transit use and internal trips, it will generate 26 new trips (7 arriving/19 departing) during the Peak AM Highway Hour and 34 new trips (21 arriving/13 departing) during the Peak PM Highway Hour. The study also shows that approximately 30 percent of the Building's generations will be oriented to and from the north and pass through the Study Locations as shown on Exhibit No 4 in Appendix A.

c. Maxwell Place Building D Trip Generations

Building D at Maxwell Place is located south of 11th Street and east of Hudson Street in Hoboken and will consist of 58 residential units, approximately 113,000 sf of office space and 17,000 sf of retail space.

The Traffic Impact Study for Maxwell Building D estimated that, after reductions for mass transit use and internal trips, it will generate 136 new trips (108 arriving/28

departing) during the Peak AM Highway Hour and 192 new trips (63 arriving/129 departing) during the Peak PM Highway Hour. It is estimated that these trips will also pass through the Study Locations as shown on Exhibit No 4.

2. Lincoln Harbor Approved Developments

Three developments within Lincoln Harbor have been approved but were not occupied when the traffic counts were performed. Therefore, the following trip generations were also added to the traffic projections:

a. 800 Harbor Boulevard Trip Generations

800 Harbor Boulevard will consist of 593 residential units. Details regarding its trip generations are presented in Exhibit No. 5, which shows that, after reductions for mass transit use, it will generate 92 and 110 new trips during the Peak AM and PM Highway Hours, respectively. The Arrival and Departure Distributions of these trip generations are shown on Exhibits No. 6 and 7 in Appendix A.

b. 1500 Harbor Boulevard (Pier Residential) Trip Generations

1500 Harbor Boulevard will consist of 247 residential units with on-site parking. Details regarding its trip generations are also presented in Exhibit No. 5, which shows that, after reductions for mass transit use, it will generate 42 and 54 new trips during the Peak AM and PM Highway Hours, respectively. The Arrival/Departure Distribution of these trip generations are shown on Exhibits No. 8 and 9 in Appendix A.

c. 1450 Harbor Boulevard (Grocery Store) Trip Generations

1450 Harbor Boulevard will consist of a 29,000-sf grocery store. Details regarding its trip generations are also presented in Exhibit No. 5, which shows that, after reductions, it will generate 45 and 124 new trips during the Peak AM and PM Highway Hours, respectively. The Arrival and Departure Distributions of these trip generations are shown on Exhibits No. 10 and 11 in Appendix A.

C-4 DESIGN YEAR 2022 NO-BUILD TRAFFIC VOLUMES

Application of the annual growth rate to the 2019 Existing Traffic Volumes and addition of the approved development's traffic generations resulted in the Year 2022 No-Build Traffic Volumes presented on Exhibits No. 12 and 13 in Appendix A.

SECTION D
YEAR 2022 BUILD TRAFFIC VOLUMES

SECTION D
YEAR 2022 BUILD TRAFFIC VOLUMES

D-1 PROJECT TRIP GENERATIONS AND DISTRIBUTIONS

1. Trip Generations

The trip generations of the Project were estimated based on trip generation data contained in ITE's publication entitled Trip Generation, 10th Edition. Based on ITE rates for LUC 222 "Multifamily Housing (High-Rise)", reduced by 25 percent to account for light rail, bus and ferry service use, it is estimated that the it will generate 64 new trips during Peak AM Highway Hour and 73 new trips during Peak PM Highway Hour. Details regarding the trip generation estimates are presented in Exhibit No. 14 in Appendix A.

It is noted that a 25 percent reduction is considered conservatively low since a survey of the Estuary residents determined that approximately 80 percent work in New York City and use mass transit to/from work. Those survey results are consistent with traffic counts and field observations at the Estuary performed by MMA.

2. Trip Distributions

The overall orientation of the Project's trip generations was estimated based on past experience and knowledge of the Lincoln Harbor area traffic flow and an assessment of the existing traffic volumes in the area. This assessment indicated the following general orientations:

<u>Route</u>	<u>Percent</u>
Port Imperial Boulevard to/from the north	40
JFK Boulevard to/from the north	5
Hackensack Avenue to/from the north and west	10
I-495 to/from the west	15
Willow Avenue to/from the north	5
Willow Avenue to/from the south	5
Park Avenue to/from the south	20

The above trip orientations were used to identify the Arrival and Departure Distributions of the Project's trips through the Study Locations shown on Exhibits No. 15 and 16 in Appendix A.

D-2 YEAR 2022 BUILD TRAFFIC VOLUMES

The Project's trip generations were distributed through the Study Locations based on the Arrival/Departure Distributions and added to the No-Build Traffic Volumes as shown in the projection tables in Exhibits 17 and 18 in Appendix A. The resulting Year 2022 Build Traffic Volumes are shown on Exhibits No. 19 and 20 in Appendix A.

SECTION E

TRAFFIC ANALYSES AND FINDINGS

SECTION E
TRAFFIC ANALYSES AND FINDINGS

E-1 DESCRIPTION OF ANALYSES

Capacity Analyses were performed using HCS 2010 software to evaluate the traffic conditions at each of the Study Locations. The methodology and terminology used in the Capacity Analyses are described in the "Highway Capacity Manual" published by the Transportation Research Board, which establishes a system by which roadways are analyzed for their ability to serve traffic volumes.

1. Signalized Intersections

For signalized intersections, Level of Service is defined in terms of delay, which is a measure of loss of travel time and Level of Service criteria is stated in terms of the Average Control Delay per vehicle for the peak 15-minute period within the hour analyzed. Delay is dependent on several factors, including width and number of lanes, turning volumes, truck volumes, Green time to Cycle Length Ratios, etc. The criteria for the various Level of Service designations are summarized in the following Table:

<u>Level of Service</u>	<u>Description</u>	<u>Average Delay Per Vehicle (seconds)</u>
A	Free Flow	10.0 or less
B	Mostly Free Flow	10.1 to 20.0
C	Somewhat Restricted	20.1 to 35.0
D	Some short Delays	35.1 to 55.0
E	At Capacity	55.1 to 80.0
F	Congestion	80.1 or greater

2. Unsignalized Intersection

Main roadway volumes are of great significance to the capacity of the minor cross street since unsignalized intersection analyses are based on the gap acceptance theory, which relies on the size and distribution of gaps in the major traffic stream, the usefulness of the gaps to the minor stream drivers, and the relative priority of the various traffic streams. Level of Service criteria is stated in terms of the Average Control Delay per vehicle for the peak 15-minute period within the hour per the following Level of Service designations:

Level of Service	Expected Delay to Minor Street Traffic	Average Total Delay (sec/veh)
a	Little or no delay	10.0 or Less
b	Short traffic delays	10.1 to 15.0
c	Average traffic delays	15.1 to 25.0
d	Long traffic delays	25.1 to 35.0
e	Very long traffic delays	35.1 to 50.0
f	Demand exceeds Capacity	50.1 or greater

E-2 ANALYSES SCENARIOS

Three sets of Capacity Analyses were performed in order to define the impact of the Project. The first set compared the intersection capacities to the Year 2019 Existing Traffic Volumes, the second set the intersection capacities to the Year 2022 No-Build Traffic Volumes and the third set the intersection capacities to the Year 2022 Build Traffic Volumes. Where the analyses indicated existing or potential traffic delays, a fourth set of Capacity Analyses was performed to identify feasible improvements and traffic conditions with the improvements. Copies of the Capacity Analyses printouts are included in Appendix B of this report.

E-3 ANALYSES FINDINGS

Following are brief summaries of the intersection geometries and traffic controls, as well as the findings of the Capacity Analyses:

1. Willow Avenue and 16th Street

a. Intersection Geometry

Willow Avenue forms the north and south legs and 16th Street the east and west legs of the intersection. Both Willow Avenue approaches to the intersection consist of two through lanes permitting left and right turns. 16th Street serves only eastbound traffic and its approach consists of one travel lane with parking permitted along both sides of the roadway. The intersection traffic is controlled by a two-phase traffic signal.

b. Year 2019 Existing Traffic Conditions

Capacity Analyses with the Year 2019 Existing Traffic Volumes show that the intersection and its approaches operate at acceptable traffic flow conditions during both Peak Hours analyzed.

c. Year 2022 No-Build Traffic Conditions

Capacity Analyses with the Year 2022 No-Build Traffic Volumes show that the intersection and its approaches will continue to operate at acceptable traffic flow conditions during both Peak Hours.

d. **Year 2022 Build Traffic Conditions**

The Build Traffic Projections show that this intersection will serve 2,056 and 1,968 vehicle trips during the Peak AM and PM Highway Hours, respectively. Of these trips, only 3 trips will be added by the Project, representing less than one percent (about 0.0015) of the total intersection traffic volumes.

Capacity Analyses with the Year 2022 Build Traffic Volumes indicate that the relatively small amount of traffic to be added by the Project will not have a significant impact and that the intersection will continue to operate similar to the No-Build Traffic Conditions.

2. **Park Avenue, South Harbor Boulevard and 16th Street**

a. **Intersection Geometry**

Park Avenue forms the north and south legs and 16th Street the west leg of this intersection. South Harbor Boulevard traverses under Park Avenue and merges with southbound Park Avenue at the intersection. All approaches to the intersection consist of one lane and traffic is controlled by a three-phase traffic signal that provides a separate signal phase for the South Harbor Boulevard approach.

b. **Year 2019 Existing Traffic Conditions**

The Capacity Analysis software does not accept two separate southbound phases, as is the case at this intersection. Therefore, in the Capacity Analyses, the South Harbor

Boulevard approach, which operates concurrently with northbound Park Avenue, was analyzed as a northbound left-turn movement with a separate phase.

Capacity Analyses with the Year 2019 Existing Traffic Volumes indicate that the Park Avenue and 16th Street approaches operate at acceptable traffic flow conditions during both Peak Hours. However, the South Harbor Boulevard approach experiences delays during the Peak Hours.

c. Year 2022 No-Build Traffic Conditions

Capacity Analyses with the Year 2022 No-Build Traffic Volumes indicate that the intersection will continue to operate at the Existing Traffic Conditions, although the delays on the South Harbor Boulevard approach will increase.

d. Year 2022 Build Traffic Conditions

The Build Traffic Projections show that this intersection will serve 1,759 and 2,003 vehicle trips during the Peak AM and PM Highway Hours, respectively. Of these trips, 13 and 15 trips will be added by the Project during the Peak AM and PM Highway Hours, respectively, representing less than one percent (about 0.0075) of the total intersection traffic volumes.

Capacity Analyses with the Year 2022 Build Traffic Volumes indicate that the relatively small amount of traffic to be added by the Project will not have a significant impact and that the intersection will continue to operate similar to the No-Build Traffic Conditions.

e. **Potential Improvements**

Additional Capacity Analyses were performed to determine whether the delays on the South Harbor Boulevard approach, which is allotted 16 seconds of green time, could be eliminated by increasing the allotted green time. While those Analyses show that the delays could be eliminated, increasing the South Harbor Boulevard green time would reduce the green time allotted to the 16th Street and Park Avenue approaches and create delays on these approaches. Therefore, timing changes are not recommended.

Widening of the intersection approaches was also considered. However, widening was not determined to be feasible for the following reasons:

- Capacity Analyses reflecting widening of the 16th Street approach to provide separate left-turn and right-turn lanes show that it would not eliminate the delays without adjustment of the signal timing.
- Widening of Park Avenue is not feasible because the intersection is too close to the bridge structure over the railroad tracks.
- Widening of South Harbor Boulevard to two lanes is also not feasible since southbound Park Avenue has only one receiving lane.

3. 19th Street and Hackensack Avenue

a. Intersection Geometry

19th Street forms the east leg and Hackensack Avenue the north and south legs of the intersection. The westbound approach consists of a left-turn lane and a channelized right-turn lane and the northbound and southbound approaches consist of one travel lane and parking. A blinking yellow light facing the southbound approach and blinking red lights facing the northbound and westbound approaches control traffic.

b. Year 2019 Existing Traffic Conditions

Capacity Analyses with the Year 2019 Existing Traffic Volumes indicate that most traffic movements operate at acceptable traffic flow conditions, except for the westbound left-turn movement, which experiences long delays during the Peak AM Highway Hour, primarily due to the high southbound traffic volumes.

c. Year 2022 No-Build Traffic Conditions

Capacity Analyses with the Year 2022 No-Build Traffic Volumes indicate that the intersection will continue to operate similar to the Existing Traffic Conditions.

d. Year 2022 Build Traffic Conditions

The Build Traffic Projections show that this intersection will serve 1,036 and 1,172 vehicle trips during the Peak AM and PM Highway Hours, respectively. Of these trips,

about 7 trips will be added by the Project, representing less than one percent (about 0.007) of the total intersection traffic volumes.

Capacity Analyses with the Year 2022 Build Traffic Volumes indicate that the relatively small amount of traffic to be added by the Project will not have a significant impact and that the intersection will continue to operate similar to the No-Build Traffic Conditions.

e. **Potential Improvements**

The delays experienced by the westbound left turns on 19th Street could be eliminated by a full traffic signal control. However, full traffic signal control is not suggested due to the downgrade of the southbound Hackensack Avenue approach and potential problems during snow and icy conditions. It is noted that the left-turn volume on 19th Street is very low. It is also noted that, based on the existing signal heads, it appears that full signal control existed in the past and that the signal was de-activated.

4. **19th Street and Willow Avenue**

a. **Intersection Geometry**

19th Street forms the east and west legs and Willow Avenue the north and south legs of the intersection. The eastbound approach consists of three lanes permitting left and right turns and the westbound approach consists of one left-turn lane, one through lane and two channelized right-turn lanes. The northbound approach consists of three lanes permitting left and right turns and the southbound approach consists of two

lanes permitting left and right turns. Traffic through the intersection is controlled by a three-phase traffic signal that provides separate phases for the northbound and southbound approaches.

b. Year 2019 Existing Traffic Conditions

Capacity Analyses with the Year 2019 Existing Traffic Volumes indicate that the left-turn movement on the westbound approach to the intersection experiences long delays during the Peak AM Highway Hour and that the other movements operate within capacity limits. It is noted that the Capacity Analyses findings are based on the counted traffic volumes through this intersection that may have been metered by conditions at the Lincoln Tunnel, in which case the demand volumes could be higher than the counted volumes. It is also noted that the intersection conditions are substantially better during off-peak periods when the Tunnel traffic is lower.

c. Year 2022 No-Build Traffic Conditions

Capacity Analyses with the Year 2022 No-Build Traffic Volumes indicate that the intersection and its traffic movements will operate similar to the Existing Traffic Conditions.

d. 2022 Build Traffic Conditions

The Build Traffic Projections show that this intersection will serve 2,969 and 2,972 vehicle trips during the Peak AM and PM Highway Hours, respectively. Of these trips, 13 and 15 trips will be added by the Project during the Peak AM and PM Highway

Hours, respectively, representing less than one percent (about 0.005) of the total intersection traffic volumes.

Capacity Analyses with the Year 2022 Build Traffic Volumes indicate that the relatively small amount of traffic to be added by the Project will not have a significant impact and that the intersection will operate similar to the No-Build Traffic Conditions.

e. Potential Improvements

Alternate signal phasing and timings were considered and analyzed. Those analyses did not find any signal modification that would eliminate the delays without causing delays on other approaches. Intersection widening was also considered. However, the intersection has been widened in the past and there does not appear to be available right-of-way for further widening. Therefore, no changes are recommended.

5. 19th Street and Park Avenue

a. Intersection Geometry

19th Street forms the east and west legs and Park Avenue the north and south legs of the intersection. The eastbound approach consists of three lanes permitting left and right turns and the westbound approach consists of three lanes permitting left turns and one channelized right-turn lane. The northbound approach consists of two lanes permitting left and right turns and the southbound approach consists of one left-turn lane, one through lane and one right-turn lane. Traffic through the intersection is

controlled by a four-phase traffic signal that includes advance phases for the eastbound and southbound approaches.

b. Year 2019 Existing Traffic Conditions

Capacity Analyses with the Year 2019 Existing Traffic Volumes indicate that the left-turn movement on the northbound approach to the intersection experiences long delays during the Peak PM Highway Hour and that the other movements operate within capacity limits.

Similar to the 19th Street and Willow Avenue intersection, the counted traffic volumes through this intersection may also have been metered by conditions at the Lincoln Tunnel and the demand volumes may have been higher. Also, traffic conditions at this intersection are substantially better during off-peak periods when the Tunnel traffic is much lower.

c. Year 2022 No-Build Traffic Conditions

Capacity Analyses with the Year 2022 No-Build Traffic Volumes indicate that the intersection will to operate similar to the Existing Traffic Conditions during the Peak Hours.

d. Year 2022 Build Traffic Conditions

The Build Traffic Projections show that this intersection will serve 2,620 and 3,133 vehicle trips during the Peak AM and PM Highway Hours, respectively. Of these trips,

16 and 24 trips will be added by the Project during the Peak AM and PM Highway Hours, respectively, representing less than one percent (about 0.007) of the total intersection traffic volumes.

Capacity Analyses with the Year 2022 Build Traffic Volumes indicate that the relatively small amount of traffic to be added by the Project will not have a significant impact and that the intersection will operate similar to the No-Build Traffic Conditions.

e. Potential Improvements

Similar to the 19th Street and Willow Avenue intersection, alternate signal phasing and timing were analyzed, as was intersection widening. However, the analyses did not find any signal modification that would eliminate all the delays and intersection widening was not deemed feasible due to right-of-way constraints. Therefore, no changes are recommended.

6. 19th Street and Lincoln Harbor Road (Parking Deck Ramp)

a. Intersection Geometry

19th Street forms the east and west legs and Lincoln Harbor Road (ramp to the parking deck) the north leg of the intersection. This intersection is located approximately 100 feet west of a light rail crossing of 19th Street. The eastbound 19th Street approach consists of two channelized left-turn lanes onto the garage ramp and two through lanes, the westbound 19th Street consists of two through lanes and the ramp southbound approach consists of two right-turn lanes.

Traffic through the intersection is controlled by a two-phase traffic signal, with one phase permitting the eastbound left-turn and through movements concurrently with the southbound right-turn movement and a second phase permitting the eastbound and westbound through movements. The traffic signal is coordinated with a traffic signal that controls the light rail crossing.

b. Year 2019 Existing Traffic Conditions

The Capacity Analysis software accept approaches that permit only right turns, as is the case at this intersection, and suggests that a through movement be added with "0" traffic volume. Therefore, the Capacity Analyses for this intersection were performed assuming a southbound through movement with "0" traffic and a southbound phase with only one second of green time. Since the southbound through phase was limited to only one second, the Capacity Analyses findings are considered to be accurate.

The Capacity Analyses with the Year 2019 Existing Traffic Volumes indicate that all approaches to the intersection operate at acceptable conditions during both Peak Hours. It is noted that traffic flow through this intersection can be delayed during light rail crossings of 19th Street.

c. Year 2022 No-Build Traffic Conditions

Capacity Analyses with the Year 2022 No-Build Traffic Volumes indicate that the intersection and all movements will operate similar to the Existing Traffic Conditions.

d. Year 2022 Build Traffic Conditions

The Build Traffic Projections show that this intersection will serve 1,370 and 1,591 vehicle trips during the Peak AM and PM Highway Hours, respectively. Of these trips, 16 and 24 trips will be added by the Project during the Peak AM and PM Highway Hours, respectively, representing about one and one-half percent (about 0.0151) of the total intersection traffic volumes.

Capacity Analyses with the Year 2022 Build Traffic Volumes indicate that the relatively small amount of traffic to be added by the Project will not have a significant impact and that the intersection and all movements will operate similar to the No-Build Traffic Conditions.

7. 19th Street and Waterfront Terrace

a. Intersection Geometry

19th Street forms the east and west legs and Waterfront Terrace the north leg of the intersection. This intersection is located just east of the light rail crossing of 19th Street. The eastbound approach to the intersection consists of two lanes permitting left turns, the westbound approach consists of one through lane and one right-turn lane, and the southbound approach consists of one left-turn lane and one right-turn lane. Traffic through the intersection is controlled by a two-phase traffic signal that is coordinated with the signal at the light rail crossing.

b. Year 2019 Existing Traffic Conditions

As noted previously, the Capacity Analysis software does not accept an approach that permits only left and right turns. Therefore, in the Capacity Analyses for this intersection, the southbound Waterfront Terrace approach was analyzed with a through movement serving "0" traffic. Since "0" traffic was added, the Capacity Analyses findings are accurate and acceptable.

The Capacity Analyses with the Year 2019 Existing Traffic Volumes show that all approaches operate at acceptable conditions. However, due to the temporary closure of South Harbor Boulevard, it is believed that drivers have modified their routes and that the counted intersection volumes may not be representative of typical conditions.

Analyses of this intersection performed as part of prior studies identified long delays on the Waterfront Terrace approach and recommended the improvements shown on the attached Exhibit No. 21 in Appendix A. As previously noted, Hartz has agreed to perform new traffic counts after South Harbor Boulevard is reopened.

c. Year 2022 No-Build Traffic Conditions

Capacity Analyses with the Year 2022 No-Build Traffic Volumes using the current intersection geometry indicate that, without any improvements, the traffic generations of the other developments will have an impact and cause the eastbound left-turn movement to experience delays during the Peak PM Highway Hour.

d. **Year 2022 Build Traffic Conditions**

The Build Traffic Projections show that this intersection will serve 1,584 and 1,697 vehicle trips during the Peak AM and PM Highway Hours, respectively. Of these trips, 36 and 46 trips will be added by the Project during the Peak AM and PM Highway Hours, respectively, representing less than three percent (about 0.0271) of the total intersection traffic volumes.

Capacity Analyses with the Year 2022 Build Traffic Volumes and no improvements indicate that the relatively small amount of traffic to be added by the Project will not have a significant impact and that the intersection will operate similar to the No-Build Traffic Conditions.

e. **Potential Improvements**

Since the closure of South Harbor Boulevard apparently impacts the intersection traffic volumes, it is recommended that traffic counts be performed after South Harbor Boulevard is reopened and to continue working with the Township's traffic consultant to reach an agreement regarding what improvements should be implemented.

8. **Waterfront Ter./Port Imperial Blvd. and Baldwin Ave./Harbor Blvd.**

a. **Intersection Geometry**

Port Imperial Boulevard forms the north leg, Harbor Boulevard the east leg, Waterfront Terrace the south leg and Baldwin Avenue the west leg of this intersection. The

southbound and northbound approaches consist of two through lanes that permit right turns and one left-turn lane, the eastbound approach consists of one left-turn lane and one through/left-turn/right-turn lane and the westbound approach consists of one right-turn lane and one through/left-turn lane. The intersection traffic is controlled by a four-phase traffic signal that includes an advance southbound phase and separate east and west phases.

b. Year 2019 Existing Traffic Conditions

Capacity Analyses with the Year 2019 Existing Traffic Volumes show that most movements through the intersection operate at acceptable conditions, although the eastbound left-turn movement experiences long delays during the Peak PM Hour.

c. Year 2022 No-Build Traffic Conditions

Capacity Analyses with the Year 2022 No-Build Traffic Volumes and no improvement indicate similar traffic flow as the No-Build Traffic Conditions.

d. Year 2022 Build Traffic Conditions

The Build Traffic Projections show that this intersection will serve 2,299 and 2,312 vehicle trips during the Peak AM and PM Highway Hours, respectively. Of these trips, 38 and 43 trips will be added by the Project during the Peak AM and PM Highway Hours, respectively, representing less than two percent (about 0.0186) of the total intersection traffic volumes.

Capacity Analyses with the Year 2022 Build Traffic Volumes indicate that the relatively small amount of traffic to be added by the Project will not have a significant impact and that the intersection will continue to operate similar to the No-Build Traffic Conditions.

e. Potential Improvements

Additional Capacity Analyses were performed to determine whether improvements could be implemented to reduce or eliminate the delays. Those analyses show that modification of the signal phasing to add a separate phase for the northbound and southbound left-turn movements, combined with an increase of the green time allotted to the eastbound approach, would eliminate the long delays and provide acceptable traffic flow conditions for all movements.

9. JFK Boulevard and Baldwin Avenue

a. Intersection Geometry

JFK Boulevard forms the north and south legs and Baldwin Avenue the east leg of the intersection. The northbound approach consists of two lanes permitting right turns, the southbound approach consists of one left-turn lane and three through lanes, and the westbound approach consists of one left-turn lane and one right-turn lane. The intersection traffic is controlled by a three-phase traffic signal that includes an advance southbound phase.

b. Year 2019 Existing Traffic Conditions

Capacity Analyses with the Year 2019 Existing Traffic Volumes indicate that the westbound approach experiences long delays during both Peak Hours.

c. Year 2022 No-Build Traffic Conditions

Capacity Analyses with the Year 2022 No-Build Traffic Volumes indicate that, without any improvement, all movements through the intersection will operate similar to the Existing Traffic Conditions.

d. Year 2022 Build Traffic Conditions

The Build Traffic Projections show that this intersection will serve 2,622 and 2,263 vehicle trips during the Peak AM and PM Highway Hours, respectively. Of these trips, 13 and 15 trips will be added by the Project during the Peak AM and PM Highway Hours, respectively, representing less than one percent (about 0.0067) of the total intersection traffic volumes.

Capacity Analyses with the Year 2022 Build Traffic Volumes indicate that the relatively small amount of traffic to be added by the Project will not have a significant impact and that the intersection will continue to operate similar to the No-Build Traffic Conditions.

e. Recommended Improvements

Additional Capacity Analyses were performed to determine whether improvements could be implemented to eliminate the delays. Those analyses show that signal timing modifications to provide more green time to the westbound Baldwin Avenue approach would eliminate the delays and provide acceptable traffic flow conditions for all approaches.

E-4 SUMMARY OF CAPACITY ANALYSES FINDINGS

The results of the Capacity Analyses were summarized to provide an easy comparison of the Levels of Service, Average Delays and Volume/Capacity Ratios with the Existing, No-Build and Build Traffic Volumes. The findings of the Capacity Analyses with the Peak AM Highway Hour traffic volumes are presented in Exhibit No. 22 and the findings of the Capacity Analyses with the Peak PM Highway Hour traffic volumes are presented in Exhibit No. 23 in Appendix A.

SECTION F

PARKING ACCESS AND PORTE COCHERE ASSESSMENT



MICHAEL MARIS ASSOCIATES, INC.

SECTION F

PARKING ACCESS AND PORTE COCHERE ASSESSMENT

F-1 PARKING STRUCTURE ACCESS

Access to the parking structure will be provided by two driveways, with the eastern driveway permitting all movements at its intersection with South Harbor Boulevard and the western driveway permitting only left turns in and right turn out. Capacity Analyses were performed to identify traffic conditions at the eastern driveway intersection with South Harbor Boulevard, which is expected to serve as the main access to the parking structure. In order to be conservative, it was assumed that all vehicles using the Porte Cochere will also park in the garage and that all Project trips will use the eastern driveway.

1. Estimated Traffic Volumes

The Project will generate 64 new trips (15 arriving and 49 departing) during the Peak AM Highway Hour and 73 new trips (44 arriving and 29 departing) during the Peak PM Highway Hour. Based on the assumption that all generated trips will use the eastern driveway, the following volumes are estimated for its intersection with South Harbor Boulevard:

<u>Approach</u>	<u>Peak AM Hour</u>	<u>Peak PM Hour</u>
Westbound South Harbor Boulevard Left	15	44
Westbound South Harbor Boulevard Through	228	225
Northbound Driveway Left	10	5
Northbound Driveway Right	39	24

2. Capacity Analyses Findings

Unsignalized Intersection Capacity Analyses were performed assuming that all approaches to the intersection will be one-lane wide and that a "Stop" sign will be installed facing the driveway approach. The findings of the Capacity Analyses, copies of which are included in Appendix B of this report, show that the controlled approach to the intersection will operate at very acceptable Level of Service A during both Peak Hours. The Analyses also show negligible vehicle queues on the westbound left-turn movement and the driveway approach.

F-2 PORTE COCHERE

The width of the proposed Porte Cochere will be 22 feet wide in order to provide two lanes, one lane to serve vehicles loading and unloading and the other lane to serve by-passing vehicles, as well as provide extra storage capacity on rare occasions. The roadway width will be reduced to 16 feet near the intersection with South Harbor Boulevard in order to control departing traffic and permit only one vehicle to exit at any time.

The Project is estimated to generate its highest volumes during the Peak PM Highway Hour when a total of 64 arriving/departing trips are estimated to be generated. It is conservatively estimated that a maximum of 40 percent of all arriving and departing trips will use the Porte Cochere, which indicates a maximum of 26 vehicles.

Queueing Analyses were performed to identify the number of vehicles that might be queued within the Porte Cochere during the Peak Hour. These Queueing Analyses study the waiting

time and length of queue of a system based on the demand, service times and the number of servers in the system. The main characteristics of the queue are as follows:

- λ = mean/average number of arrivals per time period
- μ = mean/average number of customers server per time period
- ρ = utilization factor, i.e. the fraction of time that servers are busy
- r = number of items (vehicles) in the system, waiting and being served
- C = number of servers that can service a system simultaneously (single- or multi-sever)
- Additional characteristics are if the arrivals are constant (at equal time periods) or variable based on normal distribution (Poisson) and if the service times are deterministic or constant.

The Queuing Analyses were performed using the following variables:

- Although the Porte Cochere will be striped as two lanes, the Analyses assumed one lane used for drop-offs and pick-ups where up to three vehicles could load or unload concurrently (three service stations).
- Each vehicle will stay within the drop-off/pick-up area a maximum of three minutes (service time of 180 seconds).
- A total of 26 vehicles will use the drop-off/pick-up area during the peak hour. Since the vehicles would arrive/depart at random, a Poisson theory distribution was used to reflect the possibility of several vehicles could arrive concurrently.

The findings of the Queuing Analysis show that the server utilization will be about 45 percent, that there will be less than 1.5 vehicles being serviced at any time and that there will not be any other vehicles waiting to be served. Therefore, it is concluded that the Porte Cochere will operate at acceptable conditions.

SECTION G

SUMMARY OF FINDINGS AND CONCLUSIONS



MICHAEL MARIS ASSOCIATES, INC.

SECTION G

SUMMARY OF FINDINGS AND CONCLUSIONS

G-1 SUMMARY OF FINDINGS

Following is a summary of the Parking Assessment and Traffic Impact Study findings:

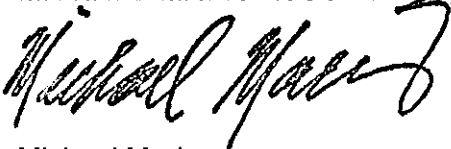
1. Based on accepted data, the proposed 321 parking spaces will be sufficient for the Project's 259 residential units. Also, the proposed dimensions of the parking spaces (8'-6" wide and 18'-0" long) will be acceptable for the low turnover residential development.
2. The highest traffic volumes in the area occur during the peak commuter periods, primarily due to the nature of development in the area and Lincoln Harbor's proximity to the Lincoln Tunnel. Consequently, some of the intersections experience delays, especially when problems exist at the Tunnel.
2. Several large developments are being constructed in the surrounding area. While a substantial amount of those developments has been constructed and occupied, additional components that are not yet constructed or occupied will add traffic to the roadway system. Those developments include portions of Port Imperial, Hoboken Cove, Maxwell Place and Lincoln Harbor.
3. Hartz has successfully pursued mass transit utilization and surveys indicate that many residents at Lincoln Harbor use mass transit (buses, light rail, and ferry) to and from work. A survey of the Estuary residents and observations by MMA indicate that a very small portion drive to/from work during the Peak Hours.

4. The Project will generate a relatively small amount of new traffic volumes that will not significantly impact traffic flow in the area.
5. Capacity analyses of the existing and future operating conditions at the Study Locations indicate that the roadway and signal improvements identified here in would reduce the existing and future delays.
6. As designed, the proposed access to the parking structure and the Porte Cochere will adequately serve the Project's anticipated demands and traffic generations.

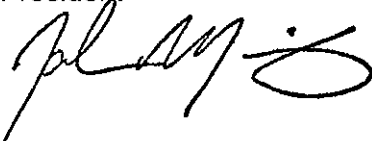
G-2 CONCLUSIONS

Based on the findings presented herein, it is the conclusion of Michael Maris Associates, Inc. that the Project will have sufficient parking and will generate a relatively small amount of traffic due to the availability of a variety of alternate travels modes within Lincoln Harbor. Although some intersections in the area experience delays due to the Project's proximity to Lincoln Tunnel, the Project will not significantly increase the delays and the roadway/signal improvements identified herein will improve the traffic operating conditions.

Respectfully submitted,
MICHAEL MARIS ASSOCIATES, INC.



Michael Maris
President



John Maris
Vice President

APPENDIX A

EXHIBITS

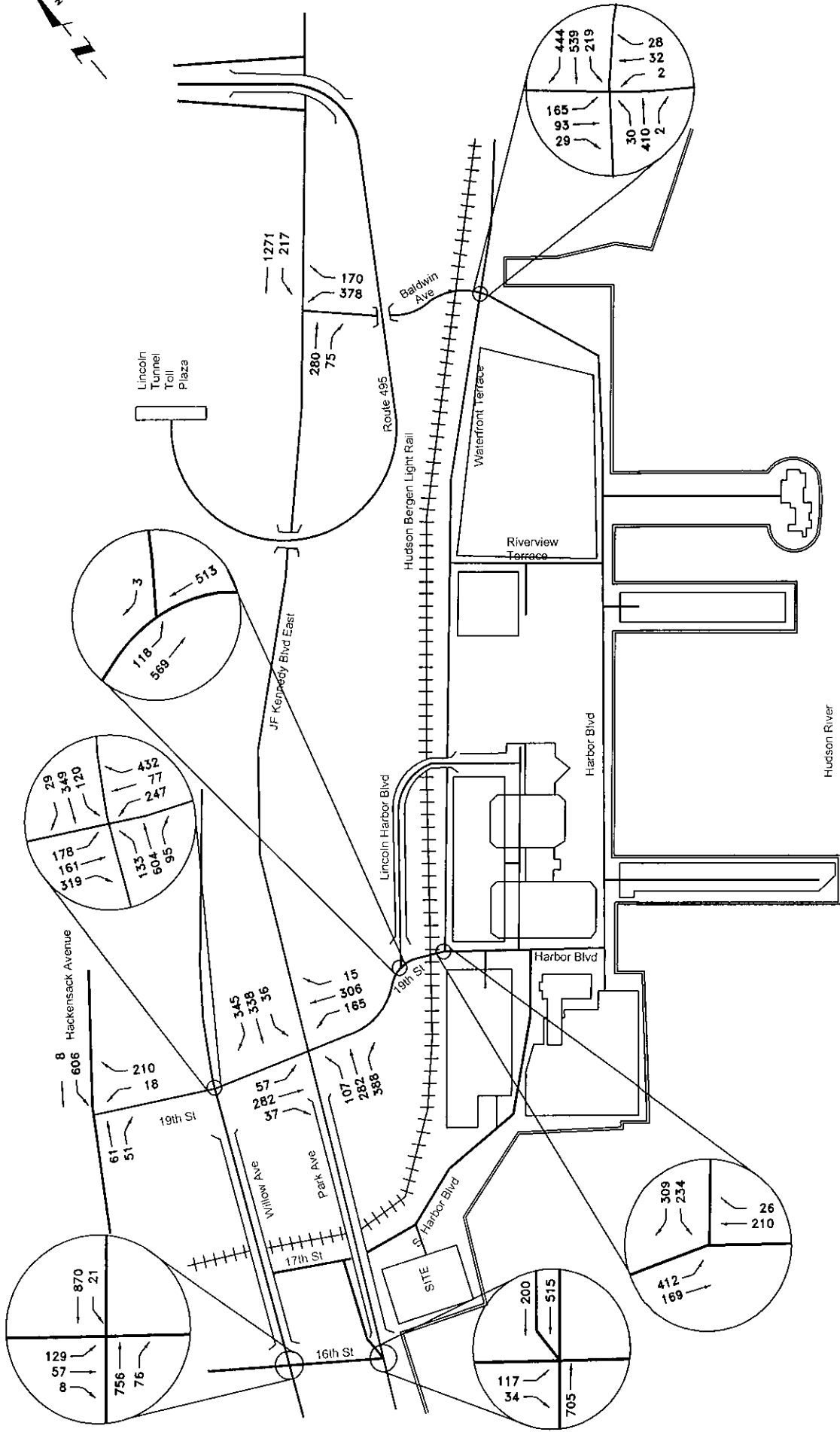


EXHIBIT NO. 1

PEAK AM HIGHWAY HOUR
2019 EXISTING TRAFFIC VOLUMES
ATR Development
Weehawken, NJ



MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

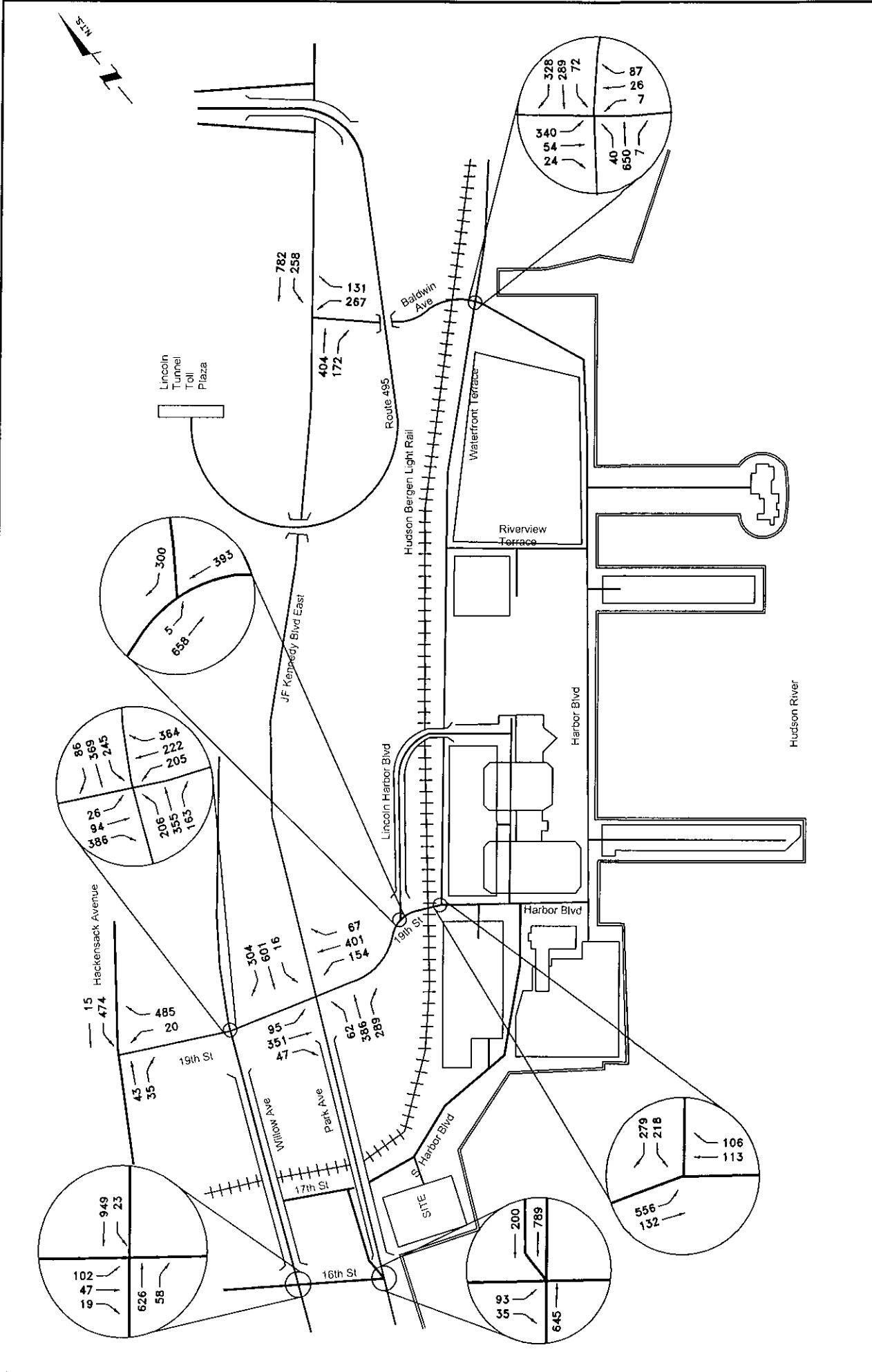
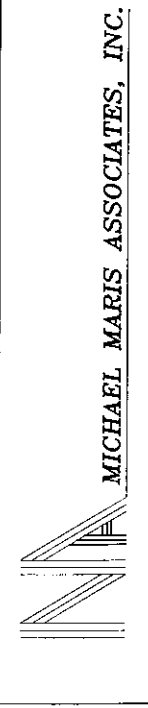


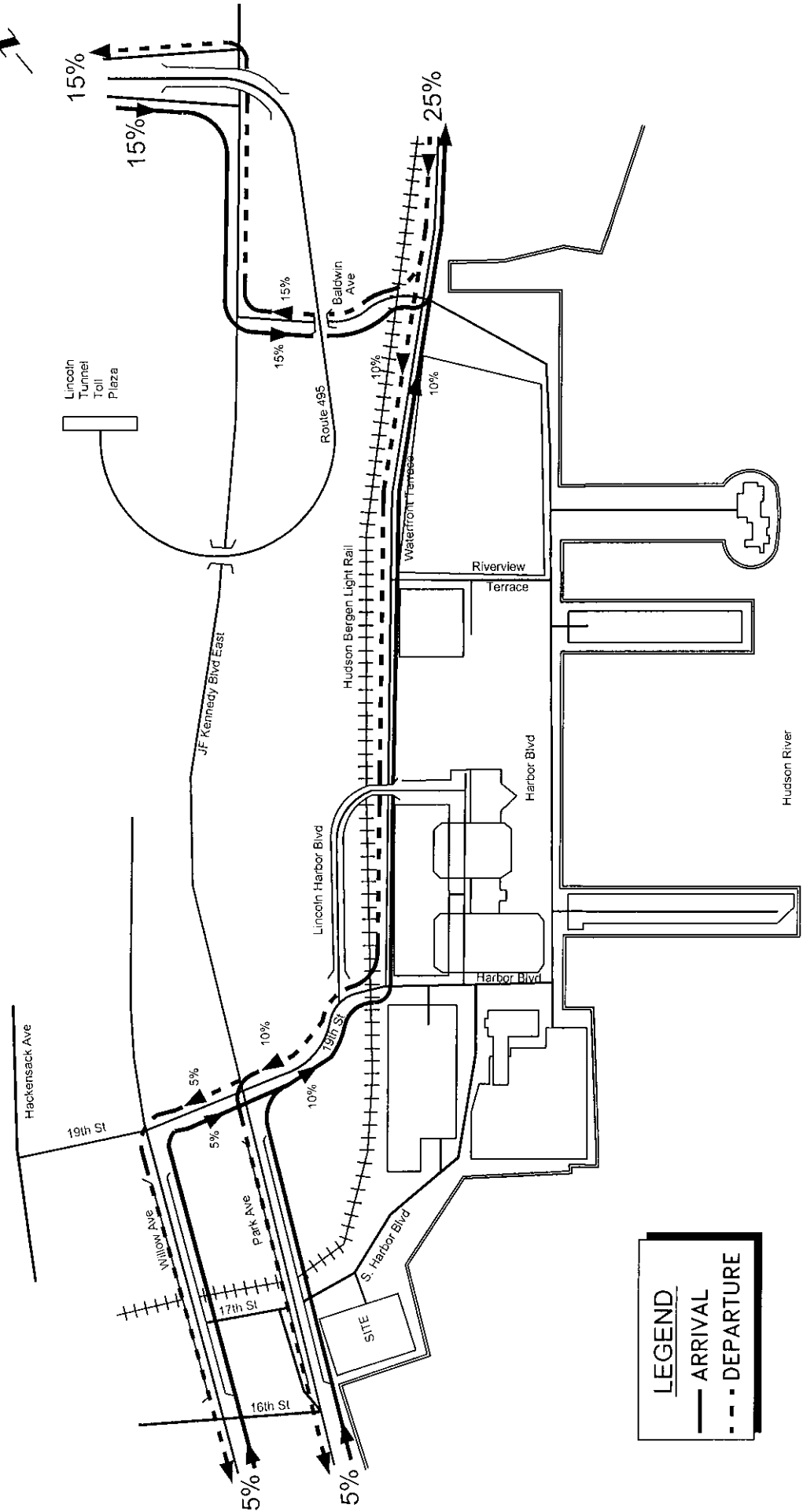
EXHIBIT NO. 2

PEAK PM HIGHWAY HOUR
2019 EXISTING TRAFFIC VOLUMES

ATR Development
Weehawken, NJ

Project No. 19-221





LEGEND

— ARRIVAL

- - - DEPARTURE

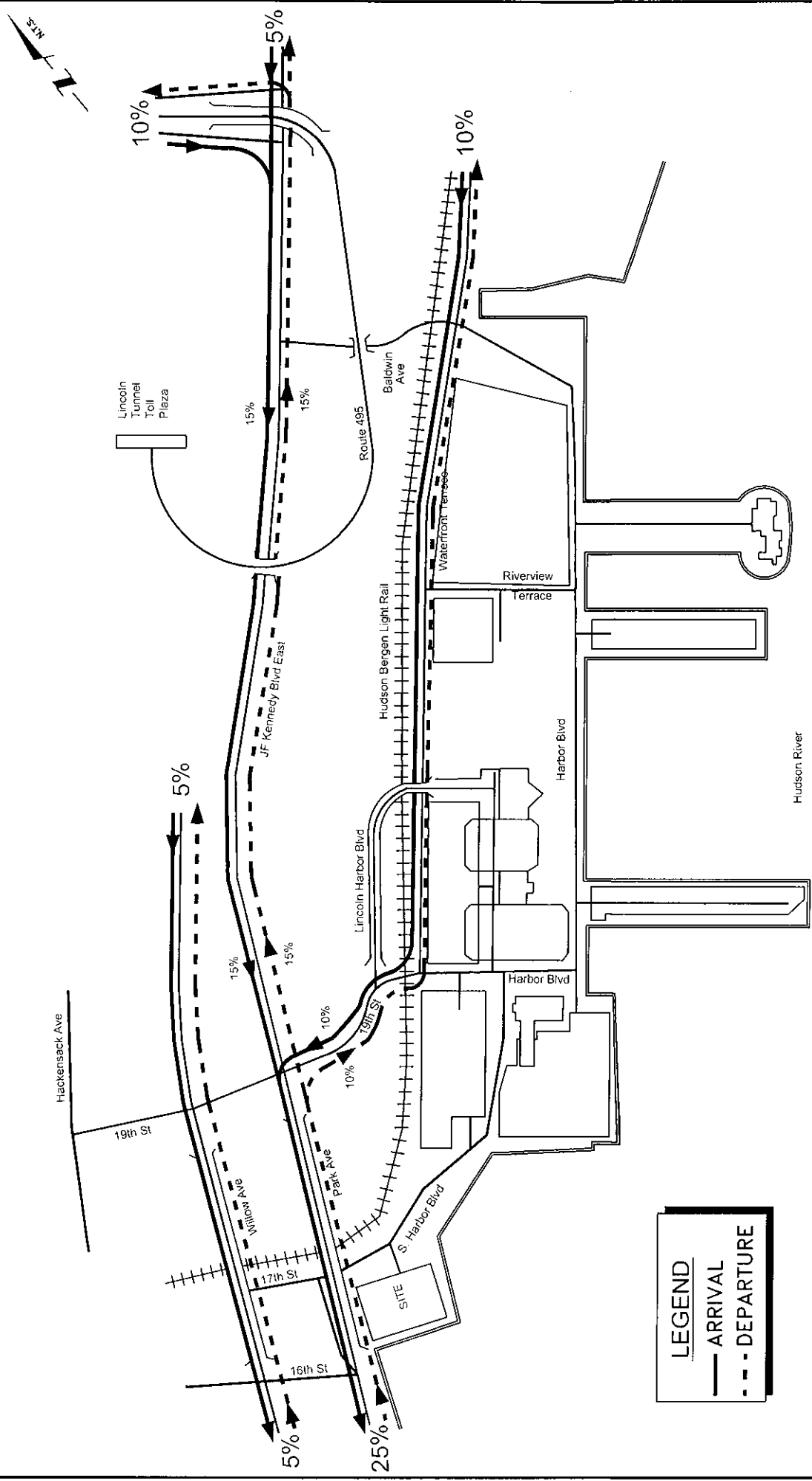
EXHIBIT NO. 3

PORT IMPERIAL
 ARRIVAL & DEPARTURE DISTRIBUTIONS
 ATR Development
 Weehawken, NJ

MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019



LEGEND
 — ARRIVAL
 - - - DEPARTURE

EXHIBIT NO. 4

HOBOKEN COVE & MAXWELL PLACE
 ARRIVAL & DEPARTURE DISTRIBUTIONS

ATIR Development
 Weehawken, NJ

MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

UNOCCUPIED LINCOLN HARBOR DEVELOPMENTS

TRIP GENERATIONS

	PEAK AM HIGHWAY HOUR			PEAK PM HIGHWAY HOUR		
	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
<u>PIER RESIDENTIAL</u>						
247 UNITS (3)	22	61	83	65	41	106
Mass Transit (50%)	11	30	41	32	20	52
NET NEW GENERATIONS	11	31	42	33	21	54
<u>800 HARBOR BOULEVARD</u>						
<u>RESIDENTIAL</u>						
593 UNITS (1)	43	136	179	128	82	210
Mass Transit (50%)	21	68	89	64	41	105
NET NEW GENERATIONS	22	68	90	64	41	105
<u>RETAIL</u>						
1,500 SF (2)	7	5	12	11	13	24
Pass-by/Internal (80%)	6	4	10	9	10	19
NET NEW GENERATIONS	1	1	2	2	3	5
<u>GROCERY STORE (4)</u>						
29,000 SF	66	45	111	158	152	310
Pass-by/Internal (60%)	39	27	66	95	91	186
NET NEW GENERATIONS	27	18	45	63	61	124
TOTAL NEW GENERATIONS	61	118	179	162	126	288

Trip Generation estimates based on ITE's Trip Generation, 10th Edition

- (1) Based on ITE Land Use Code 222 "Multifamily Housing (High-Rise)" and 50% credit for mass transit use.
- (2) Based on ITE Land Use Code 820 "Shopping Center" and 80% credit for internal use (AM based on 9th Edition).
- (3) Based on ITE Land Use Code 221 "Multifamily Housing (Mid-Rise)" and 50% credit for mass transit use
- (4) Based on ITE Land Use Code 850 "Supermarket" and 60% credit for internal use.

EXHIBIT 5



MICHAEL MARIS ASSOCIATES, INC.

LINCOLN HARBOR APPROVED DEVELOPMENTS
TRIP GENERATIONS
ATIR Development
Weehawken, NJ

Project No. 19-221

November, 2019

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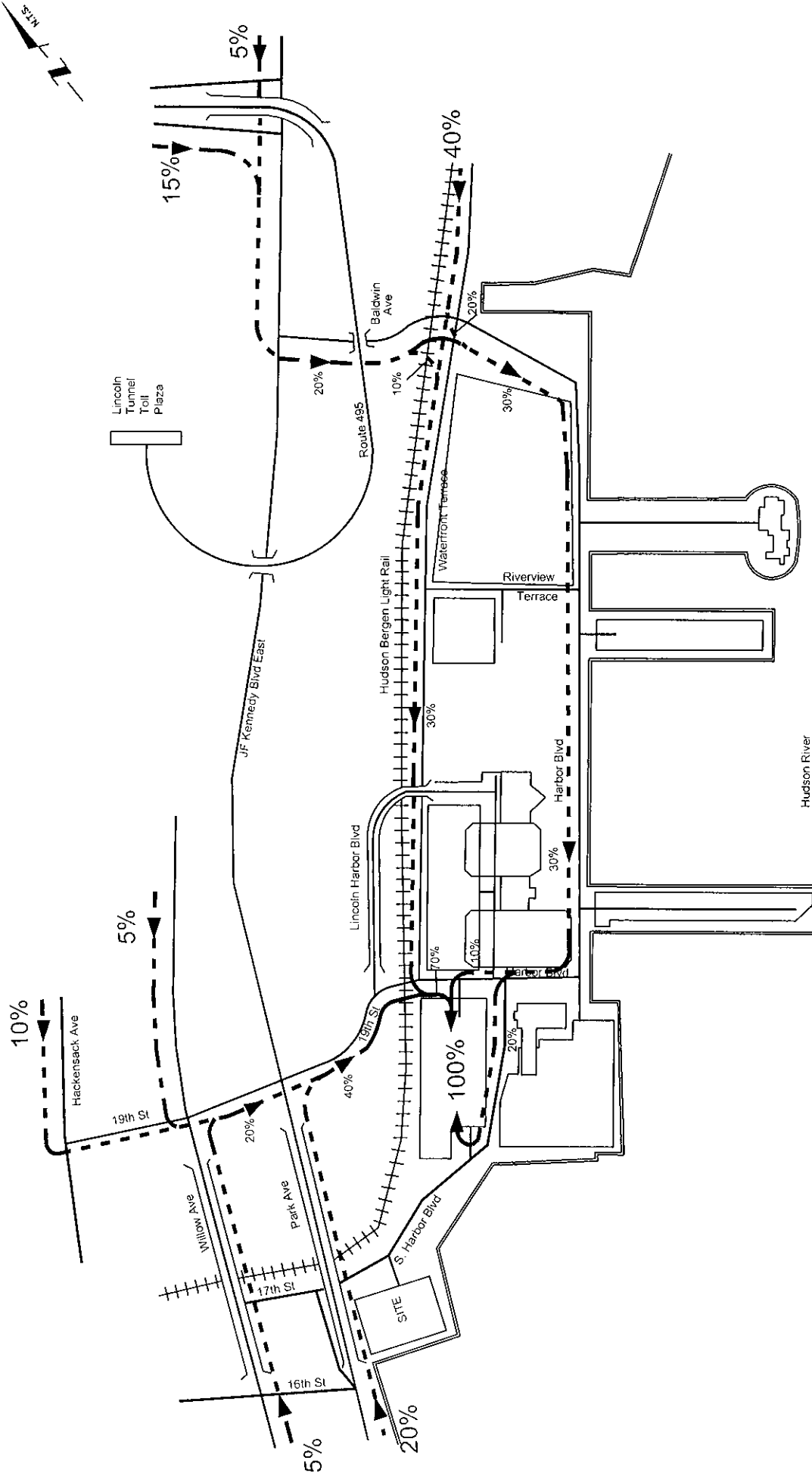
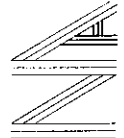


EXHIBIT NO. 6

800 HARBOR BOULEVARD
ARRIVAL DISTRIBUTION
ATIR Development
Weehawken, NJ

MICHAEL MARIS ASSOCIATES, INC.



Project No. 19-221

November, 2019

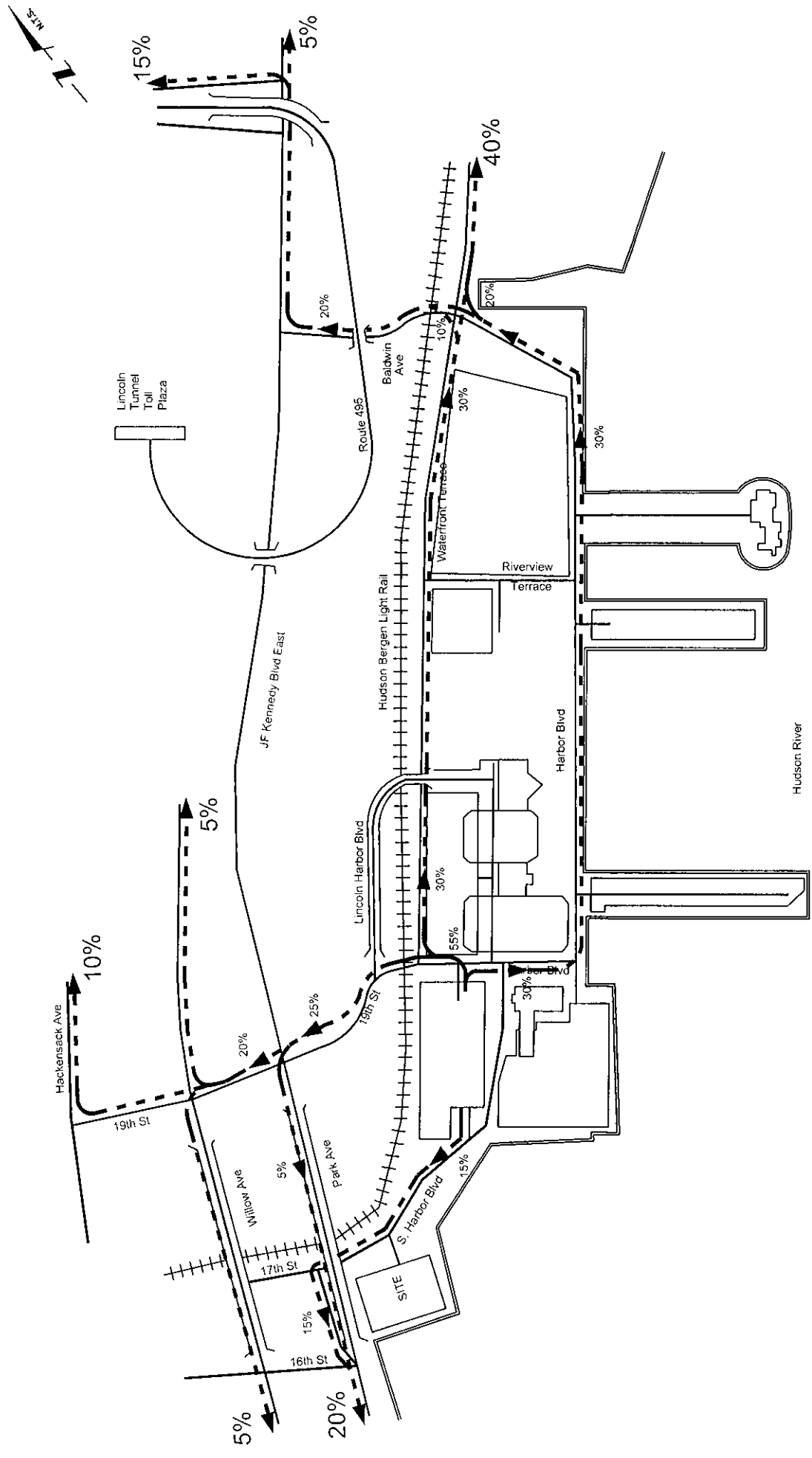
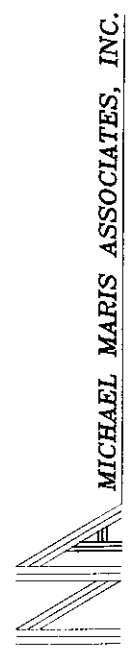


EXHIBIT NO. 7

800 HARBOR BOULEVARD
DEPARTURE DISTRIBUTION
ATIR Development
Weehawken, NJ



Project No. 19-221

November, 2019

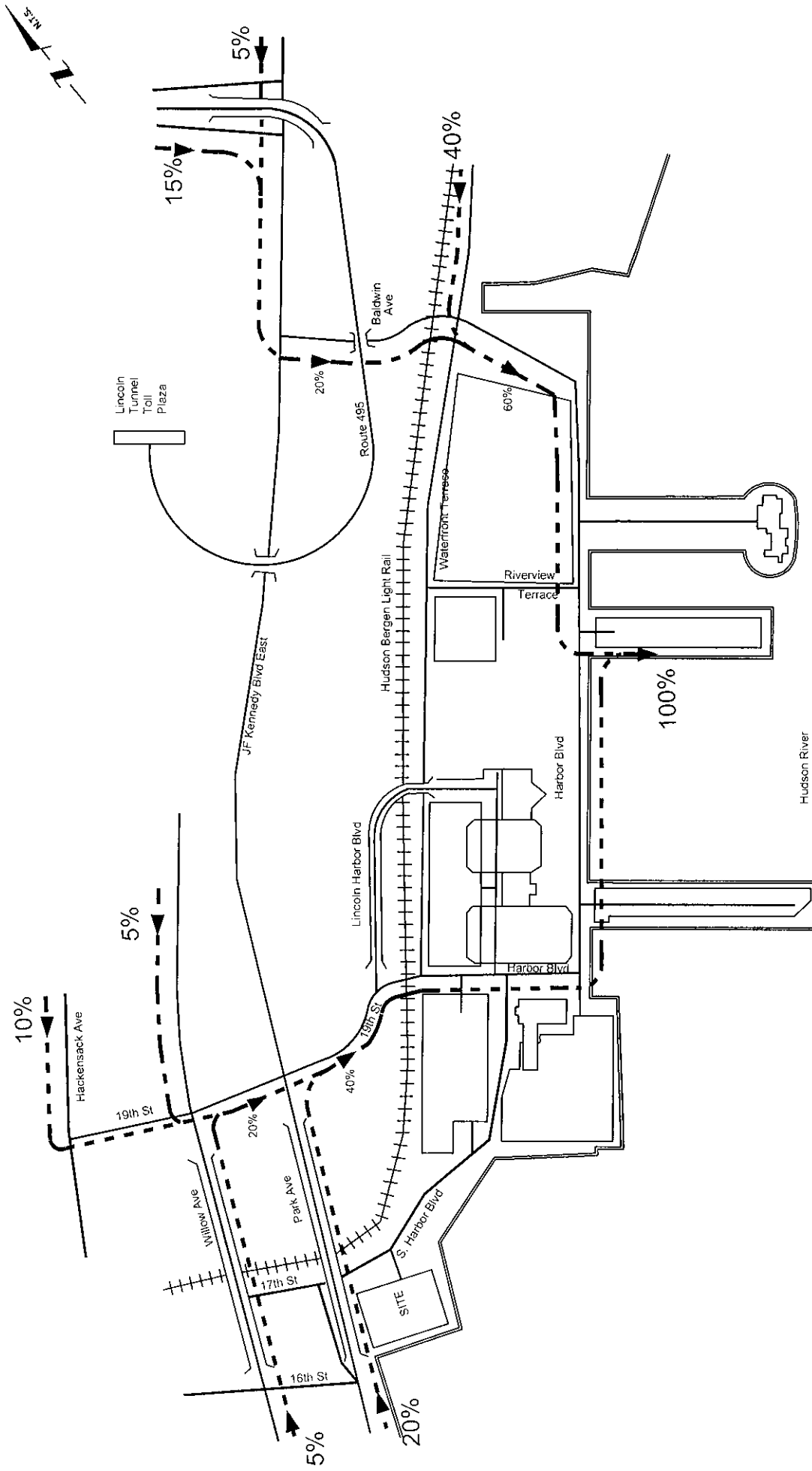
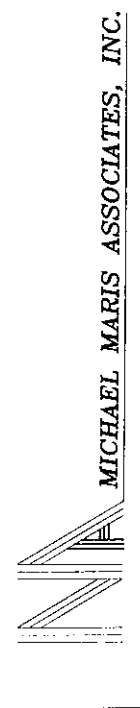


EXHIBIT NO. 8

PIER RESIDENTIAL
ARRIVAL DISTRIBUTION
ATR Development
Weehawken, NJ



MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

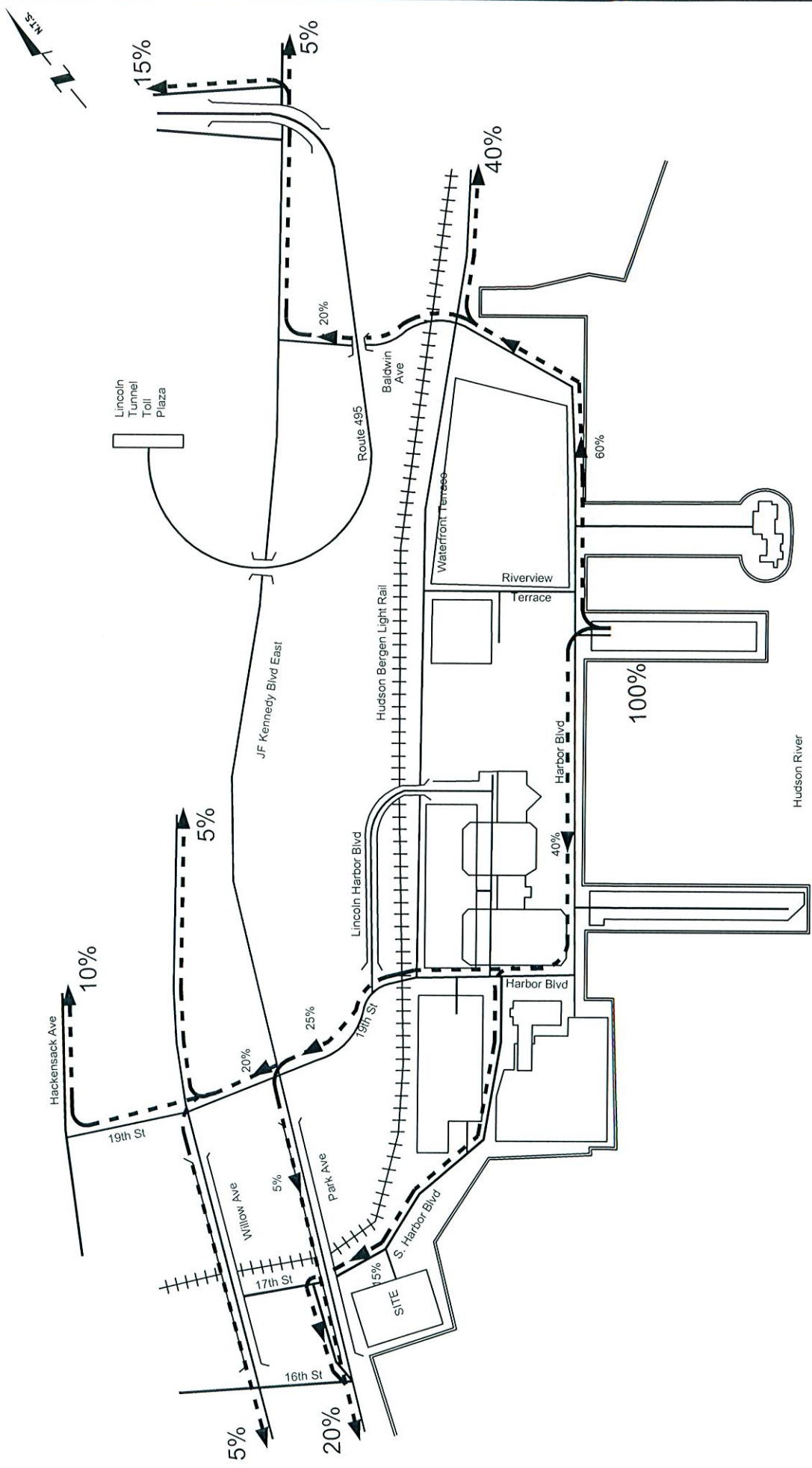


EXHIBIT NO. 9

PIER RESIDENTIAL
 DEPARTURE DISTRIBUTION
 ATIR Development
 Weehawken, NJ

MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

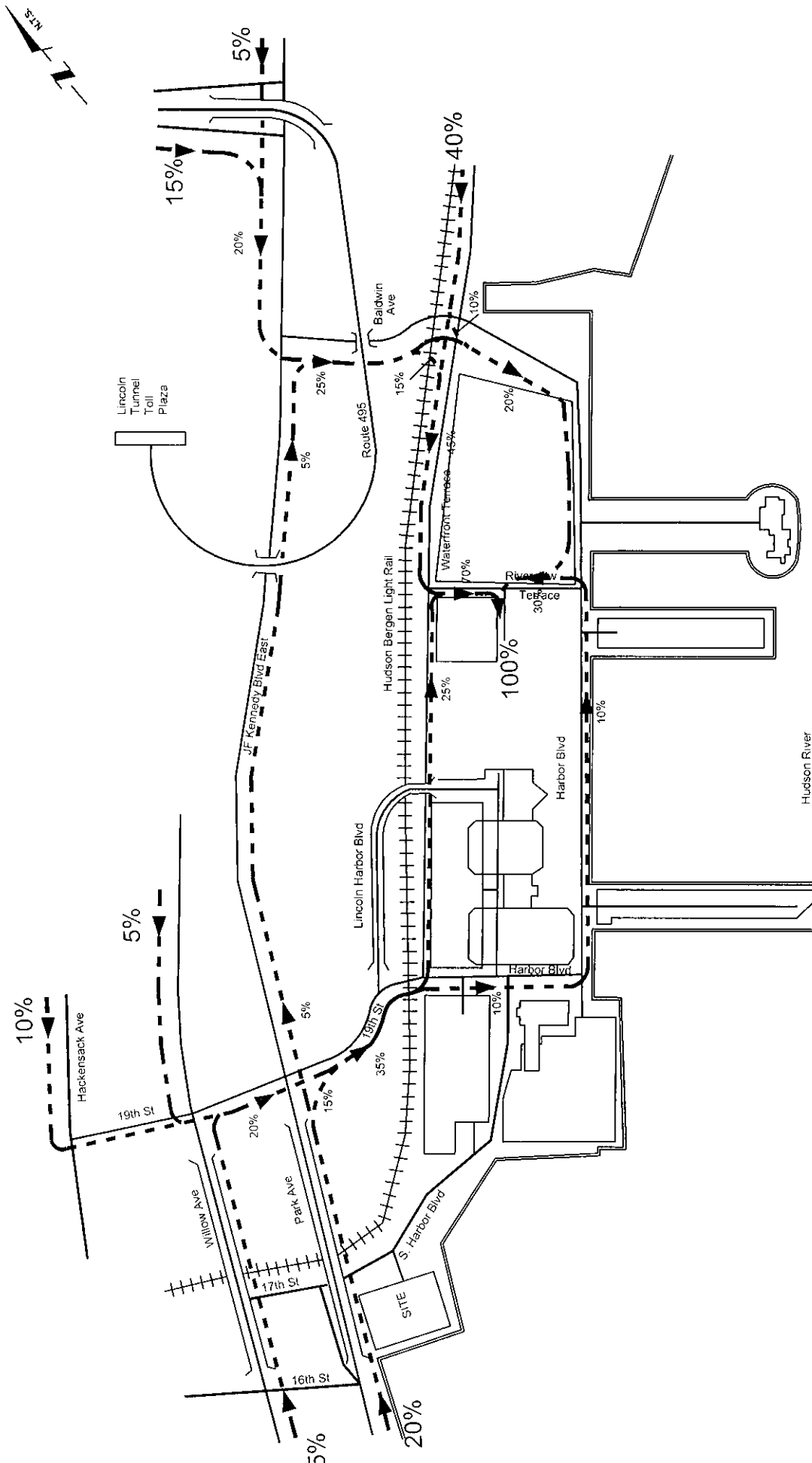


EXHIBIT NO. 10

GROCERY STORE
 ARRIVAL DISTRIBUTION
 ATR Development
 Weehawken, NJ



MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

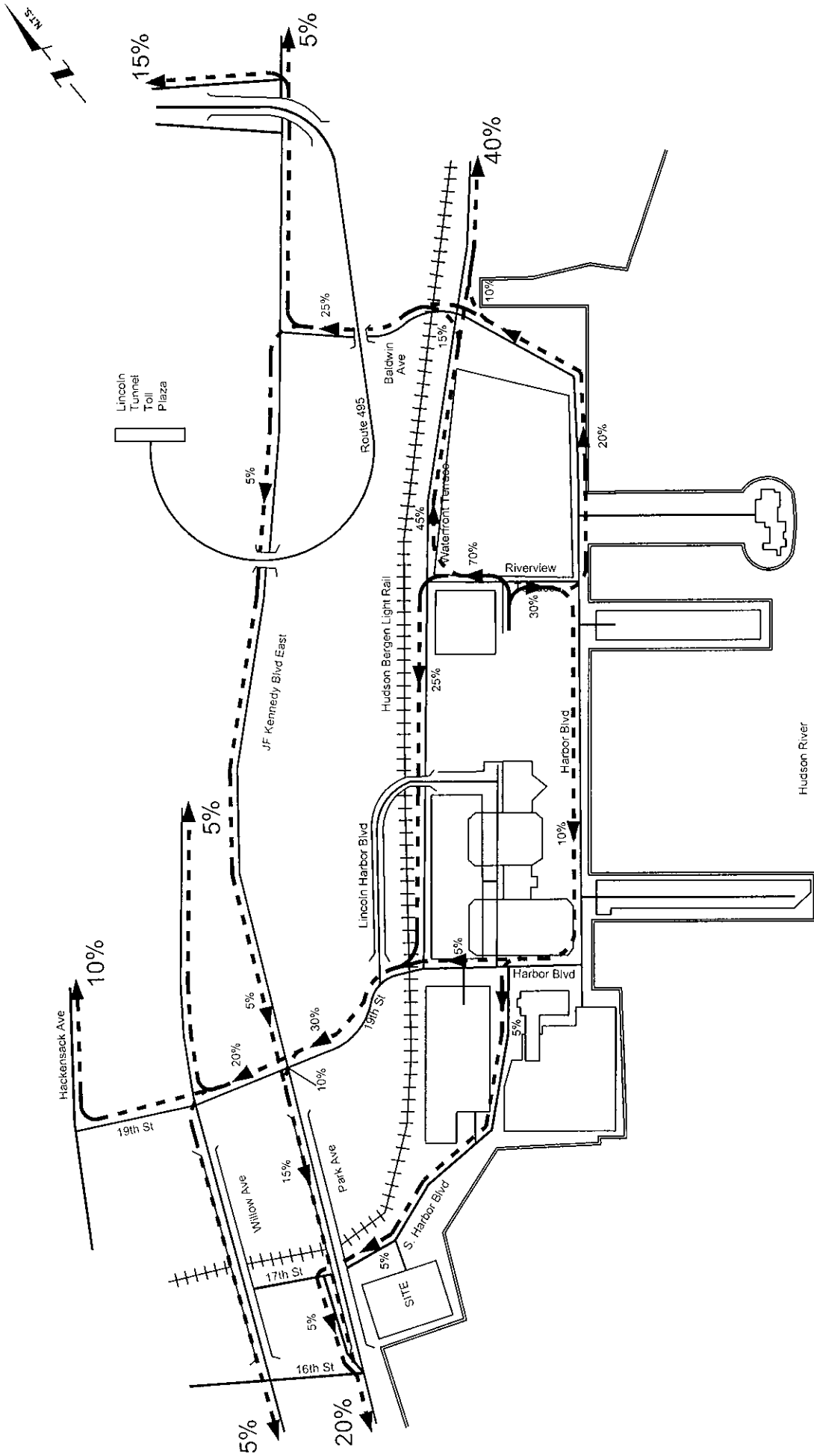
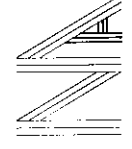


EXHIBIT NO. 11

GROCERY STORE
DEPARTURE DISTRIBUTION
ATR Development
Weehawken, NJ

MICHAEL MARIS ASSOCIATES, INC.



Project No. 19-221

November, 2019

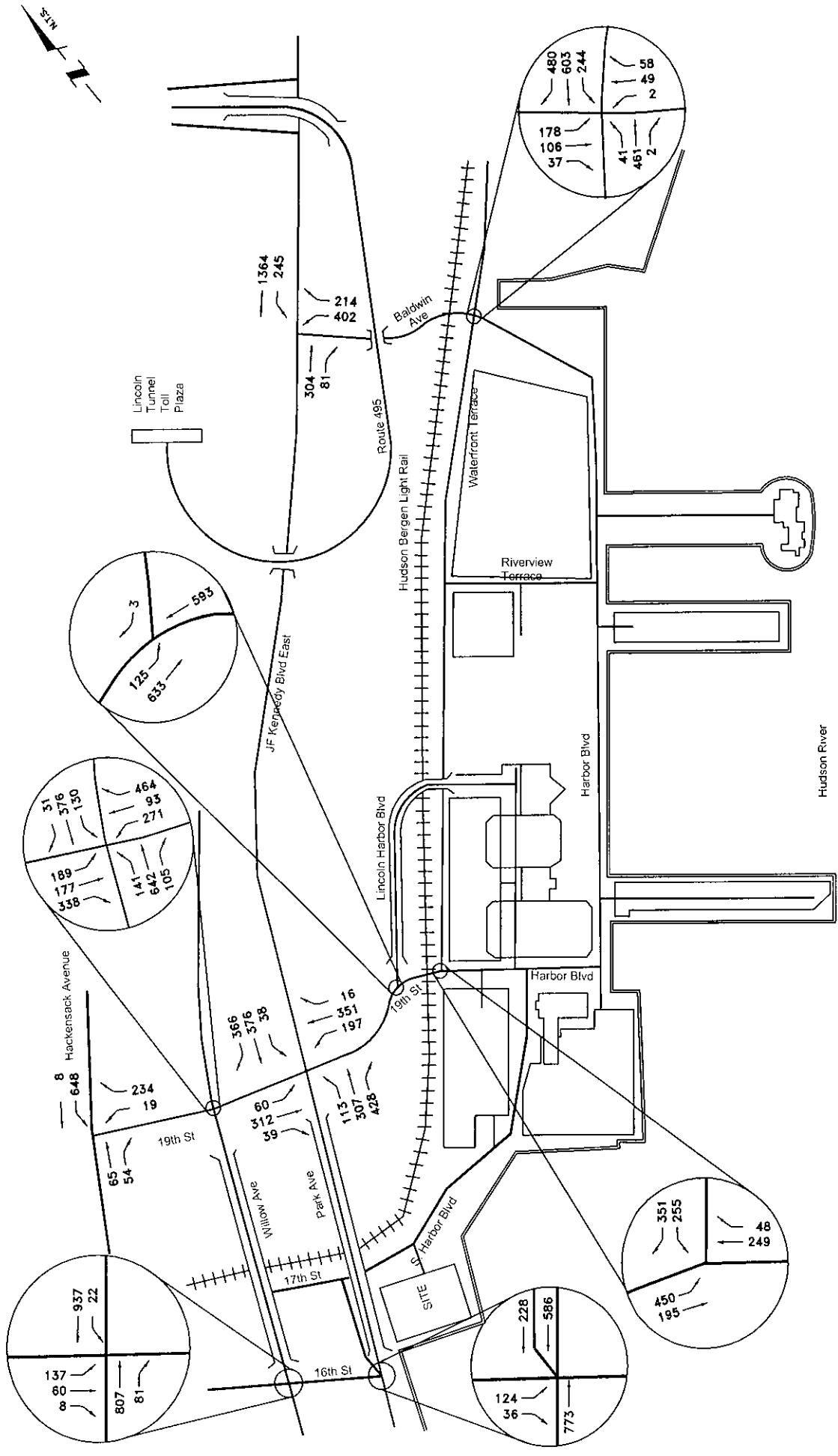
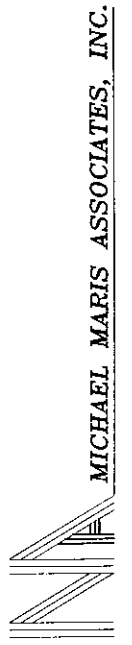


EXHIBIT NO. 12

PEAK AM HIGHWAY HOUR
 2022 NO-BUILD TRAFFIC VOLUMES
 ATIR Development
 Weehawken, NJ



MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

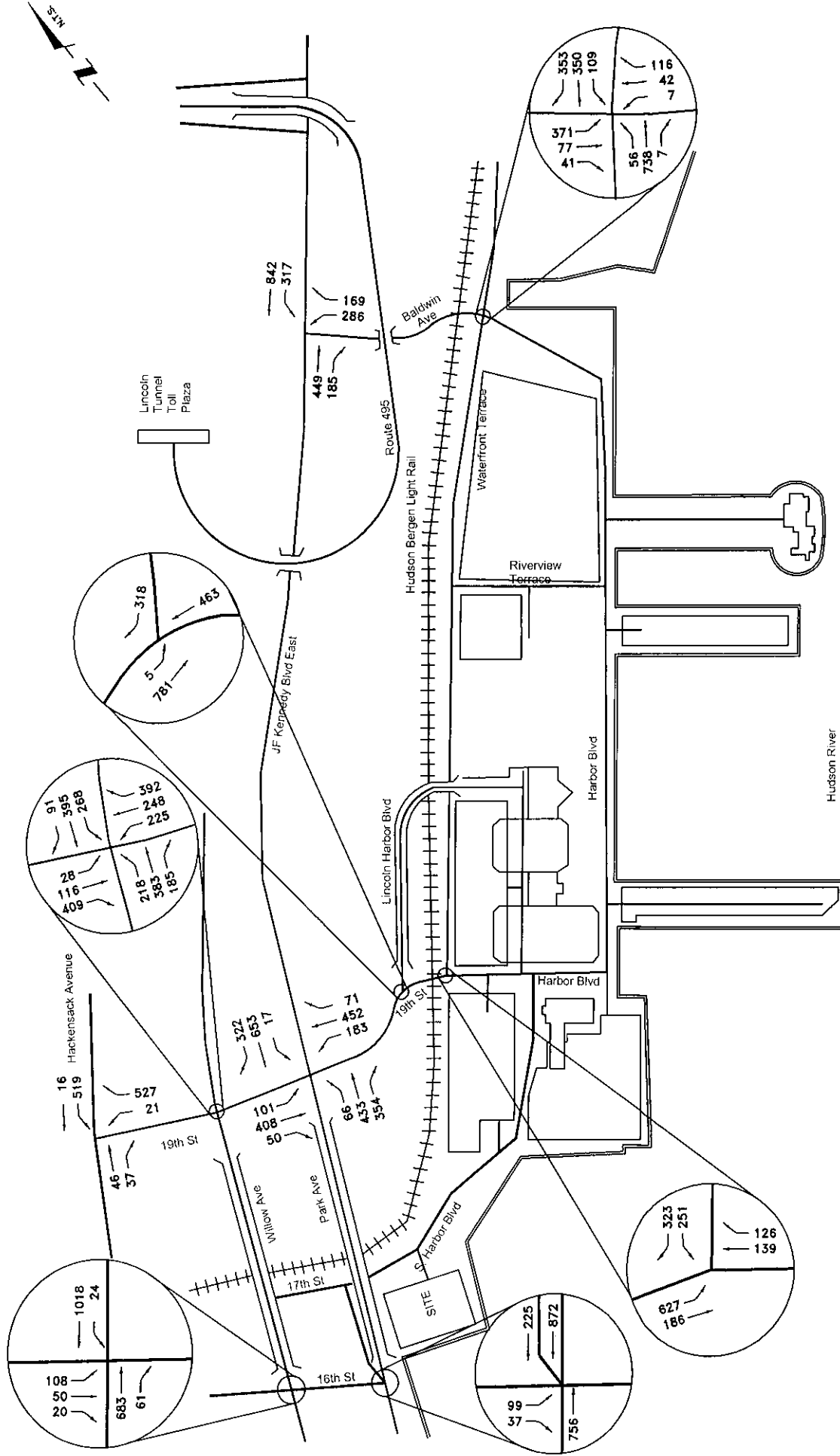
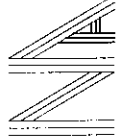


EXHIBIT NO. 13

PEAK PM HIGHWAY HOUR
2022 NO-BUILD TRAFFIC VOLUMES
ATIR Development
Weehawken, NJ

MICHAEL MARIS ASSOCIATES, INC.



Project No. 19-221

November, 2019

PROPOSED ATIR SITE RESIDENTIAL TRIP GENERATIONS

	PEAK AM			PEAK PM		
	HIGHWAY HOUR			HIGHWAY HOUR		
	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
259 UNITS	20	65	85	59	38	97
Mass Transit (25%)	5	16	21	15	9	24
NET NEW GENERATIONS	15	49	64	44	29	73

Generations based on ITE Trip Generation 10th Edition, Land Use Code 222 "Multifamily Housing (High-Rise)" using HTGR for Dwelling Units in "General Urban/Suburban" locations.

EXHIBIT NO. 14



MICHAEL MARIS ASSOCIATES, INC.

ATIR TRIP GENERATIONS

*ATIR Development
Weehawken, NJ*

Project No. 19-221

November, 2019

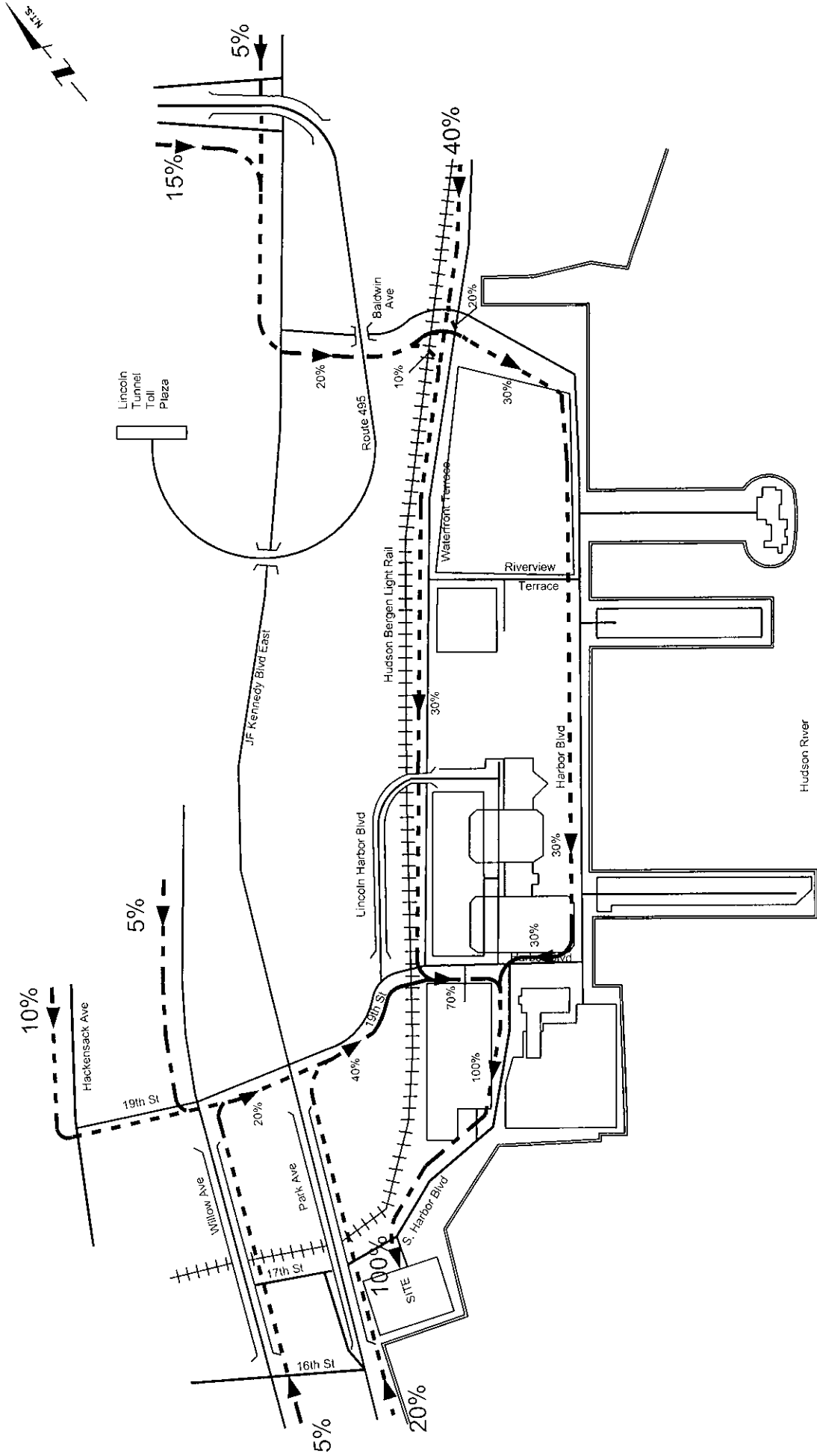
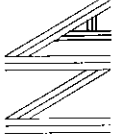


EXHIBIT NO. 15

ATIR
ARRIVAL DISTRIBUTION
ATIR Development
Weehawken, NJ


MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

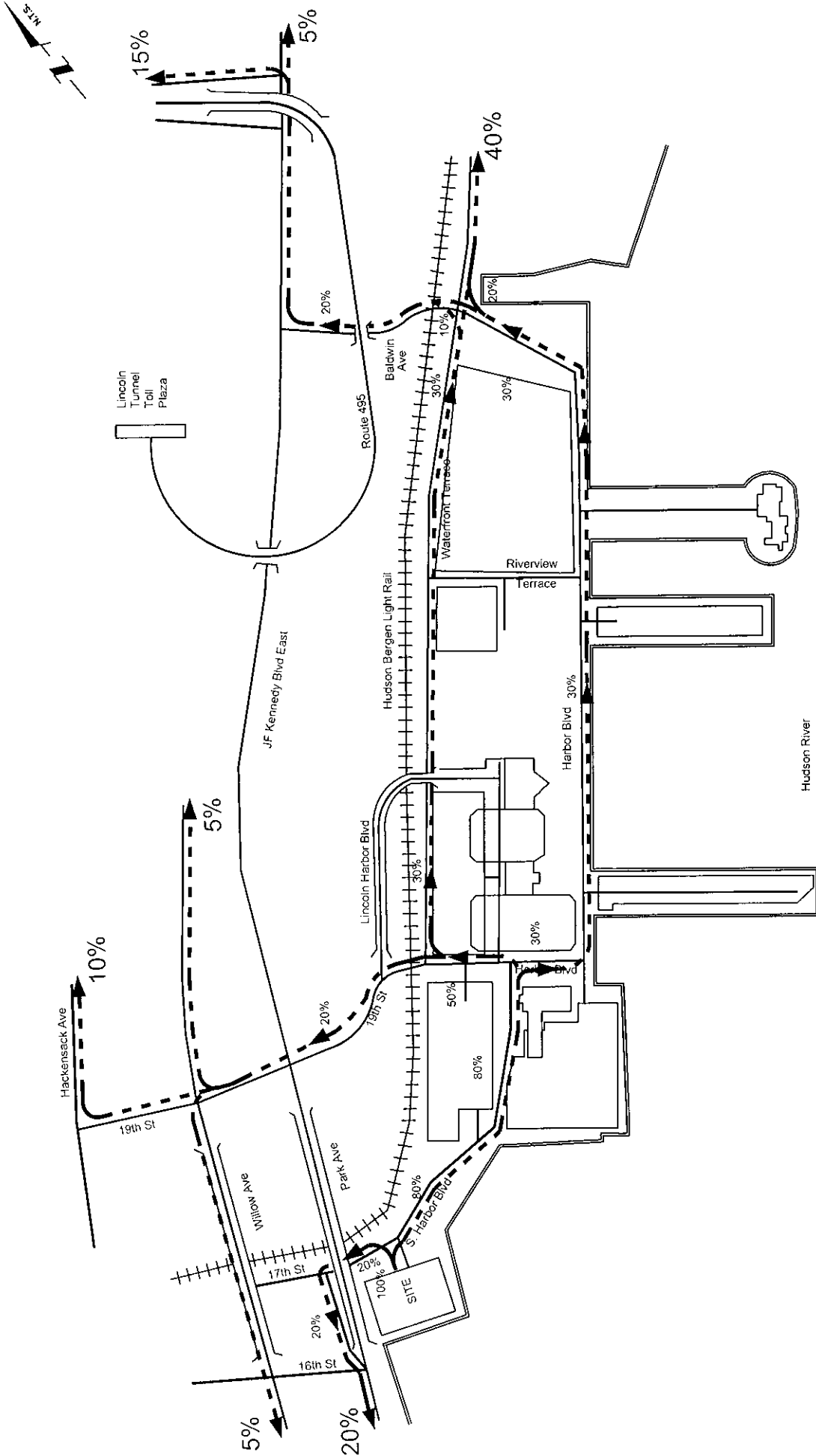
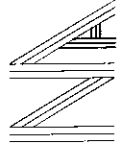


EXHIBIT NO. 16

ATIR
DEPARTURE DISTRIBUTION
ATIR Development
Weehawken, NJ



MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

PEAK AM HIGHWAY HOUR (7:15 - 8:15)																					
File Name Date Printed Design Year Growth Factor Peak Hour		19221/EX 11/18/19 2022 1.060 8:00 - 9:00AM		2019 EXISTING TRAFFIC VOLUMES	HOBOKEN COVE & MAXWELL PLACE	PORT IMPERIAL VOLUMES	PIER RESIDENTIAL				800 HARBOR B'LVD				GROCERY STORE		2022 "NO-BUILD" TRAFFIC VOLUMES				2022 "BUILD" TRAFFIC VOLUMES
INTERSECTION NAME		APPROACH AND MOVEMENT					NEW TRIPS		NEW TRIPS		NEW TRIPS		NEW TRIPS		NEW TRIPS		NEW TRIPS				
							VEH= 11	VEH= 31	VEH= 23	VEH= 69	VEH= 27	VEH= 18			VEH= 15	VEH= 49					
				ENTERING % VOL	EXITING % VOL	ENTERING % VOL	EXITING % VOL	ENTERING % VOL	EXITING % VOL	ENTERING % VOL	EXITING % VOL	ENTERING % VOL	EXITING % VOL								
Intersection No. 1		EB Left		129	0	0	0	0	0	0	0	0	0	137	0	0	0	137			
Willow Avenue and 16th Street		EB Through		57	0	0	0	0	0	0	0	0	0	60	0	0	0	60			
		EB Right		8	0	0	0	0	0	0	0	0	0	0	8	0	0	0	8		
		NB Through		756	2	1	5	1	0	5	1	0	5	1	807	5	1	0	808		
		NB Right		76	0	0	0	0	0	0	0	0	0	0	81	0	0	0	81		
		SB Left		21	0	0	0	0	0	0	0	0	0	22	0	0	0	22			
		SB Through		870	6	3	0	5	2	0	5	3	0	5	1	937	0	5	2	940	
		ALL APPR.		1917	8	4	5	1	5	2	5	1	5	3	2053	5	1	5	2	2056	
Intersection No. 2		EB Left		117	0	0	0	0	0	0	0	0	0	124	0	0	0	124			
Park Avenue and 16th Street		EB Right		34	0	0	0	0	0	0	0	0	0	36	0	0	0	36			
		NB Through		705	12	1	20	2	0	20	5	0	20	5	0	773	20	3	0	776	
		SBSR Through		200	0	0	0	15	5	0	15	10	0	5	1	226	0	20	10	238	
		SB Through		515	29	3	0	5	2	0	5	3	0	15	3	586	0	0	0	586	
		ALL APPR.		1571	41	4	20	2	20	6	20	5	20	4	1746	20	3	20	10	1759	
Intersection No. 3		WB Left		18	0	0	0	0	0	0	0	0	0	19	0	0	0	19			
Hackensack Avenue and 15th Street		WB Right		210	0	10	3	0	10	7	0	10	2	234	0	10	5	0	239		
		NB Through		61	0	0	0	0	0	0	0	0	0	0	65	0	0	0	65		
		NB Right		51	0	0	0	0	0	0	0	0	0	54	0	0	0	0	54		
		SB Left		606	10	1	0	10	2	0	10	3	0	0	648	10	2	0	0	650	
		SB Through		8	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8		
		ALL APPR.		954	0	0	10	1	10	3	10	2	10	7	1029	10	2	10	5	1036	
Intersection No. 4		EB Left		178	0	0	0	0	0	0	0	0	0	185	0	0	0	189			
Willow Avenue and 15th Street		EB Through		161	10	1	0	10	2	0	10	3	0	177	10	2	0	178			
		EB Right		319	0	0	0	0	0	0	0	0	0	0	338	0	0	0	338		
		WB Left		247	0	5	2	0	5	3	0	5	1	271	0	5	2	0	273		
		WB Through		77	0	10	3	0	10	7	0	10	2	0	93	0	10	5	98		
		WB Right		432	0	5	2	0	5	3	0	5	1	464	0	5	2	0	466		
		NB Left		133	0	0	0	0	0	0	0	0	0	141	0	0	0	0	141		
		NB Through		604	2	0	0	0	0	0	0	0	0	0	642	0	0	0	642		
		NB Right		95	1	5	1	0	5	1	0	5	1	105	5	1	0	0	106		
		SB Left		120	5	1	0	5	1	0	5	1	0	130	5	1	0	0	131		
		SB Through		349	6	0	0	0	0	0	0	0	0	0	376	0	0	0	376		
		SB Right		29	0	0	0	0	0	0	0	0	0	31	0	0	0	0	31		
		ALL APPR.		2744	8	4	20	2	20	6	20	5	20	14	2956	20	3	20	10	2969	
Intersection No. 5		EB Left		57	0	0	0	0	0	0	0	0	0	60	0	0	0	60			
Park Avenue and 15th Street		EB Through		282	20	2	0	20	5	0	20	5	0	312	20	3	0	315			
		EB Right		37	0	0	0	0	0	0	0	0	0	0	39	0	0	0	39		
		WB Left		165	0	5	2	0	5	3	0	5	1	197	0	0	0	197			
		WB Through		306	0	20	6	0	20	14	0	20	4	0	351	0	20	10	361		
		WB Right		15	0	0	0	0	0	0	0	0	0	16	0	0	0	16			
		NB Left		107	0	0	0	0	0	0	0	0	0	113	0	0	0	0	113		
		NB Through		282	7	0	0	0	0	0	5	1	0	0	307	0	0	0	307		
		NB Right		388	5	1	20	2	20	5	0	15	4	428	20	3	0	0	431		
		SB Left		36	0	0	0	0	0	0	0	0	0	38	0	0	0	0	38		
		SB Through		338	0	0	0	0	0	0	0	0	0	5	1	376	0	0	0	376	
		SB Right		375	0	0	0	0	0	0	0	0	0	366	0	0	0	0	366		
		ALL APPR.		2358	41	8	40	4	25	8	40	9	25	17	2604	40	6	20	10	2620	
Intersection No. 6		SB Right		3	0	0	0	0	0	0	0	0	0	3	0	0	0	3			
19th Street and Parking Deck Driveway		EB Left		118	0	0	0	0	0	0	0	0	0	125	0	0	0	0	125		
		EB Through		569	5	2	40	4	0	40	9	0	35	9	633	40	6	0	0	639	
		WB Through		513	12	7	0	25	8	0	25	17	0	30	5	593	0	20	10	603	
		ALL APPR.		1203	17	9	40	4	25	8	40	9	25	17	1355	40	6	20	10	1370	
Intersection No. 7		EB Left		412	0	0	0	0	0	0	0	25	7	450	0	0	0	450			
Harbor Blvd/19th Street and Waterfront Terrace		EB Through		169	40	4	0	40	9	0	40	3	0	195	40	6	0	0	201		
		WB Through		210	0	25	8	0	25	17	0	5	1	0	249	0	20	10	258		
		WB Right		26	0	0	0	0	30	21	0	0	0	48	0	30	15	0	63		
		SB Left		234	0	0	0	30	7	0	0	0	0	255	30	5	0	0	259		
		SB Through		309	0	0	0	0	0	0	0	0	25	5	351	0	0	0	351		
		ALL APPR.		1360	17	9	40	4	25	8	70	16	55	38	1549	70	11	50	25	1584	
Intersection No. 8		EB Left		165	0	0	0	0	0	0	0	0	0	178	0	0	0	0	178		
Baldwin Ave/Harbor Blvd and Port Imperial Blvd/ Waterfront Terrace		EB Through		93	20	2	0	10	2	0	10	3	0	105	10	2	0	0	107		
		EB Right		29	0	0	0	10	2	0	15	4	0	0	37	10	2	0	0	39	
		WB Left		2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2		
		WB Through		32	0	20	6	0	10	7	0	10	2	49	0	10	5	0	54		
		WB Right		28	0	40	12	0	20	14	0	10	2	0	58	0	20	10	0	67	
		NB Left		30	0	0	0	0	10	7	0	15	3	41	0	10	5	0	46		
		NB Through		410	5	2	0	0	20	14	0	30	5	0	461	0	20	10	0	471	
		NB Right		2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2		
		SB Left		219	40	4	0	20	5	0	10	3	0	244	20	3	0	0	247		
		SB Through		539	0	0	0	20	5	0	30	8	0	0	603	20	3	0	0	606	
		SB Right		444	0	0	0	0	0	0	0	0	0	480	0	0	0	0	480		
		ALL APPR.		1993	17	21	60	7	60	19	60	14	60	41	65	18	65	12	2260		
Intersection No. 9		WB Left		378	0	0	0	0	0	0	0	0	0	402	0	0	0	0	402		
JFK Boulevard East and Baldwin Avenue		WB Right		170	0	20	6	0	20	14	0	20	4	214	0	20	10	0	224		
		NB Through		280	0	0	0	0	0	0	0	0	0	0	304	0	0	0	304		
		NB Right		75	0	0	0	0	0	0	5	1	0	81	0	0	0	0	81		
		SB Left		217	0	3	20	2	0	20	5	0	0	245	20	3	0	0	248		
		SB Through		1271	0	0	0	0	0	0	0	0	0	0	1364	0	0	0	1364		
		ALL APPR.		2391	24	13	20	2	20	6	20	5	20	14	25	7	25	5	2610		

PEAK PM HIGHWAY HOUR (4:45 - 6:45)		19221EX		HOBOKEN COVE & MAXWELL PLACE		PORT IMPERIAL		PIER RESIDENTIAL				800 HARBOR B'LV'D				GROCERY STORE				ATIR RESIDENTIAL				2022 "BUILD" TRAFFIC VOLUMES
File Name	Date Printed	Design Year	Growth Factor	Peak Hour	EXISTING TRAFFIC VOLUMES	VOLUMES	VOLUMES	NEW TRIPS				NEW TRIPS				NEW TRIPS				NEW TRIPS				
APPROACH AND MOVEMENT	11/18/19	2022	1.060	4.45 - 5.45 PM				VEH= 33	VEH= 21	VEH= 66	VEH= 44	VEH= 63	VEH= 61	"NO-BUILD" TRAFFIC VOLUMES		VEH= 44	VEH= 29							
INTERSECTION NAME								ENTERING % VOL	EXITING % VOL	ENTERING % VOL	EXITING % VOL	ENTERING % VOL	EXITING % VOL	ENTERING % VOL	EXITING % VOL	ENTERING % VOL	EXITING % VOL	ENTERING % VOL	EXITING % VOL	ENTERING % VOL	EXITING % VOL	ENTERING % VOL	EXITING % VOL	
Intersection No. 1 Willow Avenue and 16th Street	EB Left	102						0	0	0	0	0	0	0	0	108	0	0	0	0	0	0	108	
	EB Through	47						0	0	0	0	0	0	0	0	50	0	0	0	0	0	50		
	EB Right	19						0	0	0	0	0	0	0	0	20	0	0	0	0	0	20		
	NB Through	626	7	4	5	2	0	5	3	0	5	3	0	5	3	683	5	2	0	0	0	685		
	NB Right	58						0	0	0	0	0	0	0	0	61	0	0	0	0	0	61		
	SB Left	23						0	0	0	0	0	0	0	0	24	0	0	0	0	0	24		
Intersection No. 2 Park Avenue and 16th Street	SB Through	949	4	2	0	5	1	0	5	2	0	5	2	0	5	1018	0	5	1	0	0	1020		
	ALL APPR.	1824	11	6	5	2	5	1	5	3	5	2	5	3	1965	5	2	5	1	0	0	1968		
	EB Left	93						0	0	0	0	0	0	0	0	99	0	0	0	0	0	99		
	EB Right	35						0	0	0	0	0	0	0	0	37	0	0	0	0	0	37		
	NB Through	645	36	4	20	7	0	20	13	0	20	13	0	20	13	756	20	9	0	0	0	765		
	SBSR Through	200						0	15	3	0	15	7	0	5	225	0	20	6	0	0	231		
Intersection No. 3 Hackensack Avenue and 19th Street	SB Through	789	21	2	0	5	1	0	5	2	0	5	2	0	15	872	0	0	0	0	0	872		
	ALL APPR.	1762	57	6	20	7	20	4	20	13	20	9	20	13	1988	20	9	20	6	0	0	2003		
	WB Left	20						0	0	0	0	0	0	0	0	21	0	0	0	0	0	21		
	WB Right	485						0	10	2	0	10	4	0	10	527	0	10	3	0	0	530		
	NB Through	43						0	0	0	0	0	0	0	0	46	0	0	0	0	0	46		
	NB Right	35						0	0	0	0	0	0	0	0	37	0	0	0	0	0	37		
Intersection No. 4 Willow Avenue and 15th Street	SB Left	474			10	3	0	10	7	0	10	6	0	10	6	519	10	4	0	0	0	523		
	SB Through	15						0	0	0	0	0	0	0	16	0	0	0	0	0	0	16		
	ALL APPR.	1072	0	0	10	3	10	2	10	7	10	4	10	6	1165	10	4	10	3	0	0	1172		
	EB Left	26						0	0	0	0	0	0	0	0	28	0	0	0	0	0	28		
	EB Through	94			10	3	0	10	7	0	10	6	0	10	6	116	10	4	0	0	0	120		
	EB Right	386						0	0	0	0	0	0	0	409	0	0	0	0	0	0	409		
Intersection No. 5 Park Avenue and 15th Street	WB Left	205		1	0	5	1	0	5	2	0	5	3	0	5	225	0	5	1	0	0	226		
	WB Through	222			0	10	2	0	10	4	0	10	6	0	10	248	0	10	3	0	0	251		
	WB Right	364			0	5	1	0	5	2	0	5	3	0	392	0	5	1	0	0	0	394		
	NB Left	206						0	0	0	0	0	0	0	0	218	0	0	0	0	0	218		
	NB Through	355	7					0	0	0	0	0	0	0	0	383	0	0	0	0	0	383		
	NB Right	163		4	5	2	0	5	3	0	5	3	0	5	3	185	5	2	0	0	0	187		
Intersection No. 6 19th Street and Parking Deck Driveway	SB Left	245			5	2	0	5	3	0	5	3	0	5	3	268	5	2	0	0	0	270		
	SB Through	369	4					0	0	0	0	0	0	0	395	0	0	0	0	0	0	395		
	SB Right	86						0	0	0	0	0	0	0	91	0	0	0	0	0	0	91		
	ALL APPR.	2721	11	5	20	7	20	4	20	13	20	9	20	13	2958	20	9	20	6	0	0	2972		
	EB Left	95						0	0	0	0	0	0	0	0	101	0	0	0	0	0	101		
	EB Through	351		4	20	7	0	20	13	0	20	13	0	20	13	408	20	9	0	0	0	417		
Intersection No. 7 Harbor Blvd/19th Street and Waterfront Terrace	EB Right	47						0	0	0	0	0	0	0	50	0	0	0	0	0	0	50		
	WB Left	154	8	2	0	5	1	0	5	2	0	5	2	0	10	183	0	0	0	0	0	183		
	WB Through	431		2	0	20	4	0	20	9	0	20	9	0	20	452	0	20	6	0	0	458		
	WB Right	67						0	0	0	0	0	0	0	71	0	0	0	0	0	0	71		
	NB Left	62						0	0	0	0	0	0	0	0	66	0	0	0	0	0	66		
	NB Through	386	21					0	0	0	0	5	3	0	433	0	0	0	0	0	0	433		
Intersection No. 8 Baldwin Ave/Harbor Blvd and Port Imperial Blvd/Waterfront Terrace	NB Right	289	14	4	20	7	0	20	13	0	15	9	0	15	9	354	20	9	0	0	0	362		
	SB Left	16						0	0	0	0	0	0	0	0	17	0	0	0	0	0	17		
	SB Through	601	13					0	0	0	0	0	0	5	3	653	0	0	0	0	0	653		
	SB Right	304						0	0	0	0	0	0	0	322	0	0	0	0	0	0	322		
	ALL APPR.	2773	56	12	40	13	25	5	40	26	25	11	40	25	35	3110	40	18	20	6	0	3133		
	SB Right	300						0	0	0	0	0	0	0	0	318	0	0	0	0	0	318		
Intersection No. 9 JFK Boulevard East and Baldwin Avenue	EB Left	5						0	0	0	0	0	0	0	0	5	0	0	0	0	0	5		
	EB Through	658	14	8	40	13	0	40	26	0	35	22	0	35	22	781	40	18	0	0	0	799		
	WB Through	393	8	4	0	25	5	0	25	11	0	25	11	0	30	463	0	20	6	0	0	469		
	ALL APPR.	1356	22	12	40	13	25	5	40	26	25	11	35	22	30	1568	40	18	20	6	0	1591		
	EB Left	556	14	8				0	0	0	0	0	0	0	0	627	0	0	0	0	0	627		
	EB Through	132			40	13	0	40	26	0	40	26	0	40	26	186	40	18	0	0	0	203		
Intersection No. 9 JFK Boulevard East and Baldwin Avenue	WB Through	113						0	25	5	0	25	11	0	5	139	0	20	6	0	0	145		
	WB Right	106						0	0	0	0	30	13	0	6	126	0	30	9	0	0	134		
	SB Left	218						0	0	0	0	0	0	0	0	251	30	13	0	0	0	284		
	SB Through	279	8	4				0	0	0	0	0	0	0	25	323	0	0	0	0	0	323		
	SB Right	8						0	0	0	0	0	0	0	0	9	0	0	0	0	0	9		
	ALL APPR.	1404	22	12	40	13	25	5	70	46	55	24	35	22	30	1651	70	31	50	15	0	1687		
Intersection No. 8 Baldwin Ave/Harbor Blvd and Port Imperial Blvd/Waterfront Terrace	EB Left	340		11				0	0	0	0	0	0	0	0	371	0	0	0	0	0	371		
	EB Through	54			20	7	0	10	7	0	10	6	0	10	6	77	10	4	0	0	0	81		
	EB Right	24						0	0	0	0	0	0	0	0	41	10	4	0	0	0	46		
	WB Left	7						0	0	0	0	0	0	0	0	7	0	0	0	0	0	7		
	WB Through	26						0	20	4	0	10	4	0	10	42	0	10	3	0	0	45		
	WB Right	87						0	40	8	0	20	9	0	10	116	0	20	6	0	0	121		
Intersection No. 9 JFK Boulevard East and Baldwin Avenue	NB Left	43						0	0	0	0	10	4	0	15	9	0	10	3	0	0	59		
	NB Through	650	14	8				0	0	0	0	20	9	0	30	738	0	20	6	0	0	744		
	NB Right	7						0	0	0	0	0	0	0	0	7	0	0	0	0	0	7		
	SB Left	72																						

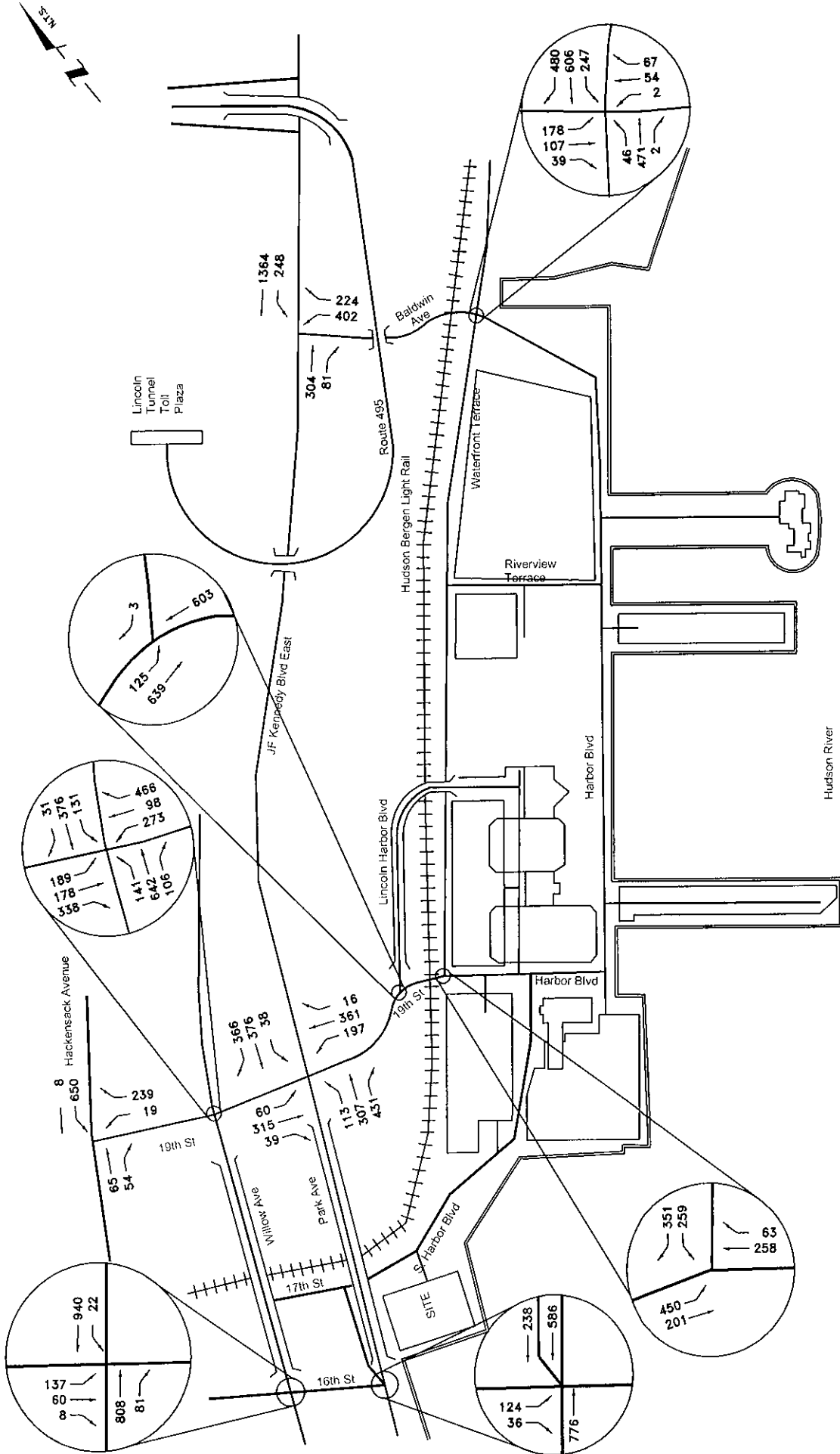
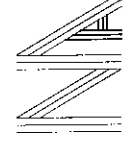


EXHIBIT NO. 19

PEAK AM HIGHWAY HOUR
2022 BUILD TRAFFIC VOLUMES
ATR Development
Weehawken, NJ

MICHAEL MARIS ASSOCIATES, INC.



Project No. 19-221

November, 2019

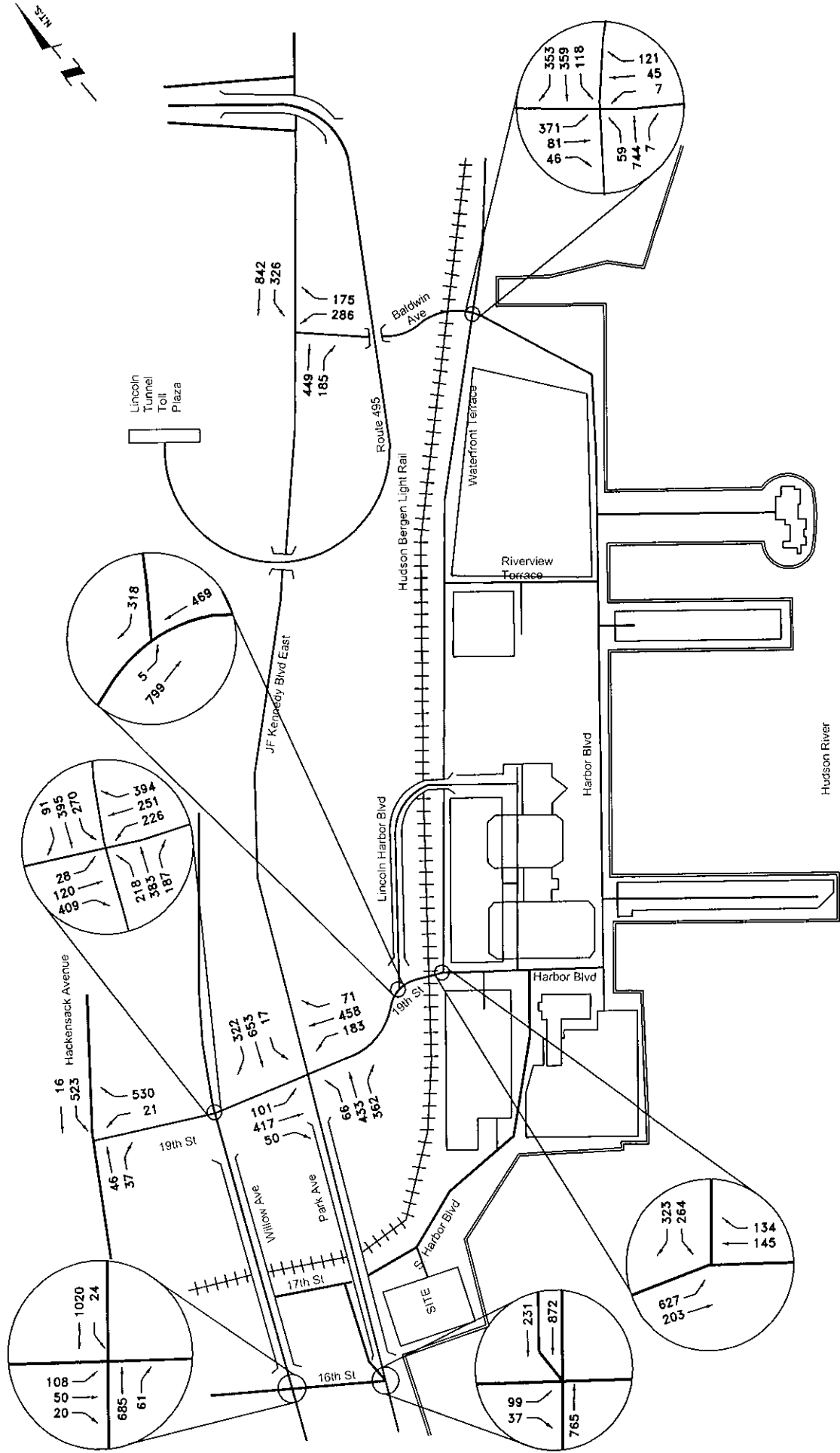
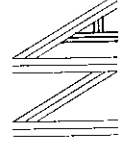


EXHIBIT NO. 20

PEAK PM HIGHWAY HOUR
 2022 BUILD TRAFFIC VOLUMES
 ATIR Development
 Weehawken, NJ



MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

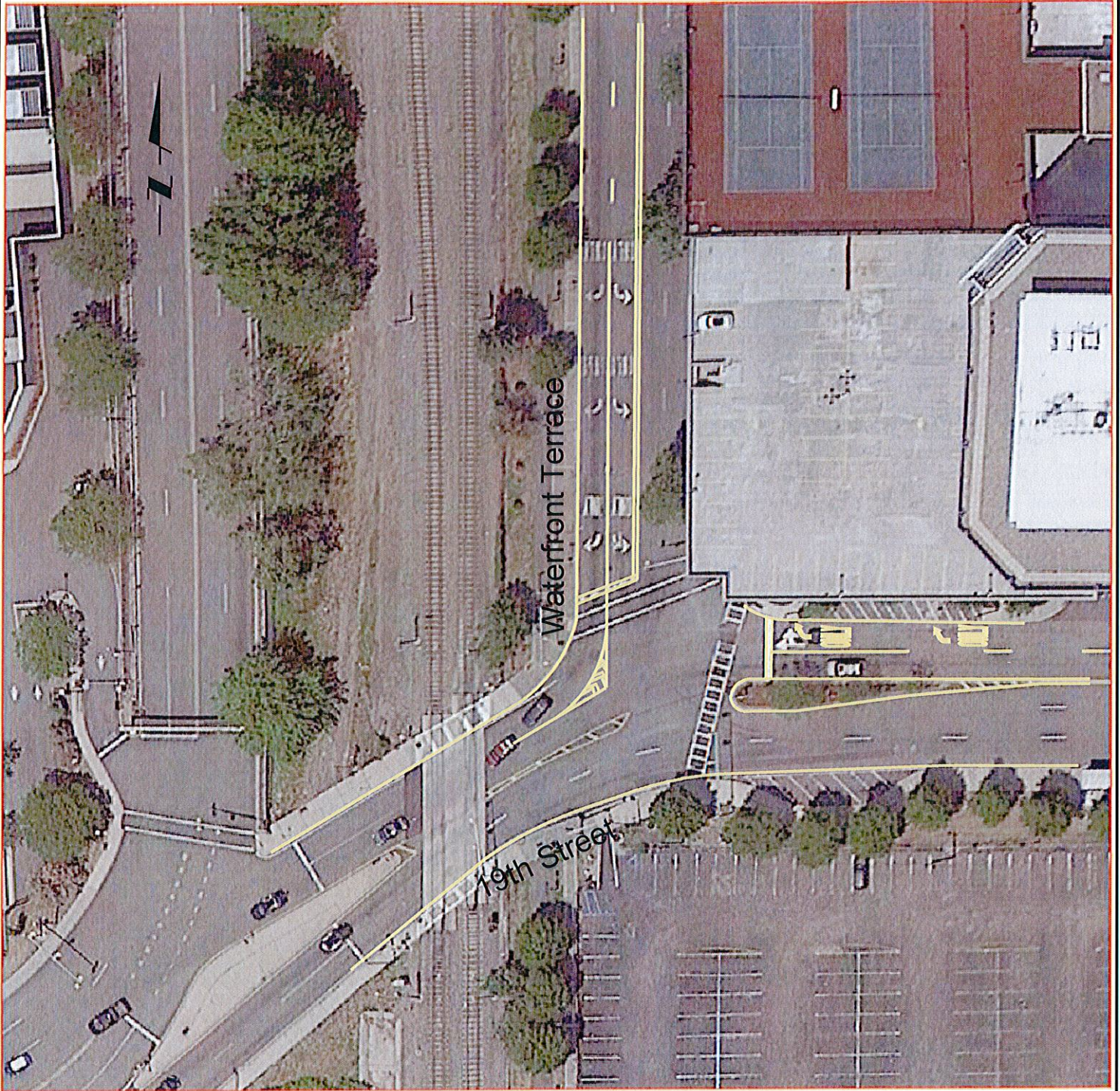


EXHIBIT NO. 21

WATERFRONT TERRACE & 19TH STREET
PROPOSED IMPROVEMENT PLANS

ATIR Development
Weehawken, NJ

Project No. 19-221

November, 2019



MICHAEL MARIS ASSOCIATES, INC.

LEVEL OF SERVICE SUMMARY (revised 11/17/19)

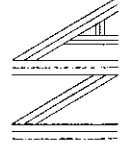
PEAK AM HIGHWAY HOUR

INTERSECTION NAME	APPROACH	LANE GROUP	NO.	YEAR 2019 EXISTING CONDITIONS			YEAR 2022 NO-BUILD CONDITIONS			YEAR 2022 BUILD CONDITIONS			YEAR 2022 BUILD W/IMPROVEMENTS CONDITIONS			PROPOSED IMPROVEMENTS
				DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	
INTERSECTION 1 Willow Avenue and 16th Street	E/B 16th Street	L/T/R	1	33.0	0.54	C	33.9	0.57	C	33.9	0.57	C				
	N/B Willow Avenue	T	1	10.5	0.43	B	10.9	0.46	B	10.9	0.46	B				
	T/R Approach	T	1	10.5	0.43	B	10.9	0.46	B	10.9	0.46	B				
	S/B Willow Avenue	L/T	1	10.9	0.46	B	11.5	0.50	B	11.5	0.50	B				
		T	1	11.4	0.48	B	12.0	0.52	B	12.0	0.52	B				
		Approach	1	11.1		B	11.7		B	11.7		B				
	Total Intersection			13.1		B	13.6		B	13.6		B				
INTERSECTION 2 Park Avenue and 16th Street/Harbor Blvd	E/B 16th Street	L/R	1	44.1	0.59	D	45.7	0.63	D	45.7	0.63	D			SIGNAL TIMING MODIFICATION	
	N/B Park Avenue	T	1	8.8	0.63	A	10.1	0.69	B	10.2	0.69	B			REDISTRIBUTE GREEN TIME TO HARBOR BLVD	
	S/B Park Avenue	T	1	18.6	0.63	B	21.3	0.71	C	21.3	0.71	C				
	S/B Harbor Boulevard	T	1	82.3	0.93	F	115.4	1.06	F	130.2	1.11	F			NOT RECOMMENDED	
	Total Intersection			24.8		C	30.8		C	33.3		C				
INTERSECTION 3 Hackensack Avenue and 19th Street	W/B 19th Street	L	1	63.5	0.24	F	81.7	0.30	F	83.3	0.31	F				
	R	1	10.0	0.24	B	10.3	0.27	B	10.3	0.27	B					
	Approach			14.2		B	15.6		C							
	S/B Hackensack Ave	L/T	1	9.5	0.45	A	9.8	0.48	A	9.9	0.49	A				
	Total Intersection					N/A			N/A			N/A				

EXHIBIT NO. 22

PEAK AM HIGHWAY HOUR
LEVELS OF SERVICE SUMMARY

ATR Development
Weehawken, NJ



MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

LEVEL OF SERVICE SUMMARY (revised 11/17/19)

PEAK AM HIGHWAY HOUR

File Name: 103719.DWG(4) 10/25/19

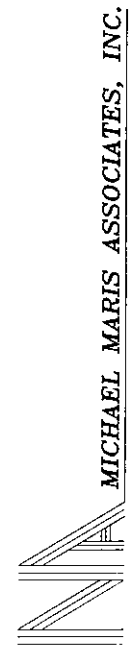
INTERSECTION NAME	APPROACH	LANE GROUP	NO.	YEAR 2019 EXISTING CONDITIONS			YEAR 2022 NO-BUILD CONDITIONS			YEAR 2022 BUILD CONDITIONS			YEAR 2022 BUILD W/IMPROVEMENTS CONDITIONS			PROPOSED IMPROVEMENTS
				DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	
INTERSECTION 4 Willow Avenue and 19th Street	E/B 19th Street	L/T	1	31.7	0.44	C	33.4	0.49	C	33.8	0.49	C				
		T	1	26.3	0.34	C	26.9	0.37	C	26.9	0.37	C				
		T/R Approach	1	30.8	0.60	C	35.1	0.65	D	35.1	0.65	D				
	W/B 19th Street	L	1	162.9	1.19	F	260.4	1.43	F	265.2	1.44	F				
		T	1	23.8	0.16	C	24.2	0.19	C	24.3	0.20	C				
		R Approach	2	97.7	0.26	C	25.7	0.31	C	25.7	0.32	C				
	N/B Willow Avenue	L/T	1	59.3	0.88	E	69.9	0.94	E	69.8	0.94	E				
		T	1	49.8	0.80	D	55.5	0.86	E	55.6	0.86	E				
		T/R Approach	1	52.3	0.81	D	58.6	0.87	E	58.8	0.87	E				
	S/B Willow Avenue	L/T	1	33.7	0.64	C	35.9	0.68	D	36.0	0.69	D				
T/R		1	31.7	0.58	C	33.3	0.63	C	33.3	0.63	C					
Approach		1	32.8		C	34.7		C	34.7		C					
Total Intersection				52.5		D	66.0		E	66.6		E				
INTERSECTION 5 Park Avenue and 19th Street	E/B 19th Street	L/T	1	17.2	0.21	B	17.8	0.23	B	17.9	0.23	B	24.5	0.28	C	
		T	1	16.0	0.19	B	16.3	0.21	B	16.3	0.21	B	21.8	0.26	C	
		T/R Approach	1	16.1	0.19	B	16.4	0.22	B	16.4	0.22	B	21.9	0.27	C	
	W/B 19th Street	L/T	1	22.5	0.35	C	24.9	0.43	C	25.0	0.44	C	34.7	0.54	C	
		T	2	15.9	0.21	B	16.2	0.24	B	16.3	0.25	B	21.7	0.30	C	
		R Approach	1	18.1	0.01	A	9.3	0.09	A	9.3	0.01	A	13.1	0.01	B	
	N/B Park Avenue	L/T	1	45.3	0.80	D	55.2	0.89	E	55.2	0.89	E	33.2	0.70	C	
		T/R	1	52.6	0.85	D	67.7	0.95	E	69.8	0.96	E	42.7	0.83	D	
		Approach	1	48.7		D	61.1		E	61.9		E	37.7		D	
	S/B Park Avenue	L	1	21.6	0.13	C	23.1	0.15	C	23.3	0.15	C	17.2	0.11	B	
T		1	21.9	0.44	C	22.8	0.49	C	22.8	0.49	C	16.6	0.42	B		
R Approach		1	37.7	0.61	D	39.2	0.66	D	39.2	0.66	D	28.6	0.55	C		
Total Intersection			30.8		C	35.3		D	35.5		D	28.0		C		

SIGNAL TIMING MODIFICATION
REDISTRIBUTE GREEN TIME TO INCREASE NB LEFT CAPACITY
NOT RECOMMENDED

EXHIBIT NO. 22

PEAK AM HIGHWAY HOUR
LEVELS OF SERVICE SUMMARY (cont)

ATIR Development
Weehawken, NJ



MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

LEVEL OF SERVICE SUMMARY (revised 11/17/19)

PEAK AM HIGHWAY HOUR

INTERSECTION NAME	APPROACH	LANE GROUP	NO.	YEAR 2019 EXISTING CONDITIONS			YEAR 2022 NO-BUILD CONDITIONS			YEAR 2022 BUILD CONDITIONS			YEAR 2022 BUILD W/IMPROVEMENTS CONDITIONS			PROPOSED IMPROVEMENTS
				DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	
INTERSECTION 6 19th Street and Harbor Road/Garage Ramp	E/B 19th Street	L	2	24.6	0.12	C	24.6	0.13	C	24.6	0.13	C				
		T	2	0.4	0.19	A	0.4	0.21	A	0.4	0.21	A				
	Approach		4.5	A	4.4	A	4.4	A	4.4	A	4.4	A				
	W/B 19th Street	T	2	8.8	0.26	A	9.1	0.30	A	9.2	0.30	A				
Harbor Road/Garage Ramp	S/B Harbor Rd/Garage	R	2	22.9	0.01	C	22.9	0.01	C	22.9	0.01	C				
	Total Intersection			6.4	A	A	6.5	A	A	6.5	A	A				
INTERSECTION 7 Waterfront Terrace and Harbor Boulevard	E/B Harbor Boulevard	L/T	1	23.8	0.72	C	32.8	0.84	C	34.2	0.85	C	24.3	0.76	C	RESTRIPE TO ADD CHANNELIZED SB RIGHT TURN LANE SIGNAL TIMING MODIFICATION REDISTRIBUTE GREEN TIME
		T	1	9.0	0.22	A	9.3	0.25	A	9.4	0.26	A	7.6	0.24	A	
	Approach		19.5	B	25.7	C	25.7	C	26.6	C	26.6	C	19.1	B		
	W/B Harbor Boulevard	T	1	9.4	0.26	A	9.9	0.31	A	10.0	0.32	A	8.1	0.29	A	
Harbor Boulevard	R	1	7.6	0.02	A	7.8	0.05	A	7.8	0.05	A	6.3	0.04	A		
	Approach		9.3	A	9.6	A	9.6	A	9.7	A	9.7	A	7.9	A		
Waterfront Terrace	L	1	17.6	0.41	B	18.1	0.45	B	18.2	0.45	B	22.3	0.54	C		
	R	1	21.3	0.59	C	23.7	0.67	C	24.8	0.70	C	35.6	0.82	D		
Approach		19.7	B	21.3	C	21.3	C	22.1	C	22.1	C	30.0	C			
Total Intersection				17.9	B	B	21.0	C	C	21.6	C	C	21.3	C	C	

EXHIBIT NO. 22

PEAK AM HIGHWAY HOUR
LEVELS OF SERVICE SUMMARY (cont)

ATIR Development
Weehawken, NJ

Project No. 19-221

November, 2019



MICHAEL MARIS ASSOCIATES, INC.

LEVEL OF SERVICE SUMMARY (revised 11/17/19)

PEAK AM HIGHWAY HOUR

INTERSECTION NAME	APPROACH	LANE GROUP	NO.	YEAR 2019 EXISTING CONDITIONS			YEAR 2022 NO-BUILD CONDITIONS			YEAR 2022 BUILD CONDITIONS			YEAR 2022 BUILD W/IMPROVEMENTS CONDITIONS			PROPOSED IMPROVEMENTS
				DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	
INTERSECTION 8 Waterfront Terrace/ Port Imp. Boulevard and Baldwin Avenue/ Harbor Boulevard	E/B Baldwin Avenue	L	1	48.2	0.58	D	50.2	0.63	D	50.2	0.63	D	37.7	0.45	D	SIGNAL PHASING MODIFICATION ADD NB & SB LEFT TURN PHASE
		L/T/R Approach	1	42.8 45.9	0.41	D	44.8 47.8	0.48	D	45.1 47.9	0.50	D	35.7 36.8	0.36	D	
	W/B Harbor Boulevard	L/T	1	37.5	0.11	D	38.2	0.17	D	38.5	0.18	D	38.5	0.18	D	SIGNAL PHASING MODIFICATION ADD NB & SB LEFT TURN PHASE
		R Approach	1	25.6 32.8	0.07	C	26.9 26.9	0.15	C	27.3 32.7	0.18	C	42.8 40.8	0.33	D	
	N/B Waterfront Terrace	L	1	26.3	0.12	C	30.2	0.19	C	30.9	0.22	C	26.3	0.22	C	SIGNAL TIMING MODIFICATION
T T/R Approach		1	27.4 27.4 27.3	0.35 0.35	C	28.2 28.2 28.3	0.40 0.40	C	28.3 28.3 28.5	0.40 0.40	C	28.3 28.3 28.1	0.40 0.40	C		
S/B Port Imperial Blvd	L	1	18.4	0.43	B	19.9	0.50	B	20.1	0.51	C	35.3	0.68	D	SIGNAL TIMING MODIFICATION	
	T T/R Approach	1	19.4 19.8 19.4	0.55 0.55	B	20.7 21.2 20.7	0.60 0.60	C	20.7 21.2 20.8	0.60 0.60	C	51.4 54.0 49.3	0.91 0.91	D		
Total Intersection				25.4		C	26.9		C	27.1		C	42.3		D	
INTERSECTION 9 JFK Boulevard and Baldwin Avenue	W/B Baldwin Avenue	L	1	247.5	1.42	F	286.3	1.56	F	286.3	1.52	F	47.0	0.86	D	SIGNAL TIMING MODIFICATION
		R Approach	1	58.1 188.8	0.78	E	92.7 219.0	0.99	F	105.0 221.4	1.03	F	32.3 41.7	0.59	C	
	N/B JFK Boulevard	T	1	12.7	0.22	B	13.0	0.24	B	13.0	0.24	B	21.3	0.33	C	SIGNAL TIMING MODIFICATION
		T/R Approach	1	12.8 12.8	0.23	B	13.1 13.0	0.25	B	13.1 13.0	0.25	B	21.5 21.4	0.33	C	
	S/B JFK Boulevard	L	1	6.4	0.31	A	6.9	0.37	A	6.9	0.37	A	13.5	0.45	B	REDISTRIBUTE GREEN TIME
T Approach		3	6.5 6.5	0.50	A	6.9 6.9	0.54	A	6.9 6.9	0.54	A	14.6 14.5	0.67	B		
Total Intersection				49.5		D	58.2		E	59.3		E	22.0		C	

EXHIBIT NO. 22

PEAK AM HIGHWAY HOUR
LEVELS OF SERVICE SUMMARY (cont)

ATIR Development
Weehawken, NJ



MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

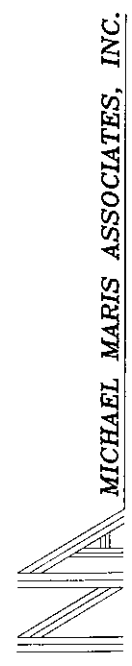
LEVEL OF SERVICE SUMMARY (revised 11/17/19)

PEAK PM HIGHWAY HOUR

INTERSECTION NAME	APPROACH	LANE GROUP	NO.	YEAR 2019 EXISTING CONDITIONS			YEAR 2022 NO-BUILD CONDITIONS			YEAR 2022 BUILD CONDITIONS			YEAR 2022 BUILD W/IMPROVEMENT CONDITIONS			PROPOSED IMPROVEMENTS
				DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	
INTERSECTION 1 Willow Avenue and 16th Street	E/B 16th Street	L/T/R	1	31.0	0.46	C	31.6	0.49	C	31.6	0.49	C				
	N/B Willow Avenue	T	1	9.5	0.34	A	9.7	0.36	A	9.8	0.37	A				
	T/R Approach	T	1	9.5	0.34	A	9.8	0.36	A	9.9	0.37	A				
	S/B Willow Avenue	L/T	1	11.9	0.52	B	12.6	0.56	B	12.6	0.56	B				
INTERSECTION 2 Park Avenue and 16th Street/Harbor Blvd	Total Intersection			12.9		B	13.4		B	13.5		B			SIGNAL TIMING MODIFICATION	
	E/B 16th Street	L/R	1	38.1	0.43	D	38.9	0.46	D	38.8	0.46	D	38.8	0.46	D	
	N/B Park Avenue	T	1	6.8	0.51	A	8.0	0.59	A	8.1	0.60	A	8.1	0.60	A	
	S/B Park Avenue	T	1	28.7	0.86	C	40.1	0.95	D	40.1	0.95	D	50.9	1.00	D	
INTERSECTION 3 Hackensack Avenue and 19th Street	S/B Harbor Boulevard	T	1	62.1	0.82	C	77.6	0.92	E	82.6	0.95	F	58.3	0.82	E	
	Total Intersection			25.1		C	32.0		C	32.7		C	34.6		NOT RECOMMENDED	
	W/B 19th Street	L	1	32.4	0.14	D	39.9	0.18	E	40.5	0.18	E				
	S/B Hackensack Ave	R	1	13.0	0.54	B	14.0	0.59	B	14.1	0.59	B				
Total Intersection			13.8		B	15.0		B	15.1		C					
		L/T	1	8.7	0.34	A	8.9	0.37	A	8.9	0.38	A				
						N/A			N/A			N/A				

EXHIBIT NO. 23

PEAK PM HIGHWAY HOUR
LEVELS OF SERVICE SUMMARY
ATIR Development
Weehawken, NJ



MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

LEVEL OF SERVICE SUMMARY (revised 11/17/19)

PEAK PM HIGHWAY HOUR

File Name: 1927ALCRS(CO)1.XLS

INTERSECTION NAME	APPROACH	LANE GROUP	NO.	YEAR 2019 EXISTING CONDITIONS			YEAR 2022 NO-BUILD CONDITIONS			YEAR 2022 BUILD CONDITIONS			YEAR 2022 BUILD W/IMPROVEMENT CONDITIONS			PROPOSED IMPROVEMENTS
				DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	
INTERSECTION 4 Willow Avenue and 19th Street	E/B 19th Street	L/T	1	23.7	0.14	C	24.1	0.17	C	24.2	0.17	C				
		T	1	23.5	0.14	C	23.9	0.17	C	24.0	0.17	C				
		T/R	1	35.2	0.66	D	37.8	0.71	D	37.8	0.71	D				
		Approach		31.6		C	33.2		C	33.2		C				
	W/B 19th Street	L	1	113.7	1.04	F	202.8	1.28	F	206.4	1.29	F				
		T	1	27.3	0.41	C	28.2	0.46	C	28.3	0.46	C				
		R	2	25.5	0.29	C	26.4	0.34	C	26.5	0.35	C				
	N/B Willow Avenue	Approach		58.1		E	88.9		F	89.9		F				
		L/T	1	42.9	0.70	D	46.9	0.76	D	47.1	0.77	D				
		T	1	39.3	0.63	D	42.0	0.67	D	42.1	0.69	D				
S/B Willow Avenue	T/R	1	41.1	0.65	D	44.3	0.71	D	44.5	0.71	D					
	Approach		41.1		D	44.5		D	44.6		D					
	L/T	1	37.3	0.75	D	41.1	0.80	D	41.2	0.81	D					
INTERSECTION 5 Park Avenue and 19th Street	E/B 19th Street	L/T	1	20.8	0.28	C	22.2	0.31	C	22.3	0.32	C	30.7	0.39	C	
		T	1	16.6	0.24	B	17.1	0.28	B	17.2	0.29	B	23.1	0.35	C	
		T/R	1	16.7	0.25	B	17.2	0.28	B	17.2	0.29	B	23.2	0.35	C	
		Approach		17.8		B	18.4		B	18.5		B	25.0		C	
	W/B 19th Street	L/T	1	23.9	0.34	C	27.4	0.46	C	27.7	0.46	C	39.2	0.58	D	
		T	2	16.5	0.27	B	16.9	0.31	B	17.0	0.31	B	22.6	0.38	C	
		R	1	9.4	0.02	A	9.5	0.03	A	9.5	0.03	A	13.3	0.03	B	
	N/B Park Avenue	Approach		18.2		B	19.6		B	19.6		B	26.9		C	
		L/T	1	93.7	1.04	F	273.9	1.49	F	281.1	1.50	F	47.4	0.86	D	
		T/R	1	47.7	0.81	E	66.5	0.95	E	68.4	0.96	E	36.1	0.75	D	
S/B Park Avenue	Approach		71.8		E	176.1		F	181.1		F	42.0		D		
	L	1	20.4	0.05	C	22.0	0.07	C	22.1	0.07	C	16.6	0.05	B		
	T	1	31.5	0.77	C	35.7	0.84	D	35.7	0.84	D	23.2	0.71	C		
Total Intersection	Approach	R	1	37.7	0.59	D	39.0	0.64	D	39.0	0.64	D	28.6	0.53	C	
		Approach		32.9		C	36.3		D	36.3		D	24.5		C	
			37.4		D	68.3		E	69.8		E	30.0		C		

EXHIBIT NO. 23

PEAK PM HIGHWAY HOUR
LEVELS OF SERVICE SUMMARY (cont)
ATR Development
Weehawken, NJ



MICHAEL MARIS ASSOCIATES, INC.

Project No. 19-221

November, 2019

LEVEL OF SERVICE SUMMARY (revised 11/17/19)

PEAK PM HIGHWAY HOUR

INTERSECTION NAME	APPROACH	LANE GROUP	NO.	YEAR 2019 EXISTING CONDITIONS			YEAR 2022 NO-BUILD CONDITIONS			YEAR 2022 BUILD CONDITIONS			YEAR 2022 BUILD W/IMPROVEMENT CONDITIONS			PROPOSED IMPROVEMENTS
				DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	
INTERSECTION 6 19th Street and Harbor Road/Garage Ramp	E/B 19th Street	L T Approach	2	23.5	0.01	C	23.5	0.01	C	23.5	0.01	C				
				0.4	0.23	A	0.5	0.28	A	0.5	0.28	A				
				0.6		A	0.6		A	0.6		A				
				8.5	0.21	A	8.8	0.25	A	8.9	0.27	A				
INTERSECTION 7 Waterfront Terrace and Harbor Boulevard/19 St.	S/B Harbor Rd/Garage	R	2	37.8	0.71	D	40.1	0.75	D	40.1	0.75	D				
				11.1		B	11.0		B	11.0		B				
				37.6	0.92	D	79.2	1.08	F	83.0	1.10	F	49.6	0.99	D	RESTRIPE TO ADD CHANNELIZED SB RIGHT TURN LANE
				8.7	0.18	A	9.3	0.25	A	9.5	0.28	A	7.7	0.25	A	
	W/B Harbor Boulevard	T R Approach	1	32.2		C	63.2		E	65.1		E				
				8.5	0.16	A	8.8	0.19	A	8.9	0.20	A	7.2	0.18	A	SIGNAL TIMING MODIFICATION
				8.1	0.10	A	8.4	0.13	A	8.4	0.14	A	6.8	0.13	A	
				8.4		A	8.6		A	8.7		A	7.0		A	
	S/B Waterfront Terrace	L R Approach	1	18.7	0.47	B	20.1	0.54	C	20.8	0.56	C	26.7	0.67	C	REDISTRIBUTE GREEN TIME
				22.3	0.61	C	25.8	0.71	C	25.8	0.71	C	38.3	0.84	D	
				20.7		C	23.3		C	23.5		C	33.0		C	
				24.9		C	41.4		D	42.3		D	32.4		C	
Total Intersection																

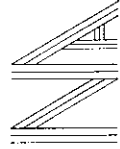
EXHIBIT NO. 23

PEAK PM HIGHWAY HOUR
LEVELS OF SERVICE SUMMARY (cont'd)

ATR Development
Weehawken, NJ

Project No. 19-221

November, 2019



MICHAEL MARIS ASSOCIATES, INC.

LEVEL OF SERVICE SUMMARY (revised 11/17/19)

PEAK PM HIGHWAY HOUR

INTERSECTION NAME	APPROACH	LANE GROUP	NO.	YEAR 2019 EXISTING CONDITIONS			YEAR 2022 NO-BUILD CONDITIONS			YEAR 2022 BUILD CONDITIONS			YEAR 2022 BUILD W/IMPROVEMENT CONDITIONS			PROPOSED IMPROVEMENTS	
				DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS		
INTERSECTION 8 Waterfront Terrace/ Port Imp. Boulevard and Baldwin Avenue/ Harbor Boulevard	E/B Baldwin Avenue	L	1	152.1	1.18	F	194.3	1.28	F	194.3	1.29	F	67.4	0.93	E	SIGNAL PHASING MODIFICATION ADD NB & SB LEFT TURN PHASE	
		L/T/R Approach	1	40.5 131.2	0.29	D F	43.9 158.0	0.44	D F	44.9 156.2	0.49	D F	35.6 59.3	0.35	D E		
	W/B Harbor Boulevard	L/T	1	37.4	0.11	D	38.1	0.16	D	38.3	0.17	D	38.3	0.17	D		
		R Approach	1	27.8 30.7	0.22	C C	29.3 32.1	0.30	C C	29.6 32.4	0.31	C C	51.4 47.2	0.58	D D		
	N/B Waterfront Terrace	L	1	24.7	0.12	C	26.0	0.19	C	26.2	0.20	C	22.6	0.21	C		
		T T/R Approach	1 1 1	31.1 31.1 30.7	0.54 0.54 0.54	C C C	33.1 33.1 32.6	0.61 0.61 0.61	C C C	33.2 33.2 32.7	0.62 0.62 0.62	C C C	33.3 33.3 32.4	0.62 0.62 0.62	C C C		
	S/B Port Imperial Blvd	L	1	16.3	0.19	B	18.6	0.31	B	19.1	0.34	B	27.9	0.50	C		
		T T/R Approach	1 1 1	15.7 17.3 16.5	0.32 0.41	B B B	16.7 17.9 17.4	0.39 0.45	B B B	16.8 17.9 17.6	0.40 0.45	B B B	32.6 36.0 33.3	0.60 0.67	C D C		
	Total Intersection				47.8		D	54.5		D	54.2		D	39.7			C
	INTERSECTION 9 JFK Boulevard and Baldwin Avenue	W/B Baldwin Avenue	L	1	84.1	0.98	F	102.4	1.05	F	102.4	1.05	F	31.4	0.60		C
R Approach			1	42.1 70.3	0.55	D E	50.4 83.1	0.71	D F	52.6 83.4	0.73	D F	27.5 29.9	0.42	C C		
N/B JFK Boulevard		T	1	14.3	0.36	B	14.8	0.40	B	14.8	0.40	B	25.0	0.53	C		
		T/R Approach	1	14.5 14.4	0.36	B B	15.0 14.9	0.40	B B	15.0 14.9	0.40	B B	25.5 25.3	0.54	C C		
S/B JFK Boulevard		L	1	8.1	0.42	A	10.3	0.54	B	10.6	0.55	B	20.9	0.68	C		
		T Approach	3	5.0 5.7	0.29	A A	5.1 6.5	0.31	A A	5.1 6.6	0.31	A A	10.7 13.6	0.38	B B		
Total Intersection				21.0		C	24.4		C	24.6		C	20.1		C		

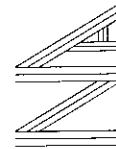
EXHIBIT NO. 23

PEAK PM HIGHWAY HOUR
LEVELS OF SERVICE SUMMARY (cont)

ATR Development
Weehawken, NJ

Project No. 19-221

November, 2019



MICHAEL MARIS ASSOCIATES, INC.

APPENDIX B

CAPACITY ANALYSES

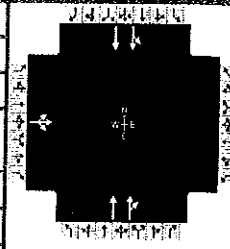


MICHAEL MARIS ASSOCIATES, INC.

2019 EXISTING TRAFFIC CONDITIONS

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 1ame	Analysis Date	Mar 21, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7.00		
File Name	1ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	129	57	8				756	76	21	870		

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	55.0	25.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

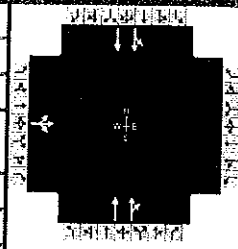
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		12.0				8.0		8.0
Phase Duration, s		30.0				60.0		60.0
Change Period, (Y+R _c), s		5.0				5.0		5.0
Max Allow Headway (MAH), s		3.2				0.0		0.0
Queue Clearance Time (g _s), s		13.4						
Green Extension Time (g _e), s		0.3				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14				2	12	1	6		
Adjusted Flow Rate (v), veh/h	204						445	431	482	456		
Adjusted Saturation Flow Rate (s), veh/h/ln	1366						1710	1654	1643	1556		
Queue Service Time (g _s), s	11.4						12.3	12.3	0.0	14.0		
Cycle Queue Clearance Time (g _c), s	11.4						12.3	12.3	13.7	14.0		
Green Ratio (g/C)	0.28						0.61	0.61	0.61	0.61		
Capacity (c), veh/h	379						1045	1011	1046	951		
Volume-to-Capacity Ratio (X)	0.538						0.426	0.426	0.461	0.479		
Available Capacity (c _a), veh/h	379						1045	1011	1046	951		
Back of Queue (Q), veh/ln (50th percentile)	4.3						4.6	4.5	5.2	5.0		
Queue Storage Ratio (RQ) (50th percentile)	0.00						0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	27.6						9.2	9.2	9.5	9.6		
Incremental Delay (d ₂), s/veh	5.4						1.3	1.3	1.5	1.7		
Initial Queue Delay (d ₃), s/veh	0.0						0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	33.0						10.5	10.5	10.9	11.4		
Level of Service (LOS)	C						B	B	B	B		
Approach Delay, s/veh / LOS	33.0	C	0.0				10.5	B	11.1	B		
Intersection Delay, s/veh / LOS	13.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.7	B	2.7	B	1.9	A	1.4	A
Bicycle LOS Score / LOS	0.8	A			1.2	A	1.3	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 1ame	Analysis Date	Mar 21, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Willow Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	1ame.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	129	57	8					756	76		21	870

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	55.0	25.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		

Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	129	57	8					756	76		21	870
Initial Queue (Q _b), veh/h	0	0	0					0	0		0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900					1900	1900		1900	1900
Parking (N _m), man/h	5	L+R	5					None			None	
Heavy Vehicles (P _{HV}), %		2						0			0	
Ped / Bike / RTOR, /h	8	0	0					2	0	0	5	0
Buses (N _b), buses/h	0	0	0					0	0		0	0
Arrival Type (AT)	3	3	3					3	3		3	3
Upstream Filtering (f)	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Lane Width (W), ft		12.0						10.0			10.0	
Turn Bay Length, ft		0						0			0	
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h	25	25	25					25	25		25	25

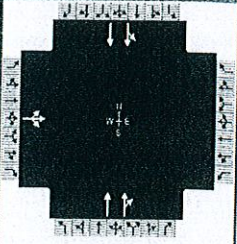
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		30.0				60.0	
Yellow Change Interval (Y), s		3.0				3.0		3.0
Red Clearance Interval (R _c), s		2.0				2.0		2.0
Minimum Green (G _{min}), s	6	6				6	6	6
Start-Up Lost Time (l), s	2.0	2.0				2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0				2.0	2.0	2.0
Passage (PT), s	2.0	2.0				2.0	2.0	2.0
Recall Mode	Max	Max				Max	Max	Max
Dual Entry	No	Yes				No	No	No
Walk (Walk), s	0.0	0.0				0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0				0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information

Agency	MMA			Duration, h	0.25
Analyst	MM - 1ame	Analysis Date	Mar 21, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Willow Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	1ame.xus				
Project Description	Atir Residential				



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	129	57	8					756	76		21	870

Signal Information

Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	Off															
Force Mode	Fixed	Simult. Gap N/S	Off															
				Green	55.0	25.0	0.0	0.0	0.0	0.0								
				Yellow	3.0	3.0	0.0	0.0	0.0	0.0								
				Red	2.0	2.0	0.0	0.0	0.0	0.0								

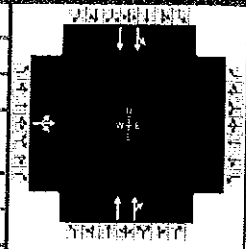
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Approach Grade Adjustment Factor (f_a)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	0.875	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	0.971	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.815						1.000			0.961	
Right-Turn Adjustment Factor (f_{RT})		0.000						0.967			0.910	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.997						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.991						0.998			1.000
Movement Saturation Flow Rate (s), veh/h		401						3057			3124	
Proportion of Vehicles Arriving on Green (P)	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.61	0.61	0.61	0.61	0.00
Incremental Delay Factor (k)		0.50						0.50	0.50	0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0				5.0		5.0
Green Ratio (g/C)		0.28				0.61		0.61
Permitted Saturation Flow Rate (s_p), veh/h/ln		0				619		643
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		0
Permitted Effective Green Time (g_p), s		0.0				0.0		55.0
Permitted Service Time (g_u), s		0.0				0.0		42.7
Permitted Queue Service Time (g_{ps}), s								0.0
Time to First Blockage (g_l), s		0.0				55.0		28.9
Queue Service Time Before Blockage (g_s), s								13.7
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.983	0.00	1.983	0.00	1.198	0.00	0.681	0.00				
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.077	0.000	0.077				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b		51.20		50.14	1222.22	6.81	1222.22	6.81				
Bicycle F_w / F_v	-3.64	0.34	-3.64		-3.64	0.72	-3.64	0.77				

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 1pme	Analysis Date	Mar 21, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.97
Intersection	Willow Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	1pme.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	102	47	19					626	58	23	949	

Signal Information				Signal Phases										
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	55.0	25.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0				
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

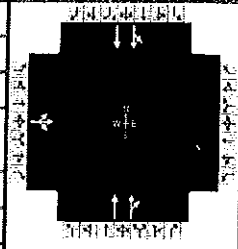
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		12.0				8.0		8.0
Phase Duration, s		30.0				60.0		60.0
Change Period, (Y+R _c), s		5.0				5.0		5.0
Max Allow Headway (MAH), s		3.3				0.0		0.0
Queue Clearance Time (g _s), s		11.5						
Green Extension Time (g _e), s		0.3				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14				2	12	1	6		
Adjusted Flow Rate (v), veh/h		173					358	348	517	485		
Adjusted Saturation Flow Rate (s), veh/h/ln		1352					1710	1659	1562	1468		
Queue Service Time (g _s), s		9.5					9.2	9.3	0.0	16.6		
Cycle Queue Clearance Time (g _c), s		9.5					9.2	9.3	16.5	16.6		
Green Ratio (g/C)		0.28					0.61	0.61	0.61	0.61		
Capacity (c), veh/h		376					1045	1014	996	897		
Volume-to-Capacity Ratio (X)		0.461					0.342	0.343	0.519	0.541		
Available Capacity (c _a), veh/h		376					1045	1014	996	897		
Back of Queue (Q), veh/ln (50th percentile)		3.5					3.4	3.4	5.9	5.7		
Queue Storage Ratio (RQ) (50th percentile)		0.00					0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh		26.9					8.6	8.6	10.0	10.2		
Incremental Delay (d ₂), s/veh		4.0					0.9	0.9	1.9	2.3		
Initial Queue Delay (d ₃), s/veh		0.0					0.0	0.0	0.0	0.0		
Control Delay (d), s/veh		31.0					9.5	9.5	11.9	12.5		
Level of Service (LOS)		C					A	A	B	B		
Approach Delay, s/veh / LOS	31.0	C	0.0				9.5	A	12.2	B		
Intersection Delay, s/veh / LOS			12.9						B			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.7	B	2.7	B	1.9	A	1.4	A
Bicycle LOS Score / LOS	0.8	A			1.1	A	1.3	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 1pme	Analysis Date	Mar 21, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.97		
Intersection	Willow Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	1pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	102	47	19					626	58	23	949	

Signal Information				Signal Timing (s)										
Cycle, s	90.0	Reference Phase	2	Green	55.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap EW	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off											

Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	102	47	19					626	58	23	949	
Initial Queue (Q _b), veh/h	0	0	0					0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900					1900	1900	1900	1900	
Parking (N _m), man/h	5	L+R	5					None			None	
Heavy Vehicles (P _{HV}), %		2						0			6	
Ped / Bike / RTOR, /h	8	0	0					0	0	0	2	0
Buses (N _b), buses/h	0	0	0					0	0	0	0	
Arrival Type (AT)	3	3	3					3	3	3	3	
Upstream Filtering (I)	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Lane Width (W), ft		12.0						10.0			10.0	
Turn Bay Length, ft		0						0			0	
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h	25	25	25					25	25	25	25	

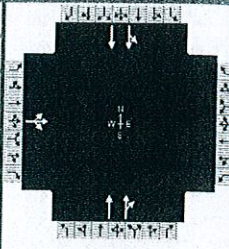
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		30.0				60.0	
Yellow Change Interval (Y), s		3.0				3.0		3.0
Red Clearance Interval (R _c), s		2.0				2.0		2.0
Minimum Green (G _{min}), s	6	6				6	6	6
Start-Up Lost Time (I _l), s	2.0	2.0				2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0				2.0	2.0	2.0
Passage (PT), s	2.0	2.0				2.0	2.0	2.0
Recall Mode	Max	Max				Max	Max	Max
Dual Entry	No	Yes				No	No	No
Walk (Walk), s	0.0	0.0				0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0				0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
	0	No	25				0	No	25	0	No	25
85th % Speed / Rest in Walk / Corner Radius												
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information

Agency	MMA			Duration, h	0.25
Analyst	MM - 1pme	Analysis Date	Mar 21, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.97
Intersection	Willow Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	1pme.xus				
Project Description	Atir Residential				



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	102	47	19				626	58		23	949	

Signal Information

Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off										
Force Mode	Fixed	Simult. Gap N/S	Off										
		Green		55.0	25.0	0.0	0.0	0.0	0.0				
		Yellow		3.0	3.0	0.0	0.0	0.0	0.0				
		Red		2.0	2.0	0.0	0.0	0.0	0.0				

Saturation Flow / Delay

	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	0.943	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	0.875	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	0.971	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.806						1.000			0.968	
Right-Turn Adjustment Factor (f_{RT})		0.000						0.970			0.910	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.997						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.991						1.000			1.000
Movement Saturation Flow Rate (s), veh/h		378						3083			2958	
Proportion of Vehicles Arriving on Green (P)	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.61	0.61	0.61	0.61	0.00
Incremental Delay Factor (k)		0.50						0.50	0.50	0.50	0.50	

Signal Timing / Movement Groups

	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0				5.0		5.0
Green Ratio (g/C)		0.28				0.61		0.61
Permitted Saturation Flow Rate (s_p), veh/h/ln		0				584		754
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		0
Permitted Effective Green Time (g_p), s		0.0				0.0		55.0
Permitted Service Time (g_u), s		0.0				0.0		45.7
Permitted Queue Service Time (g_{ps}), s								0.0
Time to First Blockage (g_t), s		0.0				55.0		28.0
Queue Service Time Before Blockage (g_{rs}), s								16.5
Protected Right Saturation Flow (s_r), veh/h/ln								
Protected Right Effective Green Time (g_r), s								

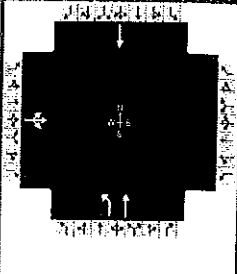
Multimodal

	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.983	0.00	1.983	0.00	1.198	0.00	0.681	0.00				
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.077	0.000	0.077				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b		51.20		50.14	1222.22	6.81	1222.22	6.81				
Bicycle F_w / F_v	-3.64	0.29	-3.64		-3.64	0.58	-3.64	0.83				

HCS 2010 Signalized Intersection Results Summary

General Information

Agency	MMA			Duration, h	0.25
Analyst	MM - 2ame	Analysis Date	Mar 22, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Park Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	2ame.xus				
Project Description	Atir Residential				



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	117	0	34				200	705				515

Signal Information

Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		12.0			2.0	4.0		8.3
Phase Duration, s		20.0			18.0	70.0		52.0
Change Period, (Y+R _c), s		5.0			5.0	5.0		5.0
Max Allow Headway (MAH), s		3.3			3.3	0.0		0.0
Queue Clearance Time (g _s), s		10.2			14.0			
Green Extension Time (g _e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.22			1.00			

Movement Group Results

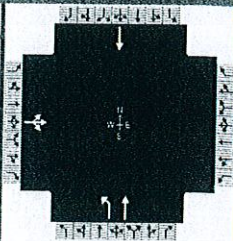
Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14				5	2				6
Adjusted Flow Rate (v), veh/h	157						211	742				
Adjusted Saturation Flow Rate (s), veh/h/ln	1587						1566	1644				
Queue Service Time (g _s), s	8.2						12.0	20.6				
Cycle Queue Clearance Time (g _c), s	8.2						12.0	20.6				
Green Ratio (g/C)	0.17						0.14	0.72				
Capacity (c), veh/h	265						226	1188				
Volume-to-Capacity Ratio (X)	0.593						0.931	0.625				
Available Capacity (c _a), veh/h	265						226	1188				
Back of Queue (Q), veh/ln (50th percentile)	3.9						7.3	6.6				
Queue Storage Ratio (RQ) (50th percentile)	0.00						0.00	0.00				
Uniform Delay (d ₁), s/veh	34.7						38.1	6.3				
Incremental Delay (d ₂), s/veh	9.4						44.2	2.5				
Initial Queue Delay (d ₃), s/veh	0.0						0.0	0.0				
Control Delay (d), s/veh	44.1						82.3	8.8				
Level of Service (LOS)	D						F	A				
Approach Delay, s/veh / LOS	44.1	D		0.0			25.1	C	18.6	B		
Intersection Delay, s/veh / LOS	24.8						C					

Multimodal Results

	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.1	B	1.8	A	2.1	B
Bicycle LOS Score / LOS	0.7	A			2.1	B	1.4	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 2ame	Analysis Date	Mar 22, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Park Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1> 7:00
File Name	2ame.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	117	0	34				200	705				515

Signal Information				Signal Phases									
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off										
Force Mode	Fixed	Simult. Gap N/S	Off										
		Green		13.0	47.0	15.0	0.0	0.0	0.0				
		Yellow		3.0	3.0	3.0	0.0	0.0	0.0				
		Red		2.0	2.0	2.0	0.0	0.0	0.0				

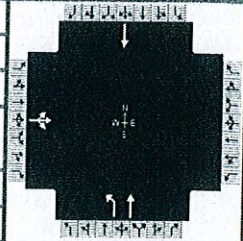
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	117	0	34				200	705				515
Initial Queue (Q ₀), veh/h	0	0	0				0	0				0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900				1900	1900				1900
Parking (N _m), man/h	None						None			None		
Heavy Vehicles (P _{HV}), %		3					4	4				3
Ped / Bike / RTOR, /h	3	0	2				2	0		1	0	
Buses (N _b), buses/h	0	0	0				0	0				0
Arrival Type (AT)	3	3	3				3	3				3
Upstream Filtering (f)	1.00	1.00	1.00				1.00	1.00				1.00
Lane Width (W), ft		15.0					12.0	12.0				10.0
Turn Bay Length, ft		0					0	0				0
Grade (Pg), %		0			0			0				0
Speed Limit, mi/h	25	25	25				25	25				25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		20.0			18.0	70.0		52.0
Yellow Change Interval (Y), s		3.0			3.0	3.0		3.0
Red Clearance Interval (R _c), s		2.0			2.0	2.0		2.0
Minimum Green (G _{min}), s	6	6			6	6		6
Start-Up Lost Time (l), s	2.0	2.0			2.0	2.0		2.0
Extension of Effective Green (e), s	2.0	2.0			2.0	2.0		2.0
Passage (PT), s	2.0	2.0			2.0	2.0		2.0
Recall Mode	Max	Max			Max	Max		Max
Dual Entry	No	Yes			No	No		No
Walk (Walk), s	0.0	0.0			0.0	0.0		0.0
Pedestrian Clearance Time (PC), s	0.0	0.0			0.0	0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - Zame	Analysis Date	Mar 22, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	Zame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	117	0	34				200	705				515

Signal Information				Signal Timing													
Cycle, s	90.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0							
				Red	2.0	2.0	2.0	0.0	0.0	0.0							

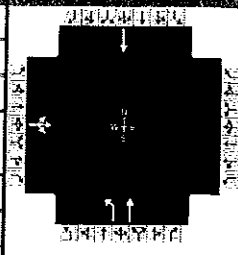
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.040	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.971	1.000	0.000	0.000	0.000	0.962	0.962	1.000	1.000	0.971	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.919					0.952	0.000			1.000	
Right-Turn Adjustment Factor (f_{RT})		0.000						1.000			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.991						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.991						1.000			1.000
Movement Saturation Flow Rate (s), veh/h		0					1566	1644			1660	
Proportion of Vehicles Arriving on Green (P)	0.17	0.00	0.17	0.00	0.00	0.00	0.14	0.72	0.00	0.00	0.52	0.00
Incremental Delay Factor (k)		0.50					0.50	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		4.0			5.0	5.0		5.0
Green Ratio (g/C)		0.17			0.14	0.72		0.52
Permitted Saturation Flow Rate (s _p), veh/h/ln		0			0	0		729
Shared Saturation Flow Rate (s _{sh}), veh/h/ln								0
Permitted Effective Green Time (g _p), s		0.0			0.0	0.0		0.0
Permitted Service Time (g _u), s		0.0			0.0	0.0		0.0
Permitted Queue Service Time (g _{ps}), s								
Time to First Blockage (g _t), s		0.0			0.0	0.0		47.0
Queue Service Time Before Blockage (g _{rs}), s								
Protected Right Saturation Flow (s _r), veh/h/ln								
Protected Right Effective Green Time (g _r), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.00	1.389	0.00	1.198	0.00	1.389	0.00	1.389	0.00		
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.050	0.000	0.093	0.000	0.093		
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b		51.20		50.14	1444.44	3.47	1044.44	10.27				
Bicycle F_w / F_v	-3.64	0.26	-3.64		-3.64	1.57	-3.64	0.89				

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2pme	Analysis Date	Mar 22, 2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	2pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	93	0	35				200	645				789

Signal Information				Signal Timing (s)										
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

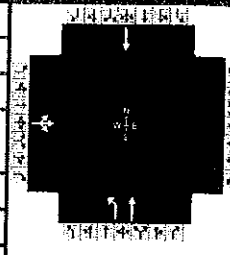
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		12.0			2.0	4.0		8.3
Phase Duration, s		20.0			18.0	70.0		52.0
Change Period, (Y+R _c), s		5.0			5.0	5.0		5.0
Max Allow Headway (MAH), s		3.3			3.3	0.0		0.0
Queue Clearance Time (g _s), s		7.8			12.4			
Green Extension Time (g _e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.01			1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14				5	2			6	
Adjusted Flow Rate (v), veh/h		127					211	679			831	
Adjusted Saturation Flow Rate (s), veh/h/ln		1780					1774	1863			1845	
Queue Service Time (g _s), s		5.8					10.4	14.3			35.2	
Cycle Queue Clearance Time (g _c), s		5.8					10.4	14.3			35.2	
Green Ratio (g/C)		0.17					0.14	0.72			0.52	
Capacity (c), veh/h		297					256	1345			963	
Volume-to-Capacity Ratio (X)		0.429					0.822	0.505			0.862	
Available Capacity (c _a), veh/h		297					256	1345			963	
Back of Queue (Q), veh/ln (50th percentile)		2.9					6.2	5.1			16.7	
Queue Storage Ratio (RQ) (50th percentile)		0.00					0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh		33.7					37.4	5.5			18.7	
Incremental Delay (d ₂), s/veh		4.5					24.7	1.4			10.1	
Initial Queue Delay (d ₃), s/veh		0.0					0.0	0.0			0.0	
Control Delay (d), s/veh		38.1					62.1	6.8			28.7	
Level of Service (LOS)		D					E	A			C	
Approach Delay, s/veh / LOS	38.1		D	0.0			19.9		B	28.7		C
Intersection Delay, s/veh / LOS	25.1						C					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.3		B	2.1		B	1.8		A	2.1		B
Bicycle LOS Score / LOS	0.7		A				2.0		A	1.9		A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2pme	Analysis Date	Mar 22, 2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	2pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	93	0	35				200	645				789

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		

Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	93	0	35				200	645				789
Initial Queue (Q _b), veh/h	0	0	0				0	0				0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900				1900	1900				1900
Parking (N _m), man/h		None						None				None
Heavy Vehicles (P _{HV}), %		2					2	2				3
Ped / Bike / RTOR, /h	1	0	7				1	0		4	0	
Buses (N _b), buses/h	0	0	0				0	0				0
Arrival Type (AT)	3	3	3				3	3				3
Upstream Filtering (f)	1.00	1.00	1.00				1.00	1.00				1.00
Lane Width (W), ft		15.0					12.0	12.0				10.0
Turn Bay Length, ft		0					0	0				0
Grade (P _g), %		0				0		0				0
Speed Limit, mi/h	25	25	25				25	25				25

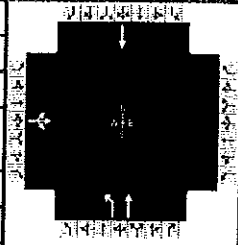
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		20.0			18.0	70.0	
Yellow Change Interval (Y), s		3.0			3.0	3.0		3.0
Red Clearance Interval (R _c), s		2.0			2.0	2.0		2.0
Minimum Green (G _{min}), s	6	6			6	6		6
Start-Up Lost Time (l), s	2.0	2.0			2.0	2.0		2.0
Extension of Effective Green (e), s	2.0	2.0			2.0	2.0		2.0
Passage (PT), s	2.0	2.0			2.0	2.0		2.0
Recall Mode	Max	Max			Max	Max		Max
Dual Entry	No	Yes			No	No		No
Walk (Walk), s	0.0	0.0			0.0	0.0		0.0
Pedestrian Clearance Time (PC), s	0.0	0.0			0.0	0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information

Agency	MMA			Duration, h	0.25
Analyst	MM - 2pme	Analysis Date	Mar 22, 2019	Area Type	Other
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.95
Intersection	Park Avenue & 16th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	2pme.xus				
Project Description	Atir Residential				



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	93	0	35				200	645				789

Signal Information

Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Saturation Flow / Delay												
Lane Width Adjustment Factor (f_w)	1.000	1.040	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	0.000	0.000	0.000	0.980	0.980	1.000	1.000	0.971	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.919					0.952	0.000			1.000	
Right-Turn Adjustment Factor (f_{RT})		0.000						1.000			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.991						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.997						1.000			1.000
Movement Saturation Flow Rate (s), veh/h		0					1774	1863			1845	
Proportion of Vehicles Arriving on Green (P)	0.17	0.00	0.17	0.00	0.00	0.00	0.14	0.72	0.00	0.00	0.52	0.00
Incremental Delay Factor (k)		0.50					0.50	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t)		4.0			5.0	5.0		5.0
Green Ratio (g/C)		0.17			0.14	0.72		0.52
Permitted Saturation Flow Rate (s_p), veh/h/ln		0			0	0		773
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s		0.0			0.0	0.0		0.0
Permitted Service Time (g_s), s		0.0			0.0	0.0		0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_t), s		0.0			0.0	0.0		47.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.00	1.389	0.00	1.198	0.00	1.389	0.01				
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.050	0.000	0.093				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b		51.20		50.14	1444.44	3.47	1044.44	10.27				
Bicycle F_w / F_v	-3.64	0.21	-3.64		-3.64	1.47	-3.64	1.37				

TWO-WAY STOP CONTROL SUMMARY

Analyst: 3ame
 Agency/Co.: MMA
 Date Performed: 03/22/19
 Analysis Time Period: Peak AM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2019 Existing Condition
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound			
		1 L	2 T	3 R	4 L	5 T	6 R		
Volume		61	51		606	8			
Peak-Hour Factor, PHF		0.93	0.93		0.93	0.93			
Hourly Flow Rate, HFR		65	54		651	8			
Percent Heavy Vehicles		--	--		3	--	--		
Median Type/Storage		Undivided			/				
RT Channelized?									
Lanes		1	0		0	1			
Configuration			TR			LT			
Upstream Signal?			No			No			

Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		18		210			
Peak Hour Factor, PHF		0.93		0.93			
Hourly Flow Rate, HFR		19		225			
Percent Heavy Vehicles		6		3			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage					/		/
Lanes		1		1			
Configuration		L		R			

Delay, Queue Length, and Level of Service

Approach Movement	NB 1	SB 4	Westbound			Eastbound		
			7 LT	8 L	9 R	10 L	11 T	12 R
v (vph)	651	19			225			
C(m) (vph)	1446	80			939			
v/c	0.45	0.24			0.24			
95% queue length	2.40	0.84			0.94			
Control Delay	9.5	63.5			10.0+			
LOS		A		F			B	
Approach Delay					14.2			
Approach LOS					B			

HCS+: Unsignalized Intersections Release 5.6

Phone:
E-Mail:

Fax:

----- TWO-WAY STOP CONTROL (TWSC) ANALYSIS -----

Analyst: 3ame
 Agency/Co.: MMA
 Date Performed: 03/22/19
 Analysis Time Period: Peak AM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2019 Existing Condition
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS Study period (hrs): 0.25

----- Vehicle Volumes and Adjustments -----

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		61	51	606	8	
Peak-Hour Factor, PHF		0.93	0.93	0.93	0.93	
Peak-15 Minute Volume		16	14	163	2	
Hourly Flow Rate, HFR		65	54	651	8	
Percent Heavy Vehicles		--	--	3	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	18		210			
Peak Hour Factor, PHF	0.93		0.93			
Peak-15 Minute Volume	5		56			
Hourly Flow Rate, HFR	19		225			
Percent Heavy Vehicles	6		3			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

----- Pedestrian Volumes and Adjustments -----

Movements	13	14	15	16
Flow (ped/hr)	9	5	7	0

Lane Width (ft)	11.0	12.0	11.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	1	0	1	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		8
Shared ln volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		3	6		3			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.5		6.2			
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		3	6		3			
t(f)		2.2	3.6		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

V prog	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

Total Saturation Flow Rate, s (vph)
 Arrival Type
 Effective Green, g (sec)
 Cycle Length, C (sec)
 Rp (from Exhibit 16-11)
 Proportion vehicles arriving on green P
 g(q1)
 g(q2)
 g(q)

 Computation 2-Proportion of TWSC Intersection Time blocked

	Movement 2		Movement 5
	V(t)	V(l,prot)	V(t)
	V(l,prot)		V(l,prot)

alpha			
beta			
Travel time, t(a) (sec)			
Smoothing Factor, F			
Proportion of conflicting flow, f			
Max platooned flow, V(c,max)			
Min platooned flow, V(c,min)			
Duration of blocked period, t(p)			
Proportion time blocked, p	0.000		0.000

 Computation 3-Platoon Event Periods Result

p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
--	-----------------------------	-------------------------------------	--------------------------------------

p(1)
 p(4)
 p(7)
 p(8)
 p(9)
 p(10)
 p(11)
 p(12)

 Computation 4 and 5
 Single-Stage Process

Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R

V c, x		126	1418		104			
--------	--	-----	------	--	-----	--	--	--

s
 Px
 V c, u, x

 C r, x
 C plat, x

 Two-Stage Process

	7	8	10	11
--	---	---	----	----

V(c,x)
s
P(x)
V(c,u,x)

1500

C(r,x)
C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	104	
Potential Capacity	948	
Pedestrian Impedance Factor	0.99	0.99
Movement Capacity	939	
Probability of Queue free St.	0.76	1.00
Step 2: LT from Major St.	4	1
Conflicting Flows	126	
Potential Capacity	1454	
Pedestrian Impedance Factor	0.99	1.00
Movement Capacity	1446	
Probability of Queue free St.	0.55	1.00
Maj L-Shared Prob Q free St.	0.55	
Step 3: TH from Minor St.	8	11
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	0.99	0.99
Cap. Adj. factor due to Impeding mvmnt	0.54	0.54
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Conflicting Flows	1418	
Potential Capacity	148	
Pedestrian Impedance Factor	0.99	1.00
Maj. L, Min T Impedance factor		0.54
Maj. L, Min T Adj. Imp Factor.		0.64
Cap. Adj. factor due to Impeding mvmnt	0.54	0.49
Movement Capacity	80	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor 0.99 0.99
 Cap. Adj. factor due to Impeding mvmnt 0.54 0.54
 Movement Capacity

Result for 2 stage process:

a
 y
 C t
 Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Part 1 - First Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage
 Conflicting Flows 1418
 Potential Capacity 148
 Pedestrian Impedance Factor 0.99 1.00
 Maj. L, Min T Impedance factor 0.54
 Maj. L, Min T Adj. Imp Factor. 0.64
 Cap. Adj. factor due to Impeding mvmnt 0.54 0.49
 Movement Capacity 80

Results for Two-stage process:

a
 y
 C t 80

Worksheet 8-Shared Lane Calculations

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (vph)	19		225			
Movement Capacity (vph)	80		939			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
C sep	80		939			
Volume	19		225			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						
n max						
C sh						
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		651	19		225			
C(m) (vph)		1446	80		939			
v/c		0.45	0.24		0.24			
95% queue length		2.40	0.84		0.94			
Control Delay		9.5	63.5		10.0+			
LOS		A	F		B			
Approach Delay				14.2				
Approach LOS				B				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.55
v(i1), Volume for stream 2 or 5		8
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		0.55
d(M,LT), Delay for stream 1 or 4		9.5
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		4.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: 3pme
 Agency/Co.: MMA
 Date Performed: 03/22/19
 Analysis Time Period: Peak PM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2019 Existing Condition
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume		43	35	474	15			
Peak-Hour Factor, PHF		0.94	0.94	0.94	0.94			
Hourly Flow Rate, HFR		45	37	504	15			
Percent Heavy Vehicles		--	--	1	--	--		
Median Type/Storage		Undivided		/				
RT Channelized?								
Lanes		1	0		0	1		
Configuration			TR		LT			
Upstream Signal?		No			No			

Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		20	485				
Peak Hour Factor, PHF		0.94	0.94				
Hourly Flow Rate, HFR		21	515				
Percent Heavy Vehicles		0	5				
Percent Grade (%)		0			0		
Flared Approach: Exists?/Storage				/		/	
Lanes		1	1				
Configuration		L	R				

Delay, Queue Length, and Level of Service

Approach Movement	NB	SB	Westbound			Eastbound		
			4	7	8	9	10	11
Lane Config	1	4	LT	L	R			
v (vph)		504	21		515			
C(m) (vph)		1483	152		959			
v/c		0.34	0.14		0.54			
95% queue length		1.53	0.47		3.29			
Control Delay		8.7	32.4		13.0			
LOS		A	D		B			
Approach Delay				13.8				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.6

Phone:
E-Mail:

Fax:

-----TWO-WAY STOP CONTROL(TWSC) ANALYSIS-----

Analyst: 3pme
 Agency/Co.: MMA
 Date Performed: 03/22/19
 Analysis Time Period: Peak PM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2019 Existing Condition
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS Study period (hrs): 0.25

-----Vehicle Volumes and Adjustments-----

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		43	35	474	15	
Peak-Hour Factor, PHF		0.94	0.94	0.94	0.94	
Peak-15 Minute Volume		11	9	126	4	
Hourly Flow Rate, HFR		45	37	504	15	
Percent Heavy Vehicles		--	--	1	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	20		485			
Peak Hour Factor, PHF	0.94		0.94			
Peak-15 Minute Volume	5		129			
Hourly Flow Rate, HFR	21		515			
Percent Heavy Vehicles	0		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

-----Pedestrian Volumes and Adjustments-----

Movements	13	14	15	16
Flow (ped/hr)	6	1	16	0

Lane Width (ft)	11.0	12.0	11.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	1	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		15
Shared ln volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		1	0		5			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.4		6.3			
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		1	0		5			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate, s (vph)
 Arrival Type
 Effective Green, g (sec)
 Cycle Length, C (sec)
 Rp (from Exhibit 16-11)
 Proportion vehicles arriving on green P
 g(q1)
 g(q2)
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

alpha
 beta
 Travel time, t(a) (sec)
 Smoothing Factor, F
 Proportion of conflicting flow, f
 Max platooned flow, V(c,max)
 Min platooned flow, V(c,min)
 Duration of blocked period, t(p)
 Proportion time blocked, p

	0.000		0.000
--	-------	--	-------

Computation 3-Platoon Event Periods Result

p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Stage II
--	-----------------------------	-------------------------------------	-----------------

p(1)
 p(4)
 p(7)
 p(8)
 p(9)
 p(10)
 p(11)
 p(12)

Computation 4 and 5
 Single-Stage Process

Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R

V c, x	98	1109	80
s			
Px			
V c, u, x			

C r, x
 C plat, x

Two-Stage Process

7	8	10	11
---	---	----	----

V(c, x)		
s	1500	
P(x)		
V(c, u, x)		

C(r, x)		
C(plat, x)		

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
---------------------------	---	----

Conflicting Flows	80	
Potential Capacity	972	
Pedestrian Impedance Factor	0.99	1.00
Movement Capacity	959	
Probability of Queue free St.	0.46	1.00

Step 2: LT from Major St.	4	1
---------------------------	---	---

Conflicting Flows	98	
Potential Capacity	1501	
Pedestrian Impedance Factor	0.99	1.00
Movement Capacity	1483	
Probability of Queue free St.	0.66	1.00
Maj L-Shared Prob Q free St.	0.66	

Step 3: TH from Minor St.	8	11
---------------------------	---	----

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	0.99	0.99
Cap. Adj. factor due to Impeding mvmnt	0.65	0.65
Movement Capacity		
Probability of Queue free St.	1.00	1.00

Step 4: LT from Minor St.	7	10
---------------------------	---	----

Conflicting Flows	1109	
Potential Capacity	234	
Pedestrian Impedance Factor	0.98	1.00
Maj. L, Min T Impedance factor		0.65
Maj. L, Min T Adj. Imp Factor.		0.73
Cap. Adj. factor due to Impeding mvmnt	0.65	0.34
Movement Capacity	152	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
---------------------------	---	----

Part 1 - First Stage

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor 0.99 0.99
 Cap. Adj. factor due to Impeding mvmnt 0.65 0.65
 Movement Capacity

Result for 2 stage process:

a
 Y
 C t
 Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Part 1 - First Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage
 Conflicting Flows 1109
 Potential Capacity 234
 Pedestrian Impedance Factor 0.98 1.00
 Maj. L, Min T Impedance factor 0.65
 Maj. L, Min T Adj. Imp Factor. 0.73
 Cap. Adj. factor due to Impeding mvmnt 0.65 0.34
 Movement Capacity 152

Results for Two-stage process:

a
 Y
 C t 152

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	21		515			
Movement Capacity (vph)	152		959			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	152		959			
Volume	21		515			
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh						
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

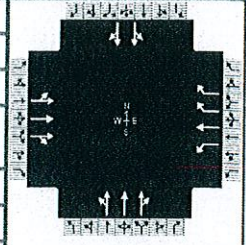
Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		504	21		515			
C(m) (vph)		1483	152		959			
v/c		0.34	0.14		0.54			
95% queue length		1.53	0.47		3.29			
Control Delay		8.7	32.4		13.0			
LOS		A	D		B			
Approach Delay				13.8				
Approach LOS				B				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.66
v(i1), Volume for stream 2 or 5		15
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		0.66
d(M,LT), Delay for stream 1 or 4		8.7
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		3.0

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 4ame	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 19th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	4ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	178	161	319	247	77	432	133	604	95	120	349	29

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

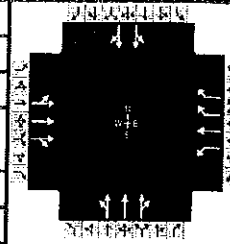
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		5.0		12.0		12.0
Phase Duration, s		32.0		32.0		25.0		33.0
Change Period, (Y+R _c), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						19.1		17.3
Green Extension Time (g _e), s		0.0		0.0		0.3		0.9
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.01

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	187	169	254	260	81	151	314	291	269	270		247
Adjusted Saturation Flow Rate (s), veh/h/ln	1148	1679	1400	954	1743	986	1602	1638	1491	1365		1370
Queue Service Time (g _s), s	11.2	7.1	13.9	13.1	3.1	5.2	17.1	15.1	15.4	15.3		13.6
Cycle Queue Clearance Time (g _c), s	14.3	7.1	13.9	27.0	3.1	5.2	17.1	15.1	15.4	15.3		13.6
Green Ratio (g/C)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31		0.31
Capacity (c), veh/h	424	504	420	218	523	591	356	364	331	425		426
Volume-to-Capacity Ratio (X)	0.442	0.337	0.604	1.191	0.155	0.255	0.882	0.800	0.811	0.636		0.579
Available Capacity (c _a), veh/h	424	504	420	218	523	591	356	364	331	425		426
Back of Queue (Q), veh/ln (50th percentile)	3.8	3.0	5.3	12.3	1.4	1.3	9.1	7.6	7.2	5.7		5.0
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	28.4	24.5	26.9	40.9	23.1	23.9	33.9	33.1	33.2	26.6		26.0
Incremental Delay (d ₂), s/veh	3.3	1.8	6.3	122.0	0.6	1.0	25.5	16.6	19.1	7.1		5.6
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Control Delay (d), s/veh	31.7	26.3	33.2	162.9	23.8	24.9	59.3	49.8	52.3	33.7		31.7
Level of Service (LOS)	C	C	C	F	C	C	E	D	D	C		C
Approach Delay, s/veh / LOS	30.8		C	97.7		F	54.0		D	32.8		C
Intersection Delay, s/veh / LOS	52.5						D					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.8		C	3.1		C	3.7		D	2.6		B
Bicycle LOS Score / LOS	0.8		A	1.3		A	1.0		A	0.9		A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 4ame	Analysis Date	3/22/2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Willow Avenue & 19th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	4ame.xus				
Project Description	Atr Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	178	161	319	247	77	432	133	604	95	120	349	29

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		

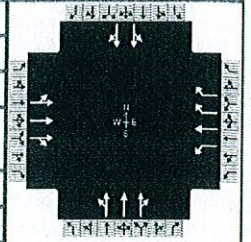
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	178	161	319	247	77	432	133	604	95	120	349	29
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %		3		2	9	44		16			36	
Ped / Bike / RTOR, /h	16	0	78	4	0	289	53	0	2	16	0	7
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft		11.0		10.0	11.0	11.0		10.0			12.0	
Turn Bay Length, ft		0		0	0	0		0			0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		32.0		32.0		25.0		33.0
Yellow Change Interval (Y), s		3.0		3.0		3.0		3.0
Red Clearance Interval (R _c), s		2.0		2.0		2.0		2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (l), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 4ame	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 19th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	4ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	178	161	319	247	77	432	133	604	95	120	349	29

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap EW	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

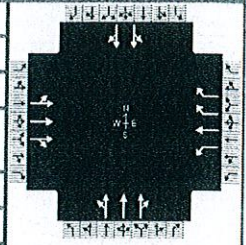
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.971	1.000	0.980	0.917	0.694	1.000	0.862	1.000	1.000	0.735	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	0.885	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.622			0.000			0.978			0.977	
Right-Turn Adjustment Factor (f_{RT})		0.759			0.000			0.908			0.980	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.997			0.993			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.984			0.996			0.928			0.974
Movement Saturation Flow Rate (s), veh/h		1679			1743			3473			1968	
Proportion of Vehicles Arriving on Green (P)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31	0.31	0.31
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		5.0		5.0		5.0		4.0
Green Ratio (g/C)		0.30		0.30		0.22		0.31
Permitted Saturation Flow Rate (s _p), veh/h/ln		1334		954		0		0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln		0						
Permitted Effective Green Time (g _p), s		27.0		27.0		0.0		0.0
Permitted Service Time (g _u), s		23.9		13.1		0.0		0.0
Permitted Queue Service Time (g _{ps}), s		11.2		13.1				
Time to First Blockage (g _t), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g _{rs}), s		0.0						
Protected Right Saturation Flow (s _r), veh/h/ln				0				
Protected Right Effective Green Time (g _r), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.00	2.336	0.01	2.545	0.41	1.710	0.11
Pedestrian F_s / F_{delay}	0.000	0.124	0.000	0.124	0.000	0.158	0.000	0.132
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	600.00	22.05	600.00	22.05		51.20	444.44	27.22
Bicycle F_w / F_v	-3.64	0.34	-3.64	0.81	-3.64	0.48	-3.64	0.43

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 4pme	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	Willow Avenue & 19th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	4pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	26	94	386	205	222	364	206	355	163	245	369	86

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

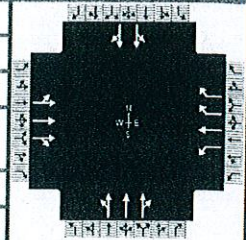
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		5.0		12.0		12.0
Phase Duration, s		32.0		32.0		25.0		33.0
Change Period, (Y+R _c), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.2
Queue Clearance Time (g _s), s						14.8		20.7
Green Extension Time (g _e), s		0.0		0.0		0.9		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.44		0.18

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	55	70	277	214	231	147	252	237	217	380		340
Adjusted Saturation Flow Rate (s), veh/h/ln	1105	1712	1409	982	1881	856	1627	1696	1510	1641		1613
Queue Service Time (g _s), s	0.3	2.7	15.4	11.6	8.8	5.9	12.8	11.4	11.8	18.7		16.6
Cycle Queue Clearance Time (g _c), s	9.1	2.7	15.4	27.0	8.8	5.9	12.8	11.4	11.8	18.7		16.6
Green Ratio (g/C)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31		0.31
Capacity (c), veh/h	391	514	423	206	564	514	362	377	336	511		502
Volume-to-Capacity Ratio (X)	0.140	0.136	0.656	1.036	0.410	0.286	0.698	0.628	0.647	0.745		0.679
Available Capacity (c _a), veh/h	391	514	423	206	564	514	362	377	336	511		502
Back of Queue (Q), veh/ln (50th percentile)	0.9	1.2	6.0	8.7	4.2	1.3	6.1	5.4	5.1	8.6		7.3
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	23.0	23.0	27.4	41.5	25.1	24.1	32.2	31.6	31.8	27.8		27.1
Incremental Delay (d ₂), s/veh	0.8	0.6	7.7	72.3	2.2	1.4	10.7	7.7	9.3	9.5		7.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Control Delay (d), s/veh	23.7	23.5	35.2	113.7	27.3	25.5	42.9	39.3	41.1	37.3		34.3
Level of Service (LOS)	C	C	D	F	C	C	D	D	D	D		C
Approach Delay, s/veh / LOS	31.6		C	58.1		E	41.1		D	35.9		D
Intersection Delay, s/veh / LOS	42.1						D					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.9		C	3.1		C	3.6		D	2.6		B
Bicycle LOS Score / LOS	0.7		A	1.5		A	0.9		A	1.1		A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 4pme	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	Willow Avenue & 19th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	4pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	26	94	386	205	222	364	206	355	163	245	369	86

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	26	94	386	205	222	364	206	355	163	245	369	86
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	1			3			1			64		
Ped / Bike / RTOR, /h	29	0	120	15	0	223	24	0	46	19	0	8
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	11.0			10.0			11.0			10.0		
Turn Bay Length, ft	0			0			0			0		
Grade (Pg), %	0			0			0			0		
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

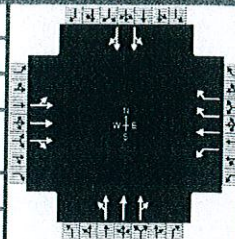
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		32.0		32.0		25.0		33.0
Yellow Change Interval (Y), s		3.0		3.0		3.0		3.0
Red Clearance Interval (R _c), s		2.0		2.0		2.0		2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information

Agency	MMA			Duration, h	0.25
Analyst	MM - 4pme	Analysis Date	3/22/2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96
Intersection	Willow Avenue & 19th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	4pme.xus				
Project Description	Atir Residential				



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	26	94	386	205	222	364	206	355	163	245	369	86

Signal Information

Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

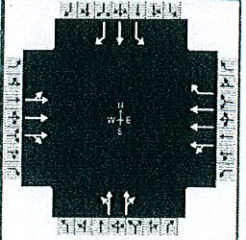
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.990	1.000	0.971	0.990	0.610	1.000	0.893	1.000	1.000	0.893	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	0.885	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.587			0.000			0.959			0.968	
Right-Turn Adjustment Factor (f_{RT})		0.749			0.000			0.885			0.949	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.991			0.988			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.971			0.985			0.968			0.969
Movement Saturation Flow Rate (s), veh/h		2272			1881			2602			1768	
Proportion of Vehicles Arriving on Green (P)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31	0.31	0.31
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0		5.0		4.0
Green Ratio (g/C)		0.30		0.30		0.22		0.31
Permitted Saturation Flow Rate (s_p), veh/h/ln		1157		982		0		0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		27.0		27.0		0.0		0.0
Permitted Service Time (g_u), s		18.2		11.6		0.0		0.0
Permitted Queue Service Time (g_{ps}), s		0.3		11.6				
Time to First Blockage (g_f), s		2.1		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{rs}), s		1.9						
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.07	2.336	0.01	2.545	0.32	1.710	0.17
Pedestrian F_s / F_{delay}	0.000	0.124	0.000	0.124	0.000	0.158	0.000	0.132
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	600.00	22.05	600.00	22.05		51.20	444.44	27.22
Bicycle F_w / F_v	-3.64	0.22	-3.64	0.98	-3.64	0.39	-3.64	0.59

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5ame	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Park Avenue & 19th Street		Analysis Year	2019 Existing	Analysis Period	1 > 7:00	
File Name	5ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	57	282	37	165	306	15	107	282	388	36	338	345

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	100.0	Reference Phase	2	Green	0.0	47.0	10.0	30.0	0.0	0.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	5	6	7	8	
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off												

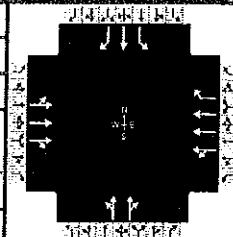
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8	7	4
Case Number	0.0	14.0		7.3		8.3	1.0	3.0
Phase Duration, s	0.0	52.0		52.0		35.0	13.0	48.0
Change Period, (Y+R _c), s	3.0	5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s	0.0	0.0		0.0		3.5	3.3	3.3
Queue Clearance Time (g _s), s						26.8	3.3	21.5
Green Extension Time (g _e), s	0.0	0.0		0.0		0.8	0.0	1.3
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						1.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	120	132	129	170	315	7	398		348	37	348	267
Adjusted Saturation Flow Rate (s), veh/h/ln	1114	1478	1415	882	1601	1670	1516		1360	1757	1827	1087
Queue Service Time (g _s), s	4.4	5.2	5.3	12.0	5.8	0.2	22.7		24.1	1.3	13.4	19.5
Cycle Queue Clearance Time (g _c), s	4.4	5.2	5.3	17.4	5.8	0.2	24.8		24.1	1.3	13.4	19.5
Green Ratio (g/C)	0.47	0.47	0.47	0.47	0.47	0.57	0.30		0.30	0.42	0.43	0.43
Capacity (c), veh/h	578	695	665	486	1505	952	501		408	294	786	435
Volume-to-Capacity Ratio (X)	0.208	0.190	0.194	0.350	0.210	0.008	0.796		0.853	0.126	0.444	0.614
Available Capacity (c _a), veh/h	578	695	665	486	1505	952	501		408	294	786	435
Back of Queue (Q), veh/ln (50th percentile)	1.8	1.9	1.8	3.0	2.2	0.1	10.7		10.1	0.6	6.1	6.6
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	16.4	15.4	15.5	20.5	15.6	9.3	33.0		32.9	20.8	20.1	31.3
Incremental Delay (d ₂), s/veh	0.8	0.6	0.7	2.0	0.3	0.0	12.3		19.7	0.9	1.8	6.4
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	17.2	16.0	16.1	22.5	15.9	9.3	45.3		52.6	21.6	21.9	37.7
Level of Service (LOS)	B	B	B	C	B	A	D		D	C	C	D
Approach Delay, s/veh / LOS	16.4	B		18.1	B		48.7	D		28.3	C	
Intersection Delay, s/veh / LOS	30.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.9	C	3.3	C	3.2	C
Bicycle LOS Score / LOS	0.7	A	0.8	A	1.1	A	1.6	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5ame	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Park Avenue & 19th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	5ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	57	282	37	165	306	15	107	282	388	36	338	345

Signal Information				Signal Timing (s)						Signal Phases			
Cycle, s	100.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	0.0	47.0	10.0	30.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0			
				Red	0.0	2.0	0.0	2.0	0.0	0.0			

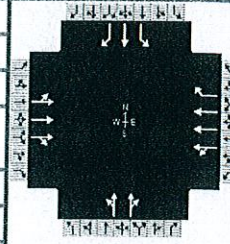
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	57	282	37	165	306	15	107	282	388	36	338	345
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %		17			8	0		4		3	4	48
Ped / Bike / RTOR, /h	0	0	6	4	0	8	36	0	53	1	0	86
Busés (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft		10.0			11.0	16.0		12.0		10.0	11.0	10.0
Turn Bay Length, ft		0			0	0		0		0	0	0
Grade (Pg), %		0			0			0		0		
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	23.0	52.0		29.0		35.0	13.0	48.0
Yellow Change Interval (Y), s	3.0	3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s	0.0	2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (l), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 5ame	Analysis Date	3/22/2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.97
Intersection	Park Avenue & 19th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	5ame.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	57	282	37	165	306	15	107	282	388	36	338	345

Signal Information				Signal Phases						Signal Diagrams					
Cycle, s	100.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	47.0	10.0	30.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0					

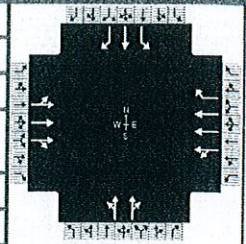
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.040	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.855	1.000	1.000	0.926	1.000	1.000	0.962	1.000	0.971	0.962	0.676
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.000	0.686			0.501			0.830		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.871			0.000			0.744			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.999			1.000			0.999			0.992		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.997			0.964			0.999
Movement Saturation Flow Rate (s), veh/h	0	3113			3202			1107		1757	1827	
Proportion of Vehicles Arriving on Green (P)	0.47	0.47	0.47	0.47	0.47	0.47	0.30	0.30	0.30	0.10	0.43	0.43
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		5.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)	0.00	0.47		0.47		0.30	0.42	0.43
Permitted Saturation Flow Rate (s _p), veh/h/ln	0	1079		1074		1048	781	0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln		0		0		0		
Permitted Effective Green Time (g _p), s	0.0	49.0		47.0		30.0	32.0	0.0
Permitted Service Time (g _s), s	0.0	41.2		41.7		29.6	5.9	0.0
Permitted Queue Service Time (g _{ps}), s		3.3		12.0		22.7	1.3	
Time to First Blockage (g _t), s	0.0	2.1		0.0		2.2	0.0	0.0
Queue Service Time Before Blockage (g _{ts}), s		2.1		0.0		2.2		
Protected Right Saturation Flow (s _r), veh/h/ln				1675				1088
Protected Right Effective Green Time (g _r), s				10.0				-3.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.08	2.107	0.12	2.545	0.01	2.443	0.01
Pedestrian F_s / F_{delay}	0.000	0.106	0.000	0.106	0.000	0.128	0.000	0.112
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	940.00	14.05	939.99	14.05	600.00	24.50	860.00	16.25
Bicycle F_w / F_v	-3.64	0.21	-3.64	0.27	-3.64	0.62	-3.64	1.08

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5pme	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	Park Avenue & 19th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	5pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	95	351	47	154	401	67	62	386	289	16	601	304

Signal Information				Signal Timing (s)						Signal Phases				
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	0.0	47.0	10.0	30.0	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	5	6	7	8
				Red	0.0	2.0	0.0	2.0	0.0	0.0				

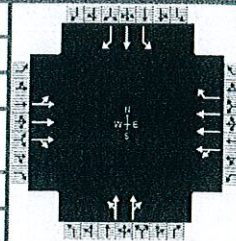
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8	7	4
Case Number	0.0	14.0		7.3		8.3	1.0	3.0
Phase Duration, s	0.0	52.0		52.0		35.0	13.0	48.0
Change Period, (Y+R _c), s	3.0	5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s	0.0	0.0		0.0		3.5	3.3	3.2
Queue Clearance Time (g _s), s						32.0	2.5	30.4
Green Extension Time (g _e), s	0.0	0.0		0.0		0.0	0.0	1.8
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						1.00	0.00	0.04

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	137	185	181	160	418	22	385		351	17	626	236
Adjusted Saturation Flow Rate (s), veh/h/ln	925	1631	1571	801	1631	1617	1101		1440	1810	1881	1003
Queue Service Time (g _s), s	4.6	6.8	6.9	12.3	7.8	0.6	14.6		22.6	0.5	28.4	18.5
Cycle Queue Clearance Time (g _c), s	4.6	6.8	6.9	19.2	7.8	0.6	30.0		22.6	0.5	28.4	18.5
Green Ratio (g/C)	0.47	0.47	0.47	0.47	0.47	0.57	0.30		0.30	0.42	0.43	0.43
Capacity (c), veh/h	498	767	738	449	1533	923	372		432	311	809	401
Volume-to-Capacity Ratio (X)	0.275	0.241	0.245	0.358	0.272	0.024	1.035		0.813	0.054	0.774	0.590
Available Capacity (c _a), veh/h	498	767	738	449	1533	923	372		432	311	809	401
Back of Queue (Q), veh/ln (50th percentile)	2.3	2.7	2.6	2.9	3.0	0.2	15.1		9.6	0.3	13.9	5.9
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	19.4	15.8	15.9	21.6	16.1	9.4	37.7		32.4	20.1	24.3	31.4
Incremental Delay (d ₂), s/veh	1.4	0.7	0.8	2.2	0.4	0.0	56.0		15.3	0.3	7.1	6.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	20.8	16.6	16.7	23.9	16.5	9.4	93.7		47.7	20.4	31.5	37.7
Level of Service (LOS)	C	B	B	C	B	A	F		D	C	C	D
Approach Delay, s/veh / LOS	17.8		B	18.2		B	71.8		E	32.9		C
Intersection Delay, s/veh / LOS	37.4						D					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.3		B	2.9		C	3.3		C	3.2		C
Bicycle LOS Score / LOS	0.8		A	0.8		A	1.1		A	1.9		A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5pme	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	Park Avenue & 19th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	5pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	95	351	47	154	401	67	62	386	289	16	601	304

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	100.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	47.0	10.0	30.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0					

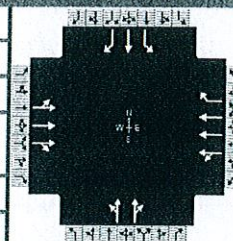
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	95	351	47	154	401	67	62	386	289	16	601	304
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %		6			6	3		2			0	59
Ped / Bike / RTOR, /h	1	0	10	8	0	46	41	0	30	14	0	77
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (A _T)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft		10.0			11.0	16.0		12.0			10.0	11.0
Turn Bay Length, ft		0			0	0		0			0	0
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	23.0	52.0		29.0		35.0	13.0	48.0
Yellow Change Interval (Y), s	3.0	3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s	0.0	2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (l _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (P _T), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (P _C), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5pme	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	Park Avenue & 19th Street	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	5pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	95	351	47	154	401	67	62	386	289	16	601	304

Signal Information				Signal Phases						Signal Diagrams				
Cycle, s	100.0	Reference Phase	2	Green	0.0	47.0	10.0	30.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off											

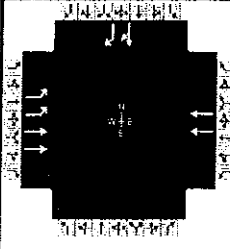
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.040	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.943	1.000	1.000	0.943	0.971	1.000	0.980	1.000	1.000	0.990	0.629
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.000	0.516			0.447			0.591		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.876			0.000			0.773			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.998			0.999			0.996			0.991		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.999			0.995			0.959			0.990
Movement Saturation Flow Rate (s), veh/h	0	3125			3262			1250		1810	1881	
Proportion of Vehicles Arriving on Green (P)	0.47	0.47	0.47	0.47	0.47	0.47	0.30	0.30	0.30	0.10	0.43	0.43
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)	0.00	0.47		0.47		0.30	0.42	0.43
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	982		996		808	778	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0		0		
Permitted Effective Green Time (g_p), s	0.0	49.0		47.0		30.0	32.0	0.0
Permitted Service Time (g_u), s	0.0	39.2		40.1		14.6	7.4	0.0
Permitted Queue Service Time (g_{ps}), s		7.2		12.3		14.6	0.5	
Time to First Blockage (g_r), s	0.0	0.8		0.0		5.8	0.0	0.0
Queue Service Time Before Blockage (g_{rs}), s		0.8		0.0		5.8		
Protected Right Saturation Flow (s_R), veh/h/ln				1626				1013
Protected Right Effective Green Time (g_R), s				10.0				-3.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.04	2.107	0.11	2.545	0.07	2.443	0.01				
Pedestrian F_s / F_{delay}	0.000	0.106	0.000	0.106	0.000	0.128	0.000	0.112				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	940.00	14.05	939.99	14.05	600.00	24.50	860.00	16.25				
Bicycle F_w / F_v	-3.64	0.28	-3.64	0.33	-3.64	0.61	-3.64	1.45				

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6ame	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	19th St & Garage Ramp		Analysis Year	2019 Existing	Analysis Period	1 > 7:00	
File Name	6ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	118	569			513					0		3

Signal Information				Signal Timing Diagram														
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	Off															
Force Mode	Fixed	Simult. Gap N/S	Off															
				Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

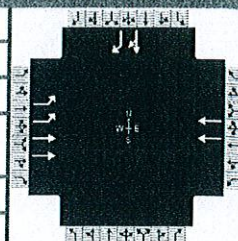
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6				4
Case Number	2.0	4.0		8.3				11.0
Phase Duration, s	30.0	89.0		59.0				1.0
Change Period, (Y+Rc), s	5.0	5.0		5.0				0.0
Max Allow Headway (MAH), s	3.3	0.0		0.0				5.3
Queue Clearance Time (gc), s	4.3							2.2
Green Extension Time (ge), s	0.2	0.0		0.0				0.0
Phase Call Probability	1.00							1.00
Max Out Probability	0.00							1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6					4		14
Adjusted Flow Rate (v), veh/h	120	581			523					0		3
Adjusted Saturation Flow Rate (s), veh/h/in	1757	1659			1706					1900		902
Queue Service Time (gs), s	2.3	1.3			6.5					0.0		0.2
Cycle Queue Clearance Time (gc), s	2.3	1.3			6.5					0.0		0.2
Green Ratio (g/C)	0.28	0.93			0.60					0.01		0.29
Capacity (c), veh/h	976	3098			2048					21		457
Volume-to-Capacity Ratio (X)	0.123	0.187			0.256					0.000		0.007
Available Capacity (ca), veh/h	976	3098			2048					21		457
Back of Queue (Q), veh/in (50th percentile)	1.0	0.1			2.3					0.0		0.0
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00					0.00		0.00
Uniform Delay (d1), s/veh	24.3	0.2			8.5					0.0		22.8
Incremental Delay (d2), s/veh	0.3	0.1			0.3					0.0		0.0
Initial Queue Delay (d3), s/veh	0.0	0.0			0.0					0.0		0.0
Control Delay (d), s/veh	24.6	0.4			8.8					0.0		22.9
Level of Service (LOS)	C	A			A							C
Approach Delay, s/veh / LOS	4.5	A		8.8	A		0.0			22.9		C
Intersection Delay, s/veh / LOS	6.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.7	A	2.7	B	2.7	B	3.0	C
Bicycle LOS Score / LOS	1.1	A	0.9	A			0.5	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6ame	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	19th St & Garage Ramp	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	6ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	118	569			513						0	3

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
		Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

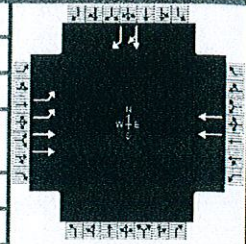
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	118	569			513						0	3
Initial Queue (Q _b), veh/h	0	0			0						0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900						1900	1900
Parking (N _m), man/h		None			None						None	
Heavy Vehicles (P _{HV}), %	0	9			6						0	0
Ped / Bike / RTOR, /h	0	0		1	0					37	0	0
Buses (N _b), buses/h	0	0			0						0	0
Arrival Type (AT)	3	3			3						3	3
Upstream Filtering (f)	1.00	1.00			1.00						1.00	1.00
Lane Width (W), ft	11.0	11.0			12.0						12.0	12.0
Turn Bay Length, ft	0	0			0						0	0
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h	25	25			25						25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	30.0	89.0		59.0				1.0
Yellow Change Interval (Y), s	3.0	3.0		3.0				0.0
Red Clearance Interval (R _c), s	2.0	2.0		2.0				0.0
Minimum Green (G _{min}), s	6	6		6				1
Start-Up Lost Time (l), s	2.0	2.0		2.0				2.0
Extension of Effective Green (e), s	2.0	2.0		2.0				2.0
Passage (PT), s	2.0	2.0		2.0				2.0
Recall Mode	Max	Max		Max				Max
Dual Entry	No	Yes		Yes				Yes
Walk (Walk), s	0.0	0.0		0.0				0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0				0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50					No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6ame	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	19th St & Garage Ramp	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	6ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	118	569			513						0	3

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

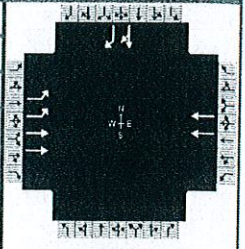
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.917	1.000	1.000	0.943	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			1.000						1.000	
Right-Turn Adjustment Factor (f_{RT})		1.000			1.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000						0.560
Movement Saturation Flow Rate (s), veh/h	3514	3403			3585						1900	
Proportion of Vehicles Arriving on Green (P)	0.28	0.93	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Incremental Delay Factor (k)	0.50	0.50			0.50							0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	5.0	5.0		5.0				4.0
Green Ratio (g/C)	0.28	0.93		0.60				0.01
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0		847				0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s	0.0	0.0		0.0				0.0
Permitted Service Time (g_u), s	0.0	0.0		0.0				0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_T), s	0.0	0.0		54.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								1610
Protected Right Effective Green Time (g_R), s								25.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.00	1.983	0.00	1.983	0.00	2.224	0.00
Pedestrian F_s / F_{delay}	0.000	-0.065	0.000	0.079	0.000	0.157	0.000	0.154
Pedestrian M_{corner} / M_{cwb}								
Bicycle c_b / d_b	1866.67	0.20	1200.00	7.20		50.14	-22.22	46.01
Bicycle F_w / F_v	-3.64	0.58	-3.64	0.43	-3.64		-3.64	0.01

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 6pme	Analysis Date	3/22/2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.93
Intersection	19th St & Garage Ramp	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	6pme.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	5	658			393					0	300	

Signal Information				Signal Timing (s)												
Cycle, s	90.0	Reference Phase	2	Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off													

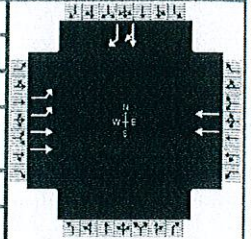
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6				4
Case Number	2.0	4.0		8.3				11.0
Phase Duration, s	30.0	89.0		59.0				1.0
Change Period, (Y+R _c), s	5.0	5.0		5.0				0.0
Max Allow Headway (MAH), s	3.3	0.0		0.0				5.7
Queue Clearance Time (g _s), s	2.1							3.0
Green Extension Time (g _e), s	0.0	0.0		0.0				0.0
Phase Call Probability	1.00							1.00
Max Out Probability	0.00							1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6					4	14	
Adjusted Flow Rate (v), veh/h	5	708			423					0	323	
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1637			1659					1900	815	
Queue Service Time (g _s), s	0.1	1.7			5.3					0.0	1.0	
Cycle Queue Clearance Time (g _c), s	0.1	1.7			5.3					0.0	1.0	
Green Ratio (g/C)	0.28	0.93			0.60					0.01	0.29	
Capacity (c), veh/h	976	3055			1991					21	456	
Volume-to-Capacity Ratio (X)	0.006	0.232			0.212					0.000	0.707	
Available Capacity (c _a), veh/h	976	3055			1991					21	456	
Back of Queue (Q), veh/ln (50th percentile)	0.0	0.1			1.8					0.0	7.3	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00					0.00	0.00	
Uniform Delay (d ₁), s/veh	23.5	0.3			8.3					0.0	28.9	
Incremental Delay (d ₂), s/veh	0.0	0.2			0.2					0.0	8.9	
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0					0.0	0.0	
Control Delay (d), s/veh	23.5	0.4			8.5					0.0	37.8	
Level of Service (LOS)	C	A			A						D	
Approach Delay, s/veh / LOS	0.6	A		8.5	A		0.0			37.8	D	
Intersection Delay, s/veh / LOS	11.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.7	A	2.7	B	2.7	B	3.0	C
Bicycle LOS Score / LOS	1.1	A	0.8	A			1.0	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6pme	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.93		
Intersection	19th St & Garage Ramp	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	6pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	5	658			393						0	300

Signal Information				Signal Timing (s)											
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off	Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

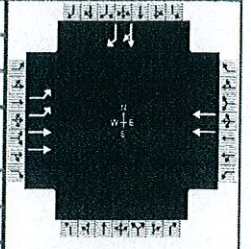
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	5	658			393						0	300
Initial Queue (Q _b), veh/h	0	0			0						0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900						1900	1900
Parking (N _m), man/h	0	L + R	0		None						None	
Heavy Vehicles (P _{HV}), %	0	5			9						0	0
Ped / Bike / RTOR, /h	0	0			1	0					47	0
Buses (N _b), buses/h	0	0			0						0	0
Arrival Type (AT)	3	3			3						3	3
Upstream Filtering (I)	1.00	1.00			1.00						1.00	1.00
Lane Width (W), ft	11.0	11.0			12.0						12.0	12.0
Turn Bay Length, ft	0	0			0						0	0
Grade (Pg), %		0			0				0		0	
Speed Limit, mi/h	25	25			25						25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s	30.0	89.0		59.0			
Yellow Change Interval (Y), s	3.0	3.0		3.0				0.0
Red Clearance Interval (R _c), s	2.0	2.0		2.0				0.0
Minimum Green (G _{min}), s	6	6		6				1
Start-Up Lost Time (I), s	2.0	2.0		2.0				2.0
Extension of Effective Green (e), s	2.0	2.0		2.0				2.0
Passage (PT), s	2.0	2.0		2.0				2.0
Recall Mode	Max	Max		Max				Max
Dual Entry	No	Yes		Yes				Yes
Walk (Walk), s	0.0	0.0		0.0				0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0				0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No		0.50	No		0.50				No		0.50

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6pme	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.93		
Intersection	19th St & Garage Ramp	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	6pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	5	658			393					0		300

Signal Information				Signal Phases														
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	Off															
Force Mode	Fixed	Simult. Gap N/S	Off															
				Green	25.0	54.0	1.0	0.0	0.0	0.0								
				Yellow	3.0	3.0	0.0	0.0	0.0	0.0								
				Red	2.0	2.0	0.0	0.0	0.0	0.0								

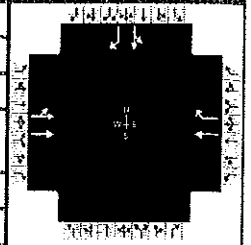
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.952	1.000	1.000	0.917	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	0.950	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			1.000						1.000	
Right-Turn Adjustment Factor (f_{RT})		1.000			1.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000						0.506
Movement Saturation Flow Rate (s), veh/h	3514	3356			3486						1900	
Proportion of Vehicles Arriving on Green (P)	0.28	0.93	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Incremental Delay Factor (k)	0.50	0.50			0.50							0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)	5.0	5.0		5.0				4.0
Green Ratio (g/C)	0.28	0.93		0.60				0.01
Permitted Saturation Flow Rate (s _p), veh/h/ln	0	0		753				0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln				0				
Permitted Effective Green Time (g _p), s	0.0	0.0		0.0				0.0
Permitted Service Time (g _u), s	0.0	0.0		0.0				0.0
Permitted Queue Service Time (g _{ps}), s								
Time to First Blockage (g), s	0.0	0.0		54.0				0.0
Queue Service Time Before Blockage (g _{rs}), s								
Protected Right Saturation Flow (s _R), veh/h/ln								1610
Protected Right Effective Green Time (g _R), s								25.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.198	0.00	1.983	0.00	1.983	0.00	2.224	0.00				
Pedestrian F_s / F_{delay}	0.000	-0.065	0.000	0.079	0.000	0.157	0.000	0.154				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	1866.67	0.20	1200.00	7.20		50.14	-22.22	46.01				
Bicycle F_w / F_v	-3.64	0.59	-3.64	0.35	-3.64		-3.64	0.53				

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7ame	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2019 Existing	Analysis Period	1> 7:00		
File Name	7ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	412	169			210	26				234	0	309

Signal Information													
Cycle, s	60.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	30.0	20.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

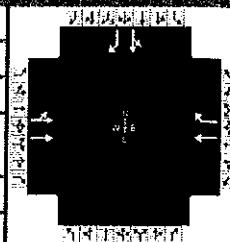
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6				4
Case Number		8.0		7.0				11.0
Phase Duration, s		35.0		35.0				25.0
Change Period, (Y+R _c), s		5.0		5.0				5.0
Max Allow Headway (MAH), s		0.0		0.0				3.4
Queue Clearance Time (g _s), s								11.7
Green Extension Time (g _e), s		0.0		0.0				1.0
Phase Call Probability								1.00
Max Out Probability								0.09

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2			6	16				7	4	14
Adjusted Flow Rate (v), veh/h	420	172			214	13				239		308
Adjusted Saturation Flow Rate (s), veh/h/ln	924	1586			1638	1491				1751		1577
Queue Service Time (g _s), s	21.7	3.3			4.5	0.3				6.3		9.7
Cycle Queue Clearance Time (g _c), s	26.3	3.3			4.5	0.3				6.3		9.7
Green Ratio (g/C)	0.50	0.50			0.50	0.50				0.33		0.33
Capacity (c), veh/h	582	793			819	745				584		526
Volume-to-Capacity Ratio (X)	0.722	0.217			0.262	0.018				0.409		0.586
Available Capacity (c _a), veh/h	582	793			819	745				584		526
Back of Queue (Q), veh/ln (50th percentile)	5.7	1.2			1.6	0.1				2.7		3.9
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00				0.00		0.00
Uniform Delay (d ₁), s/veh	16.2	8.4			8.6	7.6				15.4		16.6
Incremental Delay (d ₂), s/veh	7.6	0.6			0.8	0.0				2.1		4.7
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0				0.0		0.0
Control Delay (d), s/veh	23.8	9.0			9.4	7.6				17.6		21.3
Level of Service (LOS)	C	A			A	A				B		C
Approach Delay, s/veh / LOS	19.5	B		9.3	A		0.0			19.7		B
Intersection Delay, s/veh / LOS	17.9 B											

Multimodal Results	EB			WB			NB			SB		
	Pedestrian LOS Score / LOS	1.9	A		2.2	B		2.7	B		2.3	
Bicycle LOS Score / LOS	1.0	A		0.9	A					1.4		A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7ame	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2019 Existing	Analysis Period	1> 7:00		
File Name	7ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	412	169			210	26				234	0	309

Signal Information													
Cycle, s	60.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	30.0	20.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

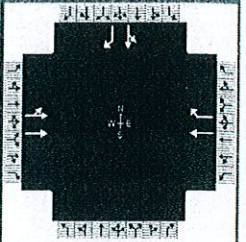
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	412	169			210	26				234	0	309
Initial Queue (Q ₀), veh/h	0	0			0	0				0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900	1900				1900	1900	1900
Parking (N _m), man/h		None			None						None	
Heavy Vehicles (P _{HV}), %		9			16	8					0	1
Ped / Bike / RTOR, /h	0	0		0	0	13				7	0	7
Buses (N _b), buses/h	0	0			0	0				0	0	0
Arrival Type (AT)	3	3			3	3				3	3	3
Upstream Filtering (f)	1.00	1.00			1.00	1.00				1.00	1.00	1.00
Lane Width (W), ft		12.0			12.0	12.0					12.0	12.0
Turn Bay Length, ft		0			0	0					0	0
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h	25	25			25	25				25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		35.0		35.0				25.0
Yellow Change Interval (Y), s		3.0		3.0				3.0
Red Clearance Interval (R _c), s		2.0		2.0				2.0
Minimum Green (G _{min}), s	6	6		6			6	6
Start-Up Lost Time (l _f), s	2.0	2.0		2.0			2.0	2.0
Extension of Effective Green (e), s	2.0	2.0		2.0			2.0	2.0
Passage (PT), s	2.0	2.0		2.0			2.0	2.0
Recall Mode	Max	Max		Max			Max	Max
Dual Entry	No	Yes		Yes			No	Yes
Walk (Walk), s	0.0	0.0		0.0			0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0			0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50					No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information				
Agency	MMA				Duration, h	0.25			
Analyst	MM - 7ame	Analysis Date	3/22/2019		Area Type	Other			
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour		PHF	0.98			
Intersection	Harbor B'lvd & Waterfront		Analysis Year	2019 Existing		Analysis Period	1> 7:00		
File Name	7ame.xus								
Project Description	Atir Residential								



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	412	169			210	26				234	0	309

Signal Information														
Cycle, s	60.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	30.0	20.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0				
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

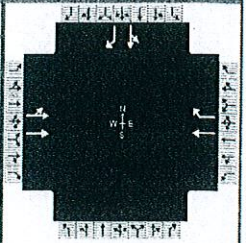
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.917	1.000	1.000	0.862	0.926	0.000	0.000	0.000	1.000	1.000	0.990
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.530			1.000						0.922	
Right-Turn Adjustment Factor (f_{RT})		0.910			0.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000						0.968		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000						0.990
Movement Saturation Flow Rate (s), veh/h		1586			1638						0	
Proportion of Vehicles Arriving on Green (P)	0.50	0.50	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.33	0.00	0.33
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50					0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		5.0		5.0				4.0
Green Ratio (g/C)		0.50		0.50				0.33
Permitted Saturation Flow Rate (s _p), veh/h/ln		1186		1232				0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln		0		0				
Permitted Effective Green Time (g _p), s		30.0		0.0				0.0
Permitted Service Time (g _u), s		25.5		0.0				0.0
Permitted Queue Service Time (g _{ps}), s		21.7						
Time to First Blockage (g _t), s		0.0		30.0				0.0
Queue Service Time Before Blockage (g _{ts}), s		0.0						
Protected Right Saturation Flow (s _r), veh/h/ln				0				0
Protected Right Effective Green Time (g _r), s				0.0				0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.00	1.557	0.01	1.983	0.02	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.081	0.000	0.081	0.000	0.143	0.000	0.144
Pedestrian M_{corner} / M_{cw}								
Bicycle C_b / d_b	1000.00	7.50	1000.00	7.50		35.21	-200.00	36.30
Bicycle F_w / F_v	-3.64	0.49	-3.64	0.38	-3.64		-3.64	0.90

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7pme	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89		
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	7pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	556	132			113	106				218	0	279

Signal Information												
Cycle, s	60.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
Green	30.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

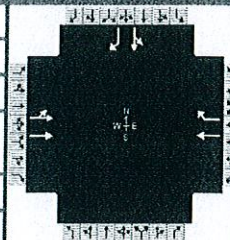
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6				4
Case Number		8.0		7.0				11.0
Phase Duration, s		35.0		35.0				25.0
Change Period, (Y+R _c), s		5.0		5.0				5.0
Max Allow Headway (MAH), s		0.0		0.0				3.5
Queue Clearance Time (g _s), s								12.3
Green Extension Time (g _e), s		0.0		0.0				1.0
Phase Call Probability								1.00
Max Out Probability								0.13

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2			6	16				7	4	14
Adjusted Flow Rate (v), veh/h	625	148			127	74				245	309	
Adjusted Saturation Flow Rate (s), veh/h/ln	1114	1647			1638	1524				1577	1509	
Queue Service Time (g _s), s	27.5	2.7			2.5	1.5				7.4	10.3	
Cycle Queue Clearance Time (g _c), s	30.0	2.7			2.5	1.5				7.4	10.3	
Green Ratio (g/C)	0.50	0.50			0.50	0.50				0.33	0.33	
Capacity (c), veh/h	677	823			819	762				526	503	
Volume-to-Capacity Ratio (X)	0.923	0.180			0.155	0.097				0.466	0.614	
Available Capacity (c _a), veh/h	677	823			819	762				526	503	
Back of Queue (Q), veh/ln (50th percentile)	11.6	1.0			0.9	0.5				2.9	4.1	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00				0.00	0.00	
Uniform Delay (d ₁), s/veh	17.7	8.2			8.1	7.9				15.8	16.8	
Incremental Delay (d ₂), s/veh	20.1	0.5			0.4	0.3				2.9	5.5	
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0				0.0	0.0	
Control Delay (d), s/veh	37.8	8.7			8.5	8.1				18.7	22.3	
Level of Service (LOS)	D	A			A	A				B	C	
Approach Delay, s/veh / LOS	32.2	C		8.4	A		0.0			20.7	C	
Intersection Delay, s/veh / LOS	24.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.9	A	2.2	B	2.8	C	2.3	B
Bicycle LOS Score / LOS	1.1	A	0.8	A			1.4	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7pme	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89		
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	7pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	556	132			113	106				218	0	279

Signal Information												
Cycle, s	60.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
		Green	30.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

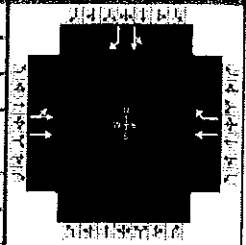
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	556	132			113	106				218	0	279
Initial Queue (Q _b), veh/h	0	0			0	0				0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900	1900				1900	1900	1900
Parking (N _m), man/h		None			None						None	
Heavy Vehicles (P _{HV}), %		5			16	5					11	4
Ped / Bike / RTOR, /h	1	0		6	0	40				17	0	4
Buses (N _b), buses/h	0	0			0	0				0	0	0
Arrival Type (AT)	3	3			3	3				3	3	3
Upstream Filtering (I)	1.00	1.00			1.00	1.00				1.00	1.00	1.00
Lane Width (W), ft		12.0			12.0	12.0					12.0	12.0
Turn Bay Length, ft		0			0	0					0	0
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h	25	25			25	25				25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		35.0		35.0				25.0
Yellow Change Interval (Y), s		3.0		3.0				3.0
Red Clearance Interval (R _c), s		2.0		2.0				2.0
Minimum Green (G _{min}), s	6	6		6			6	6
Start-Up Lost Time (I _f), s	2.0	2.0		2.0			2.0	2.0
Extension of Effective Green (e), s	2.0	2.0		2.0			2.0	2.0
Passage (PT), s	2.0	2.0		2.0			2.0	2.0
Recall Mode	Max	Max		Max			Max	Max
Dual Entry	No	Yes		Yes			No	Yes
Walk (Walk), s	0.0	0.0		0.0			0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0			0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No		0.50	No		0.50				No		0.50

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7pme	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89		
Intersection	Harbor B'lvd & Waterfront		Analysis Year	2019 Existing	Analysis Period	1 > 7:00	
File Name	7pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	556	132			113	106				218	0	279

Signal Information													
Cycle, s	60.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	30.0	20.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

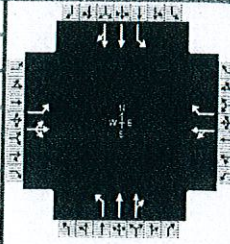
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.952	1.000	1.000	0.862	0.952	0.000	0.000	0.000	1.000	0.901	0.962
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.616			1.000						0.922	
Right-Turn Adjustment Factor (f_{RT})		0.910			0.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.995			1.000						0.968		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.994						0.975
Movement Saturation Flow Rate (s), veh/h		1647			1638						0	
Proportion of Vehicles Arriving on Green (P)	0.50	0.50	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.33	0.00	0.33
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50					0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		5.0		5.0				4.0
Green Ratio (g/C)		0.50		0.50				0.33
Permitted Saturation Flow Rate (s _p), veh/h/ln		1277		1259				0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln		0		0				0
Permitted Effective Green Time (g _p), s		30.0		0.0				0.0
Permitted Service Time (g _v), s		27.5		0.0				0.0
Permitted Queue Service Time (g _{ps}), s		27.5						
Time to First Blockage (g _t), s		0.0		30.0				0.0
Queue Service Time Before Blockage (g _{ts}), s		0.0						
Protected Right Saturation Flow (s _R), veh/h/ln				0				0
Protected Right Effective Green Time (g _R), s				0.0				0.0

Multimodal	EB			WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.00	1.557	0.01	1.983	0.06	1.557	0.00	
Pedestrian F_s / F_{delay}	0.000	0.081	0.000	0.081	0.000	0.143	0.000	0.144	
Pedestrian M_{corner} / M_{cw}									
Bicycle c_b / d_b	1000.00	7.50	1000.00	7.50		35.21	-200.00	36.30	
Bicycle F_w / F_v	-3.64	0.64	-3.64	0.33	-3.64		-3.64	0.91	

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 8ame	Analysis Date	3/28/2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Waterfront Ter & Baldwin	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	8ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	165	93	29	2	32	28	30	410	2	219	539	444

Signal Information				Signal Timing (s)						Signal Phases				
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End	Green	15.0	36.0	18.0	18.0	0.0	0.0	1	2	3	4
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	5	6	7	8
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0				

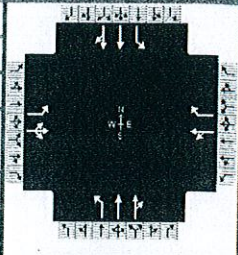
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		6	5	2
Case Number		10.0		11.0		6.3	1.0	4.0
Phase Duration, s		23.0		23.0		41.0	18.0	59.0
Change Period, (Y+R _c), s		5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s		3.1		3.2		0.0	3.1	0.0
Queue Clearance Time (g _s), s		11.6		3.7			10.4	
Green Extension Time (g _e), s		0.3		0.1		0.0	0.2	0.0
Phase Call Probability		1.00		1.00			1.00	
Max Out Probability		0.07		0.00			0.24	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	170	125			35	23	31	212	212	226	527	449
Adjusted Saturation Flow Rate (s), veh/h/ln	1707	1771			1839	1107	567	1759	1758	1630	1881	1604
Queue Service Time (g _s), s	9.6	6.6			1.7	1.5	4.1	9.5	9.5	8.4	19.8	19.8
Cycle Queue Clearance Time (g _c), s	9.6	6.6			1.7	1.5	5.9	9.5	9.5	8.4	19.8	19.8
Green Ratio (g/C)	0.17	0.17			0.17	0.31	0.34	0.34	0.34	0.50	0.51	0.51
Capacity (c), veh/h	293	304			315	348	253	603	603	524	967	825
Volume-to-Capacity Ratio (X)	0.581	0.411			0.111	0.065	0.122	0.351	0.351	0.431	0.545	0.545
Available Capacity (c _a), veh/h	293	304			315	348	253	603	603	524	967	825
Back of Queue (Q), veh/ln (50th percentile)	4.6	3.2			0.8	0.4	0.6	4.1	4.1	3.3	8.7	7.5
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	40.0	38.8			36.7	25.2	25.3	25.8	25.8	15.8	17.2	17.2
Incremental Delay (d ₂), s/veh	8.2	4.1			0.7	0.4	1.0	1.6	1.6	2.6	2.2	2.6
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	48.2	42.8			37.5	25.6	26.3	27.4	27.4	18.4	19.4	19.8
Level of Service (LOS)	D	D			D	C	C	C	C	B	B	B
Approach Delay, s/veh / LOS	45.9	D		32.8	C		27.3	C		19.4	B	
Intersection Delay, s/veh / LOS	25.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	0.6	A	0.9	A	1.5	A

HCS 2010 Signalized Intersection Input Data

General Information					Intersection Information				
Agency	MMA				Duration, h	0.25			
Analyst	MM - 8ame	Analysis Date	3/28/2019		Area Type	Other			
Jurisdiction	Weehawken, NJ		Time Period	Peak AM Highway Hour	PHF	0.97			
Intersection	Waterfront Ter & Baldwin		Analysis Year	2019 Existing	Analysis Period	1 > 7:00			
File Name	8ame.xus								
Project Description	Atir Residential								



Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				165	93	29	2	32	28	30	410	2	219	539	444

Signal Information				Signal Timing (s)						Signal Phases				
Cycle, s	105.0	Reference Phase	2	Green	15.0	36.0	18.0	18.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off											

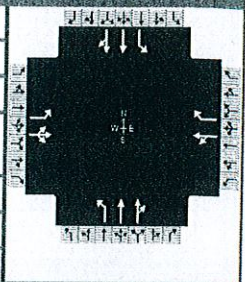
Traffic Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				165	93	29	2	32	28	30	410	2	219	539	444
Initial Queue (Q ₀), veh/h				0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h				1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h				None			None			None			None		
Heavy Vehicles (P _{HV}), %				6	3		3	45	3	8		11	1		
Ped / Bike / RTOR, /h				0	0	1	2	0	6	1	0	1	4	0	36
Buses (N _b), buses/h				0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)				3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft				12.0	12.0		12.0	12.0	12.0	12.0	12.0		11.0	11.0	
Turn Bay Length, ft				0	0		0	0	0	0	0		0	0	
Grade (Pg), %				0			0			0			0		
Speed Limit, mi/h				35	35	35	35	35	35	35	35	35	35	35	35

Phase Information		EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s			23.0		23.0		41.0	18.0	59.0
Yellow Change Interval (Y), s			3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s			2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s		6	6	6	6	6	6	6	6
Start-Up Lost Time (I _f), s		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode		Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry		No	No	No	No	No	No	No	No
Walk (Walk), s		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information				EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking				No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 8ame	Analysis Date	3/28/2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Waterfront Ter & Baldwin	Analysis Year	2019 Existing	Analysis Period	1> 7:00		
File Name	8ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	165	93	29	2	32	28	30	410	2	219	539	444

Signal Information				EB				WB				NB				SB											
Cycle, s	105.0	Reference Phase	2																								
Offset, s	0	Reference Point	End	Green	15.0	36.0	18.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

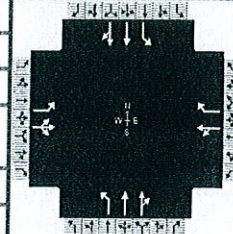
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.971	1.000	1.000	0.971	0.690	0.971	0.926	1.000	0.901	0.990	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.997			0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.960			0.000			0.999		0.853		
Left-Turn Pedestrian Adjustment Factor (f_{LP})	1.000			1.000			0.999			0.999		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.997			0.999			0.996
Movement Saturation Flow Rate (s), veh/h		1361			1731			3508		1630	1984	
Proportion of Vehicles Arriving on Green (P)	0.17	0.17	0.17	0.17	0.17	0.17	0.34	0.34	0.34	0.14	0.51	0.51
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t)		4.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)		0.17		0.17		0.34	0.50	0.51
Permitted Saturation Flow Rate (s_p), veh/h/ln		1707		0		567	882	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0		36.0	38.0	0.0
Permitted Service Time (g_u), s		0.0		0.0		34.2	26.5	0.0
Permitted Queue Service Time (g_{ps}), s						4.1	3.9	
Time to First Blockage (g_r), s		0.0		0.0		0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				1110				
Protected Right Effective Green Time (g_R), s				15.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.00	2.107	0.05	1.557	0.01	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.144	0.000	0.163	0.000	0.125	0.000	0.101
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	342.86	36.04		58.67	685.71	22.67	1028.57	12.39
Bicycle F_w / F_v	-3.64	0.49	-3.64	0.10	-3.64	0.38	-3.64	0.99

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 8pme	Analysis Date	3/28/2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.94		
Intersection	Waterfront Ter & Baldwin		Analysis Year	2019 Existing	Analysis Period	1 > 7:00	
File Name	8pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	340	54	24	7	26	87	40	650	7	72	289	328

Signal Information				Signal Timing (s)						Signal Phases				
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	11.0	36.0	18.0	22.0	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	5	6	7	8
				Red	0.0	2.0	2.0	2.0	0.0	0.0				

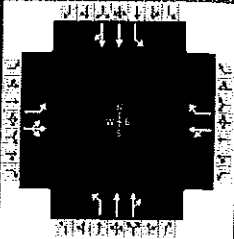
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		6	5	2
Case Number		10.0		11.0		6.3	1.0	4.0
Phase Duration, s		23.0		27.0		41.0	14.0	55.0
Change Period, (Y+R ₀), s		5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s		3.1		3.3		0.0	3.1	0.0
Queue Clearance Time (g _s), s		20.0		7.3			5.0	
Green Extension Time (g _e), s		0.0		0.2		0.0	0.0	0.0
Phase Call Probability		1.00		1.00			1.00	
Max Out Probability		1.00		0.00			0.02	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	362	83		35	82		43	349	348	77	307	334
Adjusted Saturation Flow Rate (s), veh/h/ln	1792	1666		1880	1193		798	1881	1875	1483	1863	1570
Queue Service Time (g _s), s	18.0	4.6		1.6	5.3		3.9	15.7	15.7	3.0	10.9	14.9
Cycle Queue Clearance Time (g _c), s	18.0	4.6		1.6	5.3		4.8	15.7	15.7	3.0	10.9	14.9
Green Ratio (g/C)	0.17	0.17		0.21	0.31		0.34	0.34	0.34	0.47	0.48	0.48
Capacity (c), veh/h	307	286		394	376		336	645	643	344	887	748
Volume-to-Capacity Ratio (X)	1.178	0.291		0.089	0.218		0.127	0.542	0.542	0.223	0.347	0.447
Available Capacity (c _a), veh/h	307	286		394	376		336	645	643	344	887	748
Back of Queue (Q), veh/ln (50th percentile)	17.1	2.0		0.8	1.6		0.8	7.5	7.4	1.1	4.7	5.6
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	43.5	37.9		33.4	26.5		24.6	27.8	27.8	17.5	17.3	18.3
Incremental Delay (d ₂), s/veh	108.6	2.6		0.4	1.3		0.8	3.2	3.3	1.5	1.1	1.9
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	152.1	40.5		33.9	27.8		25.3	31.1	31.1	18.9	18.3	20.2
Level of Service (LOS)	F	D		C	C		C	C	C	B	B	C
Approach Delay, s/veh / LOS	131.2	F		29.6	C		30.8	C		19.3	B	
Intersection Delay, s/veh / LOS	48.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.2	A	0.7	A	1.1	A	1.1	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 8pme	Analysis Date	3/28/2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.94		
Intersection	Waterfront Ter & Baldwin		Analysis Year	2019 Existing	Analysis Period	1 > 7:00	
File Name	8pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	340	54	24	7	26	87	40	650	7	72	289	328

Signal Information				Signal Timing (s)						Signal Phases			
Cycle, s	105.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	11.0	36.0	18.0	22.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0			
				Red	0.0	2.0	2.0	2.0	0.0	0.0			

Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	340	54	24	7	26	87	40	650	7	72	289	328
Initial Queue (Q ₀), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	1	8			0	34	0	1		22	2	
Ped / Bike / RTOR, /h	1	0	0	5	0	10	3	0	1	5	0	14
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0			12.0	12.0	12.0	12.0		11.0	11.0	
Turn Bay Length, ft	0	0			0	0	0	0		0	0	
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

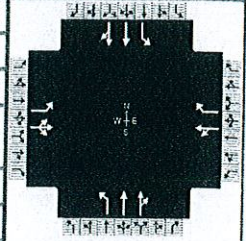
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		23.0		27.0		41.0	14.0	55.0
Yellow Change Interval (Y), s		3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s		2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (f), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	No	No	No	No	No	No	No
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information

Agency	MMA			Duration, h	0.25
Analyst	MM - 8pme	Analysis Date	3/28/2019	Area Type	Other
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.94
Intersection	Waterfront Ter & Baldwin	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	8pme.xus				
Project Description	Atir Residential				



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	340	54	24	7	26	87	40	650	7	72	289	328

Signal Information

Cycle, s	105.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	11.0	36.0	18.0	22.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0		

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.990	0.926	1.000	1.000	1.000	0.746	1.000	0.990	1.000	0.820	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.990			0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.947			0.000			0.997			0.843	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			0.997			0.999		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.998			0.993			0.996			0.995
Movement Saturation Flow Rate (s), veh/h		1153			1481			3722		1483	1863	
Proportion of Vehicles Arriving on Green (P)	0.17	0.17	0.17	0.21	0.21	0.21	0.34	0.34	0.34	0.10	0.48	0.48
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

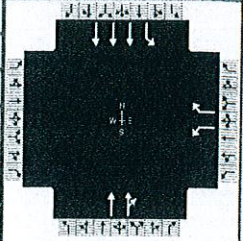
Signal Timing / Movement Groups

	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)		0.17		0.21		0.34	0.47	0.48
Permitted Saturation Flow Rate (s_p), veh/h/ln		1792		0		798	623	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0		36.0	38.0	0.0
Permitted Service Time (g_u), s		0.0		0.0		35.1	20.3	0.0
Permitted Queue Service Time (g_{ps}), s						3.9	2.5	
Time to First Blockage (g_j), s		0.0		0.0		0.0	0.0	0.0
Queue Service Time Before Blockage (g_{js}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				1202				
Protected Right Effective Green Time (g_R), s				11.0				

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.107	0.00		2.107	0.02		1.557	0.01		1.557	0.00	
Pedestrian F_s / F_{delay}	0.000	0.140		0.000	0.163		0.000	0.125		0.000	0.107	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	419.05	32.80			58.67		685.71	22.67		952.38	14.40	
Bicycle F_w / F_v	-3.64	0.73		-3.64	0.19		-3.64	0.61		-3.64	0.59	

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9ame	Analysis Date	Mar 28, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.93		
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	9ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				378		170		280	75	217	1271	

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	0.0	2.0	2.0	0.0	0.0	0.0				

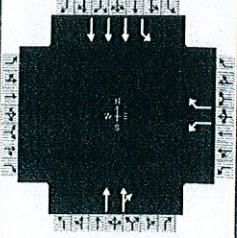
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				21.0		51.0	18.0	69.0
Change Period, (Y+R _c), s				5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s				3.3		0.0	3.3	0.0
Queue Clearance Time (g _s), s				18.0			6.8	
Green Extension Time (g _e), s				0.0		0.0	0.3	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				1.00			0.01	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				406		183		184	177	233		1367
Adjusted Saturation Flow Rate (s), veh/h/ln				1604		1311		1629	1534	1551		1273
Queue Service Time (g _s), s				16.0		12.0		5.6	5.8	4.8		14.5
Cycle Queue Clearance Time (g _c), s				16.0		12.0		5.6	5.8	4.8		14.5
Green Ratio (g/C)				0.18		0.18		0.51	0.51	0.70		0.71
Capacity (c), veh/h				285		233		832	784	736		2715
Volume-to-Capacity Ratio (X)				1.425		0.784		0.221	0.226	0.317		0.503
Available Capacity (c _a), veh/h				285		233		832	784	736		2715
Back of Queue (Q), veh/ln (50th percentile)				22.9		5.3		2.1	2.1	1.5		3.4
Queue Storage Ratio (RQ) (50th percentile)				0.00		0.00		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				37.0		35.4		12.1	12.2	5.2		5.8
Incremental Delay (d ₂), s/veh				210.5		22.8		0.6	0.7	1.1		0.7
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				247.5		58.1		12.7	12.8	6.4		6.5
Level of Service (LOS)				F		E		B	B	A		A
Approach Delay, s/veh / LOS	0.0			188.8		F		12.8	B	6.5		A
Intersection Delay, s/veh / LOS	49.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.0	C	2.3	B	0.7	A
Bicycle LOS Score / LOS				F	0.8	A	1.4	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 9ame	Analysis Date	Mar 28, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.93
Intersection	JFK Boulevard E. & Baldwi	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	9ame.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				378		170		280	75	217	1271	

Signal Information				Signal Timing (s)						Signal Phases				
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End	Green	15.0	46.0	16.0	0.0	0.0	0.0				
Uncoordinated	No	Simult. Gap EW	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	2.0	0.0	0.0	0.0				

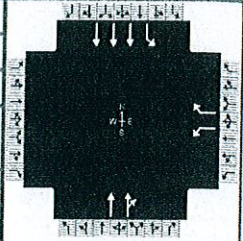
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				378		170		280	75	217	1271	
Initial Queue (Q _b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N _m), man/h						None		None			None	
Heavy Vehicles (P _{HV}), %				1		10		5		5	22	
Ped / Bike / RTOR, /h							1	0	19	2	0	
Buses (N _b), buses/h				0		0		0	0	0	0	
Arrival Type (AT)				3		3		3	3	3	3	
Upstream Filtering (f)				1.00		1.00		1.00	1.00	1.00	1.00	
Lane Width (W), ft				12.0		12.0		11.0		11.0	11.0	
Turn Bay Length, ft				0		0		0		0	0	
Grade (Pg), %		0				0		0			0	
Speed Limit, mi/h				25		25		25	25	25	25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s				21.0		51.0	18.0	69.0
Yellow Change Interval (Y), s				3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s				2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s			6			6	6	6
Start-Up Lost Time (l _t), s			2.0			2.0	2.0	2.0
Extension of Effective Green (e), s			2.0			2.0	2.0	2.0
Passage (PT), s			2.0			2.0	2.0	2.0
Recall Mode			Max			Max	Max	Max
Dual Entry			No			No	No	No
Walk (Walk), s			0.0			0.0	0.0	0.0
Pedestrian Clearance Time (PC), s			0.0			0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking				No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9ame	Analysis Date	Mar 28, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.93		
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	9ame.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				378		170		280	75	217	1271	

Signal Information				Signal Timing (s)						Signal Phases					
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	15.0	46.0	16.0	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	2.0	0.0	0.0	0.0					

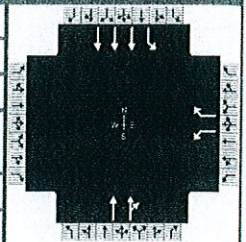
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.000	0.000	0.000	0.990	0.990	0.909	1.000	0.952	1.000	0.952	0.820	1.000
Approach Grade Adjustment Factor (f_g)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.908	1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})								1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})								0.942			1.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})				0.995			1.000			0.999		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})						0.995			0.999			1.000
Movement Saturation Flow Rate (s), veh/h					0			2642		1551	3947	
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.18	0.00	0.18	0.00	0.51	0.51	0.17	0.71	0.00
Incremental Delay Factor (k)				0.50		0.50		0.50	0.50	0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t)				4.0		5.0	3.0	5.0
Green Ratio (g/C)				0.18		0.51	0.70	0.71
Permitted Saturation Flow Rate (s_p), veh/h/ln				1604		404	888	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	48.0	0.0
Permitted Service Time (g_u), s				0.0		0.0	40.2	0.0
Permitted Queue Service Time (g_{ps}), s							2.8	
Time to First Blockage (gt), s				0.0		46.0	0.0	0.0
Queue Service Time Before Blockage (g_s), s								
Protected Right Saturation Flow (s_r), veh/h/ln				0				
Protected Right Effective Green Time (g_r), s				0.0				

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.336	0.03		2.224	0.00		1.557	0.00		0.000	0.00	
Pedestrian F_s / F_{delay}	0.000	0.157		0.000	0.158		0.000	0.095		0.000	0.053	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b		50.14			51.20		1022.22	10.76		1422.22	3.76	
Bicycle F_w / F_v	-3.64			-3.64			-3.64	0.30		-3.64	0.88	

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9pme	Analysis Date	Mar 28, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	9pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				267		131		404	172	258	782	

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	0.0	2.0	2.0	0.0	0.0	0.0				

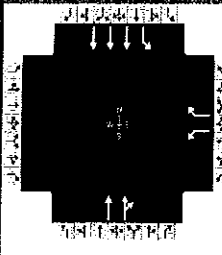
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				21.0		51.0	18.0	69.0
Change Period, (Y+R _c), s				5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s				3.3		0.0	3.3	0.0
Queue Clearance Time (g _s), s				17.5			7.5	
Green Extension Time (g _e), s				0.0		0.0	0.3	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				1.00			0.03	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				278		136		306	281	269		815
Adjusted Saturation Flow Rate (s), veh/h/ln				1604		1400		1676	1515	1597		1339
Queue Service Time (g _s), s				15.5		8.0		9.7	10.0	5.5		6.6
Cycle Queue Clearance Time (g _c), s				15.5		8.0		9.7	10.0	5.5		6.6
Green Ratio (g/C)				0.18		0.18		0.51	0.51	0.70		0.71
Capacity (c), veh/h				285		249		857	774	643		2856
Volume-to-Capacity Ratio (X)				0.975		0.548		0.358	0.363	0.418		0.285
Available Capacity (c _a), veh/h				285		249		857	774	643		2856
Back of Queue (Q), veh/ln (50th percentile)				9.8		3.3		3.9	3.6	1.9		1.6
Queue Storage Ratio (RQ) (50th percentile)				0.00		0.00		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				36.8		33.7		13.2	13.2	6.1		4.7
Incremental Delay (d ₂), s/veh				47.3		8.4		1.2	1.3	2.0		0.3
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				84.1		42.1		14.3	14.5	8.1		5.0
Level of Service (LOS)				F		D		B	B	A		A
Approach Delay, s/veh / LOS	0.0			70.3		E	14.4		B	5.7		A
Intersection Delay, s/veh / LOS				21.0						C		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.0	C	2.3	B	0.7	A
Bicycle LOS Score / LOS		A		F	1.0	A	1.1	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9pme	Analysis Date	Mar 28, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2019 Existing	Analysis Period	1 > 7:00		
File Name	9pme.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				267		131		404	172	258	782	

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0			
				Red	0.0	2.0	2.0	0.0	0.0	0.0			

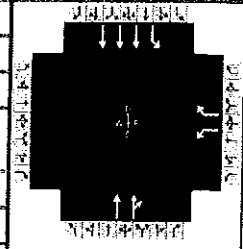
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				267		131		404	172	258	782	
Initial Queue (Q _b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N _m), man/h						None		None			None	
Heavy Vehicles (P _{HV}), %				1		3		2		2	16	
Ped / Bike / RTOR, /h							0	0	12	3	0	
Buses (N _b), buses/h				0		0		0	0	0	0	
Arrival Type (A _T)				3		3		3	3	3	3	
Upstream Filtering (I)				1.00		1.00		1.00	1.00	1.00	1.00	
Lane Width (W), ft				12.0		12.0		11.0		11.0	11.0	
Turn Bay Length, ft				0		0		0		0	0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h				25		25		25	25	25	25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s				21.0		51.0	18.0	69.0
Yellow Change Interval (Y), s				3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s				2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s			6			6	6	6
Start-Up Lost Time (I), s			2.0			2.0	2.0	2.0
Extension of Effective Green (e), s			2.0			2.0	2.0	2.0
Passage (P _T), s			2.0			2.0	2.0	2.0
Recall Mode			Max			Max	Max	Max
Dual Entry			No			No	No	No
Walk (Walk), s			0.0			0.0	0.0	0.0
Pedestrian Clearance Time (P _C), s			0.0			0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking				No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 9pme	Analysis Date	Mar 28, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.96
Intersection	JFK Boulevard E. & Baldwi	Analysis Year	2019 Existing	Analysis Period	1 > 7:00
File Name	9pme.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				267		131		404	172	258	782	

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0		
				Red	0.0	2.0	2.0	0.0	0.0	0.0		

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.000	0.000	0.000	0.990	0.990	0.971	1.000	0.980	1.000	0.980	0.862	1.000
Approach Grade Adjustment Factor (f_g)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.908	1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})					0.000			1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})					0.000			0.904			1.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})				0.995			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})						0.995			1.000			1.000
Movement Saturation Flow Rate (s), veh/h					0			2293		1597	4151	
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.18	0.00	0.18	0.00	0.51	0.51	0.17	0.71	0.00
Incremental Delay Factor (k)				0.50		0.50		0.50	0.50	0.50	0.50	

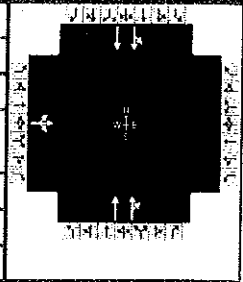
Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)				4.0		5.0	3.0	5.0
Green Ratio (g/C)				0.18		0.51	0.70	0.71
Permitted Saturation Flow Rate (s _p), veh/h/ln				1604		681	742	0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln						0		
Permitted Effective Green Time (g _p), s				0.0		0.0	48.0	0.0
Permitted Service Time (g _v), s				0.0		0.0	36.0	0.0
Permitted Queue Service Time (g _{ps}), s							6.8	
Time to First Blockage (g _t), s				0.0		46.0	0.0	0.0
Queue Service Time Before Blockage (g _{sb}), s								
Protected Right Saturation Flow (s _r), veh/h/ln				0				
Protected Right Effective Green Time (g _r), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.02	2.224	0.00	1.557	0.00	0.000	0.00
Pedestrian F_s / F_{delay}	0.000	0.157	0.000	0.158	0.000	0.095	0.000	0.053
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b		50.14		51.20	1022.22	10.76	1422.22	3.76
Bicycle F_w / F_v	-3.64		-3.64		-3.64	0.48	-3.64	0.60

2022 NO-BUILD TRAFFIC CONDITIONS

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 1amnb	Analysis Date	Mar 21, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	1amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	137	60	8					807	81		22	937

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	55.0	25.0	0.0	0.0	0.0	0.0		
				Yellow	3.0	3.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0		

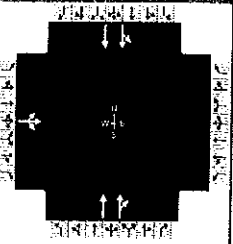
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		12.0				8.0		8.0
Phase Duration, s		30.0				60.0		60.0
Change Period, (Y+R _c), s		5.0				5.0		5.0
Max Allow Headway (MAH), s		3.2				0.0		0.0
Queue Clearance Time (g _s), s		14.2						
Green Extension Time (g _e), s		0.3				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14					2	12	1	6	
Adjusted Flow Rate (v), veh/h	216						475	460	518	491		
Adjusted Saturation Flow Rate (s), veh/h/ln	1366						1710	1654	1638	1556		
Queue Service Time (g _s), s	12.2						13.4	13.5	0.0	15.6		
Cycle Queue Clearance Time (g _c), s	12.2						13.4	13.5	15.2	15.6		
Green Ratio (g/C)	0.28						0.61	0.61	0.61	0.61		
Capacity (c), veh/h	379						1045	1011	1043	951		
Volume-to-Capacity Ratio (X)	0.569						0.455	0.455	0.497	0.517		
Available Capacity (c _a), veh/h	379						1045	1011	1043	951		
Back of Queue (Q), veh/ln (50th percentile)	4.6						5.0	4.9	5.7	5.6		
Queue Storage Ratio (RQ) (50th percentile)	0.00						0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	27.9						9.4	9.4	9.8	9.9		
Incremental Delay (d ₂), s/veh	6.1						1.4	1.5	1.7	2.0		
Initial Queue Delay (d ₃), s/veh	0.0						0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	33.9						10.9	10.9	11.5	12.0		
Level of Service (LOS)	C						B	B	B	B		
Approach Delay, s/veh / LOS	33.9	C	0.0			10.9	B	11.7	B			
Intersection Delay, s/veh / LOS	13.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.7	B	2.7	B	1.9	A	1.4	A
Bicycle LOS Score / LOS	0.8	A			1.3	A	1.3	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 1amnb	Analysis Date	Mar 21, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	1amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (V), veh/h	137	60	8					807	81	22	937	

Signal Information				Signal Timing (s)							Signal Phases				
Cycle, s	90.0	Reference Phase	2	Green	55.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off												

Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	137	60	8					807	81	22	937	
Initial Queue (Q _b), veh/h	0	0	0					0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900					1900	1900	1900	1900	
Parking (N _m), man/h	5	L+R	5					None			None	
Heavy Vehicles (P _{HV}), %		2						0			0	
Ped / Bike / RTOR, /h	8	0	0					2	0	0	5	0
Buses (N _b), buses/h	0	0	0					0	0	0	0	
Arrival Type (AT)	3	3	3					3	3	3	3	
Upstream Filtering (f)	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Lane Width (W), ft		12.0						10.0			10.0	
Turn Bay Length, ft		0						0			0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25	25					25	25	25	25	

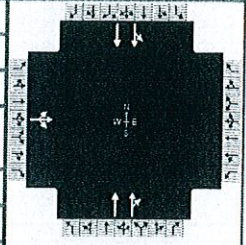
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		30.0				60.0	
Yellow Change Interval (Y), s		3.0				3.0		3.0
Red Clearance Interval (R _c), s		2.0				2.0		2.0
Minimum Green (G _{min}), s	6	6				6	6	6
Start-Up Lost Time (l), s	2.0	2.0				2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0				2.0	2.0	2.0
Passage (PT), s	2.0	2.0				2.0	2.0	2.0
Recall Mode	Max	Max				Max	Max	Max
Dual Entry	No	Yes				No	No	No
Walk (Walk), s	0.0	0.0				0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0				0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No		0.50				No		0.50	No		0.50

HCS 2010 Signalized Intersection Intermediate Values

General Information

Agency	MMA			Duration, h	0.25
Analyst	MM - 1amnb	Analysis Date	Mar 21, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00
File Name	1amnb.xus				
Project Description	Atir Residential				



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	137	60	8					807	81	22	937	

Signal Information

Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	55.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0

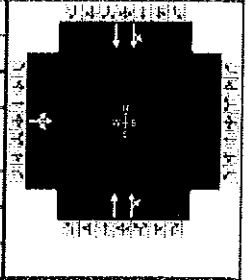
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	0.875	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	0.971	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.815						1.000			0.958	
Right-Turn Adjustment Factor (f_{RT})		0.000						0.967			0.910	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.997						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.991						0.998			1.000
Movement Saturation Flow Rate (s), veh/h		400						3057			3121	
Proportion of Vehicles Arriving on Green (P)	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.61	0.61	0.61	0.61	0.00
Incremental Delay Factor (k)		0.50						0.50	0.50	0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		4.0				5.0		5.0
Green Ratio (g/C)		0.28				0.61		0.61
Permitted Saturation Flow Rate (s _p), veh/h/ln		0				580		608
Shared Saturation Flow Rate (s _{sh}), veh/h/ln						0		0
Permitted Effective Green Time (g _p), s		0.0				0.0		55.0
Permitted Service Time (g _u), s		0.0				0.0		41.5
Permitted Queue Service Time (g _{ps}), s								0.0
Time to First Blockage (g _t), s		0.0				55.0		28.3
Queue Service Time Before Blockage (g _{fs}), s								15.2
Protected Right Saturation Flow (s _r), veh/h/ln								
Protected Right Effective Green Time (g _r), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.983	0.00	1.983	0.00	1.198	0.00	0.681	0.00
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.077	0.000	0.077
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b		51.20		50.14	1222.22	6.81	1222.22	6.81
Bicycle F_w / F_v	-3.64	0.36	-3.64		-3.64	0.77	-3.64	0.83

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 1pmnb	Analysis Date	Mar 21, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.97		
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1> 7:00		
File Name	1pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	108	50	20					663	61	24	1016	

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	55.0	25.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0				
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

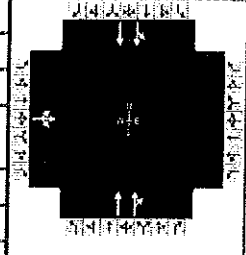
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		12.0				8.0		8.0
Phase Duration, s		30.0				60.0		60.0
Change Period, (Y+R _c), s		5.0				5.0		5.0
Max Allow Headway (MAH), s		3.3				0.0		0.0
Queue Clearance Time (g _s), s		12.2						
Green Extension Time (g _e), s		0.3				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14				2	12		1	6	
Adjusted Flow Rate (v), veh/h		184					379	368		553	519	
Adjusted Saturation Flow Rate (s), veh/h/ln		1352					1710	1659		1559	1468	
Queue Service Time (g _s), s		10.2					9.9	10.0		0.0	18.4	
Cycle Queue Clearance Time (g _c), s		10.2					9.9	10.0		18.2	18.4	
Green Ratio (g/C)		0.28					0.61	0.61		0.61	0.61	
Capacity (c), veh/h		376					1045	1014		994	897	
Volume-to-Capacity Ratio (X)		0.489					0.362	0.363		0.556	0.579	
Available Capacity (c _a), veh/h		376					1045	1014		994	897	
Back of Queue (Q), veh/ln (50th percentile)		3.7					3.7	3.6		6.5	6.3	
Queue Storage Ratio (RQ) (50th percentile)		0.00					0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh		27.2					8.7	8.7		10.4	10.5	
Incremental Delay (d ₂), s/veh		4.5					1.0	1.0		2.2	2.7	
Initial Queue Delay (d ₃), s/veh		0.0					0.0	0.0		0.0	0.0	
Control Delay (d), s/veh		31.6					9.7	9.8		12.6	13.3	
Level of Service (LOS)		C					A	A		B	B	
Approach Delay, s/veh / LOS	31.6	C		0.0			9.7	A		12.9	B	
Intersection Delay, s/veh / LOS	13.4						B					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.7	B	2.7	B	1.9	A	1.4
Bicycle LOS Score / LOS	0.8	A			1.1	A	1.4	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 1pmnb	Analysis Date	Mar 21, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.97		
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	1pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	108	50	20					663	61	24	1016	

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	55.0	25.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

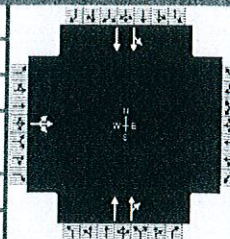
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	108	50	20					663	61	24	1016	
Initial Queue (Q _b), veh/h	0	0	0					0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900					1900	1900	1900	1900	
Parking (N _m), man/h	5	L + R	5					None			None	
Heavy Vehicles (P _{HV}), %		2						0			6	
Ped / Bike / RTOR, /h	8	0	0					0	0	0	2	0
Buses (N _b), buses/h	0	0	0					0	0	0	0	0
Arrival Type (AT)	3	3	3					3	3	3	3	
Upstream Filtering (f)	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Lane Width (W), ft		12.0						10.0			10.0	
Turn Bay Length, ft		0						0			0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25	25					25	25	25	25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		30.0				60.0		60.0
Yellow Change Interval (Y), s		3.0				3.0		3.0
Red Clearance Interval (R _c), s		2.0				2.0		2.0
Minimum Green (G _{min}), s	6	6				6	6	6
Start-Up Lost Time (l), s	2.0	2.0				2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0				2.0	2.0	2.0
Passage (PT), s	2.0	2.0				2.0	2.0	2.0
Recall Mode	Max	Max				Max	Max	Max
Dual Entry	No	Yes				No	No	No
Walk (Walk), s	0.0	0.0				0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0				0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 1pmnb	Analysis Date	Mar 21, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.97		
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	1pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	108	50	20					663	61	24	1016	

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off										
Force Mode	Fixed	Simult. Gap N/S	Off										
				Green	55.0	25.0	0.0	0.0	0.0	0.0			
				Yellow	3.0	3.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

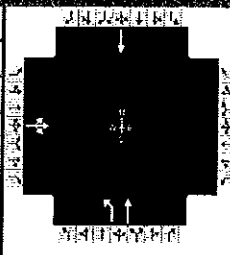
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	0.943	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	0.875	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	0.971	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.807							1.000			0.966
Right-Turn Adjustment Factor (f_{RT})		0.000							0.970			0.910
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.997						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.991						1.000			1.000
Movement Saturation Flow Rate (s), veh/h		380							3085			2957
Proportion of Vehicles Arriving on Green (P)	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.61	0.61	0.61	0.61	0.00
Incremental Delay Factor (k)		0.50						0.50	0.50	0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		4.0				5.0		5.0
Green Ratio (g/C)		0.28				0.61		0.61
Permitted Saturation Flow Rate (s _p), veh/h/ln		0				547		726
Shared Saturation Flow Rate (s _{sh}), veh/h/ln						0		0
Permitted Effective Green Time (g _p), s		0.0				0.0		55.0
Permitted Service Time (g _u), s		0.0				0.0		45.0
Permitted Queue Service Time (g _{ps}), s								0.0
Time to First Blockage (g _t), s		0.0				55.0		27.4
Queue Service Time Before Blockage (g _{rs}), s								18.2
Protected Right Saturation Flow (s _r), veh/h/ln								
Protected Right Effective Green Time (g _r), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.983	0.00	1.983	0.00	1.983	0.00	1.983	0.00	0.681	0.00	0.681	0.00
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.077	0.000	0.077	0.000	0.077	0.000	0.077
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b		51.20			50.14		1222.22	6.81	1222.22	6.81		
Bicycle F_w / F_v	-3.64	0.30	-3.64				-3.64	0.62	-3.64	0.88		

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2amnb	Analysis Date	Mar 22, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	2amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36				228	773				586

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		

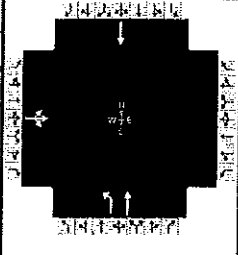
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		12.0			2.0	4.0		8.3
Phase Duration, s		20.0			18.0	70.0		52.0
Change Period, (Y+R _c), s		5.0			5.0	5.0		5.0
Max Allow Headway (MAH), s		3.3			3.3	0.0		0.0
Queue Clearance Time (g _s), s		10.8			15.0			
Green Extension Time (g _e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.40			1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14				5	2				6
Adjusted Flow Rate (v), veh/h		166					240	814				617
Adjusted Saturation Flow Rate (s), veh/h/ln		1587					1566	1644				1660
Queue Service Time (g _s), s		8.8					13.0	24.5				25.4
Cycle Queue Clearance Time (g _c), s		8.8					13.0	24.5				25.4
Green Ratio (g/C)		0.17					0.14	0.72				0.52
Capacity (c), veh/h		265					226	1188				867
Volume-to-Capacity Ratio (X)		0.629					1.061	0.685				0.711
Available Capacity (c _a), veh/h		266					226	1188				867
Back of Queue (Q), veh/ln (50th percentile)		4.2					9.8	7.9				10.3
Queue Storage Ratio (RQ) (50th percentile)		0.00					0.00	0.00				0.00
Uniform Delay (d ₁), s/veh		34.9					38.5	6.9				16.3
Incremental Delay (d ₂), s/veh		10.8					76.9	3.2				4.9
Initial Queue Delay (d ₃), s/veh		0.0					0.0	0.0				0.0
Control Delay (d), s/veh		45.7					115.4	10.1				21.3
Level of Service (LOS)		D					F	B				C
Approach Delay, s/veh / LOS	45.7	D		0.0			34.1	C		21.3		C
Intersection Delay, s/veh / LOS	30.8						C					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.3	B		2.1	B		1.8	A		2.1	B	
Bicycle LOS Score / LOS	0.8	A					2.2	B		1.5	A	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2amnb	Analysis Date	Mar 22, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	2amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36				228	773				586

Signal Information				EB			WB			NB			SB		
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0					
				Red	2.0	2.0	2.0	0.0	0.0	0.0					

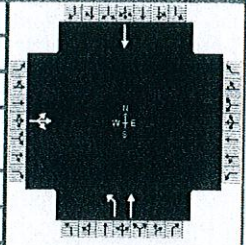
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36				228	773				586
Initial Queue (Q _b), veh/h	0	0	0				0	0				0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900				1900	1900				1900
Parking (N _m), man/h		None						None				None
Heavy Vehicles (P _{HV}), %		3					4	4				3
Ped / Bike / RTOR, /h	3	0	2				2	0		1	0	
Buses (N _b), buses/h	0	0	0				0	0				0
Arrival Type (AT)	3	3	3				3	3				3
Upstream Filtering (I)	1.00	1.00	1.00				1.00	1.00				1.00
Lane Width (W), ft		15.0					12.0	12.0				10.0
Turn Bay Length, ft		0					0	0				0
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25	25				25	25				25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		20.0			18.0	70.0		52.0
Yellow Change Interval (Y), s		3.0			3.0	3.0		3.0
Red Clearance Interval (R _c), s		2.0			2.0	2.0		2.0
Minimum Green (G _{min}), s	6	6			6	6		6
Start-Up Lost Time (l ₀), s	2.0	2.0			2.0	2.0		2.0
Extension of Effective Green (e), s	2.0	2.0			2.0	2.0		2.0
Passage (PT), s	2.0	2.0			2.0	2.0		2.0
Recall Mode	Max	Max			Max	Max		Max
Dual Entry	No	Yes			No	No		No
Walk (Walk), s	0.0	0.0			0.0	0.0		0.0
Pedestrian Clearance Time (PC), s	0.0	0.0			0.0	0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2amnb	Analysis Date	Mar 22, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	2amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36				228	773				586

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

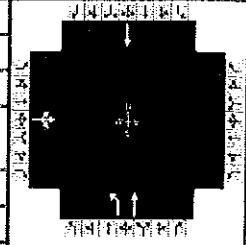
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.040	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.971	1.000	0.000	0.000	0.000	0.962	0.962	1.000	1.000	0.971	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.919					0.952	0.000			1.000	
Right-Turn Adjustment Factor (f_{RT})		0.000						1.000			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.991						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.991						1.000			1.000
Movement Saturation Flow Rate (s), veh/h		0					1566	1644			1660	
Proportion of Vehicles Arriving on Green (P)	0.17	0.00	0.17	0.00	0.00	0.00	0.14	0.72	0.00	0.00	0.52	0.00
Incremental Delay Factor (k)		0.50					0.50	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0			5.0	5.0		5.0
Green Ratio (g/C)		0.17			0.14	0.72		0.52
Permitted Saturation Flow Rate (s_p), veh/h/ln		0			0	0		682
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s		0.0			0.0	0.0		0.0
Permitted Service Time (g_u), s		0.0			0.0	0.0		0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_l), s		0.0			0.0	0.0		47.0
Queue Service Time Before Blockage (g_{rs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.389	0.00	1.198	0.00	1.389	0.00
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.050	0.000	0.093
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b		51.20		50.14	1444.44	3.47	1044.44	10.27
Bicycle F_w / F_v	-3.64	0.27	-3.64		-3.64	1.74	-3.64	1.02

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2pmnb	Analysis Date	Mar 22, 2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	2pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	99	0	37				225	756				872

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		

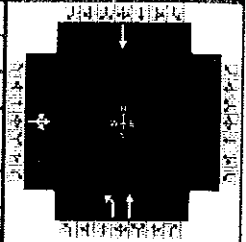
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		12.0			2.0	4.0		8.3
Phase Duration, s		20.0			18.0	70.0		52.0
Change Period, (Y+R _c), s		5.0			5.0	5.0		5.0
Max Allow Headway (MAH), s		3.3			3.3	0.0		0.0
Queue Clearance Time (g _s), s		8.2			13.9			
Green Extension Time (g _e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.02			1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14				5	2				6
Adjusted Flow Rate (v), veh/h		136					237	796				918
Adjusted Saturation Flow Rate (s), veh/h/ln		1780					1774	1863				1845
Queue Service Time (g _s), s		6.2					11.9	18.6				42.6
Cycle Queue Clearance Time (g _c), s		6.2					11.9	18.6				42.6
Green Ratio (g/C)		0.17					0.14	0.72				0.52
Capacity (c), veh/h		297					256	1345				963
Volume-to-Capacity Ratio (X)		0.458					0.924	0.592				0.953
Available Capacity (c _a), veh/h		297					256	1345				963
Back of Queue (Q), veh/ln (50th percentile)		3.1					7.9	6.6				22.2
Queue Storage Ratio (RQ) (50th percentile)		0.00					0.00	0.00				0.00
Uniform Delay (d ₁), s/veh		33.8					38.0	6.1				20.4
Incremental Delay (d ₂), s/veh		5.0					39.6	1.9				19.6
Initial Queue Delay (d ₃), s/veh		0.0					0.0	0.0				0.0
Control Delay (d), s/veh		38.8					77.6	8.0				40.1
Level of Service (LOS)		D					E	A				D
Approach Delay, s/veh / LOS	38.8		D	0.0			24.0		C	40.1		D
Intersection Delay, s/veh / LOS	32.0						C					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.3	B	2.1	B	1.8	A	2.1
Bicycle LOS Score / LOS	0.7	A			2.2	B	2.0	B

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2pmnb	Analysis Date	Mar 22, 2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	2pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	99	0	37				225	756				872

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		

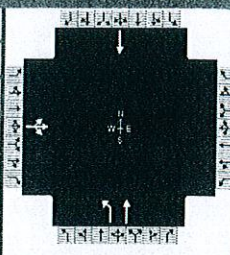
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	99	0	37				225	756				872
Initial Queue (Q _b), veh/h	0	0	0				0	0				0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900				1900	1900				1900
Parking (N _m), man/h		None						None				None
Heavy Vehicles (P _{HV}), %		2					2	2				3
Ped / Bike / RTOR, /h	1	0	7				1	0		4	0	
Buses (N _b), buses/h	0	0	0				0	0				0
Arrival Type (AT)	3	3	3				3	3				3
Upstream Filtering (f)	1.00	1.00	1.00				1.00	1.00				1.00
Lane Width (W), ft		15.0					12.0	12.0				10.0
Turn Bay Length, ft		0					0	0				0
Grade (Pg), %		0			0			0				0
Speed Limit, mi/h	25	25	25				25	25				25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		20.0			18.0	70.0	
Yellow Change Interval (Y), s		3.0			3.0	3.0		3.0
Red Clearance Interval (R _c), s		2.0			2.0	2.0		2.0
Minimum Green (G _{min}), s	6	6			6	6		6
Start-Up Lost Time (l), s	2.0	2.0			2.0	2.0		2.0
Extension of Effective Green (e), s	2.0	2.0			2.0	2.0		2.0
Passage (PT), s	2.0	2.0			2.0	2.0		2.0
Recall Mode	Max	Max			Max	Max		Max
Dual Entry	No	Yes			No	No		No
Walk (Walk), s	0.0	0.0			0.0	0.0		0.0
Pedestrian Clearance Time (PC), s	0.0	0.0			0.0	0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2pmnb	Analysis Date	Mar 22, 2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	2pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	99	0	37				225	756				872

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.040	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	0.000	0.000	0.000	0.980	0.980	1.000	1.000	0.971	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{WZ})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.919					0.952	0.000			1.000	
Right-Turn Adjustment Factor (f_{RT})		0.000						1.000			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.991						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.997						1.000			1.000
Movement Saturation Flow Rate (s), veh/h		0					1774	1863			1845	
Proportion of Vehicles Arriving on Green (P)	0.17	0.00	0.17	0.00	0.00	0.00	0.14	0.72	0.00	0.00	0.52	0.00
Incremental Delay Factor (k)		0.50					0.50	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0			5.0	5.0		5.0
Green Ratio (g/C)		0.17			0.14	0.72		0.52
Permitted Saturation Flow Rate (s_p), veh/h/ln		0			0	0		693
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s		0.0			0.0	0.0		0.0
Permitted Service Time (g_s), s		0.0			0.0	0.0		0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		0.0			0.0	0.0		47.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.00	1.389	0.00	1.198	0.00	1.389	0.01				
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.050	0.000	0.093				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b		51.20		50.14	1444.44	3.47	1044.44	10.27				
Bicycle F_w / F_v	-3.64	0.22	-3.64		-3.64	1.70	-3.64	1.51				

TWO-WAY STOP CONTROL SUMMARY

Analyst: 3amnb
 Agency/Co.: MMA
 Date Performed: 03/22/19
 Analysis Time Period: Peak AM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 No-Build
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume		65	54	648	8			
Peak-Hour Factor, PHF		0.93	0.93	0.93	0.93			
Hourly Flow Rate, HFR		69	58	696	8			
Percent Heavy Vehicles		--	--	3	--	--		
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		1	0	0	1			
Configuration			TR		LT			
Upstream Signal?		No			No			

Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		19	234				
Peak Hour Factor, PHF		0.93	0.93				
Hourly Flow Rate, HFR		20	251				
Percent Heavy Vehicles		6	3				
Percent Grade (%)		0	0				
Flared Approach: Exists?/Storage				/		/	
Lanes		1	1				
Configuration		L	R				

Delay, Queue Length, and Level of Service

Approach Movement	NB 1	SB 4	Westbound		Eastbound		
			7 L	8 R	9 	10 11	12
Lane Config		LT	L	R			
v (vph)		696	20	251			
C(m) (vph)		1436	66	932			
v/c		0.48	0.30	0.27			
95% queue length		2.74	1.10	1.09			
Control Delay		9.8	81.7	10.3			
LOS		A	F	B			
Approach Delay				15.6			
Approach LOS				C			

HCS+: Unsignalized Intersections Release 5.6

Phone:
E-Mail:

Fax:

-----TWO-WAY STOP CONTROL (TWSC) ANALYSIS-----

Analyst: 3amnb
 Agency/Co.: MMA
 Date Performed: 03/22/19
 Analysis Time Period: Peak AM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 No-Build
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS
 Study period (hrs): 0.25

-----Vehicle Volumes and Adjustments-----

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		65	54	648	8	
Peak-Hour Factor, PHF		0.93	0.93	0.93	0.93	
Peak-15 Minute Volume		17	15	174	2	
Hourly Flow Rate, HFR		69	58	696	8	
Percent Heavy Vehicles		--	--	3	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	19		234			
Peak Hour Factor, PHF	0.93		0.93			
Peak-15 Minute Volume	5		63			
Hourly Flow Rate, HFR	20		251			
Percent Heavy Vehicles	6		3			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

-----Pedestrian Volumes and Adjustments-----

Movements	13	14	15	16
Flow (ped/hr)	9	5	7	0

Lane Width (ft)	11.0	12.0	11.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	1	0	1	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		8
Shared ln volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		3	6		3			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.5		6.2			
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		3	6		3			
t(f)		2.2	3.6		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
V(t)	V(l,prot)	V(t)	V(l,prot)	

V prog

Total Saturation Flow Rate, s (vph)
 Arrival Type
 Effective Green, g (sec)
 Cycle Length, C (sec)
 Rp (from Exhibit 16-11)
 Proportion vehicles arriving on green P
 g(q1)
 g(q2)
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

alpha
 beta
 Travel time, t(a) (sec)
 Smoothing Factor, F
 Proportion of conflicting flow, f
 Max platooned flow, V(c,max)
 Min platooned flow, V(c,min)
 Duration of blocked period, t(p)
 Proportion time blocked, p

	0.000	0.000
--	-------	-------

Computation 3-Platoon Event Periods Result

p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
--	-----------------------------	-------------------------------------	--------------------------------------

p(1)
 p(4)
 p(7)
 p(8)
 p(9)
 p(10)
 p(11)
 p(12)

Computation 4 and 5
 Single-Stage Process

Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R

V c, x	134	1514	110
--------	-----	------	-----

s
 Px
 V c, u, x

C r, x
 C plat, x

Two-Stage Process

7	8	10	11
---	---	----	----

V(c, x)
s
P(x)
V(c, u, x)

1500

C(r, x)
C(plat, x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.

9

12

Conflicting Flows	110	
Potential Capacity	941	
Pedestrian Impedance Factor	0.99	0.99
Movement Capacity	932	
Probability of Queue free St.	0.73	1.00

Step 2: LT from Major St.

4

1

Conflicting Flows	134	
Potential Capacity	1444	
Pedestrian Impedance Factor	0.99	1.00
Movement Capacity	1436	
Probability of Queue free St.	0.52	1.00
Maj L-Shared Prob Q free St.	0.51	

Step 3: TH from Minor St.

8

11

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	0.99	0.99
Cap. Adj. factor due to Impeding mvmnt	0.51	0.51
Movement Capacity		
Probability of Queue free St.	1.00	1.00

Step 4: LT from Minor St.

7

10

Conflicting Flows	1514	
Potential Capacity	129	
Pedestrian Impedance Factor	0.99	1.00
Maj. L, Min T Impedance factor		0.51
Maj. L, Min T Adj. Imp Factor.		0.61
Cap. Adj. factor due to Impeding mvmnt	0.51	0.45
Movement Capacity	66	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.

8

11

Part 1 - First Stage

Conflicting Flows
Potential Capacity
Pedestrian Impedance Factor
Cap. Adj. factor due to Impeding mvmnt
Movement Capacity
Probability of Queue free St.

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
C sep	66		932			
Volume	20		251			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						
n max						
C sh						
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		696	20		251			
C(m) (vph)		1436	66		932			
v/c		0.48	0.30		0.27			
95% queue length		2.74	1.10		1.09			
Control Delay		9.8	81.7		10.3			
LOS		A	F		B			
Approach Delay				15.6				
Approach LOS				C				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.52
v(i1), Volume for stream 2 or 5		8
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		0.51
d(M,LT), Delay for stream 1 or 4		9.8
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		4.8

TWO-WAY STOP CONTROL SUMMARY

Analyst: 3pmnb
 Agency/Co.: MMA
 Date Performed: 03/22/19
 Analysis Time Period: Peak PM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 No-Build
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound			
		1 L	2 T	3 R	4 L	5 T	6 R		
Volume		46	37	519	16				
Peak-Hour Factor, PHF		0.94	0.94	0.94	0.94				
Hourly Flow Rate, HFR		48	39	552	17				
Percent Heavy Vehicles		--	--	1	--	--			
Median Type/Storage		Undivided		/					
RT Channelized?									
Lanes		1	0	0	1				
Configuration			TR		LT				
Upstream Signal?		No			No				

Minor Street:	Approach Movement	Westbound				Eastbound			
		7 L	8 T	9 R	10 L	11 T	12 R		
Volume		21	527						
Peak Hour Factor, PHF		0.94	0.94						
Hourly Flow Rate, HFR		22	560						
Percent Heavy Vehicles		0	5						
Percent Grade (%)		0	0			0			
Flared Approach: Exists?/Storage			/		/				
Lanes		1	1						
Configuration		L	R						

Delay, Queue Length, and Level of Service

Approach Movement	NB	SB	Westbound			Eastbound		
			7 L	8 R	9 L	10 T	11 R	12
Lane Config		LT	L	R	L			
v (vph)		552	22	560				
C(m) (vph)		1477	125	954				
v/c		0.37	0.18	0.59				
95% queue length		1.76	0.61	3.95				
Control Delay		8.9	39.9	14.0				
LOS		A	E	B				
Approach Delay				15.0-				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.6

Phone:
E-Mail:

Fax:

-----TWO-WAY STOP CONTROL (TWSC) ANALYSIS-----

Analyst: 3pmnb
 Agency/Co.: MMA
 Date Performed: 03/22/19
 Analysis Time Period: Peak PM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 No-Build
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS Study period (hrs): 0.25

-----Vehicle Volumes and Adjustments-----

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		46	37	519	16	
Peak-Hour Factor, PHF		0.94	0.94	0.94	0.94	
Peak-15 Minute Volume		12	10	138	4	
Hourly Flow Rate, HFR		48	39	552	17	
Percent Heavy Vehicles		--	--	1	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	21		527			
Peak Hour Factor, PHF	0.94		0.94			
Peak-15 Minute Volume	6		140			
Hourly Flow Rate, HFR	22		560			
Percent Heavy Vehicles	0		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?				No		
Lanes	1		1			
Configuration	L		R			

-----Pedestrian Volumes and Adjustments-----

Movements	13	14	15	16
Flow (ped/hr)	6	1	16	0

Lane Width (ft)	11.0	12.0	11.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	1	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		17
Shared ln volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		1	0		5			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.4		6.3			
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		1	0		5			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
V prog	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

V(c,x)
s
P(x)
V(c,u,x)

1500

C(r,x)
C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St. 9 12

Conflicting Flows 84
Potential Capacity 967
Pedestrian Impedance Factor 0.99 1.00
Movement Capacity 954
Probability of Queue free St. 0.41 1.00

Step 2: LT from Major St. 4 1

Conflicting Flows 103
Potential Capacity 1495
Pedestrian Impedance Factor 0.99 1.00
Movement Capacity 1477
Probability of Queue free St. 0.63 1.00
Maj L-Shared Prob Q free St. 0.62

Step 3: TH from Minor St. 8 11

Conflicting Flows
Potential Capacity
Pedestrian Impedance Factor 0.99 0.99
Cap. Adj. factor due to Impeding mvmnt 0.61 0.61
Movement Capacity
Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Conflicting Flows 1211
Potential Capacity 203
Pedestrian Impedance Factor 0.98 1.00
Maj. L, Min T Impedance factor 0.61
Maj. L, Min T Adj. Imp Factor. 0.70
Cap. Adj. factor due to Impeding mvmnt 0.62 0.29
Movement Capacity 125

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St. 8 11

Part 1 - First Stage
Conflicting Flows
Potential Capacity
Pedestrian Impedance Factor
Cap. Adj. factor due to Impeding mvmnt
Movement Capacity
Probability of Queue free St.

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor 0.99 0.99
 Cap. Adj. factor due to Impeding mvmnt 0.61 0.61
 Movement Capacity

Result for 2 stage process:

a
 Y
 C t
 Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Part 1 - First Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage
 Conflicting Flows 1211
 Potential Capacity 203
 Pedestrian Impedance Factor 0.98 1.00
 Maj. L, Min T Impedance factor 0.61
 Maj. L, Min T Adj. Imp Factor. 0.70
 Cap. Adj. factor due to Impeding mvmnt 0.62 0.29
 Movement Capacity 125

Results for Two-stage process:

a
 Y
 C t 125

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	22		560			
Movement Capacity (vph)	125		954			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
C sep	125		954			
Volume	22		560			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						
n max						
C sh						
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

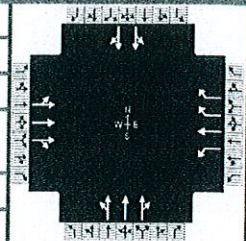
Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		552	22		560			
C(m) (vph)		1477	125		954			
v/c		0.37	0.18		0.59			
95% queue length		1.76	0.61		3.95			
Control Delay		8.9	39.9		14.0			
LOS		A	E		B			
Approach Delay				15.0-				
Approach LOS				B				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.63
v(i1), Volume for stream 2 or 5		17
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		0.62
d(M,LT), Delay for stream 1 or 4		8.9
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		3.4

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 4amnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 19th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	4amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	189	177	338	271	93	464	141	642	105	130	376	31

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

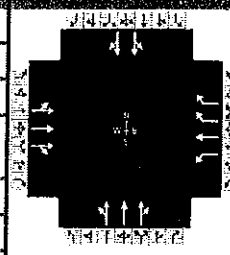
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		5.0		12.0		12.0
Phase Duration, s		32.0		32.0		25.0		33.0
Change Period, (Y+R ₀), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						20.5		18.9
Green Extension Time (g _e), s		0.0		0.0		0.0		0.9
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.04

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	199	186	274	285	98	184	336	311	286	292		266
Adjusted Saturation Flow Rate (s), veh/h/ln	1098	1679	1400	922	1743	986	1602	1638	1485	1365		1370
Queue Service Time (g _s), s	12.3	7.9	15.3	11.7	3.7	6.5	18.5	16.4	16.7	16.9		15.0
Cycle Queue Clearance Time (g _c), s	16.1	7.9	15.3	27.0	3.7	6.5	18.5	16.4	16.7	16.9		15.0
Green Ratio (g/C)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31		0.31
Capacity (c), veh/h	409	504	420	200	523	591	356	364	330	425		426
Volume-to-Capacity Ratio (X)	0.486	0.370	0.652	1.428	0.187	0.311	0.942	0.855	0.866	0.687		0.625
Available Capacity (c _a), veh/h	409	504	420	200	523	591	356	364	330	425		426
Back of Queue (Q), veh/ln (50th percentile)	4.2	3.4	5.9	16.6	1.7	1.6	10.6	8.7	8.2	6.4		5.6
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	29.3	24.8	27.4	41.5	23.4	24.3	34.4	33.6	33.7	27.2		26.5
Incremental Delay (d ₂), s/veh	4.1	2.1	7.6	218.9	0.8	1.4	35.1	21.9	24.9	8.8		6.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Control Delay (d), s/veh	33.4	26.9	35.1	260.4	24.2	25.7	69.6	55.5	58.6	35.9		33.3
Level of Service (LOS)	C	C	D	F	C	C	E	E	E	D		C
Approach Delay, s/veh / LOS	32.2		C	143.4		F	61.5		E	34.7		C
Intersection Delay, s/veh / LOS	66.0						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	3.1	C	3.7	D	2.6	B
Bicycle LOS Score / LOS	0.9	A	1.4	A	1.0	A	0.9	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 4amnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 19th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	4amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	189	177	338	271	93	464	141	642	105	130	376	31

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

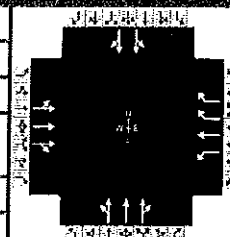
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	189	177	338	271	93	464	141	642	105	130	376	31
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	3			2			9			44		
Ped / Bike / RTOR, /h	16	0	78	4	0	289	53	0	2	16	0	7
Busés (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	11.0			10.0			11.0			12.0		
Turn Bay Length, ft	0			0			0			0		
Grade (Pg), %	0			0			0			0		
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		32.0		32.0		25.0		33.0
Yellow Change Interval (Y), s		3.0		3.0		3.0		3.0
Red Clearance Interval (R _c), s		2.0		2.0		2.0		2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (l _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 4amnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 19th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	4amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	189	177	338	271	93	464	141	642	105	130	376	31

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	27.0	28.0	20.0	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	2.0	0.0	0.0	0.0		

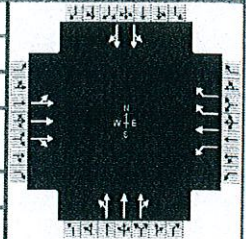
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.971	1.000	0.980	0.917	0.694	1.000	0.862	1.000	1.000	0.735	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	0.885	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.595			0.000			0.978			0.977	
Right-Turn Adjustment Factor (f_{RT})		0.759			0.000			0.905			0.980	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.997			0.994			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.984		0.996			0.928			0.974	
Movement Saturation Flow Rate (s), veh/h		1679			1743			3453			1964	
Proportion of Vehicles Arriving on Green (P)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31	0.31	0.31
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		5.0		5.0		5.0		4.0
Green Ratio (g/C)		0.30		0.30		0.22		0.31
Permitted Saturation Flow Rate (s _p), veh/h/ln		1314		922		0		0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln		0						
Permitted Effective Green Time (g _p), s		27.0		27.0		0.0		0.0
Permitted Service Time (g _v), s		23.3		11.7		0.0		0.0
Permitted Queue Service Time (g _{ps}), s		12.3		11.7				
Time to First Blockage (g _t), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g _{ts}), s		0.0						
Protected Right Saturation Flow (s _R), veh/h/ln				0				
Protected Right Effective Green Time (g _R), s				0.0				

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	2.107	0.00		2.336	0.01		2.545	0.41		1.710	0.11	
Pedestrian F_s / F_{delay}	0.000	0.124		0.000	0.124		0.000	0.158		0.000	0.132	
Pedestrian M_{corner} / M_{cw}												
Bicycle C_b / d_b	600.00	22.05		600.00	22.05			51.20		444.44	27.22	
Bicycle F_w / F_v	-3.64	0.36		-3.64	0.94		-3.64	0.51		-3.64	0.46	

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 4pmnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	Willow Avenue & 19th Street	Analysis Year	2022 No-Build	Analysis Period	1> 7:00		
File Name	4pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	28	116	409	225	248	392	218	383	185	268	395	91

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

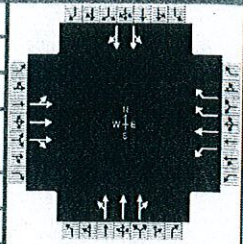
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		5.0		12.0		12.0
Phase Duration, s		32.0		32.0		25.0		33.0
Change Period, (Y+R _c), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.2
Queue Clearance Time (g _s), s						16.3		22.7
Green Extension Time (g _e), s		0.0		0.0		0.8		1.0
Phase Call Probability						1.00		1.00
Max Out Probability						0.84		0.43

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	64	86	301	234	258	176	276	260	235	410		367
Adjusted Saturation Flow Rate (s), veh/h/ln	1068	1712	1409	941	1881	856	1629	1696	1494	1641		1614
Queue Service Time (g _s), s	0.4	3.3	17.1	9.9	10.0	7.2	14.3	12.6	13.1	20.7		18.3
Cycle Queue Clearance Time (g _c), s	10.4	3.3	17.1	27.0	10.0	7.2	14.3	12.6	13.1	20.7		18.3
Green Ratio (g/C)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31		0.31
Capacity (c), veh/h	379	514	423	183	564	514	362	377	332	510		502
Volume-to-Capacity Ratio (X)	0.169	0.168	0.712	1.279	0.458	0.343	0.763	0.689	0.707	0.803		0.731
Available Capacity (c _a), veh/h	379	514	423	183	564	514	362	377	332	510		502
Back of Queue (Q), veh/ln (50th percentile)	1.1	1.4	6.8	12.3	4.9	1.6	7.0	6.2	5.8	9.7		8.2
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	23.2	23.2	28.0	42.2	25.6	24.6	32.8	32.1	32.3	28.5		27.6
Incremental Delay (d ₂), s/veh	1.0	0.7	9.8	160.5	2.7	1.8	14.2	9.9	12.0	12.6		9.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Control Delay (d), s/veh	24.1	23.9	37.8	202.8	28.2	26.4	46.9	42.0	44.3	41.1		36.7
Level of Service (LOS)	C	C	D	F	C	C	D	D	D	D		D
Approach Delay, s/veh / LOS	33.2		C	88.9		F	44.5		D	39.0		D
Intersection Delay, s/veh / LOS	52.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.1	C	3.6	D	2.6	B
Bicycle LOS Score / LOS	0.7	A	1.6	A	0.9	A	1.1	A

HCS 2010 Signalized Intersection Input Data

General Information						Intersection Information				
Agency	MMA					Duration, h	0.25			
Analyst	MM - 4pmnb	Analysis Date	3/22/2019			Area Type	Other			
Jurisdiction	Weehawken		Time Period	Peak PM Highway Hour		PHF	0.96			
Intersection	Willow Avenue & 19th Street		Analysis Year	2022 No-Build		Analysis Period	1 > 7:00			
File Name	4pmnb.xus									
Project Description	Atir Residential									



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	28	116	409	225	248	392	218	383	185	268	395	91

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	28	116	409	225	248	392	218	383	185	268	395	91
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	1			3			1			64		
Ped / Bike / RTOR, /h	29	0	120	15	0	223	24	0	46	19	0	8
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	11.0			10.0			11.0			10.0		
Turn Bay Length, ft	0			0			0			0		
Grade (Pg), %	0			0			0			0		
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

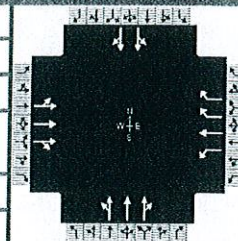
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		32.0		32.0		25.0		33.0
Yellow Change Interval (Y), s		3.0		3.0		3.0		3.0
Red Clearance Interval (R _c), s		2.0		2.0		2.0		2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (l _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information

Agency	MMA			Duration, h	0.25
Analyst	MM - 4pmnb	Analysis Date	3/22/2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96
Intersection	Willow Avenue & 19th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00
File Name	4pmnb.xus				
Project Description	Atir Residential				



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	28	116	409	225	248	392	218	383	185	268	395	91

Signal Information

Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

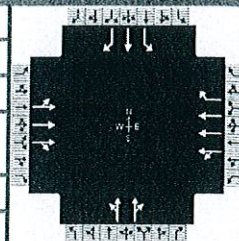
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.990	1.000	0.971	0.990	0.610	1.000	0.893	1.000	1.000	0.893	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	0.885	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.568			0.000			0.961			0.967	
Right-Turn Adjustment Factor (f_{RT})		0.749			0.000			0.875			0.949	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.991			0.989			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.971			0.985			0.968			0.969
Movement Saturation Flow Rate (s), veh/h		2292			1881			2560			1757	
Proportion of Vehicles Arriving on Green (P)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31	0.31	0.31
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0		5.0		4.0
Green Ratio (g/C)		0.30		0.30		0.22		0.31
Permitted Saturation Flow Rate (s_p), veh/h/ln		1129		941		0		0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		27.0		27.0		0.0		0.0
Permitted Service Time (g_s), s		17.0		9.9		0.0		0.0
Permitted Queue Service Time (g_{ps}), s		0.4		9.9				
Time to First Blockage (g_j), s		2.4		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{js}), s		2.2						
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.07	2.336	0.01	2.545	0.32	1.710	0.17
Pedestrian F_s / F_{delay}	0.000	0.124	0.000	0.124	0.000	0.158	0.000	0.132
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	600.00	22.05	600.00	22.05		51.20	444.44	27.22
Bicycle F_w / F_v	-3.64	0.25	-3.64	1.10	-3.64	0.42	-3.64	0.64

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5amnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Park Avenue & 19th Street	Analysis Year	2022 No-Build	Analysis Period	1> 7:00		
File Name	5amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	312	39	197	351	16	113	307	428	38	376	366

Signal Information				Signal Timing (s)						Signal Phases						
Cycle, s	100.0	Reference Phase	2	Green	0.0	47.0	10.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off													

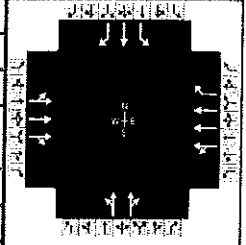
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8	7	4
Case Number	0.0	14.0		7.3		8.3	1.0	3.0
Phase Duration, s	0.0	52.0		52.0		35.0	13.0	48.0
Change Period, (Y+R _c), s	3.0	5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s	0.0	0.0		0.0		3.5	3.3	3.3
Queue Clearance Time (g _s), s						31.1	3.3	23.7
Green Extension Time (g _e), s	0.0	0.0		0.0		0.0	0.0	1.5
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						1.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	128	146	143	203	362	8	433		387	39	388	289
Adjusted Saturation Flow Rate (s), veh/h/ln	1067	1478	1418	842	1601	1670	1476		1358	1757	1827	1087
Queue Service Time (g _s), s	4.7	5.8	6.0	15.7	6.8	0.2	26.7		27.9	1.3	15.4	21.7
Cycle Queue Clearance Time (g _c), s	4.7	5.8	6.0	21.7	6.8	0.2	29.1		27.9	1.3	15.4	21.7
Green Ratio (g/C)	0.47	0.47	0.47	0.47	0.47	0.57	0.30		0.30	0.42	0.43	0.43
Capacity (c), veh/h	555	695	666	468	1505	952	488		407	263	786	435
Volume-to-Capacity Ratio (X)	0.230	0.211	0.215	0.434	0.240	0.009	0.887		0.949	0.149	0.493	0.664
Available Capacity (c _a), veh/h	555	695	666	468	1505	952	488		407	263	786	435
Back of Queue (Q), veh/ln (50th percentile)	2.0	2.1	2.1	3.8	2.5	0.1	13.0		12.8	0.6	7.0	7.3
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	16.9	15.6	15.6	22.0	15.8	9.3	34.7		34.2	21.9	20.6	31.4
Incremental Delay (d ₂), s/veh	1.0	0.7	0.7	2.9	0.4	0.0	20.5		33.4	1.2	2.2	7.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	17.8	16.3	16.4	24.9	16.2	9.3	55.2		67.7	23.1	22.8	39.2
Level of Service (LOS)	B	B	B	C	B	A	E		E	C	C	D
Approach Delay, s/veh / LOS	16.8	B		19.2	B		61.1		E	29.4	C	
Intersection Delay, s/veh / LOS	35.3						D					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.3	B		2.9	C		3.3	C		3.2	C	
Bicycle LOS Score / LOS	0.7	A		0.8	A		1.2	A		1.7	A	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5amnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Park Avenue & 19th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	5amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	312	39	197	351	16	113	307	428	38	376	366

Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	0.0	47.0	10.0	30.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
				Red	0.0	2.0	0.0	2.0	0.0	0.0				

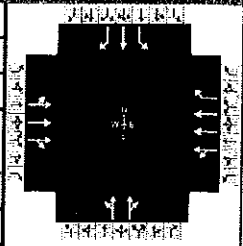
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	312	39	197	351	16	113	307	428	38	376	366
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %		17			8	0		4			3	4
Ped / Bike / RTOR, /h	0	0	6	4	0	8	36	0	53	1	0	86
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft		10.0			11.0	16.0		12.0			10.0	11.0
Turn Bay Length, ft		0			0	0		0			0	0
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s	23.0	52.0		29.0		35.0	13.0
Yellow Change Interval (Y), s	3.0	3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s	0.0	2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (l), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5amnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Park Avenue & 19th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	5amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	312	39	197	351	16	113	307	428	38	376	366

Signal Information				Signal Phases						Signal Diagrams				
Cycle, s	100.0	Reference Phase	2	Green	0.0	47.0	10.0	30.0	0.0	0.0				
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off											

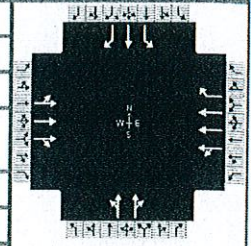
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.040	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.855	1.000	1.000	0.926	1.000	1.000	0.962	1.000	0.971	0.962	0.676
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.000	0.657			0.479			0.808		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.873			0.000			0.743			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.999			1.000			0.999			0.993		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.997			0.964			0.999
Movement Saturation Flow Rate (s), veh/h	0	3110			3202			1079		1757	1827	
Proportion of Vehicles Arriving on Green (P)	0.47	0.47	0.47	0.47	0.47	0.47	0.30	0.30	0.30	0.10	0.43	0.43
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		5.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)	0.00	0.47		0.47		0.30	0.42	0.43
Permitted Saturation Flow Rate (s _p), veh/h/ln	0	1035		1042		1011	734	0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln		0		0		0		
Permitted Effective Green Time (g _p), s	0.0	49.0		47.0		30.0	32.0	0.0
Permitted Service Time (g _v), s	0.0	40.2		41.0		27.6	2.1	0.0
Permitted Queue Service Time (g _{ps}), s		3.9		15.7		26.7	1.7	
Time to First Blockage (g _f), s	0.0	2.1		0.0		1.9	0.0	0.0
Queue Service Time Before Blockage (g _{fs}), s		2.1		0.0		1.9		
Protected Right Saturation Flow (s _R), veh/h/ln				1675				1088
Protected Right Effective Green Time (g _R), s				10.0				-3.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.08	2.107	0.12	2.545	0.01	2.443	0.01				
Pedestrian F_s / F_{delay}	0.000	0.106	0.000	0.106	0.000	0.128	0.000	0.112				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	940.00	14.05	939.99	14.05	600.00	24.50	860.00	16.25				
Bicycle F_w / F_v	-3.64	0.23	-3.64	0.32	-3.64	0.68	-3.64	1.18				

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5pmnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	Park Avenue & 19th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	5pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	101	408	50	183	452	71	66	433	354	17	653	322

Signal Information				EB						WB		NB		SB	
Cycle, s	100.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	47.0	10.0	30.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0					

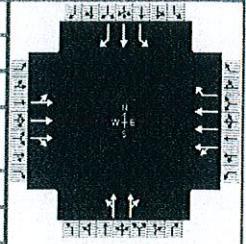
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8	7	4
Case Number	0.0	14.0		7.3		8.3	1.0	3.0
Phase Duration, s	0.0	52.0		52.0		35.0	13.0	48.0
Change Period, (Y+R _c), s	3.0	5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s	0.0	0.0		0.0		3.5	3.3	3.2
Queue Clearance Time (g _s), s						32.0	2.6	34.3
Green Extension Time (g _e), s	0.0	0.0		0.0		0.0	0.0	1.7
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						1.00	0.00	0.17

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	147	215	210	191	471	26	453		404	18	680	255
Adjusted Saturation Flow Rate (s), veh/h/ln	869	1631	1575	733	1631	1617	878		1421	1810	1881	1003
Queue Service Time (g _s), s	4.9	8.0	8.2	16.7	8.9	0.7	10.7		27.8	0.6	32.3	20.5
Cycle Queue Clearance Time (g _c), s	4.9	8.0	8.2	24.9	8.9	0.7	30.0		27.8	0.6	32.3	20.5
Green Ratio (g/C)	0.47	0.47	0.47	0.47	0.47	0.57	0.30		0.30	0.42	0.43	0.43
Capacity (c), veh/h	471	767	740	417	1533	923	305		426	268	809	401
Volume-to-Capacity Ratio (X)	0.313	0.280	0.284	0.458	0.307	0.028	1.487		0.947	0.066	0.841	0.637
Available Capacity (c _a), veh/h	471	767	740	417	1533	923	305		426	268	809	401
Back of Queue (Q), veh/ln (50th percentile)	2.6	3.2	3.1	3.8	3.4	0.3	27.6		13.3	0.3	16.3	6.5
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	20.4	16.2	16.2	23.8	16.4	9.4	38.2		34.2	21.5	25.4	31.4
Incremental Delay (d ₂), s/veh	1.7	0.9	1.0	3.6	0.5	0.1	235.7		32.2	0.5	10.3	7.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	22.2	17.1	17.2	27.4	16.9	9.5	273.9		66.5	22.0	35.7	39.0
Level of Service (LOS)	C	B	B	C	B	A	F		E	C	D	D
Approach Delay, s/veh / LOS	18.4	B		19.6	B		176.1	F		36.3	D	
Intersection Delay, s/veh / LOS	68.3						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.9	C	3.3	C	3.2	C
Bicycle LOS Score / LOS	0.8	A	0.9	A	1.2	A	2.1	B

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5pmnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	Park Avenue & 19th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	5pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	101	408	50	183	452	71	66	433	354	17	653	322

Signal Information												
Cycle, s	100.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
				Green	0.0	47.0	10.0	30.0	0.0	0.0		
				Yellow	3.0	3.0	3.0	3.0	0.0	0.0		
				Red	0.0	2.0	0.0	2.0	0.0	0.0		

Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	101	408	50	183	452	71	66	433	354	17	653	322
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %		6			6	3		2		0	1	59
Ped / Bike / RTOR, /h	1	0	10	8	0	46	41	0	30	14	0	77
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft		10.0			11.0	16.0		12.0		10.0	11.0	10.0
Turn Bay Length, ft		0			0	0		0		0	0	0
Grade (Pg), %		0			0			0		0		
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

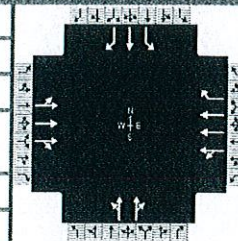
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	23.0	52.0		29.0		35.0	13.0	48.0
Yellow Change Interval (Y), s	3.0	3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s	0.0	2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (I), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information

Agency	MMA			Duration, h	0.25
Analyst	MM - 5pmnb	Analysis Date	3/22/2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96
Intersection	Park Avenue & 19th Street	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00
File Name	5pmnb.xus				
Project Description	Atir Residential				



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	101	408	50	183	452	71	66	433	354	17	653	322

Signal Information

Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End	Green	0.0	47.0	10.0	30.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0				

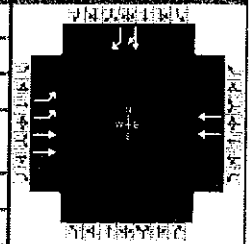
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.040	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.943	1.000	1.000	0.943	0.971	1.000	0.980	1.000	1.000	0.990	0.629
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.000	0.485			0.409			0.471		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.879			0.000			0.763			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.998			0.999			0.996			0.993		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.999			0.995			0.959			0.990
Movement Saturation Flow Rate (s), veh/h	0	3142			3262			979		1810	1881	
Proportion of Vehicles Arriving on Green (P)	0.47	0.47	0.47	0.47	0.47	0.47	0.30	0.30	0.30	0.10	0.43	0.43
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)	0.00	0.47		0.47		0.30	0.42	0.43
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	935		940		769	698	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0		0		
Permitted Effective Green Time (g_p), s	0.0	49.0		47.0		30.0	32.0	0.0
Permitted Service Time (g_u), s	0.0	38.1		38.8		10.7	2.2	0.0
Permitted Queue Service Time (g_{ps}), s		8.5		16.7		10.7	0.8	
Time to First Blockage (g_f), s	0.0	0.8		0.0		5.4	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s		0.8		0.0		5.4		
Protected Right Saturation Flow (s_R), veh/h/ln				1626				1013
Protected Right Effective Green Time (g_R), s				10.0				-3.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.04	2.107	0.11	2.545	0.07	2.443	0.01				
Pedestrian F_s / F_{delay}	0.000	0.106	0.000	0.106	0.000	0.128	0.000	0.112				
Pedestrian M_{corner} / M_{cwb}												
Bicycle c_b / d_b	940.00	14.05	939.99	14.05	600.00	24.50	860.00	16.25				
Bicycle F_w / F_v	-3.64	0.31	-3.64	0.38	-3.64	0.71	-3.64	1.57				

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6amnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	19th St & Garage Ramp	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	6amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	125	633			593						0	3

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

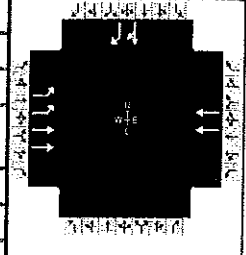
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6				4
Case Number	2.0	4.0		8.3				11.0
Phase Duration, s	30.0	89.0		59.0				1.0
Change Period, (Y+R ₀), s	5.0	5.0		5.0				0.0
Max Allow Headway (MAH), s	3.3	0.0		0.0				5.3
Queue Clearance Time (g _s), s	4.4							2.2
Green Extension Time (g _e), s	0.3	0.0		0.0				0.0
Phase Call Probability	1.00							1.00
Max Out Probability	0.00							1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2			6					4	14	
Adjusted Flow Rate (v), veh/h	128	646			605					0	3	
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1659			1706					1900	902	
Queue Service Time (g _s), s	2.4	1.4			7.8					0.0	0.2	
Cycle Queue Clearance Time (g _c), s	2.4	1.4			7.8					0.0	0.2	
Green Ratio (g/C)	0.28	0.93			0.60					0.01	0.29	
Capacity (c), veh/h	976	3098			2048					21	457	
Volume-to-Capacity Ratio (X)	0.131	0.209			0.296					0.000	0.007	
Available Capacity (c _a), veh/h	976	3098			2048					21	457	
Back of Queue (Q), veh/ln (50th percentile)	1.1	0.1			2.8					0.0	0.0	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00					0.00	0.00	
Uniform Delay (d ₁), s/veh	24.4	0.2			8.8					0.0	22.8	
Incremental Delay (d ₂), s/veh	0.3	0.2			0.4					0.0	0.0	
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0					0.0	0.0	
Control Delay (d), s/veh	24.6	0.4			9.1					0.0	22.9	
Level of Service (LOS)	C	A			A						C	
Approach Delay, s/veh / LOS	4.4	A		9.1	A		0.0			22.9	C	
Intersection Delay, s/veh / LOS	6.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.7	A	2.7	B	2.7	B	3.0	C
Bicycle LOS Score / LOS	1.1	A	1.0	A			0.5	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6amnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	19th St & Garage Ramp		Analysis Year	2022 No-Build	Analysis Period	1 > 7:00	
File Name	6amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	125	633			593						0	3

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	25.0	54.0	1.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0				
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

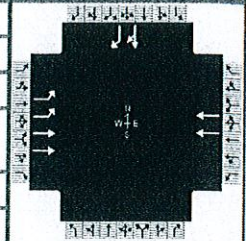
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	125	633			593						0	3
Initial Queue (Q _b), veh/h	0	0			0						0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900						1900	1900
Parking (N _m), man/h		None			None						None	
Heavy Vehicles (P _{HV}), %	0	9			6						0	0
Ped / Bike / RTOR, /h	0	0			1						37	0
Buses (N _b), buses/h	0	0			0						0	0
Arrival Type (AT)	3	3			3						3	3
Upstream Filtering (I)	1.00	1.00			1.00						1.00	1.00
Lane Width (W), ft	11.0	11.0			12.0						12.0	12.0
Turn Bay Length, ft	0	0			0						0	0
Grade (P _g), %		0			0				0		0	
Speed Limit, mi/h	25	25			25						25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s	30.0	89.0		59.0			
Yellow Change Interval (Y), s	3.0	3.0		3.0				0.0
Red Clearance Interval (R _c), s	2.0	2.0		2.0				0.0
Minimum Green (G _{min}), s	6	6		6				1
Start-Up Lost Time (I _l), s	2.0	2.0		2.0				2.0
Extension of Effective Green (e), s	2.0	2.0		2.0				2.0
Passage (PT), s	2.0	2.0		2.0				2.0
Recall Mode	Max	Max		Max				Max
Dual Entry	No	Yes		Yes				Yes
Walk (Walk), s	0.0	0.0		0.0				0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0				0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50					No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 6amnb	Analysis Date	3/22/2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98
Intersection	19th St & Garage Ramp	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00
File Name	6amnb.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	125	633			593						0	3

Signal Information				Signal Timing								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0

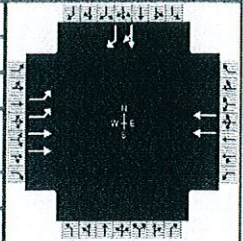
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.917	1.000	1.000	0.943	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Approach Grade Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			1.000						1.000	
Right-Turn Adjustment Factor (f_{RT})		1.000			1.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000						0.560
Movement Saturation Flow Rate (s), veh/h	3514	3403			3585						1900	
Proportion of Vehicles Arriving on Green (P)	0.28	0.93	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Incremental Delay Factor (k)	0.50	0.50			0.50							0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	5.0	5.0		5.0				4.0
Green Ratio (g/C)	0.28	0.93		0.60				0.01
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0		797				0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s	0.0	0.0		0.0				0.0
Permitted Service Time (g_u), s	0.0	0.0		0.0				0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s	0.0	0.0		54.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								1610
Protected Right Effective Green Time (g_R), s								25.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.198	0.00	1.983	0.00	1.983	0.00	2.224	0.00				
Pedestrian F_s / F_{delay}	0.000	-0.065	0.000	0.079	0.000	0.157	0.000	0.154				
Pedestrian $M_{corner} / M_{c/w}$												
Bicycle c_b / d_b	1866.67	0.20	1200.00	7.20		50.14	-22.22	46.01				
Bicycle F_w / F_v	-3.64	0.64	-3.64	0.50	-3.64		-3.64	0.01				

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6pmnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.93		
Intersection	19th St & Garage Ramp	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	6pmnb.xus						
Project Description	Atr Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	5	781			463						0	318

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

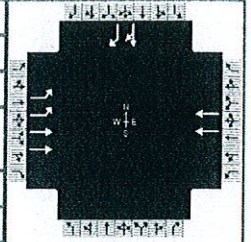
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6				4
Case Number	2.0	4.0		8.3				11.0
Phase Duration, s	30.0	89.0		59.0				1.0
Change Period, (Y+R _c), s	5.0	5.0		5.0				0.0
Max Allow Headway (MAH), s	3.3	0.0		0.0				5.7
Queue Clearance Time (g _s), s	2.1							3.0
Green Extension Time (g _e), s	0.0	0.0		0.0				0.0
Phase Call Probability	1.00							1.00
Max Out Probability	0.00							1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2			6					4	14	
Adjusted Flow Rate (v), veh/h	5	840			498					0	342	
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1637			1659					1900	815	
Queue Service Time (g _s), s	0.1	2.1			6.4					0.0	1.0	
Cycle Queue Clearance Time (g _c), s	0.1	2.1			6.4					0.0	1.0	
Green Ratio (g/C)	0.28	0.93			0.60					0.01	0.29	
Capacity (c), veh/h	976	3055			1991					21	456	
Volume-to-Capacity Ratio (X)	0.006	0.275			0.250					0.000	0.749	
Available Capacity (c _a), veh/h	976	3055			1991					21	456	
Back of Queue (Q), veh/ln (50th percentile)	0.0	0.1			2.2					0.0	8.0	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00					0.00	0.00	
Uniform Delay (d ₁), s/veh	23.5	0.3			8.5					0.0	29.3	
Incremental Delay (d ₂), s/veh	0.0	0.2			0.3					0.0	10.8	
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0					0.0	0.0	
Control Delay (d), s/veh	23.5	0.5			8.8					0.0	40.1	
Level of Service (LOS)	C	A			A						D	
Approach Delay, s/veh / LOS	0.6	A		8.8	A		0.0			40.1	D	
Intersection Delay, s/veh / LOS	11.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.7	A	2.7	B	2.7	B	3.0	C
Bicycle LOS Score / LOS	1.2	A	0.9	A			1.1	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6pmnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.93		
Intersection	19th St & Garage Ramp	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	6pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	5	781			463						0	318

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

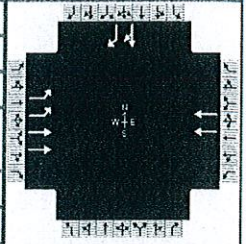
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	5	781			463						0	318
Initial Queue (Q _b), veh/h	0	0			0						0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900						1900	1900
Parking (N _m), man/h	0	L + R	0		None						None	
Heavy Vehicles (P _{HV}), %	0	5			9						0	0
Ped / Bike / RTOR, /h	0	0			1	0					47	0
Buses (N _b), buses/h	0	0			0						0	0
Arrival Type (AT)	3	3			3						3	3
Upstream Filtering (I)	1.00	1.00			1.00						1.00	1.00
Lane Width (W), ft	11.0	11.0			12.0						12.0	12.0
Turn Bay Length, ft	0	0			0						0	0
Grade (P _g), %		0			0				0		0	
Speed Limit, mi/h	25	25			25						25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s	30.0	89.0		59.0			
Yellow Change Interval (Y), s	3.0	3.0		3.0				0.0
Red Clearance Interval (R _c), s	2.0	2.0		2.0				0.0
Minimum Green (G _{min}), s	6	6		6				1
Start-Up Lost Time (I), s	2.0	2.0		2.0				2.0
Extension of Effective Green (e), s	2.0	2.0		2.0				2.0
Passage (PT), s	2.0	2.0		2.0				2.0
Recall Mode	Max	Max		Max				Max
Dual Entry	No	Yes		Yes				Yes
Walk (Walk), s	0.0	0.0		0.0				0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0				0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50					No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6pmnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.93		
Intersection	19th St & Garage Ramp	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	6pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	5	781			463						0	318

Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
		Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

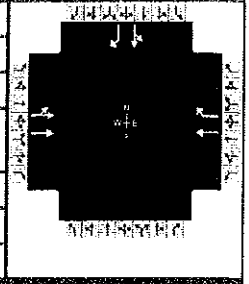
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.952	1.000	1.000	0.917	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	0.950	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			1.000						1.000	
Right-Turn Adjustment Factor (f_{RT})		1.000			1.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000						0.506
Movement Saturation Flow Rate (s), veh/h	3514	3356			3486						1900	
Proportion of Vehicles Arriving on Green (P)	0.28	0.93	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Incremental Delay Factor (k)	0.50	0.50			0.50							0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	5.0	5.0		5.0				4.0
Green Ratio (g/C)	0.28	0.93		0.60				0.01
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0		665				0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s	0.0	0.0		0.0				0.0
Permitted Service Time (g_u), s	0.0	0.0		0.0				0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_r), s	0.0	0.0		54.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								1610
Protected Right Effective Green Time (g_R), s								25.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.00	1.983	0.00	1.983	0.00	2.224	0.00
Pedestrian F_s / F_{delay}	0.000	-0.065	0.000	0.079	0.000	0.157	0.000	0.154
Pedestrian M_{corner} / M_{cW}								
Bicycle c_b / d_b	1866.67	0.20	1200.00	7.20		50.14	-22.22	46.01
Bicycle F_w / F_v	-3.64	0.70	-3.64	0.41	-3.64		-3.64	0.56

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7amnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	7amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	450	195			249	48				255	0	351

Signal Information														
Cycle, s	60.0	Reference Phase	2							←		↑		
Offset, s	0	Reference Point	End							←		↑		
Uncoordinated	No	Simult. Gap E/W	Off	Green	30.0	20.0	0.0	0.0	0.0	0.0	←		↑	
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	←		↑	
				Red	2.0	2.0	0.0	0.0	0.0	0.0	←		↑	

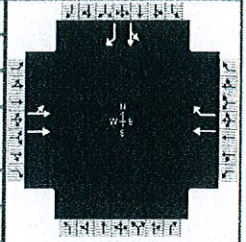
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6				4
Case Number		8.0		7.0				11.0
Phase Duration, s		35.0		35.0				25.0
Change Period, (Y+R _c), s		5.0		5.0				5.0
Max Allow Headway (MAH), s		0.0		0.0				3.4
Queue Clearance Time (q _s), s								13.4
Green Extension Time (g _e), s		0.0		0.0				1.0
Phase Call Probability								1.00
Max Out Probability								0.25

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2			6	16				7	4	14
Adjusted Flow Rate (v), veh/h	459	199			254	36				260		351
Adjusted Saturation Flow Rate (s), veh/h/ln	856	1586			1638	1491				1751		1577
Queue Service Time (q _s), s	24.5	3.9			5.5	0.7				7.0		11.4
Cycle Queue Clearance Time (q _c), s	30.0	3.9			5.5	0.7				7.0		11.4
Green Ratio (g/C)	0.50	0.50			0.50	0.50				0.33		0.33
Capacity (c), veh/h	548	793			819	745				584		526
Volume-to-Capacity Ratio (X)	0.838	0.251			0.310	0.048				0.446		0.668
Available Capacity (c _a), veh/h	548	793			819	745				584		526
Back of Queue (Q), veh/ln (50th percentile)	7.7	1.5			1.9	0.2				3.0		4.8
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00				0.00		0.00
Uniform Delay (d ₁), s/veh	18.6	8.6			8.9	7.7				15.7		17.1
Incremental Delay (d ₂), s/veh	14.2	0.8			1.0	0.1				2.5		6.6
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0				0.0		0.0
Control Delay (d), s/veh	32.8	9.3			9.9	7.8				18.1		23.7
Level of Service (LOS)	C	A			A	A				B		C
Approach Delay, s/veh / LOS	25.7		C	9.6		A	0.0			21.3		C
Intersection Delay, s/veh / LOS	21.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.9	A	2.2	B	2.7	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	1.0	A			1.5	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7amnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	7amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h	450	195			249	48					255	0	351

Signal Information													
Cycle, s	60.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	30.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

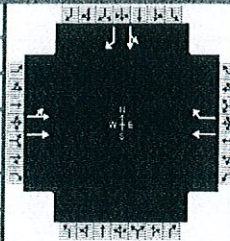
Traffic Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h	450	195			249	48					255	0	351
Initial Queue (Q _b), veh/h	0	0			0	0					0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900	1900					1900	1900	1900
Parking (N _m), man/h		None			None						None		
Heavy Vehicles (P _{HV}), %		9			16	8					0	1	
Ped / Bike / RTOR, /h	0	0		0	0	13				7	0	7	
Buses (N _b), buses/h	0	0			0	0				0	0	0	
Arrival Type (AT)	3	3			3	3				3	3	3	
Upstream Filtering (I)	1.00	1.00			1.00	1.00				1.00	1.00	1.00	
Lane Width (W), ft		12.0			12.0	12.0					12.0	12.0	
Turn Bay Length, ft		0			0	0					0	0	
Grade (P _g), %		0			0			0			0		
Speed Limit, mi/h	25	25			25	25					25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		35.0		35.0				25.0
Yellow Change Interval (Y), s		3.0		3.0				3.0
Red Clearance Interval (R _c), s		2.0		2.0				2.0
Minimum Green (G _{min}), s	6	6		6			6	6
Start-Up Lost Time (I _t), s	2.0	2.0		2.0			2.0	2.0
Extension of Effective Green (e), s	2.0	2.0		2.0			2.0	2.0
Passage (PT), s	2.0	2.0		2.0			2.0	2.0
Recall Mode	Max	Max		Max			Max	Max
Dual Entry	No	Yes		Yes			No	Yes
Walk (Walk), s	0.0	0.0		0.0			0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0			0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50					No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7amnb		Analysis Date	3/22/2019		Area Type	Other
Jurisdiction	Weehawken		Time Period	Peak AM Highway Hour		PHF	0.98
Intersection	Harbor B'lvd & Waterfront		Analysis Year	2022 No-Build		Analysis Period	1> 7:00
File Name	7amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	450	195			249	48				255	0	351

Signal Information													
Cycle, s	60.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off										
Force Mode	Fixed	Simult. Gap N/S	Off										
		Green		30.0	20.0	0.0	0.0	0.0	0.0				
		Yellow		3.0	3.0	0.0	0.0	0.0	0.0				
		Red		2.0	2.0	0.0	0.0	0.0	0.0				

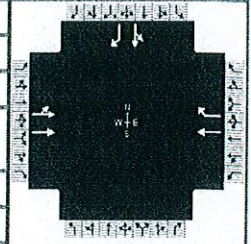
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.917	1.000	1.000	0.862	0.926	0.000	0.000	0.000	1.000	1.000	0.990
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.491			1.000						0.922	
Right-Turn Adjustment Factor (f_{RT})		0.910			0.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000						0.968		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000						0.990
Movement Saturation Flow Rate (s), veh/h		1586			1638						0	
Proportion of Vehicles Arriving on Green (P)	0.50	0.50	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.33	0.00	0.33
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50					0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0				4.0
Green Ratio (g/C)		0.50		0.50				0.33
Permitted Saturation Flow Rate (s_p), veh/h/ln		1143		1202				0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0				0
Permitted Effective Green Time (g_p), s		30.0		0.0				0.0
Permitted Service Time (g_u), s		24.5		0.0				0.0
Permitted Queue Service Time (g_{ps}), s		24.5						
Time to First Blockage (g_f), s		0.0		30.0				0.0
Queue Service Time Before Blockage (g_{fs}), s		0.0						
Protected Right Saturation Flow (s_R), veh/h/ln				0				0
Protected Right Effective Green Time (g_R), s				0.0				0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.00	1.557	0.01	1.983	0.02	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.081	0.000	0.081	0.000	0.143	0.000	0.144
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1000.00	7.50	1000.00	7.50		35.21	-200.00	36.30
Bicycle F_w / F_v	-3.64	0.54	-3.64	0.48	-3.64		-3.64	1.01

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7pmnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89		
Intersection	Harbor B'lv'd & Waterfront	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	7pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	627	186			139	126				251	0	323

Signal Information												
Cycle, s	60.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
		Green	30.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

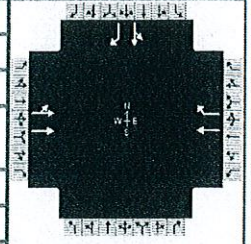
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6				4
Case Number		8.0		7.0				11.0
Phase Duration, s		35.0		35.0				25.0
Change Period, (Y+R _c), s		5.0		5.0				5.0
Max Allow Headway (MAH), s		0.0		0.0				3.5
Queue Clearance Time (g _s), s								14.5
Green Extension Time (g _e), s		0.0		0.0				0.9
Phase Call Probability								1.00
Max Out Probability								0.41

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2			6	16				7	4	14
Adjusted Flow Rate (v), veh/h	704	209			156	97				282	358	
Adjusted Saturation Flow Rate (s), veh/h/ln	1060	1647			1638	1524				1577	1509	
Queue Service Time (g _s), s	26.8	3.9			3.2	2.0				8.7	12.5	
Cycle Queue Clearance Time (g _c), s	30.0	3.9			3.2	2.0				8.7	12.5	
Green Ratio (g/C)	0.50	0.50			0.50	0.50				0.33	0.33	
Capacity (c), veh/h	650	823			819	762				526	503	
Volume-to-Capacity Ratio (X)	1.084	0.254			0.191	0.127				0.536	0.713	
Available Capacity (c _a), veh/h	650	823			819	762				526	503	
Back of Queue (Q), veh/ln (50th percentile)	19.8	1.5			1.1	0.7				3.5	5.1	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00				0.00	0.00	
Uniform Delay (d ₁), s/veh	19.1	8.6			8.3	8.0				16.2	17.5	
Incremental Delay (d ₂), s/veh	60.1	0.7			0.5	0.3				3.9	8.3	
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0				0.0	0.0	
Control Delay (d), s/veh	79.2	9.3			8.8	8.4				20.1	25.8	
Level of Service (LOS)	F	A			A	A				C	C	
Approach Delay, s/veh / LOS	63.2	E		8.6	A		0.0			23.3	C	
Intersection Delay, s/veh / LOS	41.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.9	A	2.2	B	2.8	C	2.3	B
Bicycle LOS Score / LOS	1.2	A	0.9	A			1.5	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7pmnb	Analysis Date	3/22/2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89		
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	7pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	627	186			139	126				251	0	323

Signal Information												
Cycle, s	60.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
		Green	30.0	20.0	0.0	0.0	0.0	0.0				
		Yellow	3.0	3.0	0.0	0.0	0.0	0.0				
		Red	2.0	2.0	0.0	0.0	0.0	0.0				

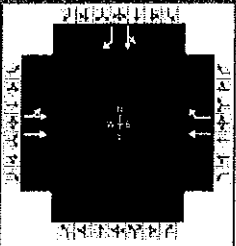
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	627	186			139	126				251	0	323
Initial Queue (Q _b), veh/h	0	0			0	0				0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900	1900				1900	1900	1900
Parking (N _m), man/h		None			None						None	
Heavy Vehicles (P _{HV}), %		5			16	5					11	4
Ped / Bike / RTOR, /h	1	0			6	0	40			17	0	4
Buses (N _b), buses/h	0	0			0	0				0	0	0
Arrival Type (AT)	3	3			3	3				3	3	3
Upstream Filtering (f)	1.00	1.00			1.00	1.00				1.00	1.00	1.00
Lane Width (W), ft		12.0			12.0	12.0					12.0	12.0
Turn Bay Length, ft		0			0	0					0	0
Grade (Pg), %		0			0				0		0	
Speed Limit, mi/h	25	25			25	25				25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		35.0		35.0			
Yellow Change Interval (Y), s		3.0		3.0				3.0
Red Clearance Interval (R _c), s		2.0		2.0				2.0
Minimum Green (G _{min}), s	6	6		6			6	6
Start-Up Lost Time (f _l), s	2.0	2.0		2.0			2.0	2.0
Extension of Effective Green (e), s	2.0	2.0		2.0			2.0	2.0
Passage (PT), s	2.0	2.0		2.0			2.0	2.0
Recall Mode	Max	Max		Max			Max	Max
Dual Entry	No	Yes		Yes			No	Yes
Walk (Walk), s	0.0	0.0		0.0			0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0			0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No		0.50	No		0.50				No		0.50

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 7pmb	Analysis Date	3/22/2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 No-Build	Analysis Period	1> 7:00
File Name	7pmb.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	627	186			139	126				251	0	323

Signal Information														
Cycle, s	60.0	Reference Phase	2											
Offset, s	0	Reference Point	End	Green	30.0	20.0	0.0	0.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0				

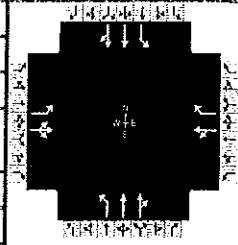
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.952	1.000	1.000	0.862	0.952	0.000	0.000	0.000	1.000	0.901	0.962
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.586			1.000						0.922	
Right-Turn Adjustment Factor (f_{RT})		0.910			0.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.995			1.000						0.968		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.994						0.975
Movement Saturation Flow Rate (s), veh/h		1647			1638						0	
Proportion of Vehicles Arriving on Green (P)	0.50	0.50	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.33	0.00	0.33
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50					0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		5.0		5.0				4.0
Green Ratio (g/C)		0.50		0.50				0.33
Permitted Saturation Flow Rate (s _p), veh/h/ln		1244		1191				0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln		0		0				
Permitted Effective Green Time (g _p), s		30.0		0.0				0.0
Permitted Service Time (g _u), s		26.8		0.0				0.0
Permitted Queue Service Time (g _{ps}), s		26.8						
Time to First Blockage (g _t), s		0.0		30.0				0.0
Queue Service Time Before Blockage (g _{ts}), s		0.0						
Protected Right Saturation Flow (s _R), veh/h/ln				0				0
Protected Right Effective Green Time (g _R), s				0.0				0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.198	0.00		1.557	0.01		1.983	0.06		1.557	0.00	
Pedestrian F_s / F_{delay}	0.000	0.081		0.000	0.081		0.000	0.143		0.000	0.144	
Pedestrian M_{corner} / M_{cw}												
Bicycle cb / db	1000.00	7.50		1000.00	7.50			35.21		-200.00	36.30	
Bicycle F_w / F_v	-3.64	0.75		-3.64	0.42		-3.64			-3.64	1.06	

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 8amnb	Analysis Date	3/28/2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Waterfront/Port Imperial &	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	8amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	178	106	37	2	49	58	41	461	2	244	603	480

Signal Information				Signal Timing (s)						Signal Phases				
Cycle, s	105.0	Reference Phase	2	Green	15.0	36.0	18.0	18.0	0.0	0.0	Green	1	2	3
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	Yellow	1	2	3
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0	Red	1	2	3
Force Mode	Fixed	Simult. Gap N/S	Off											

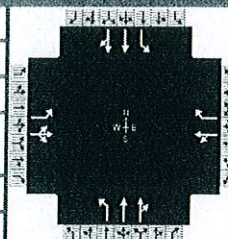
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		6	5	2
Case Number		10.0		11.0		6.3	1.0	4.0
Phase Duration, s		23.0		23.0		41.0	18.0	59.0
Change Period, (Y+R _c), s		5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s		3.1		3.2		0.0	3.1	0.0
Queue Clearance Time (g _s), s		12.5		5.7			11.5	
Green Extension Time (g _e), s		0.3		0.1		0.0	0.2	0.0
Phase Call Probability		1.00		1.00			1.00	
Max Out Probability		0.15		0.00			0.70	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	184	146			53	54	42	238	238	252	581	498
Adjusted Saturation Flow Rate (s), veh/h/in	1707	1764			1841	1107	515	1759	1758	1630	1881	1608
Queue Service Time (g _s), s	10.5	7.9			2.6	3.7	6.6	10.8	10.8	9.5	22.8	22.9
Cycle Queue Clearance Time (g _c), s	10.5	7.9			2.6	3.7	11.5	10.8	10.8	9.5	22.8	22.9
Green Ratio (g/C)	0.17	0.17			0.17	0.31	0.34	0.34	0.34	0.50	0.51	0.51
Capacity (c), veh/h	293	302			316	348	221	603	603	503	967	827
Volume-to-Capacity Ratio (X)	0.627	0.484			0.167	0.154	0.191	0.395	0.395	0.500	0.601	0.602
Available Capacity (c _a), veh/h	293	302			316	348	221	603	603	503	967	827
Back of Queue (Q), veh/in (50th percentile)	5.1	3.8			1.2	1.0	0.9	4.7	4.7	3.8	10.0	8.7
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00	0.29	0.00	0.00	2.09	0.00	0.00
Uniform Delay (d ₁), s/veh	40.4	39.3			37.1	25.9	28.3	26.2	26.2	16.3	17.9	17.9
Incremental Delay (d ₂), s/veh	9.8	5.5			1.1	0.9	1.9	1.9	1.9	3.5	2.8	3.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	50.2	44.8			38.2	26.9	30.2	28.2	28.2	19.9	20.7	21.2
Level of Service (LOS)	D	D			D	C	C	C	C	B	C	C
Approach Delay, s/veh / LOS	47.8		D	32.5		C	28.3		C	20.7		C
Intersection Delay, s/veh / LOS	26.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	0.7	A	0.9	A	1.6	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 8amnb	Analysis Date	3/28/2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Waterfront/Port Imperial &	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	8amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	178	106	37	2	49	58	41	461	2	244	603	480

Signal Information				Signal Timing (s)													
Cycle, s	105.0	Reference Phase	2	EB			WB			NB			SB				
Offset, s	0	Reference Point	End	Green	15.0	36.0	18.0	18.0	0.0	0.0	Green	15.0	36.0	18.0	18.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	Yellow	3.0	3.0	3.0	3.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0	Red	0.0	2.0	2.0	2.0	0.0	0.0

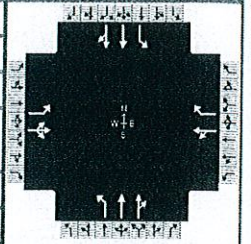
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	178	106	37	2	49	58	41	461	2	244	603	480
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	6	3			3	45	3	8		11	1	
Ped / Bike / RTOR, /h	0	0	1	2	0	6	1	0	1	4	0	36
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (A _T)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0			12.0	12.0	12.0	12.0		11.0	11.0	
Turn Bay Length, ft	0	0			0	0	80	0		50	0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		23.0		23.0		41.0	18.0
Yellow Change Interval (Y), s		3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s		2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (l), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (P _T), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	No	No	No	No	No	No	No
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (P _C), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 8amnb		Analysis Date	3/28/2019		Area Type	Other
Jurisdiction	Weehawken, NJ		Time Period	Peak AM Highway Hour		PHF	0.97
Intersection	Waterfront/Port Imperial &		Analysis Year	2022 No-Build		Analysis Period	1 > 7:00
File Name	8amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	178	106	37	2	49	58	41	461	2	244	603	480

Signal Information														
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	36.0	18.0	18.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
				Red	0.0	2.0	2.0	2.0	0.0	0.0				

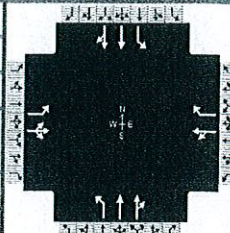
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.971	1.000	1.000	0.971	0.690	0.971	0.926	1.000	0.901	0.990	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor ($f_{L,T}$)		0.000			0.998			0.000		0.952	0.000	
Right-Turn Adjustment Factor ($f_{R,T}$)		0.956			0.000			0.999			0.855	
Left-Turn Pedestrian Adjustment Factor ($f_{L,pb}$)	1.000			1.000			0.999			0.999		
Right-Turn Ped-Bike Adjustment Factor ($f_{R,pb}$)			1.000			0.997			0.999			0.996
Movement Saturation Flow Rate (s), veh/h		1317			1769			3510		1630	2011	
Proportion of Vehicles Arriving on Green (P)	0.17	0.17	0.17	0.17	0.17	0.17	0.34	0.34	0.34	0.14	0.51	0.51
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		4.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)		0.17		0.17		0.34	0.50	0.51
Permitted Saturation Flow Rate (s _p), veh/h/ln		1707		0		515	840	0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln								
Permitted Effective Green Time (g _p), s		0.0		0.0		36.0	38.0	0.0
Permitted Service Time (g _u), s		0.0		0.0		31.1	25.2	0.0
Permitted Queue Service Time (g _{ps}), s						6.6	5.5	
Time to First Blockage (g _t), s		0.0		0.0		0.0	0.0	0.0
Queue Service Time Before Blockage (g _{rs}), s								
Protected Right Saturation Flow (s _R), veh/h/ln				1110				
Protected Right Effective Green Time (g _R), s				15.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.00	2.107	0.05	1.557	0.01	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.144	0.000	0.163	0.000	0.125	0.000	0.101
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	342.86	36.04		58.67	685.71	22.67	1028.57	12.39
Bicycle F_w / F_v	-3.64	0.54	-3.64	0.18	-3.64	0.43	-3.64	1.10

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 8pmnb	Analysis Date	3/28/2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.94		
Intersection	Waterfront Ter & Baldwin	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	8pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	371	77	41	7	42	116	56	738	7	109	350	353

Signal Information				Signal Timing (s)						Signal Phases				
Cycle, s	105.0	Reference Phase	2	Green	15.0	36.0	18.0	18.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off											

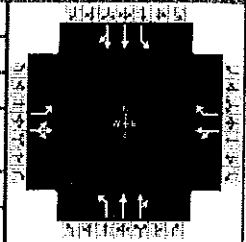
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		6	5	2
Case Number		10.0		11.0		6.3	1.0	4.0
Phase Duration, s		23.0		23.0		41.0	18.0	59.0
Change Period, (Y+R ₀), s		5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s		3.1		3.3		0.0	3.1	0.0
Queue Clearance Time (g _s), s		20.0		9.5			6.4	
Green Extension Time (g _e), s		0.0		0.2		0.0	0.1	0.0
Phase Call Probability		1.00		1.00			1.00	
Max Out Probability		1.00		0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	395	126			52	113	60	396	395	116	372	361
Adjusted Saturation Flow Rate (s), veh/h/ln	1792	1655			1887	1191	733	1881	1876	1483	1863	1571
Queue Service Time (g _s), s	18.0	7.1			2.5	7.5	6.1	18.4	18.4	4.4	12.7	15.2
Cycle Queue Clearance Time (g _c), s	18.0	7.1			2.5	7.5	6.1	18.4	18.4	4.4	12.7	15.2
Green Ratio (g/C)	0.17	0.17			0.17	0.31	0.34	0.34	0.34	0.50	0.51	0.51
Capacity (c), veh/h	307	284			323	376	320	645	643	376	958	808
Volume-to-Capacity Ratio (X)	1.285	0.443			0.161	0.300	0.186	0.614	0.615	0.308	0.389	0.446
Available Capacity (c _a), veh/h	307	284			323	376	320	645	643	376	958	808
Back of Queue (Q), veh/ln (50th percentile)	20.7	3.2			1.2	2.3	1.2	8.8	8.8	1.6	5.5	5.6
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	43.5	39.0			37.1	27.3	24.7	28.7	28.7	16.5	15.5	16.1
Incremental Delay (d ₂), s/veh	150.8	4.9			1.1	2.0	1.3	4.3	4.4	2.1	1.2	1.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	194.3	43.9			38.1	29.3	26.0	33.1	33.1	18.6	16.7	17.9
Level of Service (LOS)	F	D			D	C	C	C	C	B	B	B
Approach Delay, s/veh / LOS	158.0	F		32.1	C		32.6	C		17.4	B	
Intersection Delay, s/veh / LOS	54.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	0.8	A	1.2	A	1.2	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 8pmnb	Analysis Date	3/28/2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.94		
Intersection	Waterfront Ter & Baldwin		Analysis Year	2022 No-Build	Analysis Period	1 > 7:00	
File Name	8pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	371	77	41	7	42	116	56	738	7	109	350	353

Signal Information													
Cycle, s	105.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	36.0	18.0	18.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0			
				Red	0.0	2.0	2.0	2.0	0.0	0.0			

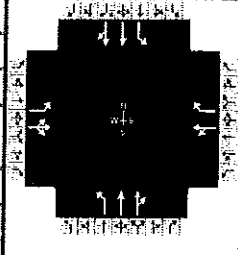
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	371	77	41	7	42	116	56	738	7	109	350	353
Initial Queue (Q ₀), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	1	8			0	34	0	1		22	2	
Ped / Bike / RTOR, /h	1	0	0	5	0	10	3	0	1	5	0	14
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0			12.0	12.0	12.0	12.0		11.0	11.0	
Turn Bay Length, ft	0	0			0	0	0	0		0	0	
Grade (P _g), %		0			0			0		0		
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		23.0		23.0		41.0	18.0
Yellow Change Interval (Y), s		3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s		2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (f), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	No	No	No	No	No	No	No
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information						Intersection Information					
Agency	MMA					Duration, h	0.25				
Analyst	MM - 8pmnb		Analysis Date	3/28/2019		Area Type	Other				
Jurisdiction	Weehawken, NJ		Time Period	Peak PM Highway Hour		PHF	0.94				
Intersection	Waterfront Ter & Baldwin		Analysis Year	2022 No-Build		Analysis Period	1 > 7:00				
File Name	8pmnb.xus										
Project Description	Alir Residential										



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	371	77	41	7	42	116	56	738	7	109	350	353

Signal Information				Signal Timing (s)						Signal Phases				
Cycle, s	105.0	Reference Phase	2	Green	15.0	36.0	18.0	18.0	0.0	0.0	Green	15.0	36.0	18.0
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	Yellow	3.0	3.0	3.0
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0	Red	0.0	2.0	2.0
Force Mode	Fixed	Simult. Gap N/S	Off											

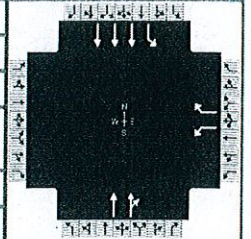
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.990	0.926	1.000	1.000	1.000	0.746	1.000	0.990	1.000	0.820	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.993			0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.941			0.000			0.997			0.843	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			0.997			0.999		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.998			0.991			0.996			0.995
Movement Saturation Flow Rate (s), veh/h		1080			1617			3726		1483	1863	
Proportion of Vehicles Arriving on Green (P)	0.17	0.17	0.17	0.17	0.17	0.17	0.34	0.34	0.34	0.14	0.51	0.51
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		4.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)		0.17		0.17		0.34	0.50	0.51
Permitted Saturation Flow Rate (s _p), veh/h/ln		1792		0		733	570	0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln								
Permitted Effective Green Time (g _p), s		0.0		0.0		36.0	38.0	0.0
Permitted Service Time (g _u), s		0.0		0.0		36.0	17.6	0.0
Permitted Queue Service Time (g _{ps}), s						6.1	5.2	
Time to First Blockage (g _r), s		0.0		0.0		0.0	0.0	0.0
Queue Service Time Before Blockage (g _{fs}), s								
Protected Right Saturation Flow (s _R), veh/h/ln				1202				
Protected Right Effective Green Time (g _R), s				15.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.00	2.107	0.02	1.557	0.01	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.144	0.000	0.163	0.000	0.125	0.000	0.101
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	342.86	36.04		58.67	685.71	22.67	1028.57	12.39
Bicycle F_w / F_v	-3.64	0.86	-3.64	0.27	-3.64	0.70	-3.64	0.70

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 9amnb	Analysis Date	Mar 28, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.93
Intersection	JFK Boulevard E. & Baldwi	Analysis Year	2022 No-Build	Analysis Period	1> 7:00
File Name	9amnb.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				402		214		304	81	245	1364	

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	0.0	2.0	2.0	0.0	0.0	0.0				

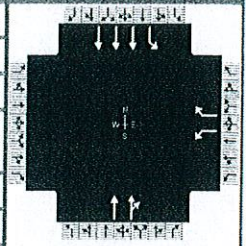
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				21.0		51.0	18.0	69.0
Change Period, (Y+R _c), s				5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s				3.3		0.0	3.3	0.0
Queue Clearance Time (g _s), s				18.0			7.5	
Green Extension Time (g _e), s				0.0		0.0	0.3	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				1.00			0.03	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				432		230		201	193	263		1467
Adjusted Saturation Flow Rate (s), veh/h/ln				1604		1311		1629	1533	1551		1273
Queue Service Time (g _s), s				16.0		15.8		6.2	6.3	5.5		16.2
Cycle Queue Clearance Time (g _c), s				16.0		15.8		6.2	6.3	5.5		16.2
Green Ratio (g/C)				0.18		0.18		0.51	0.51	0.70		0.71
Capacity (c), veh/h				285		233		832	783	719		2715
Volume-to-Capacity Ratio (X)				1.516		0.987		0.241	0.246	0.367		0.540
Available Capacity (c _a), veh/h				285		233		832	783	719		2715
Back of Queue (Q), veh/ln (50th percentile)				26.0		8.6		2.3	2.3	1.8		3.8
Queue Storage Ratio (RQ) (50th percentile)				0.00		0.00		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				37.0		36.9		12.3	12.3	5.4		6.1
Incremental Delay (d ₂), s/veh				249.3		55.8		0.7	0.7	1.4		0.8
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				286.3		92.7		13.0	13.1	6.9		6.9
Level of Service (LOS)				F		F		B	B	A		A
Approach Delay, s/veh / LOS	0.0			219.0		F	13.0		B	6.9		A
Intersection Delay, s/veh / LOS				58.2						E		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.0	C	2.3	B	0.7	A
Bicycle LOS Score / LOS				F	0.8	A	1.4	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9amnb	Analysis Date	Mar 28, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.93		
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	9amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				402		214		304	81	245	1364	

Signal Information															
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0					
				Red	0.0	2.0	2.0	0.0	0.0	0.0					

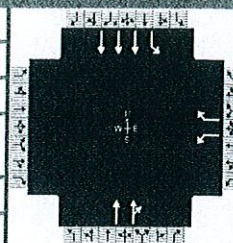
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				402		214		304	81	245	1364	
Initial Queue (Q _b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N _m), man/h						None		None			None	
Heavy Vehicles (P _{HV}), %				1		10		5		5	22	
Ped / Bike / RTOR, /h								1	0	19	2	0
Buses (N _b), buses/h				0		0		0	0	0	0	
Arrival Type (AT)				3		3		3	3	3	3	
Upstream Filtering (f)				1.00		1.00		1.00	1.00	1.00	1.00	
Lane Width (W), ft				12.0		12.0		11.0		11.0	11.0	
Turn Bay Length, ft				0		0		0		0	0	
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h				25		25		25	25	25	25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s				21.0		51.0	18.0	69.0
Yellow Change Interval (Y), s				3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s				2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s			6			6	6	6
Start-Up Lost Time (f), s			2.0			2.0	2.0	2.0
Extension of Effective Green (e), s			2.0			2.0	2.0	2.0
Passage (PT), s			2.0			2.0	2.0	2.0
Recall Mode			Max			Max	Max	Max
Dual Entry			No			No	No	No
Walk (Walk), s			0.0			0.0	0.0	0.0
Pedestrian Clearance Time (PC), s			0.0			0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking				No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9amnb	Analysis Date	Mar 28, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.93		
Intersection	JFK Boulevard E. & Baldwi	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	9amnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				402		214		304	81	245	1364	

Signal Information				Signal Timing (s)						Signal Phases				
Cycle, s	90.0	Reference Phase	2	Green	15.0	46.0	16.0	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	2.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off											

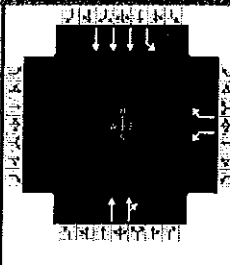
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.000	0.000	0.000	0.990	0.990	0.909	1.000	0.952	1.000	0.952	0.820	1.000
Approach Grade Adjustment Factor (f_g)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.908	1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})								1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})								0.941			1.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})				0.995			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})						0.995			0.999			1.000
Movement Saturation Flow Rate (s), veh/h					0			2631		1551	3947	
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.18	0.00	0.18	0.00	0.51	0.51	0.17	0.71	0.00
Incremental Delay Factor (k)				0.50		0.50		0.50	0.50	0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0		5.0	3.0	5.0
Green Ratio (g/C)				0.18		0.51	0.70	0.71
Permitted Saturation Flow Rate (s_p), veh/h/ln				1604		367	863	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	48.0	0.0
Permitted Service Time (g_u), s				0.0		0.0	39.7	0.0
Permitted Queue Service Time (g_{ps}), s							3.7	
Time to First Blockage (g_r), s				0.0		46.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.03	2.224	0.00	1.557	0.00	0.000	0.00
Pedestrian F_s / F_{delay}	0.000	0.157	0.000	0.158	0.000	0.095	0.000	0.053
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b		50.14		51.20	1022.22	10.76	1422.22	3.76
Bicycle F_w / F_v	-3.64		-3.64		-3.64	0.32	-3.64	0.95

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9pmnb		Analysis Date	Mar 28, 2019		Area Type	CBD
Jurisdiction	Weehawken, NJ		Time Period	Peak PM Highway Hour		PHF	0.96
Intersection	JFK Boulevard E. & Baldwin		Analysis Year	2022 No-Build		Analysis Period	1> 7:00
File Name	9pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				286		169		449	185	317	842	

Signal Information				Signal Timing (s)									Signal Phases					
Cycle, s	90.0	Reference Phase	2	Green	15.0	46.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off															

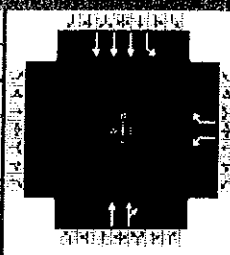
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				21.0		51.0	18.0	69.0
Change Period, (Y+R _c), s				5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s				3.4		0.0	3.3	0.0
Queue Clearance Time (g _s), s				18.0			9.0	
Green Extension Time (g _e), s				0.0		0.0	0.4	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				1.00			0.14	

Movement Group Results	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement				3		18		2	12	1		6	
Adjusted Flow Rate (v), veh/h				298		176		338	310	330		877	
Adjusted Saturation Flow Rate (s), veh/h/ln				1604		1400		1676	1517	1597		1339	
Queue Service Time (g _s), s				16.0		10.6		10.9	11.3	7.0		7.3	
Cycle Queue Clearance Time (g _c), s				16.0		10.6		10.9	11.3	7.0		7.3	
Green Ratio (g/C)				0.18		0.18		0.51	0.51	0.70		0.71	
Capacity (c), veh/h				285		249		857	776	617		2856	
Volume-to-Capacity Ratio (X)				1.045		0.707		0.395	0.399	0.535		0.307	
Available Capacity (c _a), veh/h				285		249		857	776	617		2856	
Back of Queue (Q), veh/ln (50th percentile)				11.4		4.7		4.4	4.0	2.5		1.8	
Queue Storage Ratio (RQ) (50th percentile)				0.00		0.00		0.00	0.00	0.00		0.00	
Uniform Delay (d ₁), s/veh				37.0		34.8		13.5	13.5	7.0		4.8	
Incremental Delay (d ₂), s/veh				65.4		15.6		1.4	1.5	3.3		0.3	
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0	
Control Delay (d), s/veh				102.4		50.4		14.8	15.0	10.3		5.1	
Level of Service (LOS)				F		D		B	B	B		A	
Approach Delay, s/veh / LOS	0.0			83.1			14.9			6.5			A
Intersection Delay, s/veh / LOS	24.4						C						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.0	C	2.3	B	0.7	A
Bicycle LOS Score / LOS				F	1.0	A	1.2	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9pmnb	Analysis Date	Mar 28, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00		
File Name	9pmnb.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				286		169		449	185	317	842	

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0			
				Red	0.0	2.0	2.0	0.0	0.0	0.0			

Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				286		169		449	185	317	842	
Initial Queue (Q _b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N _m), man/h						None			None		None	
Heavy Vehicles (P _{HV}), %				1		3		2		2	16	
Ped / Bike / RTOR, /h								0	0	12	3	0
Buses (N _b), buses/h				0		0		0	0	0	0	
Arrival Type (AT)				3		3		3	3	3	3	
Upstream-Filtering (f)				1.00		1.00		1.00	1.00	1.00	1.00	
Lane Width (W), ft				12.0		12.0		11.0		11.0	11.0	
Turn Bay Length, ft				0		0		0		0	0	
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h				25		25		25	25	25	25	

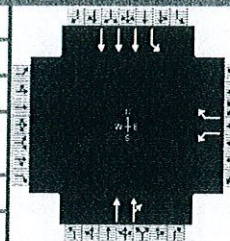
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s				21.0		51.0	18.0	69.0
Yellow Change Interval (Y), s				3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s				2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s			6			6	6	6
Start-Up Lost Time (l), s			2.0			2.0	2.0	2.0
Extension of Effective Green (e), s			2.0			2.0	2.0	2.0
Passage (PT), s			2.0			2.0	2.0	2.0
Recall Mode			Max			Max	Max	Max
Dual Entry			No			No	No	No
Walk (Walk), s			0.0			0.0	0.0	0.0
Pedestrian Clearance Time (PC), s			0.0			0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking				No		0.50	No		0.50	No		0.50

HCS 2010 Signalized Intersection Intermediate Values

General Information

Agency	MMA			Duration, h	0.25
Analyst	MM - 9pmnb	Analysis Date	Mar 28, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.96
Intersection	JFK Boulevard E. & Baldwi	Analysis Year	2022 No-Build	Analysis Period	1 > 7:00
File Name	9pmnb.xus				
Project Description	Atir Residential				



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				286		169		449	185	317	842	

Signal Information

Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	0.0	2.0	2.0	0.0	0.0	0.0				

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.000	0.000	0.000	0.990	0.990	0.971	1.000	0.980	1.000	0.980	0.862	1.000
Approach Grade Adjustment Factor (f_g)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.908	1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})								1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})								0.905			1.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})				0.995			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})						0.995			1.000			1.000
Movement Saturation Flow Rate (s), veh/h						0		2311		1597	4151	
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.18	0.00	0.18	0.00	0.51	0.51	0.17	0.71	0.00
Incremental Delay Factor (k)				0.50		0.50		0.50	0.50	0.50	0.50	

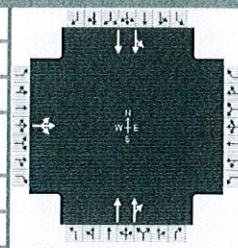
Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)				4.0		5.0	3.0	5.0
Green Ratio (g/C)				0.18		0.51	0.70	0.71
Permitted Saturation Flow Rate (s _p), veh/h/ln				1604		642	702	0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln						0		
Permitted Effective Green Time (g _p), s				0.0		0.0	48.0	0.0
Permitted Service Time (g _v), s				0.0		0.0	34.7	0.0
Permitted Queue Service Time (g _{ps}), s							11.8	
Time to First Blockage (g _t), s				0.0		46.0	0.0	0.0
Queue Service Time Before Blockage (g _{rs}), s								
Protected Right Saturation Flow (s _R), veh/h/ln				0				
Protected Right Effective Green Time (g _R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.02	2.224	0.00	1.557	0.00	0.000	0.00
Pedestrian F_s / F_{delay}	0.000	0.157	0.000	0.158	0.000	0.095	0.000	0.053
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b		50.14		51.20	1022.22	10.76	1422.22	3.76
Bicycle F_w / F_v	-3.64		-3.64		-3.64	0.53	-3.64	0.66

2022 BUILD TRAFFIC CONDITIONS

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 1amb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	1amb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	137	60	8					808	81	22	940	

Signal Information				Signal Timing (s)										
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off											
Force Mode	Fixed	Simult. Gap N/S	Off											
				Green	55.0	25.0	0.0	0.0	0.0	0.0				
				Yellow	3.0	3.0	0.0	0.0	0.0	0.0				
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

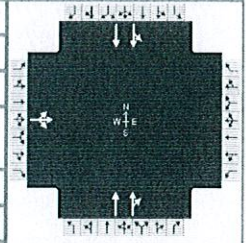
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		12.0				8.0		8.0
Phase Duration, s		30.0				60.0		60.0
Change Period, (Y+R _c), s		5.0				5.0		5.0
Max Allow Headway (MAH), s		3.2				0.0		0.0
Queue Clearance Time (g _s), s		14.2						
Green Extension Time (g _e), s		0.3				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14					2	12	1	6	
Adjusted Flow Rate (v), veh/h	216						476	460	520	493		
Adjusted Saturation Flow Rate (s), veh/h/ln	1366						1710	1654	1638	1556		
Queue Service Time (g _s), s	12.2						13.4	13.5	0.0	15.7		
Cycle Queue Clearance Time (g _c), s	12.2						13.4	13.5	15.3	15.7		
Green Ratio (g/C)	0.28						0.61	0.61	0.61	0.61		
Capacity (c), veh/h	379						1045	1011	1043	951		
Volume-to-Capacity Ratio (X)	0.569						0.455	0.455	0.498	0.518		
Available Capacity (c _a), veh/h	379						1045	1011	1043	951		
Back of Queue (Q), veh/ln (50th percentile)	4.6						5.1	4.9	5.7	5.6		
Queue Storage Ratio (RQ) (50th percentile)	0.00						0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	27.9						9.4	9.4	9.8	10.0		
Incremental Delay (d ₂), s/veh	6.1						1.4	1.5	1.7	2.0		
Initial Queue Delay (d ₃), s/veh	0.0						0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	33.9						10.9	10.9	11.5	12.0		
Level of Service (LOS)	C						B	B	B	B		
Approach Delay, s/veh / LOS	33.9	C		0.0			10.9	B		11.7	B	
Intersection Delay, s/veh / LOS	13.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.7	B	2.7	B	1.9	A	1.4	A
Bicycle LOS Score / LOS	0.8	A			1.3	A	1.3	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 1amb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	1amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	137	60	8					808	81	22	940	

Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
		Green	55.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

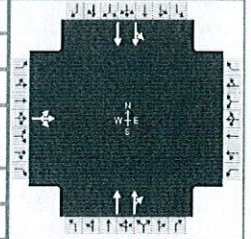
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	137	60	8					808	81	22	940	
Initial Queue (Q _b), veh/h	0	0	0					0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900					1900	1900	1900	1900	
Parking (N _m), man/h	5	L + R	5					None			None	
Heavy Vehicles (P _{HV}), %		2						0			0	
Ped / Bike / RTOR, /h	8	0	0				2	0	0	5	0	
Buses (N _b), buses/h	0	0	0					0	0	0	0	
Arrival Type (AT)	3	3	3					3	3	3	3	
Upstream Filtering (I)	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Lane Width (W), ft		12.0						10.0			10.0	
Turn Bay Length, ft		0						0			0	
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h	25	25	25					25	25	25	25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		30.0				60.0		60.0
Yellow Change Interval (Y), s		3.0				3.0		3.0
Red Clearance Interval (R _c), s		2.0				2.0		2.0
Minimum Green (G _{min}), s	6	6				6	6	6
Start-Up Lost Time (I), s	2.0	2.0				2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0				2.0	2.0	2.0
Passage (PT), s	2.0	2.0				2.0	2.0	2.0
Recall Mode	Max	Max				Max	Max	Max
Dual Entry	No	Yes				No	No	No
Walk (Walk), s	0.0	0.0				0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0				0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 1amb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	1amb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	137	60	8					808	81	22	940	

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	55.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0

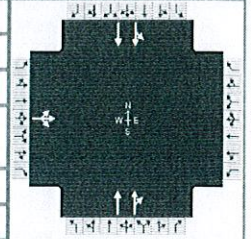
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	0.875	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	0.971	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{WZ})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.815						1.000			0.958	
Right-Turn Adjustment Factor (f_{RT})		0.000						0.967			0.910	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.997						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.991						0.998			1.000
Movement Saturation Flow Rate (s), veh/h		400						3058			3121	
Proportion of Vehicles Arriving on Green (P)	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.61	0.61	0.61	0.61	0.00
Incremental Delay Factor (k)		0.50						0.50	0.50	0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		4.0				5.0		5.0
Green Ratio (g/C)		0.28				0.61		0.61
Permitted Saturation Flow Rate (s _p), veh/h/ln		0				578		608
Shared Saturation Flow Rate (s _{sh}), veh/h/ln						0		0
Permitted Effective Green Time (g _p), s		0.0				0.0		55.0
Permitted Service Time (g _u), s		0.0				0.0		41.5
Permitted Queue Service Time (g _{ps}), s								0.0
Time to First Blockage (g _t), s		0.0				55.0		28.3
Queue Service Time Before Blockage (g _{ts}), s								15.3
Protected Right Saturation Flow (s _R), veh/h/ln								
Protected Right Effective Green Time (g _R), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.983	0.00	1.983	0.00	1.198	0.00	0.681	0.00				
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.077	0.000	0.077				
Pedestrian M_{corner} / M_{cW}												
Bicycle c_b / d_b		51.20		50.14	1222.22	6.81	1222.22	6.81				
Bicycle F_w / F_v	-3.64	0.36	-3.64	0.36	-3.64	0.77	-3.64	0.84				

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 1pmb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.97		
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	1pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h	108	50	20							685	61	24	1020

Signal Information				Signal Phases										
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	55.0	25.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0				
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

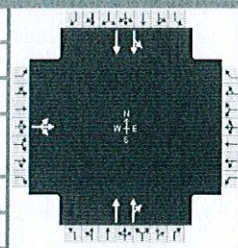
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		12.0				8.0		8.0
Phase Duration, s		30.0				60.0		60.0
Change Period, (Y+Rc), s		5.0				5.0		5.0
Max Allow Headway (MAH), s		3.3				0.0		0.0
Queue Clearance Time (gs), s		12.2						
Green Extension Time (ge), s		0.3				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14					2	12	1	6	
Adjusted Flow Rate (v), veh/h	184						390			555		
Adjusted Saturation Flow Rate (s), veh/h/ln	1352						1710			1557		
Queue Service Time (gs), s	10.2						10.3			0.0		
Cycle Queue Clearance Time (gc), s	10.2						10.3			18.3		
Green Ratio (g/C)	0.28						0.61			0.61		
Capacity (c), veh/h	376						1045			993		
Volume-to-Capacity Ratio (X)	0.489						0.373			0.582		
Available Capacity (ca), veh/h	376						1045			993		
Back of Queue (Q), veh/ln (50th percentile)	3.7						3.9			6.6		
Queue Storage Ratio (RQ) (50th percentile)	0.00						0.00			0.00		
Uniform Delay (d1), s/veh	27.2						8.8			10.4		
Incremental Delay (d2), s/veh	4.5						1.0			2.3		
Initial Queue Delay (d3), s/veh	0.0						0.0			0.0		
Control Delay (d), s/veh	31.6						9.8			12.6		
Level of Service (LOS)	C						A			B		
Approach Delay, s/veh / LOS	31.6	C		0.0			9.9	A		13.0	B	
Intersection Delay, s/veh / LOS	13.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.7	B	2.7	B	1.9	A	1.4	A
Bicycle LOS Score / LOS	0.8	A			1.1	A	1.4	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 1pmb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.97		
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	1pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	108	50	20					685	61	24	1020	

Signal Information				Signal Phases										
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	55.0	25.0	0.0	0.0	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	5	6	7	8
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

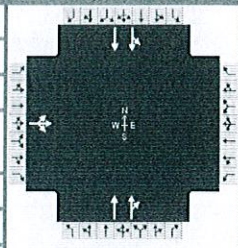
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	108	50	20					685	61	24	1020	
Initial Queue (Q _b), veh/h	0	0	0					0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900					1900	1900	1900	1900	
Parking (N _m), man/h	5	L + R	5					None			None	
Heavy Vehicles (P _{HV}), %		2						0			6	
Ped / Bike / RTOR, /h	8	0	0				0	0	0	2	0	
Buses (N _b), buses/h	0	0	0					0	0	0	0	
Arrival Type (AT)	3	3	3					3	3	3	3	
Upstream Filtering (I)	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Lane Width (W), ft		12.0						10.0			10.0	
Turn Bay Length, ft		0						0			0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25	25					25	25	25	25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		30.0				60.0	
Yellow Change Interval (Y), s		3.0				3.0		3.0
Red Clearance Interval (R _c), s		2.0				2.0		2.0
Minimum Green (G _{min}), s	6	6				6	6	6
Start-Up Lost Time (I _f), s	2.0	2.0				2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0				2.0	2.0	2.0
Passage (PT), s	2.0	2.0				2.0	2.0	2.0
Recall Mode	Max	Max				Max	Max	Max
Dual Entry	No	Yes				No	No	No
Walk (Walk), s	0.0	0.0				0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0				0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information	
Agency	MMA			Duration, h	0.25	
Analyst	MM - 1pmbn.rev	Analysis Date	Nov 16, 2019		Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour		PHF	0.97
Intersection	Willow Avenue & 16th Street	Analysis Year	2022 Build		Analysis Period	1> 7:00
File Name	1pmbn.rev.xus					
Project Description	Atir Residential					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	108	50	20					685	61	24	1020	

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
		Green	55.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

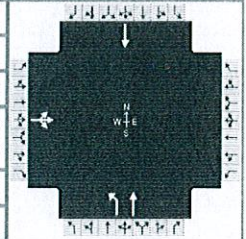
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	0.943	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	0.875	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	0.971	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.807						1.000			0.965	
Right-Turn Adjustment Factor (f_{RT})		0.000						0.971			0.910	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.997						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.991						1.000			1.000
Movement Saturation Flow Rate (s), veh/h		380						3095			2956	
Proportion of Vehicles Arriving on Green (P)	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.61	0.61	0.61	0.61	0.00
Incremental Delay Factor (k)		0.50						0.50	0.50	0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0				5.0		5.0
Green Ratio (g/C)		0.28				0.61		0.61
Permitted Saturation Flow Rate (s_p), veh/h/ln		0				545		711
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		0
Permitted Effective Green Time (g_p), s		0.0				0.0		55.0
Permitted Service Time (g_u), s		0.0				0.0		44.6
Permitted Queue Service Time (g_{ps}), s								0.0
Time to First Blockage (g_t), s		0.0				55.0		27.4
Queue Service Time Before Blockage (g_{ts}), s								18.3
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.983	0.00	1.983	0.00	1.198	0.00	0.681	0.00
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.077	0.000	0.077
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b		51.20		50.14	1222.22	6.81	1222.22	6.81
Bicycle F_w / F_v	-3.64	0.30	-3.64		-3.64	0.63	-3.64	0.89

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 2amb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Park Avenue & 16th Street	Analysis Year	2022 Build	Analysis Period	1> 7:00
File Name	2amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36				238	776				586

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

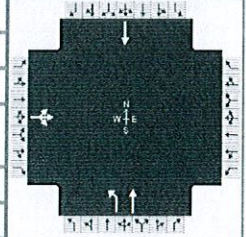
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		12.0			2.0	4.0		8.3
Phase Duration, s		20.0			18.0	70.0		52.0
Change Period, (Y+R _c), s		5.0			5.0	5.0		5.0
Max Allow Headway (MAH), s		3.3			3.3	0.0		0.0
Queue Clearance Time (g _s), s		10.8			15.0			
Green Extension Time (g _e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.40			1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14				5	2			6	
Adjusted Flow Rate (v), veh/h		166					251	817			617	
Adjusted Saturation Flow Rate (s), veh/h/ln		1587					1566	1644			1660	
Queue Service Time (g _s), s		8.8					13.0	24.7			25.4	
Cycle Queue Clearance Time (g _c), s		8.8					13.0	24.7			25.4	
Green Ratio (g/C)		0.17					0.14	0.72			0.52	
Capacity (c), veh/h		265					226	1188			867	
Volume-to-Capacity Ratio (X)		0.629					1.108	0.688			0.711	
Available Capacity (c _a), veh/h		265					226	1188			867	
Back of Queue (Q), veh/ln (50th percentile)		4.2					10.7	8.0			10.3	
Queue Storage Ratio (RQ) (50th percentile)		0.00					0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh		34.9					38.5	6.9			16.3	
Incremental Delay (d ₂), s/veh		10.8					91.7	3.3			4.9	
Initial Queue Delay (d ₃), s/veh		0.0					0.0	0.0			0.0	
Control Delay (d), s/veh		45.7					130.2	10.2			21.3	
Level of Service (LOS)		D					F	B			C	
Approach Delay, s/veh / LOS	45.7	D		0.0			38.3	D		21.3	C	
Intersection Delay, s/veh / LOS	33.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.1	B	1.8	A	2.1	B
Bicycle LOS Score / LOS	0.8	A			2.2	B	1.5	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 2amb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Park Avenue & 16th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	2amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36				238	776				586

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
Green	13.0	47.0	15.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	0.0
Yellow	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

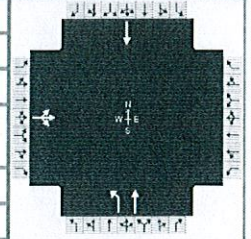
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36				238	776				586
Initial Queue (Q _b), veh/h	0	0	0				0	0				0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900				1900	1900				1900
Parking (N _m), man/h		None						None				None
Heavy Vehicles (P _{HV}), %		3					4	4				3
Ped / Bike / RTOR, /h	3	0	2				2	0		1	0	
Buses (N _b), buses/h	0	0	0				0	0				0
Arrival Type (AT)	3	3	3				3	3				3
Upstream Filtering (I)	1.00	1.00	1.00				1.00	1.00				1.00
Lane Width (W), ft		15.0					12.0	12.0				10.0
Turn Bay Length, ft		0					0	0				0
Grade (Pg), %		0			0			0				0
Speed Limit, mi/h	25	25	25				25	25				25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		20.0			18.0	70.0	
Yellow Change Interval (Y), s		3.0			3.0	3.0		3.0
Red Clearance Interval (R _c), s		2.0			2.0	2.0		2.0
Minimum Green (G _{min}), s	6	6			6	6		6
Start-Up Lost Time (I _t), s	2.0	2.0			2.0	2.0		2.0
Extension of Effective Green (e), s	2.0	2.0			2.0	2.0		2.0
Passage (PT), s	2.0	2.0			2.0	2.0		2.0
Recall Mode	Max	Max			Max	Max		Max
Dual Entry	No	Yes			No	No		No
Walk (Walk), s	0.0	0.0			0.0	0.0		0.0
Pedestrian Clearance Time (PC), s	0.0	0.0			0.0	0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	MMA	Duration, h	0.25		
Analyst	MM - 2amb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Park Avenue & 16th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	2amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36				238	776				586

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

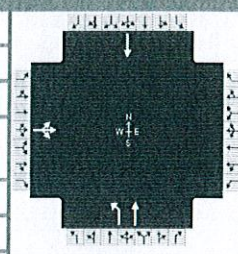
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.040	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.971	1.000	0.000	0.000	0.000	0.962	0.962	1.000	1.000	0.971	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.919					0.952	0.000			1.000	
Right-Turn Adjustment Factor (f_{RT})		0.000						1.000			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.991						1.000				1.000	
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.991						1.000			1.000
Movement Saturation Flow Rate (s), veh/h		0					1566	1644			1660	
Proportion of Vehicles Arriving on Green (P)	0.17	0.00	0.17	0.00	0.00	0.00	0.14	0.72	0.00	0.00	0.52	0.00
Incremental Delay Factor (k)		0.50					0.50	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0			5.0	5.0		5.0
Green Ratio (g/C)		0.17			0.14	0.72		0.52
Permitted Saturation Flow Rate (s_p), veh/h/ln		0			0	0		680
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s		0.0			0.0	0.0		0.0
Permitted Service Time (g_u), s		0.0			0.0	0.0		0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_r), s		0.0			0.0	0.0		47.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.389	0.00	1.198	0.00	1.389	0.00
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.050	0.000	0.093
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b		51.20		50.14	1444.44	3.47	1044.44	10.27
Bicycle F_w / F_v	-3.64	0.27	-3.64		-3.64	1.76	-3.64	1.02

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	2pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	99	0	37				231	765				872

Signal Information				Signal Timing (s)										
Cycle, s	90.0	Reference Phase	2	Green	13.0	47.0	15.0	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	Off	Red	2.0	2.0	2.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off											

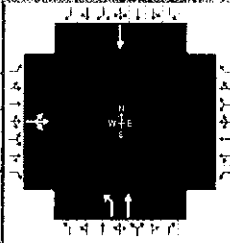
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		12.0			2.0	4.0		8.3
Phase Duration, s		20.0			18.0	70.0		52.0
Change Period, (Y+R _c), s		5.0			5.0	5.0		5.0
Max Allow Headway (MAH), s		3.3			3.3	0.0		0.0
Queue Clearance Time (g _s), s		8.2			14.2			
Green Extension Time (g _e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.02			1.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14				5	2				6
Adjusted Flow Rate (v), veh/h	136						243	805	918			
Adjusted Saturation Flow Rate (s), veh/h/ln	1780						1774	1863	1845			
Queue Service Time (g _s), s	6.2						12.2	19.0	42.6			
Cycle Queue Clearance Time (g _c), s	6.2						12.2	19.0	42.6			
Green Ratio (g/C)	0.17						0.14	0.72	0.52			
Capacity (c), veh/h	297						256	1345	963			
Volume-to-Capacity Ratio (X)	0.458						0.949	0.599	0.953			
Available Capacity (c _a), veh/h	297						256	1345	963			
Back of Queue (Q), veh/ln (50th percentile)	3.1						8.4	6.8	22.2			
Queue Storage Ratio (RQ) (50th percentile)	0.00						0.00	0.00	0.00			
Uniform Delay (d ₁), s/veh	33.8						38.2	6.1	20.4			
Incremental Delay (d ₂), s/veh	5.0						44.5	2.0	19.6			
Initial Queue Delay (d ₃), s/veh	0.0						0.0	0.0	0.0			
Control Delay (d), s/veh	38.8						82.6	8.1	40.1			
Level of Service (LOS)	D						F	A	D			
Approach Delay, s/veh / LOS	38.8	D	0.0				25.4	C	40.1			D
Intersection Delay, s/veh / LOS	32.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.1	B	1.8	A	2.1	B
Bicycle LOS Score / LOS	0.7	A			2.2	B	2.0	B

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2pmb.rev			Analysis Date	Nov 16, 2019		
Jurisdiction	Weehawken, NJ			Area Type	Other		
		Time Period	Peak PM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street			Analysis Year	2022 Build		
File Name	2pmb.rev.xus			Analysis Period	1 > 7:00		
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	99	0	37				231	765				872

Signal Information				EB			WB			NB			SB		
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0					
				Red	2.0	2.0	2.0	0.0	0.0	0.0					

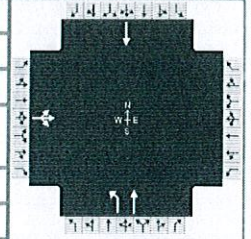
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	99	0	37				231	765				872
Initial Queue (Q _b), veh/h	0	0	0				0	0				0
Base Saturation Flow Rate (S ₀), veh/h	1900	1900	1900				1900	1900				1900
Parking (N _m), man/h		None						None				None
Heavy Vehicles (P _{HV}), %		2					2	2				3
Ped / Bike / RTOR, /h	1	0	7				1	0		4	0	0
Buses (N _b), buses/h	0	0	0				0	0				0
Arrival Type (AT)	3	3	3				3	3				3
Upstream Filtering (I)	1.00	1.00	1.00				1.00	1.00				1.00
Lane Width (W), ft		15.0					12.0	12.0				10.0
Turn Bay Length, ft		0					0	0				0
Grade (Pg), %		0			0			0				0
Speed Limit, mi/h	25	25	25				25	25				25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		20.0			18.0	70.0	
Yellow Change Interval (Y), s		3.0			3.0	3.0		3.0
Red Clearance Interval (R _c), s		2.0			2.0	2.0		2.0
Minimum Green (G _{min}), s	6	6			6	6		6
Start-Up Lost Time (I _t), s	2.0	2.0			2.0	2.0		2.0
Extension of Effective Green (e), s	2.0	2.0			2.0	2.0		2.0
Passage (PT), s	2.0	2.0			2.0	2.0		2.0
Recall Mode	Max	Max			Max	Max		Max
Dual Entry	No	Yes			No	No		No
Walk (Walk), s	0.0	0.0			0.0	0.0		0.0
Pedestrian Clearance Time (PC), s	0.0	0.0			0.0	0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	2pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	99	0	37				231	765				872

Signal Information													
Cycle, s	90.0	Reference Phase	2	↕	↕	↕				↑	↑	↔	↔
Offset, s	0	Reference Point	End	↕	↕	↕				↑	↑	↔	↔
Uncoordinated	No	Simult. Gap E/W	Off	Green	13.0	47.0	15.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.040	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	0.000	0.000	0.000	0.980	0.980	1.000	1.000	0.971	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.919					0.952	0.000			1.000	
Right-Turn Adjustment Factor (f_{RT})		0.000						1.000			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.991						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.997						1.000			1.000
Movement Saturation Flow Rate (s), veh/h		0					1774	1863			1845	
Proportion of Vehicles Arriving on Green (P)	0.17	0.00	0.17	0.00	0.00	0.00	0.14	0.72	0.00	0.00	0.52	0.00
Incremental Delay Factor (k)		0.50					0.50	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		4.0			5.0	5.0		5.0
Green Ratio (g/C)		0.17			0.14	0.72		0.52
Permitted Saturation Flow Rate (s _p), veh/h/ln		0			0	0		687
Shared Saturation Flow Rate (s _{sh}), veh/h/ln								0
Permitted Effective Green Time (g _p), s		0.0			0.0	0.0		0.0
Permitted Service Time (g _v), s		0.0			0.0	0.0		0.0
Permitted Queue Service Time (g _{ps}), s								
Time to First Blockage (g _f), s		0.0			0.0	0.0		47.0
Queue Service Time Before Blockage (g _{fs}), s								
Protected Right Saturation Flow (s _R), veh/h/ln								
Protected Right Effective Green Time (g _R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.389	0.00	1.198	0.00	1.389	0.01
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.050	0.000	0.093
Pedestrian M_{corner} / M_{cw}								
Bicycle C_b / d_b		51.20		50.14	1444.44	3.47	1044.44	10.27
Bicycle F_w / F_v	-3.64	0.22	-3.64		-3.64	1.73	-3.64	1.51

TWO-WAY STOP CONTROL SUMMARY

Analyst: 3amb.rev
 Agency/Co.: MMA
 Date Performed: 11/16/19
 Analysis Time Period: Peak AM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 Build
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume		65	54		650	8		
Peak-Hour Factor, PHF		0.93	0.93		0.93	0.93		
Hourly Flow Rate, HFR		69	58		698	8		
Percent Heavy Vehicles		--	--		3	--	--	
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		1	0		0	1		
Configuration			TR			LT		
Upstream Signal?		No				No		

Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		19		239			
Peak Hour Factor, PHF		0.93		0.93			
Hourly Flow Rate, HFR		20		256			
Percent Heavy Vehicles		6		3			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage					/		/
Lanes		1		1			
Configuration		L		R			

Delay, Queue Length, and Level of Service

Approach Movement	NB	SB	Westbound			Eastbound		
			4 	7 L	8 R	9 	10 T	11 R
Lane Config		LT		L	R			
v (vph)		698		20		256		
C(m) (vph)		1436		65		932		
v/c		0.49		0.31		0.27		
95% queue length		2.76		1.11		1.12		
Control Delay		9.9		83.3		10.3		
LOS		A		F		B		
Approach Delay					15.6			
Approach LOS					C			

HCS+: Unsignalized Intersections Release 5.6

Phone:
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-----TWO-WAY STOP CONTROL(TWSC) ANALYSIS-----

Analyst: 3amb.rev
 Agency/Co.: MMA
 Date Performed: 11/16/19
 Analysis Time Period: Peak AM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 Build
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS Study period (hrs): 0.25

-----Vehicle Volumes and Adjustments-----

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		65	54	650	8	
Peak-Hour Factor, PHF		0.93	0.93	0.93	0.93	
Peak-15 Minute Volume		17	15	175	2	
Hourly Flow Rate, HFR		69	58	698	8	
Percent Heavy Vehicles		--	--	3	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	0		0	1	
Configuration			TR		LT	
Upstream Signal?	No			No		

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	19		239			
Peak Hour Factor, PHF	0.93		0.93			
Peak-15 Minute Volume	5		64			
Hourly Flow Rate, HFR	20		256			
Percent Heavy Vehicles	6		3			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/ /		
RT Channelized?				No		
Lanes	1		1			
Configuration	L		R			

-----Pedestrian Volumes and Adjustments-----

Movements	13	14	15	16
Flow (ped/hr)	9	5	7	0

Lane Width (ft)	11.0	12.0	11.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	1	0	1	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		8
Shared ln volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation								
Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		3	6		3			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.5		6.2			
2-stage								

Follow-Up Time Calculations								
Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		3	6		3			
t(f)		2.2	3.6		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal				
	Movement 2		Movement 5	
V prog	V(t)	V(l,prot)	V(t)	V(l,prot)

Total Saturation Flow Rate, s (vph)
 Arrival Type
 Effective Green, g (sec)
 Cycle Length, C (sec)
 Rp (from Exhibit 16-11)
 Proportion vehicles arriving on green P
 g(q1)
 g(q2)
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p		0.000		0.000

Computation 3-Platoon Event Periods Result

p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
--	-----------------------------	-------------------------------------	--------------------------------------

p(1)
 p(4)
 p(7)
 p(8)
 p(9)
 p(10)
 p(11)
 p(12)

Computation 4 and 5
 Single-Stage Process

Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R

V c, x		134	1518		110			
s								
Px								
V c, u, x								

C r, x
 C plat, x

Two-Stage Process

7	8	10	11
---	---	----	----

V(c, x)
s
P(x)
V(c, u, x)

1500

C(r, x)
C(plat, x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	110	
Potential Capacity	941	
Pedestrian Impedance Factor	0.99	0.99
Movement Capacity	932	
Probability of Queue free St.	0.73	1.00
Step 2: LT from Major St.	4	1
Conflicting Flows	134	
Potential Capacity	1444	
Pedestrian Impedance Factor	0.99	1.00
Movement Capacity	1436	
Probability of Queue free St.	0.51	1.00
Maj L-Shared Prob Q free St.	0.51	
Step 3: TH from Minor St.	8	11
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	0.99	0.99
Cap. Adj. factor due to Impeding mvmnt	0.51	0.51
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Conflicting Flows	1518	
Potential Capacity	128	
Pedestrian Impedance Factor	0.99	1.00
Maj. L, Min T Impedance factor		0.51
Maj. L, Min T Adj. Imp Factor.		0.61
Cap. Adj. factor due to Impeding mvmnt	0.51	0.44
Movement Capacity	65	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
C sep	65		932			
Volume	20		256			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						
n max						
C sh						
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		698	20		256			
C(m) (vph)		1436	65		932			
v/c		0.49	0.31		0.27			
95% queue length		2.76	1.11		1.12			
Control Delay		9.9	83.3		10.3			
LOS		A	F		B			
Approach Delay				15.6				
Approach LOS				C				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.51
v(i1), Volume for stream 2 or 5		8
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		0.51
d(M,LT), Delay for stream 1 or 4		9.9
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		4.8

TWO-WAY STOP CONTROL SUMMARY

Analyst: 3pmb.rev
 Agency/Co.: MMA
 Date Performed: 11/16/19
 Analysis Time Period: Peak PM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 Build
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume		46	37	523	16			
Peak-Hour Factor, PHF		0.94	0.94	0.94	0.94			
Hourly Flow Rate, HFR		48	39	556	17			
Percent Heavy Vehicles		--	--	1	--	--		
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		1	0		0	1		
Configuration			TR		LT			
Upstream Signal?		No			No			

Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		21	530				
Peak Hour Factor, PHF		0.94	0.94				
Hourly Flow Rate, HFR		22	563				
Percent Heavy Vehicles		0	5				
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				/		/	
Lanes		1	1				
Configuration		L	R				

Delay, Queue Length, and Level of Service

Approach Movement	NB	SB	Westbound			Eastbound		
			4	7	8	9	10	11
Lane Config	1	LT	L	R				
v (vph)		556	22	563				
C(m) (vph)		1477	123	954				
v/c		0.38	0.18	0.59				
95% queue length		1.78	0.62	3.99				
Control Delay		8.9	40.5	14.1				
LOS		A	E	B				
Approach Delay				15.1				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.6

Phone:
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-----TWO-WAY STOP CONTROL(TWSC) ANALYSIS-----

Analyst: 3pmb.rev
 Agency/Co.: MMA
 Date Performed: 11/16/19
 Analysis Time Period: Peak PM Highway Hour
 Intersection: Hackensack Ave. & 19th St.
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 Build
 Project ID: Atir Residential
 East/West Street: 19th Street
 North/South Street: Hackensack Avenue
 Intersection Orientation: NS Study period (hrs): 0.25

-----Vehicle Volumes and Adjustments-----

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		46	37	523	16	
Peak-Hour Factor, PHF		0.94	0.94	0.94	0.94	
Peak-15 Minute Volume		12	10	139	4	
Hourly Flow Rate, HFR		48	39	556	17	
Percent Heavy Vehicles		--	--	1	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	21		530			
Peak Hour Factor, PHF	0.94		0.94			
Peak-15 Minute Volume	6		141			
Hourly Flow Rate, HFR	22		563			
Percent Heavy Vehicles	0		5			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

-----Pedestrian Volumes and Adjustments-----

Movements	13	14	15	16
Flow (ped/hr)	6	1	16	0

Lane Width (ft)	11.0	12.0	11.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	1	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		17
Shared ln volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		1	0		5			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.4		6.3			
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		1	0		5			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
V prog	V(t)	V(l,prot)	V(t)	V(l,prot)

Total Saturation Flow Rate, s (vph)
 Arrival Type
 Effective Green, g (sec)
 Cycle Length, C (sec)
 Rp (from Exhibit 16-11)
 Proportion vehicles arriving on green P
 g(q1)
 g(q2)
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

alpha
 beta
 Travel time, t(a) (sec)
 Smoothing Factor, F
 Proportion of conflicting flow, f
 Max platooned flow, V(c,max)
 Min platooned flow, V(c,min)
 Duration of blocked period, t(p)
 Proportion time blocked, p

	0.000		0.000
--	-------	--	-------

Computation 3-Platoon Event Periods Result

p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Process Stage II
--	-----------------------------	-------------------------------------	----------------------------

p(1)
 p(4)
 p(7)
 p(8)
 p(9)
 p(10)
 p(11)
 p(12)

Computation 4 and 5
 Single-Stage Process

Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R

V c, x	103	1219		84
s				
Px				
V c, u, x				

C r, x
 C plat, x

Two-Stage Process	7	8	10	11
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V(c,x)
s 1500
P(x)
V(c,u,x)

C(r,x)
C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	84	
Potential Capacity	967	
Pedestrian Impedance Factor	0.99	1.00
Movement Capacity	954	
Probability of Queue free St.	0.41	1.00
Step 2: LT from Major St.	4	1
Conflicting Flows	103	
Potential Capacity	1495	
Pedestrian Impedance Factor	0.99	1.00
Movement Capacity	1477	
Probability of Queue free St.	0.62	1.00
Maj L-Shared Prob Q free St.	0.62	
Step 3: TH from Minor St.	8	11
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	0.99	0.99
Cap. Adj. factor due to Impeding mvmnt	0.61	0.61
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Conflicting Flows	1219	
Potential Capacity	201	
Pedestrian Impedance Factor	0.98	1.00
Maj. L, Min T Impedance factor		0.61
Maj. L, Min T Adj. Imp Factor.		0.70
Cap. Adj. factor due to Impeding mvmnt	0.61	0.29
Movement Capacity	123	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor 0.99 0.99
 Cap. Adj. factor due to Impeding mvmnt 0.61 0.61
 Movement Capacity

Result for 2 stage process:
 a
 y
 C t
 Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Part 1 - First Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage
 Conflicting Flows 1219
 Potential Capacity 201
 Pedestrian Impedance Factor 0.98 1.00
 Maj. L, Min T Impedance factor 0.61
 Maj. L, Min T Adj. Imp Factor. 0.70
 Cap. Adj. factor due to Impeding mvmnt 0.61 0.29
 Movement Capacity 123

Results for Two-stage process:
 a
 y
 C t 123

Worksheet 8-Shared Lane Calculations

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (vph)	22		563			
Movement Capacity (vph)	123		954			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
C sep	123		954			
Volume	22		563			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						
n max						
C sh						
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

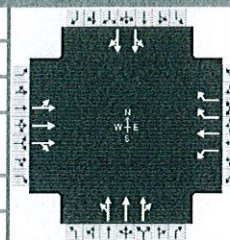
Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		556	22		563			
C(m) (vph)		1477	123		954			
v/c		0.38	0.18		0.59			
95% queue length		1.78	0.62		3.99			
Control Delay		8.9	40.5		14.1			
LOS		A	E		B			
Approach Delay				15.1				
Approach LOS				C				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.62
v(i1), Volume for stream 2 or 5		17
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		0.62
d(M,LT), Delay for stream 1 or 4		8.9
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		3.4

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 4amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	4amb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	189	178	338	273	98	466	141	642	106	131	376	31

Signal Information				Signal Timing (s)						Signal Phases			
Cycle, s	90.0	Reference Phase	2	EB		WB		NB		SB		Signal Phases	
Offset, s	0	Reference Point	End	Green	Yellow	Red	Green	Yellow	Red	Green	Yellow	Red	Signal Phases
Uncoordinated	No	Simult. Gap E/W	Off	27.0	3.0	2.0	20.0	3.0	2.0	0.0	0.0	0.0	1, 2, 3, 4
Force Mode	Fixed	Simult. Gap N/S	Off	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	5, 6, 7, 8

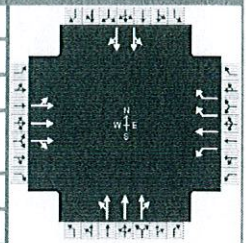
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		5.0		12.0		12.0
Phase Duration, s		32.0		32.0		25.0		33.0
Change Period, (Y+R _c), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						20.6		18.9
Green Extension Time (g _e), s		0.0		0.0		0.0		0.9
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.04

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	199	187	274	287	103	186	336	312	286	292		267
Adjusted Saturation Flow Rate (s), veh/h/ln	1083	1679	1400	922	1743	986	1603	1638	1484	1365		1370
Queue Service Time (g _s), s	12.4	7.9	15.3	11.7	4.0	6.6	18.6	16.5	16.7	16.9		15.0
Cycle Queue Clearance Time (g _c), s	16.4	7.9	15.3	27.0	4.0	6.6	18.6	16.5	16.7	16.9		15.0
Green Ratio (g/C)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31		0.31
Capacity (c), veh/h	405	504	420	200	523	591	356	364	330	425		426
Volume-to-Capacity Ratio (X)	0.491	0.372	0.652	1.439	0.197	0.315	0.944	0.856	0.867	0.688		0.626
Available Capacity (c _a), veh/h	405	504	420	200	523	591	356	364	330	425		426
Back of Queue (Q), veh/ln (50th percentile)	4.2	3.4	5.9	16.9	1.7	1.6	10.6	8.7	8.2	6.4		5.6
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	29.5	24.8	27.4	41.5	23.4	24.4	34.4	33.6	33.7	27.2		26.5
Incremental Delay (d ₂), s/veh	4.2	2.1	7.6	223.7	0.8	1.4	35.4	22.0	25.1	8.8		6.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Control Delay (d), s/veh	33.8	26.9	35.1	265.2	24.3	25.7	69.8	55.6	58.8	36.0		33.3
Level of Service (LOS)	C	C	D	F	C	C	E	E	E	D		C
Approach Delay, s/veh / LOS	32.4	C		144.8	F		61.7	E			34.7	C
Intersection Delay, s/veh / LOS	66.6						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	3.1	C	3.7	D	2.6	B
Bicycle LOS Score / LOS	0.9	A	1.4	A	1.0	A	0.9	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 4amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Willow Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	4amb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	189	178	338	273	98	466	141	642	106	131	376	31

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

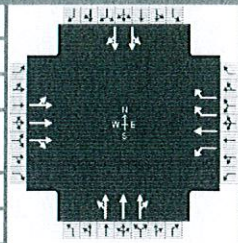
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	189	178	338	273	98	466	141	642	106	131	376	31
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %		3		2	9	44		16			36	
Ped / Bike / RTOR, /h	16	0	78	4	0	289	53	0	2	16	0	7
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft		11.0		10.0	11.0	11.0		10.0			12.0	
Turn Bay Length, ft		0		0	0	0		0			0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		32.0		32.0		25.0		33.0
Yellow Change Interval (Y), s		3.0		3.0		3.0		3.0
Red Clearance Interval (R _c), s		2.0		2.0		2.0		2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (l _f), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 4amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Willow Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	4amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	189	178	338	273	98	466	141	642	106	131	376	31

Signal Information				EB						WB		NB		SB	
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	27.0	28.0	20.0	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	2.0	0.0	0.0	0.0					

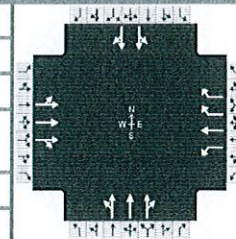
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.971	1.000	0.980	0.917	0.694	1.000	0.862	1.000	1.000	0.735	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	0.885	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.587			0.000			0.978			0.977	
Right-Turn Adjustment Factor (f_{RT})		0.759			0.000			0.904			0.980	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.997			0.994			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.984			0.996			0.928			0.974
Movement Saturation Flow Rate (s), veh/h		1679			1743			3448			1961	
Proportion of Vehicles Arriving on Green (P)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31	0.31	0.31
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0		5.0		4.0
Green Ratio (g/C)		0.30		0.30		0.22		0.31
Permitted Saturation Flow Rate (s_p), veh/h/ln		1307		922		0		0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		27.0		27.0		0.0		0.0
Permitted Service Time (g_v), s		23.0		11.7		0.0		0.0
Permitted Queue Service Time (g_{ps}), s		12.4		11.7				
Time to First Blockage (g_t), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s		0.0						
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.00	2.336	0.01	2.545	0.41	1.710	0.11
Pedestrian F_s / F_{delay}	0.000	0.124	0.000	0.124	0.000	0.158	0.000	0.132
Pedestrian M_{corner} / M_{cw}								
Bicycle C_b / d_b	600.00	22.05	600.00	22.05		51.20	444.44	27.22
Bicycle F_w / F_v	-3.64	0.36	-3.64	0.95	-3.64	0.51	-3.64	0.46

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	MMA			Duration, h	0.25	
Analyst	MM - 4pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other	
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96	
Intersection	Willow Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1> 7:00	
File Name	4pmb.rev.xus					
Project Description	Atir Residential					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	28	120	409	226	251	394	218	383	187	270	395	91

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

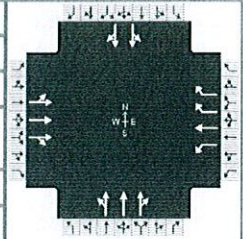
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		5.0		12.0		12.0
Phase Duration, s		32.0		32.0		25.0		33.0
Change Period, (Y+R _c), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.2
Queue Clearance Time (g _s), s						16.4		22.7
Green Extension Time (g _e), s		0.0		0.0		0.8		1.0
Phase Call Probability						1.00		1.00
Max Out Probability						0.86		0.44

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	66	89	301	235	261	178	277	260	235	411		368
Adjusted Saturation Flow Rate (s), veh/h/ln	1073	1712	1409	938	1881	856	1630	1696	1492	1640		1614
Queue Service Time (g _s), s	0.4	3.4	17.1	9.9	10.2	7.3	14.4	12.7	13.1	20.7		18.3
Cycle Queue Clearance Time (g _c), s	10.5	3.4	17.1	27.0	10.2	7.3	14.4	12.7	13.1	20.7		18.3
Green Ratio (g/C)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31		0.31
Capacity (c), veh/h	380	514	423	183	564	514	362	377	332	510		502
Volume-to-Capacity Ratio (X)	0.173	0.172	0.712	1.287	0.463	0.347	0.766	0.691	0.710	0.805		0.733
Available Capacity (c _a), veh/h	380	514	423	183	564	514	362	377	332	510		502
Back of Queue (Q), veh/ln (50th percentile)	1.1	1.5	6.8	12.4	4.9	1.6	7.0	6.2	5.8	9.8		8.2
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	23.2	23.3	28.0	42.2	25.6	24.6	32.8	32.2	32.3	28.5		27.7
Incremental Delay (d ₂), s/veh	1.0	0.7	9.8	163.9	2.7	1.8	14.3	9.9	12.1	12.7		9.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Control Delay (d), s/veh	24.2	24.0	37.8	206.1	28.3	26.5	47.1	42.1	44.5	41.2		36.8
Level of Service (LOS)	C	C	D	F	C	C	D	D	D	D		D
Approach Delay, s/veh / LOS	33.2		C	89.8		F	44.6		D	39.1		D
Intersection Delay, s/veh / LOS	52.5						D					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.9	C	3.1	C	3.6	D	2.6
Bicycle LOS Score / LOS	0.7	A	1.6	A	0.9	A	1.1	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information		
Agency	MMA			Duration, h	0.25	
Analyst	MM - 4pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other	
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96	
Intersection	Willow Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00	
File Name	4pmb.rev.xus					
Project Description	Atir Residential					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	28	120	409	226	251	394	218	383	187	270	395	91

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	27.0	28.0	20.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

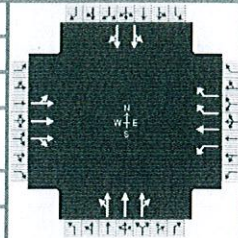
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	28	120	409	226	251	394	218	383	187	270	395	91
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %		1		3	1	64		12			12	
Ped / Bike / RTOR, /h	29	0	120	15	0	223	24	0	46	19	0	8
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft		11.0		10.0	11.0	11.0		10.0			12.0	
Turn Bay Length, ft		0		0	0	0		0			0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		32.0		32.0		25.0	
Yellow Change Interval (Y), s		3.0		3.0		3.0		3.0
Red Clearance Interval (R _c), s		2.0		2.0		2.0		2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (l _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information	
Agency	MMA			Duration, h	0.25	
Analyst	MM - 4pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other	
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96	
Intersection	Willow Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00	
File Name	4pmb.rev.xus					
Project Description	Atir Residential					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	28	120	409	226	251	394	218	383	187	270	395	91

Signal Information				EB						WB		NB		SB	
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	27.0	28.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0		

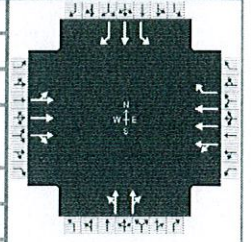
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.990	1.000	0.971	0.990	0.610	1.000	0.893	1.000	1.000	0.893	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	0.885	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.570			0.000			0.961			0.967	
Right-Turn Adjustment Factor (f_{RT})		0.749			0.000			0.874			0.949	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.992			0.989			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.971			0.985			0.968			0.969
Movement Saturation Flow Rate (s), veh/h		2308			1881			2552			1753	
Proportion of Vehicles Arriving on Green (P)	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.22	0.22	0.31	0.31	0.31
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0		5.0		4.0
Green Ratio (g/C)		0.30		0.30		0.22		0.31
Permitted Saturation Flow Rate (s_p), veh/h/ln		1126		938		0		0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		27.0		27.0		0.0		0.0
Permitted Service Time (g_u), s		16.8		9.9		0.0		0.0
Permitted Queue Service Time (g_{ps}), s		0.4		9.9				
Time to First Blockage (g_r), s		2.5		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{ts}), s		2.3						
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.07	2.336	0.01	2.545	0.32	1.710	0.17
Pedestrian F_s / F_{delay}	0.000	0.124	0.000	0.124	0.000	0.158	0.000	0.132
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	600.00	22.05	600.00	22.05		51.20	444.44	27.22
Bicycle F_w / F_v	-3.64	0.25	-3.64	1.11	-3.64	0.43	-3.64	0.64

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Park Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1> 7:00		
File Name	5amb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	315	39	197	361	16	113	307	431	38	376	366

Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	0.0	47.0	10.0	30.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
				Red	0.0	2.0	0.0	2.0	0.0	0.0				

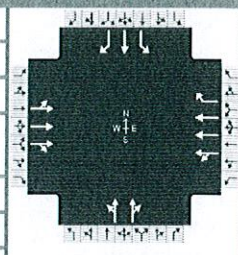
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8	7	4
Case Number	0.0	14.0		7.3		8.3	1.0	3.0
Phase Duration, s	0.0	52.0		52.0		35.0	13.0	48.0
Change Period, (Y+R _c), s	3.0	5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s	0.0	0.0		0.0		3.5	3.3	3.3
Queue Clearance Time (g _s), s						31.1	3.3	23.7
Green Extension Time (g _e), s	0.0	0.0		0.0		0.0	0.0	1.5
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						1.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	128	148	145	203	372	8	433		390	39	388	289
Adjusted Saturation Flow Rate (s), veh/h/ln	1056	1478	1418	839	1601	1670	1476		1358	1757	1827	1087
Queue Service Time (g _s), s	4.7	5.9	6.0	15.8	7.0	0.2	26.7		28.2	1.3	15.4	21.7
Cycle Queue Clearance Time (g _c), s	4.7	5.9	6.0	21.8	7.0	0.2	29.1		28.2	1.3	15.4	21.7
Green Ratio (g/C)	0.47	0.47	0.47	0.47	0.47	0.57	0.30		0.30	0.42	0.43	0.43
Capacity (c), veh/h	550	695	667	466	1505	952	488		407	261	786	435
Volume-to-Capacity Ratio (X)	0.233	0.213	0.217	0.436	0.247	0.009	0.887		0.956	0.150	0.493	0.664
Available Capacity (c _a), veh/h	550	695	667	466	1505	952	488		407	261	786	435
Back of Queue (Q), veh/ln (50th percentile)	2.0	2.1	2.1	3.9	2.6	0.1	13.0		13.1	0.6	7.0	7.3
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	16.9	15.6	15.6	22.1	15.9	9.3	34.7		34.4	22.0	20.6	31.4
Incremental Delay (d ₂), s/veh	1.0	0.7	0.7	2.9	0.4	0.0	20.5		34.9	1.2	2.2	7.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	17.9	16.3	16.4	25.0	16.3	9.3	55.2		69.2	23.2	22.8	39.2
Level of Service (LOS)	B	B	B	C	B	A	E		E	C	C	D
Approach Delay, s/veh / LOS	16.8 B			19.2 B			61.9 E			29.5 C		
Intersection Delay, s/veh / LOS	35.5						D					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.3	B		2.9	C		3.3	C		3.2	C	
Bicycle LOS Score / LOS	0.7	A		0.8	A		1.2	A		1.7	A	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Park Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	5amb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	315	39	197	361	16	113	307	431	38	376	366

Signal Information				EB						WB		NB		SB	
Cycle, s	100.0	Reference Phase	2	Green	0.0	47.0	10.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off												

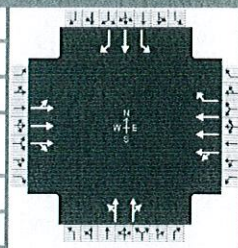
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	315	39	197	361	16	113	307	431	38	376	366
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %		17			8	0		4			3	4
Ped / Bike / RTOR, /h	0	0	6	4	0	8	36	0	53	1	0	86
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft		10.0			11.0	16.0		12.0			10.0	11.0
Turn Bay Length, ft		0			0	0		0			0	0
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

Phase Information	EB		WB		NB		SB	
	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	23.0	52.0		29.0		35.0	13.0	48.0
Yellow Change Interval (Y), s	3.0	3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s	0.0	2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (l _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 5amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.97
Intersection	Park Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	5amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	60	315	39	197	361	16	113	307	431	38	376	366

Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	0.0	47.0	10.0	30.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
				Red	0.0	2.0	0.0	2.0	0.0	0.0				

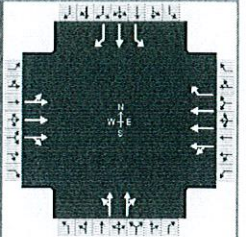
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.040	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.855	1.000	1.000	0.926	1.000	1.000	0.962	1.000	0.971	0.962	0.676
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.000	0.651			0.477			0.808		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.873			0.000			0.743			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.999			1.000			0.999			0.993		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.997			0.964			0.999
Movement Saturation Flow Rate (s), veh/h	0	3109			3202			1079		1757	1827	
Proportion of Vehicles Arriving on Green (P)	0.47	0.47	0.47	0.47	0.47	0.47	0.30	0.30	0.30	0.10	0.43	0.43
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)	0.00	0.47		0.47		0.30	0.42	0.43
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	1025		1039		1011	732	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0		0		
Permitted Effective Green Time (g_p), s	0.0	49.0		47.0		30.0	32.0	0.0
Permitted Service Time (g_u), s	0.0	40.0		41.0		27.6	1.8	0.0
Permitted Queue Service Time (g_{ps}), s		4.0		15.8		26.7	1.7	
Time to First Blockage (g_l), s	0.0	2.1		0.0		1.9	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s		2.1		0.0		1.9		
Protected Right Saturation Flow (s_R), veh/h/ln				1675				1088
Protected Right Effective Green Time (g_R), s				10.0				-3.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.08	2.107	0.12	2.545	0.01	2.443	0.01
Pedestrian F_s / F_{delay}	0.000	0.106	0.000	0.106	0.000	0.128	0.000	0.112
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	940.00	14.05	939.99	14.05	600.00	24.50	860.00	16.25
Bicycle F_w / F_v	-3.64	0.23	-3.64	0.32	-3.64	0.68	-3.64	1.18

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	Park Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	5pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	101	417	50	183	458	71	66	433	362	17	653	322

Signal Information				Signal Phases						Signal Diagrams				
Cycle, s	100.0	Reference Phase	2	Green	0.0	47.0	10.0	30.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off											

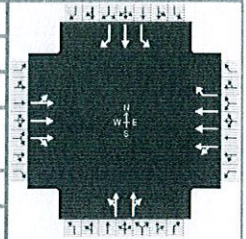
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8	7	4
Case Number	0.0	14.0		7.3		8.3	1.0	3.0
Phase Duration, s	0.0	52.0		52.0		35.0	13.0	48.0
Change Period, (Y+R _c), s	3.0	5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s	0.0	0.0		0.0		3.5	3.3	3.2
Queue Clearance Time (g _s), s						32.0	2.6	34.3
Green Extension Time (g _e), s	0.0	0.0		0.0		0.0	0.0	1.7
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						1.00	0.00	0.17

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	149	219	214	191	477	26	459		407	18	680	255
Adjusted Saturation Flow Rate (s), veh/h/ln	867	1631	1576	724	1631	1617	879		1417	1810	1881	1003
Queue Service Time (g _s), s	5.0	8.2	8.3	17.0	9.1	0.7	10.7		28.2	0.6	32.3	20.5
Cycle Queue Clearance Time (g _c), s	5.0	8.2	8.3	25.3	9.1	0.7	30.0		28.2	0.6	32.3	20.5
Green Ratio (g/C)	0.47	0.47	0.47	0.47	0.47	0.57	0.30		0.30	0.42	0.43	0.43
Capacity (c), veh/h	470	767	741	412	1533	923	305		425	266	809	401
Volume-to-Capacity Ratio (X)	0.317	0.285	0.289	0.463	0.311	0.028	1.503		0.957	0.067	0.841	0.637
Available Capacity (c _a), veh/h	470	767	741	412	1533	923	305		425	266	809	401
Back of Queue (Q), veh/ln (50th percentile)	2.6	3.2	3.2	3.9	3.5	0.3	28.2		13.6	0.3	16.3	6.5
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	20.5	16.2	16.2	24.0	16.5	9.4	38.2		34.4	21.7	25.4	31.4
Incremental Delay (d ₂), s/veh	1.8	0.9	1.0	3.7	0.5	0.1	242.9		34.1	0.5	10.3	7.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	22.3	17.2	17.2	27.7	17.0	9.5	281.1		68.4	22.1	35.7	39.0
Level of Service (LOS)	C	B	B	C	B	A	F		E	C	D	D
Approach Delay, s/veh / LOS	18.5	B		19.6	B		181.1	F		36.3	D	
Intersection Delay, s/veh / LOS	69.8						E					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.3	B		2.9	C		3.3	C		3.2	C	
Bicycle LOS Score / LOS	0.8	A		0.9	A		1.2	A		2.1	B	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	Park Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	5pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	101	417	50	183	458	71	66	433	362	17	653	322

Signal Information															
Cycle, s	100.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
		Green		0.0	47.0	10.0	30.0	0.0	0.0						
		Yellow		3.0	3.0	3.0	3.0	0.0	0.0						
		Red		0.0	2.0	0.0	2.0	0.0	0.0						

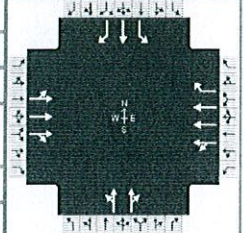
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	101	417	50	183	458	71	66	433	362	17	653	322
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %		6			6	3		2			0	59
Ped / Bike / RTOR, /h	1	0	10	8	0	46	41	0	30	14	0	77
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft		10.0			11.0	16.0		12.0			10.0	10.0
Turn Bay Length, ft		0			0	0		0			0	0
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s	23.0	52.0		29.0		35.0	13.0
Yellow Change Interval (Y), s	3.0	3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s	0.0	2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (l _f), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 5pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	Park Avenue & 19th Street	Analysis Year	2022 Build	Analysis Period	1> 7:00		
File Name	5pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	101	417	50	183	458	71	66	433	362	17	653	322

Signal Information				EB						WB		NB		SB	
Cycle, s	100.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	47.0	10.0	30.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0					

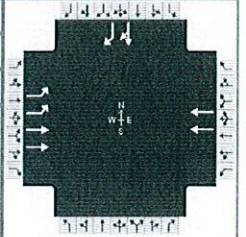
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.040	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.943	1.000	1.000	0.943	0.971	1.000	0.980	1.000	1.000	0.990	0.629
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.000	0.484			0.404			0.472		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.879			0.000			0.761			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.998			0.999			0.996			0.993		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.999			0.995			0.959			0.990
Movement Saturation Flow Rate (s), veh/h	0	3155			3262			960		1810	1881	
Proportion of Vehicles Arriving on Green (P)	0.47	0.47	0.47	0.47	0.47	0.47	0.30	0.30	0.30	0.10	0.43	0.43
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)	0.00	0.47		0.47		0.30	0.42	0.43
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	930		932		769	692	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0		0		
Permitted Effective Green Time (g_p), s	0.0	49.0		47.0		30.0	32.0	0.0
Permitted Service Time (g_u), s	0.0	37.9		38.7		10.7	1.8	0.0
Permitted Queue Service Time (g_{ps}), s		8.6		17.0		10.7	0.8	
Time to First Blockage (g_t), s	0.0	0.8		0.0		5.4	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s		0.8		0.0		5.4		
Protected Right Saturation Flow (s_R), veh/h/ln				1626				1013
Protected Right Effective Green Time (g_R), s				10.0				-3.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.04		2.107	0.11		2.545	0.07		2.443	0.01	
Pedestrian F_s / F_{delay}	0.000	0.106		0.000	0.106		0.000	0.128		0.000	0.112	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	940.00	14.05		939.99	14.05		600.00	24.50		860.00	16.25	
Bicycle F_w / F_v	-3.64	0.32		-3.64	0.38		-3.64	0.71		-3.64	1.57	

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	19th St & Garage Ramp	Analysis Year	2022-Build	Analysis Period	1> 7:00		
File Name	6amb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	125	639			603						0	3

Signal Information				Signal Timing (s)								
Cycle, s	90.0	Reference Phase	2	EB		WB		NB		SB		
Offset, s	0	Reference Point	End	Green	Yellow	Red	Green	Yellow	Red	Green	Yellow	Red
Uncoordinated	No	Simult. Gap E/W	Off	25.0	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	54.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0

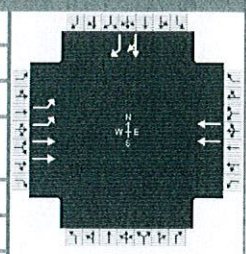
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6				4
Case Number	2.0	4.0		8.3				11.0
Phase Duration, s	30.0	89.0		59.0				1.0
Change Period, (Y+R _c), s	5.0	5.0		5.0				0.0
Max Allow Headway (MAH), s	3.3	0.0		0.0				5.3
Queue Clearance Time (g _s), s	4.4							2.2
Green Extension Time (g _e), s	0.3	0.0		0.0				0.0
Phase Call Probability	1.00							1.00
Max Out Probability	0.00							1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6					4	14	
Adjusted Flow Rate (v), veh/h	128	652			615					0	3	
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1659			1706					1900	902	
Queue Service Time (g _s), s	2.4	1.5			7.9					0.0	0.2	
Cycle Queue Clearance Time (g _c), s	2.4	1.5			7.9					0.0	0.2	
Green Ratio (g/C)	0.28	0.93			0.60					0.01	0.29	
Capacity (c), veh/h	976	3098			2048					21	457	
Volume-to-Capacity Ratio (X)	0.131	0.210			0.300					0.000	0.007	
Available Capacity (c _a), veh/h	976	3098			2048					21	457	
Back of Queue (Q), veh/ln (50th percentile)	1.1	0.1			2.9					0.0	0.0	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00					0.00	0.00	
Uniform Delay (d ₁), s/veh	24.4	0.2			8.8					0.0	22.8	
Incremental Delay (d ₂), s/veh	0.3	0.2			0.4					0.0	0.0	
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0					0.0	0.0	
Control Delay (d), s/veh	24.6	0.4			9.2					0.0	22.9	
Level of Service (LOS)	C	A			A						C	
Approach Delay, s/veh / LOS	4.4	A		9.2	A		0.0			22.9	C	
Intersection Delay, s/veh / LOS	6.5						A					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	1.7	A		2.7	B		2.7	B		3.0	C	
Bicycle LOS Score / LOS	1.1	A		1.0	A					0.5	A	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	19th St & Garage Ramp	Analysis Year	2022-Build	Analysis Period	1 > 7:00		
File Name	6amb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	125	639			603						0	3

Signal Information				Signal Timing (s)												
Cycle, s	90.0	Reference Phase	2	Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off													

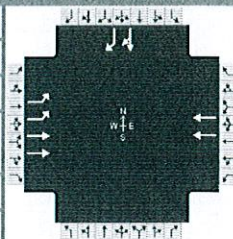
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	125	639			603						0	3
Initial Queue (Q _b), veh/h	0	0			0						0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900						1900	1900
Parking (N _m), man/h		None			None						None	
Heavy Vehicles (P _{HV}), %	0	9			6						0	0
Ped / Bike / RTOR, /h	0	0		1	0					37	0	0
Buses (N _b), buses/h	0	0			0						0	0
Arrival Type (AT)	3	3			3						3	3
Upstream Filtering (I)	1.00	1.00			1.00						1.00	1.00
Lane Width (W), ft	11.0	11.0			12.0						12.0	12.0
Turn Bay Length, ft	0	0			0						0	0
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25			25						25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	30.0	89.0		59.0				1.0
Yellow Change Interval (Y), s	3.0	3.0		3.0				0.0
Red Clearance Interval (R _c), s	2.0	2.0		2.0				0.0
Minimum Green (G _{min}), s	6	6		6				1
Start-Up Lost Time (I), s	2.0	2.0		2.0				2.0
Extension of Effective Green (e), s	2.0	2.0		2.0				2.0
Passage (PT), s	2.0	2.0		2.0				2.0
Recall Mode	Max	Max		Max				Max
Dual Entry	No	Yes		Yes				Yes
Walk (Walk), s	0.0	0.0		0.0				0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0				0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50					No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	19th St & Garage Ramp	Analysis Year	2022-Build	Analysis Period	1 > 7:00		
File Name	6amb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	125	639			603						0	3

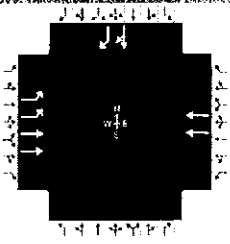
Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
		Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.917	1.000	1.000	0.943	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			1.000						1.000	
Right-Turn Adjustment Factor (f_{RT})		1.000			1.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000						0.560
Movement Saturation Flow Rate (s), veh/h	3514	3403			3585						1900	
Proportion of Vehicles Arriving on Green (P)	0.28	0.93	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Incremental Delay Factor (k)	0.50	0.50			0.50							0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	5.0	5.0		5.0				4.0
Green Ratio (g/C)	0.28	0.93		0.60				0.01
Permitted Saturation Flow Rate (S_p), veh/h/ln	0	0		793				0
Shared Saturation Flow Rate (S_{sh}), veh/h/ln				0				0.0
Permitted Effective Green Time (g_p), s	0.0	0.0		0.0				0.0
Permitted Service Time (g_u), s	0.0	0.0		0.0				0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s	0.0	0.0		54.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (S_R), veh/h/ln								1610
Protected Right Effective Green Time (g_R), s								25.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.00	1.983	0.00	1.983	0.00	2.224	0.00
Pedestrian F_s / F_{delay}	0.000	-0.065	0.000	0.079	0.000	0.157	0.000	0.154
Pedestrian M_{corner} / M_{cw}								
Bicycle C_b / d_b	1866.67	0.20	1200.00	7.20		50.14	-22.22	46.01
Bicycle F_w / F_v	-3.64	0.64	-3.64	0.51	-3.64		-3.64	0.01

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	MMA			Duration, h	0.25	
Analyst	MM - 6pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other	
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.93	
Intersection	19th St & Garage Ramp	Analysis Year	2022 Build	Analysis Period	1 > 7:00	
File Name	6pmb.rev.xus					
Project Description	Atir Residential					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	5	799			469					0		318

Signal Information													
Cycle, s	90.0	Reference Phase	2	↔		←		↔		→		↙	
Offset, s	0	Reference Point	End	↔		←		↔		→		↙	
Uncoordinated	No	Simult. Gap E/W	Off	Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

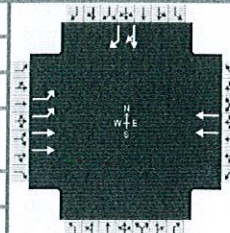
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6				4
Case Number	2.0	4.0		8.3				11.0
Phase Duration, s	30.0	89.0		59.0				1.0
Change Period, (Y+R _c), s	5.0	5.0		5.0				0.0
Max Allow Headway (MAH), s	3.3	0.0		0.0				5.7
Queue Clearance Time (g _s), s	2.1							3.0
Green Extension Time (g _e), s	0.0	0.0		0.0				0.0
Phase Call Probability	1.00							1.00
Max Out Probability	0.00							1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6					4	14	
Adjusted Flow Rate (v), veh/h	5	859			504					0	342	
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1637			1576					1900	815	
Queue Service Time (g _s), s	0.1	2.1			6.9					0.0	1.0	
Cycle Queue Clearance Time (g _c), s	0.1	2.1			6.9					0.0	1.0	
Green Ratio (g/C)	0.28	0.93			0.60					0.01	0.29	
Capacity (c), veh/h	976	3055			1892					21	456	
Volume-to-Capacity Ratio (X)	0.006	0.281			0.267					0.000	0.749	
Available Capacity (c _a), veh/h	976	3055			1892					21	456	
Back of Queue (Q), veh/ln (50th percentile)	0.0	0.1			2.3					0.0	8.0	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00					0.00	0.00	
Uniform Delay (d ₁), s/veh	23.5	0.3			8.6					0.0	29.3	
Incremental Delay (d ₂), s/veh	0.0	0.2			0.3					0.0	10.8	
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0					0.0	0.0	
Control Delay (d), s/veh	23.5	0.5			8.9					0.0	40.1	
Level of Service (LOS)	C	A			A						D	
Approach Delay, s/veh / LOS	0.6	A		8.9	A		0.0			40.1	D	
Intersection Delay, s/veh / LOS	11.0						B					

Multimodal Results	EB			WB			NB			SB	
Pedestrian LOS Score / LOS	1.7	A		2.7	B		2.7	B		3.0	C
Bicycle LOS Score / LOS	1.2	A		0.9	A					1.1	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 6pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.93
Intersection	19th St & Garage Ramp	Analysis Year	2022 Build	Analysis Period	1> 7:00
File Name	6pmb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	5	799			469					0		318

Signal Information				Signal Timing (s)										
Cycle, s	90.0	Reference Phase	2	Green	25.0	54.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off											

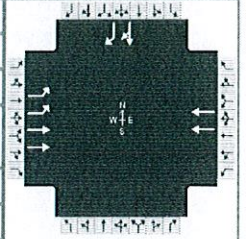
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	5	799			469					0		318
Initial Queue (Q _b), veh/h	0	0			0					0		0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900					1900	1900	
Parking (N _m), man/h	0	L + R	0		R	0				None		
Heavy Vehicles (P _{HV}), %	0	5			9					0	0	
Ped / Bike / RTOR, /h	0	0		1	0					47	0	0
Buses (N _b), buses/h	0	0			0					0	0	
Arrival Type (AT)	3	3			3					3	3	
Upstream Filtering (I)	1.00	1.00			1.00					1.00	1.00	
Lane Width (W), ft	11.0	11.0			12.0					12.0	12.0	
Turn Bay Length, ft	0	0			0					0	0	
Grade (P _g), %		0			0		0			0		
Speed Limit, mi/h	25	25			25					25	25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	30.0	89.0		59.0				1.0
Yellow Change Interval (Y), s	3.0	3.0		3.0				0.0
Red Clearance Interval (R _c), s	2.0	2.0		2.0				0.0
Minimum Green (G _{min}), s	6	6		6				1
Start-Up Lost Time (I _l), s	2.0	2.0		2.0				2.0
Extension of Effective Green (e), s	2.0	2.0		2.0				2.0
Passage (PT), s	2.0	2.0		2.0				2.0
Recall Mode	Max	Max		Max				Max
Dual Entry	No	Yes		Yes				Yes
Walk (Walk), s	0.0	0.0		0.0				0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0				0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50					No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 6pmb.rev		Analysis Date	Nov 16, 2019		Area Type	Other
Jurisdiction	Weehawken		Time Period	Peak PM Highway Hour		PHF	0.93
Intersection	19th St & Garage Ramp		Analysis Year	2022 Build		Analysis Period	1 > 7:00
File Name	6pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	5	799			469						0	318

Signal Information				Signal Phases										
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End	Green	25.0	54.0	1.0	0.0	0.0	0.0	1	2	3	4
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	5	6	7	8
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0				

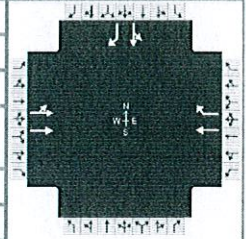
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.952	1.000	1.000	0.917	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	0.950	1.000	1.000	0.950	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			1.000						1.000	
Right-Turn Adjustment Factor (f_{RT})		1.000			1.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000							1.000	
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000						0.506
Movement Saturation Flow Rate (s), veh/h	3514	3356			3312						1900	
Proportion of Vehicles Arriving on Green (P)	0.28	0.93	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Incremental Delay Factor (k)	0.50	0.50			0.50							0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	5.0	5.0		5.0				4.0
Green Ratio (g/C)	0.28	0.93		0.60				0.01
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0		653				0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s	0.0	0.0		0.0				0.0
Permitted Service Time (g_u), s	0.0	0.0		0.0				0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_t), s	0.0	0.0		54.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								1610
Protected Right Effective Green Time (g_R), s								25.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.00	1.983	0.00	1.983	0.00	2.224	0.00
Pedestrian F_s / F_{delay}	0.000	-0.065	0.000	0.079	0.000	0.157	0.000	0.154
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1866.67	0.20	1200.00	7.20		50.14	-22.22	46.01
Bicycle F_w / F_v	-3.64	0.71	-3.64	0.42	-3.64		-3.64	0.56

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 7amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98
Intersection	Harbor B'lv'd & Waterfront	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	7amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	450	201			258	63				259	0	351

Signal Information												
Cycle, s	60.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	30.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0

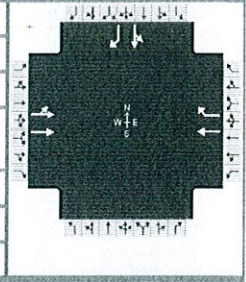
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6				4
Case Number		8.0		7.0				11.0
Phase Duration, s		35.0		35.0				25.0
Change Period, (Y+R _c), s		5.0		5.0				5.0
Max Allow Headway (MAH), s		0.0		0.0				3.4
Queue Clearance Time (g _s), s								13.4
Green Extension Time (g _e), s		0.0		0.0				1.0
Phase Call Probability								1.00
Max Out Probability								0.25

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16				7	4	14
Adjusted Flow Rate (v), veh/h	459	205			263	51				264	351	
Adjusted Saturation Flow Rate (s), veh/h/ln	841	1586			1638	1491				1751	1577	
Queue Service Time (g _s), s	24.3	4.0			5.7	1.1				7.1	11.4	
Cycle Queue Clearance Time (g _c), s	30.0	4.0			5.7	1.1				7.1	11.4	
Green Ratio (g/C)	0.50	0.50			0.50	0.50				0.33	0.33	
Capacity (c), veh/h	540	793			819	745				584	526	
Volume-to-Capacity Ratio (X)	0.850	0.259			0.321	0.068				0.453	0.668	
Available Capacity (c _a), veh/h	540	793			819	745				584	526	
Back of Queue (Q), veh/ln (50th percentile)	7.9	1.5			2.0	0.3				3.0	4.8	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00				0.00	0.00	
Uniform Delay (d ₁), s/veh	18.9	8.6			8.9	7.8				15.7	17.1	
Incremental Delay (d ₂), s/veh	15.3	0.8			1.0	0.2				2.5	6.6	
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0				0.0	0.0	
Control Delay (d), s/veh	34.2	9.4			10.0	7.9				18.2	23.7	
Level of Service (LOS)	C	A			A	A				B	C	
Approach Delay, s/veh / LOS	26.6		C	9.6		A	0.0			21.4		C
Intersection Delay, s/veh / LOS	21.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.9	A	2.2	B	2.7	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	1.0	A			1.5	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 7amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	7amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	450	201			258	63				259	0	351

Signal Information				Signal Phases												
Cycle, s	60.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	Off													
Force Mode	Fixed	Simult. Gap N/S	Off	Green	30.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

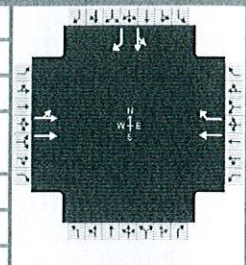
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	450	201			258	63				259	0	351
Initial Queue (Q _b), veh/h	0	0			0	0				0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900	1900				1900	1900	1900
Parking (N _m), man/h		None			None						None	
Heavy Vehicles (P _{HV}), %		9			16	8					0	1
Ped / Bike / RTOR, /h	0	0		0	0	13				7	0	7
Buses (N _b), buses/h	0	0			0	0				0	0	0
Arrival Type (AT)	3	3			3	3				3	3	3
Upstream Filtering (I)	1.00	1.00			1.00	1.00				1.00	1.00	1.00
Lane Width (W), ft		12.0			12.0	12.0					12.0	12.0
Turn Bay Length, ft		0			0	0					0	0
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25			25	25				25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		35.0		35.0				25.0
Yellow Change Interval (Y), s		3.0		3.0				3.0
Red Clearance Interval (R _c), s		2.0		2.0				2.0
Minimum Green (G _{min}), s	6	6		6			6	6
Start-Up Lost Time (I _t), s	2.0	2.0		2.0			2.0	2.0
Extension of Effective Green (e), s	2.0	2.0		2.0			2.0	2.0
Passage (PT), s	2.0	2.0		2.0			2.0	2.0
Recall Mode	Max	Max		Max			Max	Max
Dual Entry	No	Yes		Yes			No	Yes
Walk (Walk), s	0.0	0.0		0.0			0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0			0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50					No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7amb.rev		Analysis Date	Nov 16, 2019		Area Type	Other
Jurisdiction	Weehawken		Time Period	Peak AM Highway Hour		PHF	0.98
Intersection	Harbor B'lvd & Waterfront		Analysis Year	2022 Build		Analysis Period	1> 7:00
File Name	7amb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	450	201			258	63				259	0	351

Signal Information													
Cycle, s	60.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	30.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

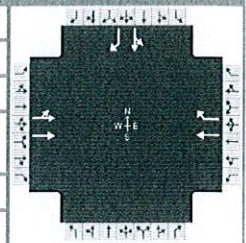
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.917	1.000	1.000	0.862	0.926	0.000	0.000	0.000	1.000	1.000	0.990
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.482			1.000						0.922	
Right-Turn Adjustment Factor (f_{RT})		0.910			0.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000						0.968		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000						0.990
Movement Saturation Flow Rate (s), veh/h		1586			1638						0	
Proportion of Vehicles Arriving on Green (P)	0.50	0.50	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.33	0.00	0.33
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50					0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0				4.0
Green Ratio (g/C)		0.50		0.50				0.33
Permitted Saturation Flow Rate (s_p), veh/h/ln		1134		1196				0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0				0
Permitted Effective Green Time (g_p), s		30.0		0.0				0.0
Permitted Service Time (g_u), s		24.3		0.0				0.0
Permitted Queue Service Time (g_{ps}), s		24.3						
Time to First Blockage (g_t), s		0.0		30.0				0.0
Queue Service Time Before Blockage (g_{fs}), s		0.0						
Protected Right Saturation Flow (s_R), veh/h/ln				0				0
Protected Right Effective Green Time (g_R), s				0.0				0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.00	1.557	0.01	1.983	0.02	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.081	0.000	0.081	0.000	0.143	0.000	0.144
Pedestrian M_{corner} / M_{cw}								
Bicycle C_b / d_b	1000.00	7.50	1000.00	7.50		35.21	-200.00	36.30
Bicycle F_w / F_v	-3.64	0.55	-3.64	0.52	-3.64		-3.64	1.02

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89		
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	7pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	627	203			145	134				264	0	323

Signal Information																				
Cycle, s	60.0	Reference Phase	2							1		2		3		4				
Offset, s	0	Reference Point	End							5		6		7		8				
Uncoordinated	No	Simult. Gap E/W	Off	Green	30.0	20.0	0.0	0.0	0.0	0.0	Yellow		3.0		3.0		0.0		0.0	
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0	Red		2.0		2.0		0.0		0.0	

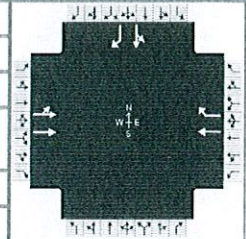
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6				4
Case Number		8.0		7.0				11.0
Phase Duration, s		35.0		35.0				25.0
Change Period, (Y+R _c), s		5.0		5.0				5.0
Max Allow Headway (MAH), s		0.0		0.0				3.4
Queue Clearance Time (g _s), s								14.5
Green Extension Time (g _e), s		0.0		0.0				1.0
Phase Call Probability								1.00
Max Out Probability								0.42

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16				7	4	14
Adjusted Flow Rate (v), veh/h	704	228			163	106				297	358	
Adjusted Saturation Flow Rate (s), veh/h/ln	1048	1647			1638	1524				1577	1509	
Queue Service Time (g _s), s	26.7	4.3			3.3	2.2				9.3	12.5	
Cycle Queue Clearance Time (g _c), s	30.0	4.3			3.3	2.2				9.3	12.5	
Green Ratio (g/C)	0.50	0.50			0.50	0.50				0.33	0.33	
Capacity (c), veh/h	644	823			819	762				526	503	
Volume-to-Capacity Ratio (X)	1.094	0.277			0.199	0.139				0.564	0.713	
Available Capacity (c _a), veh/h	644	823			819	762				526	503	
Back of Queue (Q), veh/ln (50th percentile)	20.3	1.7			1.1	0.7				3.7	5.1	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00				0.00	0.00	
Uniform Delay (d ₁), s/veh	19.1	8.7			8.3	8.1				16.4	17.5	
Incremental Delay (d ₂), s/veh	63.9	0.8			0.5	0.4				4.3	8.3	
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0				0.0	0.0	
Control Delay (d), s/veh	83.0	9.5			8.9	8.4				20.8	25.8	
Level of Service (LOS)	F	A			A	A				C	C	
Approach Delay, s/veh / LOS	65.1	E		8.7	A		0.0			23.5	C	
Intersection Delay, s/veh / LOS	42.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.9	A	2.2	B	2.8	C	2.3	B
Bicycle LOS Score / LOS	1.3	A	0.9	A			1.6	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 7pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89
Intersection	Harbor B'lv'd & Waterfront	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	7pmb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	627	203			145	134				264	0	323

Signal Information													
Cycle, s	60.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	30.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	

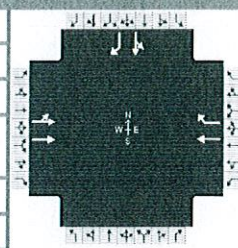
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	627	203			145	134				264	0	323
Initial Queue (Q _b), veh/h	0	0			0	0				0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900	1900				1900	1900	1900
Parking (N _m), man/h		None			None						None	
Heavy Vehicles (P _{HV}), %		5			16	5					11	4
Ped / Bike / RTOR, /h	1	0		6	0	40				17	0	4
Buses (N _b), buses/h	0	0			0	0				0	0	0
Arrival Type (AT)	3	3			3	3				3	3	3
Upstream Filtering (f)	1.00	1.00			1.00	1.00				1.00	1.00	1.00
Lane Width (W), ft		12.0			12.0	12.0					12.0	12.0
Turn Bay Length, ft		0			0	0					0	0
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	25	25			25	25				25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		35.0		35.0				25.0
Yellow Change Interval (Y), s		3.0		3.0				3.0
Red Clearance Interval (R _c), s		2.0		2.0				2.0
Minimum Green (G _{min}), s	6	6		6			6	6
Start-Up Lost Time (l _t), s	2.0	2.0		2.0			2.0	2.0
Extension of Effective Green (e), s	2.0	2.0		2.0			2.0	2.0
Passage (PT), s	2.0	2.0		2.0			2.0	2.0
Recall Mode	Max	Max		Max			Max	Max
Dual Entry	No	Yes		Yes			No	Yes
Walk (Walk), s	0.0	0.0		0.0			0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0			0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50					No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89		
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	7pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h	627	203			145	134					264	0	323

Signal Information												
Cycle, s	60.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	30.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0

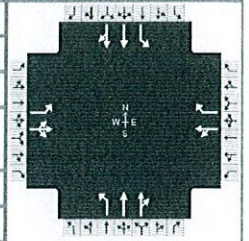
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.952	1.000	1.000	0.862	0.952	0.000	0.000	0.000	1.000	0.901	0.962
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.579			1.000						0.922	
Right-Turn Adjustment Factor (f_{RT})		0.910			0.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.995			1.000						0.968		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.994						0.975
Movement Saturation Flow Rate (s), veh/h		1647			1638						0	
Proportion of Vehicles Arriving on Green (P)	0.50	0.50	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.33	0.00	0.33
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50					0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0				4.0
Green Ratio (g/C)		0.50		0.50				0.33
Permitted Saturation Flow Rate (s_p), veh/h/ln		1237		1171				0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0				0
Permitted Effective Green Time (g_p), s		30.0		0.0				0.0
Permitted Service Time (g_v), s		26.7		0.0				0.0
Permitted Queue Service Time (g_{ps}), s		26.7						
Time to First Blockage (g_f), s		0.0		30.0				0.0
Queue Service Time Before Blockage (g_{fs}), s		0.0						
Protected Right Saturation Flow (s_R), veh/h/ln				0				0
Protected Right Effective Green Time (g_R), s				0.0				0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.00	1.557	0.01	1.983	0.06	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.081	0.000	0.081	0.000	0.143	0.000	0.144
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1000.00	7.50	1000.00	7.50		35.21	-200.00	36.30
Bicycle F_w / F_v	-3.64	0.77	-3.64	0.44	-3.64		-3.64	1.08

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 8amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.97
Intersection	Waterfront Ter & Baldwin	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	8amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	178	107	39	2	54	67	46	471	2	247	606	480

Signal Information																								
Cycle, s	105.0	Reference Phase	2																					
Offset, s	0	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	Off																					
Force Mode	Fixed	Simult. Gap N/S	Off	Green	15.0	36.0	18.0	18.0	0.0	0.0	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	Red	0.0	2.0	2.0	2.0	0.0	0.0

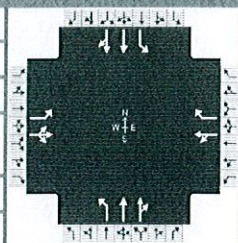
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		6	5	2
Case Number		10.0		11.0		6.3	1.0	4.0
Phase Duration, s		23.0		23.0		41.0	18.0	59.0
Change Period, (Y+R _c), s		5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s		3.1		3.2		0.0	3.1	0.0
Queue Clearance Time (g _s), s		12.5		6.3			11.6	
Green Extension Time (g _e), s		0.3		0.1		0.0	0.2	0.0
Phase Call Probability		1.00		1.00			1.00	
Max Out Probability		0.15		0.00			0.80	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	184	149		58	63	47	243	243		255	583	500
Adjusted Saturation Flow Rate (s), veh/h/ln	1707	1762		1841	1107	513	1759	1758		1630	1881	1609
Queue Service Time (g _s), s	10.5	8.1		2.8	4.3	7.5	11.1	11.1		9.6	22.9	23.0
Cycle Queue Clearance Time (g _c), s	10.5	8.1		2.8	4.3	12.5	11.1	11.1		9.6	22.9	23.0
Green Ratio (g/C)	0.17	0.17		0.17	0.31	0.34	0.34	0.34		0.50	0.51	0.51
Capacity (c), veh/h	293	302		316	348	220	603	603		499	967	827
Volume-to-Capacity Ratio (X)	0.627	0.495		0.183	0.181	0.215	0.403	0.404		0.510	0.603	0.604
Available Capacity (c _a), veh/h	293	302		316	348	220	603	603		499	967	827
Back of Queue (Q), veh/ln (50th percentile)	5.1	3.9		1.4	1.2	1.0	4.9	4.9		3.9	10.1	8.8
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	40.4	39.4		37.2	26.2	28.7	26.3	26.3		16.4	17.9	18.0
Incremental Delay (d ₂), s/veh	9.8	5.7		1.3	1.1	2.2	2.0	2.0		3.7	2.8	3.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	50.2	45.1		38.5	27.3	30.9	28.3	28.3		20.1	20.7	21.2
Level of Service (LOS)	D	D		D	C	C	C	C		C	C	C
Approach Delay, s/veh / LOS	47.9	D		32.7	C		28.5	C		20.8	C	
Intersection Delay, s/veh / LOS	27.1						C					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.9	C	2.9	C	2.3	B	2.3
Bicycle LOS Score / LOS	1.0	A	0.7	A	0.9	A	1.6	A

HCS 2010 Signalized Intersection Input Data

General Information					Intersection Information	
Agency	MMA			Duration, h	0.25	
Analyst	MM - 8amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other	
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.97	
Intersection	Waterfront Ter & Baldwin	Analysis Year	2022 Build	Analysis Period	1> 7:00	
File Name	8amb.rev.xus					
Project Description	Atir Residential					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	178	107	39	2	54	67	46	471	2	247	606	480

Signal Information														
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	36.0	18.0	18.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
				Red	0.0	2.0	2.0	2.0	0.0	0.0				

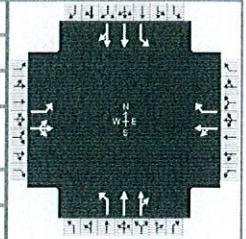
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	178	107	39	2	54	67	46	471	2	247	606	480
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	6	3			3	45	3	8		11	1	
Ped / Bike / RTOR, /h	0	0	1	2	0	6	1	0	1	4	0	36
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0			12.0	12.0	12.0	12.0		11.0	11.0	
Turn Bay Length, ft	0	0			0	0	0	0		0	0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		23.0		23.0		41.0	18.0	59.0
Yellow Change Interval (Y), s		3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s		2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	No	No	No	No	No	No	No
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 8amb.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.97
Intersection	Waterfront Ter & Baldwin	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	8amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	178	107	39	2	54	67	46	471	2	247	606	480

Signal Information				Signal Phases						Signal Diagram				
Cycle, s	105.0	Reference Phase	2	Green	15.0	36.0	18.0	18.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off											

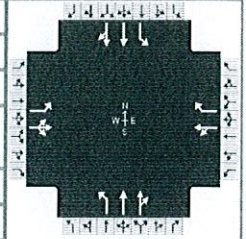
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.971	1.000	1.000	0.971	0.690	0.971	0.926	1.000	0.901	0.990	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.998			0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.955			0.000			0.999			0.855	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			0.999			0.999		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.997			0.999			0.996
Movement Saturation Flow Rate (s), veh/h		1300			1776			3510		1630	2016	
Proportion of Vehicles Arriving on Green (P)	0.17	0.17	0.17	0.17	0.17	0.17	0.34	0.34	0.34	0.14	0.51	0.51
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)		0.17		0.17		0.34	0.50	0.51
Permitted Saturation Flow Rate (s_p), veh/h/ln		1707		0		513	832	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0		36.0	38.0	0.0
Permitted Service Time (g_u), s		0.0		0.0		31.0	24.9	0.0
Permitted Queue Service Time (g_{ps}), s						7.5	5.8	
Time to First Blockage (g), s		0.0		0.0		0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				1110				
Protected Right Effective Green Time (g_R), s				15.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.00	2.107	0.05	1.557	0.01	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.144	0.000	0.163	0.000	0.125	0.000	0.101
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	342.86	36.04		58.67	685.71	22.67	1028.57	12.39
Bicycle F_w / F_v	-3.64	0.55	-3.64	0.20	-3.64	0.44	-3.64	1.10

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 8pmb.rev		Analysis Date	Nov 16, 2019		Area Type	Other
Jurisdiction	Weehawken, NJ		Time Period	Peak PM Highway Hour		PHF	0.94
Intersection	Waterfront Ter & Baldwin		Analysis Year	2022 Build		Analysis Period	1> 7:00
File Name	8pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	371	81	46	7	45	121	59	744	7	119	359	353

Signal Information																	
Cycle, s	105.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	36.0	18.0	18.0	0.0	0.0	Green	15.0	36.0	18.0	18.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	Yellow	3.0	3.0	3.0	3.0	0.0	0.0
				Red	0.0	2.0	2.0	2.0	0.0	0.0	Red	0.0	2.0	2.0	2.0	0.0	0.0

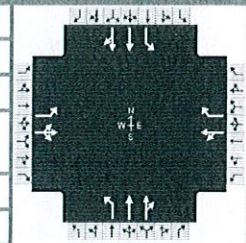
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		6	5	2
Case Number		10.0		11.0		6.3	1.0	4.0
Phase Duration, s		23.0		23.0		41.0	18.0	59.0
Change Period, (Y+R _c), s		5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s		3.1		3.3		0.0	3.1	0.0
Queue Clearance Time (g _s), s		20.0		9.9			6.9	
Green Extension Time (g _e), s		0.0		0.2		0.0	0.1	0.0
Phase Call Probability		1.00		1.00			1.00	
Max Out Probability		1.00		0.01			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	395	135			55	118	63	400	398	127	382	361
Adjusted Saturation Flow Rate (s), veh/h/ln	1792	1650			1887	1191	727	1881	1876	1483	1863	1571
Queue Service Time (g _s), s	18.0	7.8			2.6	7.9	6.5	18.6	18.6	4.9	13.2	15.2
Cycle Queue Clearance Time (g _c), s	18.0	7.8			2.6	7.9	6.5	18.6	18.6	4.9	13.2	15.2
Green Ratio (g/C)	0.17	0.17			0.17	0.31	0.34	0.34	0.34	0.50	0.51	0.51
Capacity (c), veh/h	307	283			324	376	318	645	643	374	958	808
Volume-to-Capacity Ratio (X)	1.285	0.478			0.171	0.314	0.198	0.619	0.619	0.338	0.399	0.446
Available Capacity (c _a), veh/h	307	283			324	376	318	645	643	374	958	808
Back of Queue (Q), veh/ln (50th percentile)	20.7	3.5			1.3	2.4	1.2	8.9	8.9	1.8	5.6	5.6
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	43.5	39.3			37.1	27.4	24.8	28.8	28.8	16.7	15.6	16.1
Incremental Delay (d ₂), s/veh	150.8	5.7			1.1	2.2	1.4	4.4	4.4	2.4	1.2	1.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	194.3	44.9			38.3	29.6	26.2	33.2	33.2	19.1	16.8	17.9
Level of Service (LOS)	F	D			D	C	C	C	C	B	B	B
Approach Delay, s/veh / LOS	156.2	F		32.4	C		32.7	C		17.6	B	
Intersection Delay, s/veh / LOS	54.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.4	A	0.8	A	1.2	A	1.2	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 8pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.94
Intersection	Waterfront Ter & Baldwin	Analysis Year	2022 Build	Analysis Period	1> 7:00
File Name	8pmb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	371	81	46	7	45	121	59	744	7	119	359	353

Signal Information				EB			WB			NB			SB				
Cycle, s	105.0	Reference Phase	2	Green	15.0	36.0	18.0	18.0	0.0	0.0	Green	15.0	36.0	18.0	18.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	Yellow	3.0	3.0	3.0	3.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0	Red	0.0	2.0	2.0	2.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off														

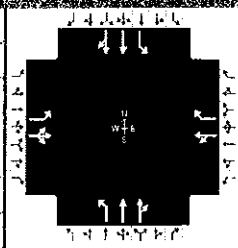
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	371	81	46	7	45	121	59	744	7	119	359	353
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (S ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	1	8			0	34	0	1		22	2	
Ped / Bike / RTOR, /h	1	0	0	5	0	10	3	0	1	5	0	14
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0			12.0	12.0	12.0	12.0		11.0	11.0	
Turn Bay Length, ft	0	0			0	0	0	0		0	0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		23.0		23.0		41.0	18.0	59.0
Yellow Change Interval (Y), s		3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s		2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (I _l), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	No	No	No	No	No	No	No
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 8pmb.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.94
Intersection	Waterfront Ter & Baldwin	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	8pmb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	371	81	46	7	45	121	59	744	7	119	359	353

Signal Information														
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End	Green	15.0	36.0	18.0	18.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0				

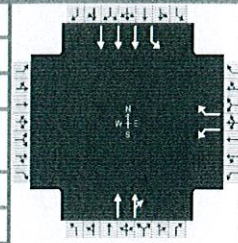
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.990	0.926	1.000	1.000	1.000	0.746	1.000	0.990	1.000	0.820	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.993			0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.938			0.000			0.997			0.843	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			0.997			0.999		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.998			0.991			0.996			0.995
Movement Saturation Flow Rate (s), veh/h		1053			1633			3727		1483	1863	
Proportion of Vehicles Arriving on Green (P)	0.17	0.17	0.17	0.17	0.17	0.17	0.34	0.34	0.34	0.14	0.51	0.51
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		4.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)		0.17		0.17		0.34	0.50	0.51
Permitted Saturation Flow Rate (s _p), veh/h/ln		1792		0		727	567	0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln								
Permitted Effective Green Time (g _p), s		0.0		0.0		36.0	38.0	0.0
Permitted Service Time (g _v), s		0.0		0.0		36.0	17.4	0.0
Permitted Queue Service Time (g _{ps}), s						6.5	5.9	
Time to First Blockage (g _t), s		0.0		0.0		0.0	0.0	0.0
Queue Service Time Before Blockage (g _{ts}), s								
Protected Right Saturation Flow (s _R), veh/h/ln				1202				
Protected Right Effective Green Time (g _R), s				15.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.00	2.107	0.02	1.557	0.01	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.144	0.000	0.163	0.000	0.125	0.000	0.101
Pedestrian M_{corner} / M_{cw}								
Bicycle C_b / d_b	342.86	36.04		58.67	685.71	22.67	1028.57	12.39
Bicycle F_w / F_v	-3.64	0.87	-3.64	0.29	-3.64	0.71	-3.64	0.72

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 9amb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.93
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	9amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				402		224		304	81	248	1364	

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	0.0	2.0	2.0	0.0	0.0	0.0				

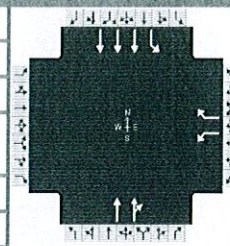
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				21.0		51.0	18.0	69.0
Change Period, (Y+Rc), s				5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s				3.3		0.0	3.3	0.0
Queue Clearance Time (gs), s				18.0			7.6	
Green Extension Time (ge), s				0.0		0.0	0.3	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				1.00			0.03	

Movement Group Results	EB			WB			NB			SB									
	L	T	R	L	T	R	L	T	R	L	T	R							
Assigned Movement				3		18		2	12	1	6								
Adjusted Flow Rate (v), veh/h				432		241		201	193	267	1467								
Adjusted Saturation Flow Rate (s), veh/h/ln				1604		1311		1629	1533	1551	1273								
Queue Service Time (gs), s				16.0		16.0		6.2	6.3	5.6	16.2								
Cycle Queue Clearance Time (gc), s				16.0		16.0		6.2	6.3	5.6	16.2								
Green Ratio (g/C)				0.18		0.18		0.51	0.51	0.70	0.71								
Capacity (c), veh/h				285		233		832	783	719	2715								
Volume-to-Capacity Ratio (X)				1.516		1.034		0.241	0.246	0.371	0.540								
Available Capacity (ca), veh/h				285		233		832	783	719	2715								
Back of Queue (Q), veh/ln (50th percentile)				26.0		9.5		2.3	2.3	1.8	3.8								
Queue Storage Ratio (RQ) (50th percentile)				0.00		0.00		0.00	0.00	0.00	0.00								
Uniform Delay (d1), s/veh				37.0		37.0		12.3	12.3	5.4	6.1								
Incremental Delay (d2), s/veh				249.3		68.0		0.7	0.7	1.5	0.8								
Initial Queue Delay (d3), s/veh				0.0		0.0		0.0	0.0	0.0	0.0								
Control Delay (d), s/veh				286.3		105.0		13.0	13.1	6.9	6.9								
Level of Service (LOS)				F		F		B	B	A	A								
Approach Delay, s/veh / LOS	0.0			221.4			F	13.0			B			6.9			A		
Intersection Delay, s/veh / LOS	59.3												E						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.0	C	2.3	B	0.7	A
Bicycle LOS Score / LOS				F	0.8	A	1.4	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 9amb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.93
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	9amb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				402		224		304	81	248	1364	

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0			
				Red	0.0	2.0	2.0	0.0	0.0	0.0			

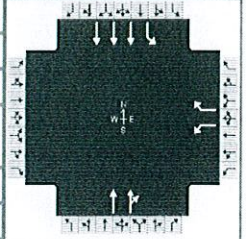
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				402		224		304	81	248	1364	
Initial Queue (Q _b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N _m), man/h						None		None			None	
Heavy Vehicles (P _{HV}), %				1		10		5		5	22	
Ped / Bike / RTOR, /h							1	0	19	2	0	
Buses (N _b), buses/h				0		0		0	0	0	0	
Arrival Type (AT)				3		3		3	3	3	3	
Upstream Filtering (I)				1.00		1.00		1.00	1.00	1.00	1.00	
Lane Width (W), ft				12.0		12.0		11.0		11.0	11.0	
Turn Bay Length, ft				0		0		0		0	0	
Grade (Pg), %		0				0		0			0	
Speed Limit, mi/h				25		25		25	25	25	25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s				21.0		51.0	18.0	69.0
Yellow Change Interval (Y), s				3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s				2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s			6		6		6	6
Start-Up Lost Time (I _t), s			2.0		2.0		2.0	2.0
Extension of Effective Green (e), s			2.0		2.0		2.0	2.0
Passage (PT), s			2.0		2.0		2.0	2.0
Recall Mode			Max		Max		Max	Max
Dual Entry			No		No		No	No
Walk (Walk), s			0.0		0.0		0.0	0.0
Pedestrian Clearance Time (PC), s			0.0		0.0		0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking				No	0.50	No	0.50	No	0.50	No	0.50	No

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9amb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.93		
Intersection	JFK Boulevard E. & Baldwi	Analysis Year	2022 Build	Analysis Period	1> 7:00		
File Name	9amb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				402		224		304	81	248	1364	

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	0.0	2.0	2.0	0.0	0.0	0.0				

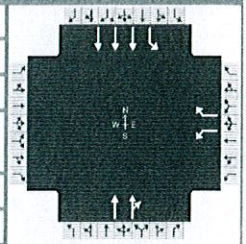
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.000	0.000	0.000	0.990	0.990	0.909	1.000	0.952	1.000	0.952	0.820	1.000
Approach Grade Adjustment Factor (f_g)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.908	1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})								1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})								0.941			1.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})				0.995			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})						0.995		0.999				1.000
Movement Saturation Flow Rate (s), veh/h					0			2631		1551	3947	
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.18	0.00	0.18	0.00	0.51	0.51	0.17	0.71	0.00
Incremental Delay Factor (k)				0.50		0.50		0.50	0.50	0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0		5.0	3.0	5.0
Green Ratio (g/C)				0.18		0.51	0.70	0.71
Permitted Saturation Flow Rate (s_p), veh/h/ln				1604		367	863	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	48.0	0.0
Permitted Service Time (g_u), s				0.0		0.0	39.7	0.0
Permitted Queue Service Time (g_{ps}), s							3.7	
Time to First Blockage (g_t), s				0.0		46.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.03	2.224	0.00	1.557	0.00	0.000	0.00
Pedestrian F_s / F_{delay}	0.000	0.157	0.000	0.158	0.000	0.095	0.000	0.053
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b		50.14		51.20	1022.22	10.76	1422.22	3.76
Bicycle F_w / F_v	-3.64		-3.64		-3.64	0.32	-3.64	0.95

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 9pmb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.96
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2022 Build	Analysis Period	1 > 7:00
File Name	9pmb.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				286		175		449	185	326	842	

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	0.0	2.0	2.0	0.0	0.0	0.0				

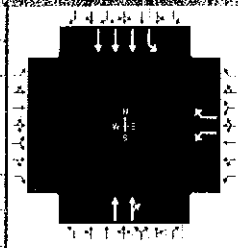
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				21.0		51.0	18.0	69.0
Change Period, (Y+R _c), s				5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s				3.4		0.0	3.3	0.0
Queue Clearance Time (g _s), s				18.0			9.3	
Green Extension Time (g _e), s				0.0		0.0	0.4	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				1.00			0.17	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1	6	
Adjusted Flow Rate (v), veh/h				298		182		338	310	340	877	
Adjusted Saturation Flow Rate (s), veh/h/ln				1604		1400		1676	1517	1597	1339	
Queue Service Time (g _s), s				16.0		11.1		10.9	11.3	7.3	7.3	
Cycle Queue Clearance Time (g _c), s				16.0		11.1		10.9	11.3	7.3	7.3	
Green Ratio (g/C)				0.18		0.18		0.51	0.51	0.70	0.71	
Capacity (c), veh/h				285		249		857	776	617	2856	
Volume-to-Capacity Ratio (X)				1.045		0.733		0.395	0.399	0.550	0.307	
Available Capacity (c _a), veh/h				285		249		857	776	617	2856	
Back of Queue (Q), veh/ln (50th percentile)				11.4		4.9		4.4	4.0	2.7	1.8	
Queue Storage Ratio (RQ) (50th percentile)				0.00		0.00		0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh				37.0		35.0		13.5	13.5	7.0	4.8	
Incremental Delay (d ₂), s/veh				65.4		17.3		1.4	1.5	3.5	0.3	
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (d), s/veh				102.4		52.3		14.8	15.0	10.6	5.1	
Level of Service (LOS)				F		D		B	B	B	A	
Approach Delay, s/veh / LOS	0.0			83.4		F	14.9	B		6.6	A	
Intersection Delay, s/veh / LOS	24.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.0	C	2.3	B	0.7	A
Bicycle LOS Score / LOS				F	1.0	A	1.2	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9pmb.rev	Analysis Date	Nov 16, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ			Time Period	Peak PM Highway Hour		
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2022 Build	Analysis Period	1 > 7:00		
File Name	9pmb.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				286		175			449	185	326	842

Signal Information				EB						WB		NB		SB	
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap EW	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0					
				Red	0.0	2.0	2.0	0.0	0.0	0.0					

Traffic Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h				286		175			449	185	326	842	
Initial Queue (Q _b), veh/h				0		0			0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h				1900		1900			1900	1900	1900	1900	
Parking (N _m), man/h						None			None			None	
Heavy Vehicles (P _{HV}), %				1		3			2		2	16	
Ped / Bike / RTOR, /h									0	0	12	3	0
Busés (N _b), buses/h				0		0			0	0	0	0	
Arrival Type (AT)				3		3			3	3	3	3	
Upstream Filtering (f)				1.00		1.00			1.00	1.00	1.00	1.00	
Lane Width (W), ft				12.0		12.0			11.0		11.0	11.0	
Turn Bay Length, ft				0		0			0		0	0	
Grade (Pg), %				0		0			0		0	0	
Speed Limit, mi/h				25		25			25	25	25	25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s				21.0		51.0	18.0
Yellow Change Interval (Y), s				3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s				2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s			6			6	6	6
Start-Up Lost Time (l), s			2.0			2.0	2.0	2.0
Extension of Effective Green (e), s			2.0			2.0	2.0	2.0
Passage (PT), s			2.0			2.0	2.0	2.0
Recall Mode			Max			Max	Max	Max
Dual Entry			No			No	No	No
Walk (Walk), s			0.0			0.0	0.0	0.0
Pedestrian Clearance Time (PC), s			0.0			0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking				No	0.50		No	0.50		No	0.50	

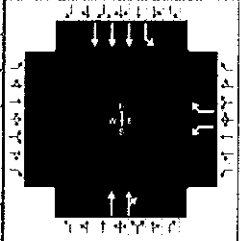
HCS 2010 Signalized Intersection Intermediate Values

General Information

Agency	MMA	Analysis Date	Nov 16, 2019
Analyst	MM - 9pmb.rev	Time Period	Peak PM Highway Hour
Jurisdiction	Weehawken, NJ	Analysis Year	2022 Build
Intersection	JFK Boulevard E. & Baldwin	Analysis Period	1 > 7:00
File Name	9pmb.rev.xus		
Project Description	Atir Residential		

Intersection Information

Duration, h	0.25
Area Type	CBD
PHF	0.96
Analysis Period	1 > 7:00


Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				286		175			449	185	326	842

Signal Information

Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	46.0	16.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0		
				Red	0.0	2.0	2.0	0.0	0.0	0.0		

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.000	0.000	0.000	0.990	0.990	0.971	1.000	0.980	1.000	0.980	0.862	1.000
Approach Grade Adjustment Factor (f_g)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.908	1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})						0.000			1.000		0.952	0.000
Right-Turn Adjustment Factor (f_{RT})						0.000			0.905		1.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})				0.995			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})						0.995			1.000			1.000
Movement Saturation Flow Rate (s), veh/h					0			2311		1597	4151	
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.18	0.00	0.18	0.00	0.51	0.51	0.17	0.71	0.00
Incremental Delay Factor (k)				0.50		0.50		0.50	0.50	0.50	0.50	

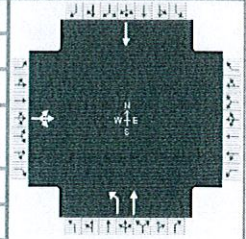
Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t)				4.0		5.0	3.0	5.0
Green Ratio (g/C)				0.18		0.51	0.70	0.71
Permitted Saturation Flow Rate (s_p), veh/h/ln				1604		642	702	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	48.0	0.0
Permitted Service Time (g_s), s				0.0		0.0	34.7	0.0
Permitted Queue Service Time (g_{ps}), s							12.4	
Time to First Blockage (g), s				0.0		46.0	0.0	0.0
Queue Service Time Before Blockage (g/s), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB	WB	NB	SB
Pedestrian F_w / F_v	2.336	0.02	2.224	0.00
Pedestrian F_s / F_{delay}	0.000	0.157	0.000	0.158
Pedestrian M_{corner} / M_{cw}				
Bicycle C_b / d_b		50.14		51.20
Bicycle F_w / F_v	-3.64		-3.64	0.53

2022 BUILD WITH IMPROVEMENTS TRAFFIC CONDITIONS

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 2amb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95
Intersection	Park Avenue & 16th Street	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00
File Name	2amb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36				238	776				586

Signal Information				Signal Timing (s)																							
Cycle, s	90.0	Reference Phase	2	Green			Yellow			Red			Phase 1			Phase 2			Phase 3			Phase 4					
Offset, s	0	Reference Point	End	16.0	44.0	15.0	3.0	3.0	3.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off										1			2			3			4					
Force Mode	Fixed	Simult. Gap N/S	Off										6			6			7			8					

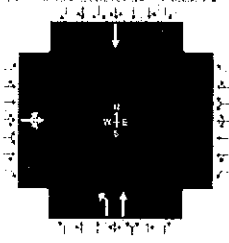
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		12.0			2.0	4.0		8.3
Phase Duration, s		20.0			21.0	70.0		49.0
Change Period, (Y+R _c), s		5.0			5.0	5.0		5.0
Max Allow Headway (MAH), s		3.3			3.3	0.0		0.0
Queue Clearance Time (g _s), s		10.8			16.1			
Green Extension Time (g _e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.40			1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14				5	2				6
Adjusted Flow Rate (v), veh/h	166						251	817	617			
Adjusted Saturation Flow Rate (s), veh/h/ln	1587						1566	1644	1660			
Queue Service Time (g _s), s	8.8						14.1	24.7	27.2			
Cycle Queue Clearance Time (g _c), s	8.8						14.1	24.7	27.2			
Green Ratio (g/C)	0.17						0.18	0.72	0.49			
Capacity (c), veh/h	265						278	1188	812			
Volume-to-Capacity Ratio (X)	0.629						0.900	0.688	0.760			
Available Capacity (c _a), veh/h	265						278	1188	812			
Back of Queue (Q), veh/ln (50th percentile)	4.2						7.9	8.0	11.4			
Queue Storage Ratio (RQ) (50th percentile)	0.00						0.00	0.00	0.00			
Uniform Delay (d ₁), s/veh	34.9						36.2	6.9	18.7			
Incremental Delay (d ₂), s/veh	10.8						33.4	3.3	6.6			
Initial Queue Delay (d ₃), s/veh	0.0						0.0	0.0	0.0			
Control Delay (d), s/veh	45.7						69.6	10.2	25.3			
Level of Service (LOS)	D						E	B	C			
Approach Delay, s/veh / LOS	45.7	D		0.0			24.1	C		25.3		C
Intersection Delay, s/veh / LOS	26.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.1	B	1.8	A	2.1	B
Bicycle LOS Score / LOS	0.8	A			2.2	B	1.5	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2amb.imp.rev			Analysis Date	Nov 16, 2019		
Jurisdiction	Weehawken, NJ			Time Period	Peak AM Highway Hour		
Intersection	Park Avenue & 16th Street			Analysis Year	2022 Build w/Imp		
File Name	2amb.imp.rev.xus			Area Type	CBD		
Project Description	Atir Residential			PHF	0.95		
				Analysis Period	1> 7:00		



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36					238	776			586

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	16.0	44.0	15.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

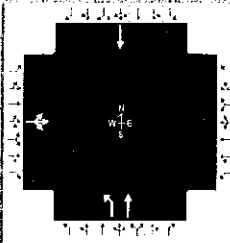
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36					238	776			586
Initial Queue (Q _b), veh/h	0	0	0					0	0			0
Base Saturation Flow Rate (S ₀), veh/h	1900	1900	1900					1900	1900			1900
Parking (N _m), man/h		None							None			None
Heavy Vehicles (P _{HV}), %		3						4	4			3
Ped / Bike / RTOR, /h	3	0	2					2	0		1	0
Buses (N _b), buses/h	0	0	0					0	0			0
Arrival Type (AT)	3	3	3					3	3			3
Upstream Filtering (f)	1.00	1.00	1.00					1.00	1.00			1.00
Lane Width (W), ft		15.0						12.0	12.0			10.0
Turn Bay Length, ft		0						0	0			0
Grade (P _g), %		0			0				0			0
Speed Limit, mi/h	25	25	25					25	25			25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		20.0			21.0	70.0	
Yellow Change Interval (Y), s		3.0			3.0	3.0		3.0
Red Clearance Interval (R _c), s		2.0			2.0	2.0		2.0
Minimum Green (G _{min}), s	6	6			6	6		6
Start-Up Lost Time (f _l), s	2.0	2.0			2.0	2.0		2.0
Extension of Effective Green (e), s	2.0	2.0			2.0	2.0		2.0
Passage (PT), s	2.0	2.0			2.0	2.0		2.0
Recall Mode	Max	Max			Max	Max		Max
Dual Entry	No	Yes			No	No		No
Walk (Walk), s	0.0	0.0			0.0	0.0		0.0
Pedestrian Clearance Time (PC), s	0.0	0.0			0.0	0.0		0.0

Multimodal Information	EB			WB			NB			SB			
85th % Speed / Rest in Walk / Corner Radius	0	No	25					0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0					9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No					0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0					12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50						No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2amb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.95		
Intersection	Park Avenue & 16th Street	Analysis Year	2022 Build w/lmp	Analysis Period	1 > 7:00		
File Name	2amb.imp.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	124	0	36						238	776		586

Signal Information				Signal Phases												
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	Off	Green	16.0	44.0	15.0	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0						
				Red	2.0	2.0	2.0	0.0	0.0	0.0						

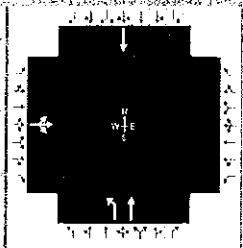
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f _w)	1.000	1.040	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f _{HV})	1.000	0.971	1.000	0.000	0.000	0.000	0.962	0.962	1.000	1.000	0.971	1.000
Approach Grade Adjustment Factor (f _g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f _p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f _{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f _a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f _{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f _{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f _{LT})		0.919					0.952	0.000			1.000	
Right-Turn Adjustment Factor (f _{RT})		0.000						1.000			0.000	
Left-Turn Pedestrian Adjustment Factor (f _{LPb})	0.991						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f _{RPb})			0.991						1.000			1.000
Movement Saturation Flow Rate (s), veh/h		0					1566	1644			1660	
Proportion of Vehicles Arriving on Green (P)	0.17	0.00	0.17	0.00	0.00	0.00	0.18	0.72	0.00	0.00	0.49	0.00
Incremental Delay Factor (k)		0.50					0.50	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		4.0			5.0	5.0		5.0
Green Ratio (g/C)		0.17			0.18	0.72		0.49
Permitted Saturation Flow Rate (s _p), veh/h/ln		0			0	0		680
Shared Saturation Flow Rate (s _{sh}), veh/h/ln								0
Permitted Effective Green Time (g _p), s		0.0			0.0	0.0		0.0
Permitted Service Time (g _w), s		0.0			0.0	0.0		0.0
Permitted Queue Service Time (g _{ps}), s								
Time to First Blockage (g _f), s		0.0			0.0	0.0		44.0
Queue Service Time Before Blockage (g _{fs}), s								
Protected Right Saturation Flow (s _R), veh/h/ln								
Protected Right Effective Green Time (g _R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F _w / F _v	1.557	0.00	1.389	0.00	1.198	0.00	1.389	0.00
Pedestrian F _s / F _{delay}	0.000	0.158	0.000	0.157	0.000	0.050	0.000	0.099
Pedestrian M _{corner} / M _{cow}								
Bicycle c _b / d _b		51.20		50.14	1444.44	3.47	977.78	11.76
Bicycle F _w / F _v	-3.64	0.27	-3.64		-3.64	1.76	-3.64	1.02

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 2pmb.imp.rev			Analysis Date	Nov 16, 2019		
Jurisdiction	Weehawken, NJ			Time Period	Peak PM Highway Hour		
Intersection	Park Avenue & 16th Street			Analysis Year	2022 Build w/Imp		
File Name	2pmb.imp.rev.xus			Analysis Period	1> 7:00		
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	99	0	37				231	765				872

Signal Information																	
Cycle, s	90.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	45.0	15.0	0.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0							
				Red	2.0	2.0	2.0	0.0	0.0	0.0							

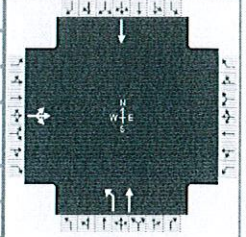
Timer Results		EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase			4			5	2		6
Case Number			12.0			2.0	4.0		8.3
Phase Duration, s			20.0			20.0	70.0		50.0
Change Period, (Y+Rc), s			5.0			5.0	5.0		5.0
Max Allow Headway (MAH), s			3.3			3.3	0.0		0.0
Queue Clearance Time (gs), s			8.2			13.9			
Green Extension Time (ge), s			0.1			0.1	0.0		0.0
Phase Call Probability			1.00			1.00			
Max Out Probability			0.02			1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14				5	2				6
Adjusted Flow Rate (v), veh/h	136						243	805	918			
Adjusted Saturation Flow Rate (s), veh/h/ln	1780						1774	1863	1845			
Queue Service Time (gs), s	6.2						11.9	19.0	44.6			
Cycle Queue Clearance Time (gc), s	6.2						11.9	19.0	44.6			
Green Ratio (g/C)	0.17						0.17	0.72	0.50			
Capacity (c), veh/h	297						296	1345	922			
Volume-to-Capacity Ratio (X)	0.458						0.822	0.599	0.995			
Available Capacity (ca), veh/h	297						296	1345	922			
Back of Queue (Q), veh/ln (50th percentile)	3.1						6.9	6.8	25.3			
Queue Storage Ratio (RQ) (50th percentile)	0.00						0.00	0.00	0.00			
Uniform Delay (d1), s/veh	33.8						36.2	6.1	22.4			
Incremental Delay (d2), s/veh	5.0						22.1	2.0	28.5			
Initial Queue Delay (d3), s/veh	0.0						0.0	0.0	0.0			
Control Delay (d), s/veh	38.8						58.3	8.1	50.9			
Level of Service (LOS)	D						E	A	D			
Approach Delay, s/veh / LOS	38.8	D	0.0			19.7	B	50.9	D			
Intersection Delay, s/veh / LOS	34.6						C					

Multimodal Results	EB			WB			NB			SB		
	Pedestrian LOS Score / LOS	2.3	B	2.1	B	1.8	A	2.1	B			
Bicycle LOS Score / LOS	0.7	A			2.2	B	2.0	B				

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA	Duration, h	0.25		
Analyst	MM - 2pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.95
Intersection	Park Avenue & 16th Street	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00
File Name	2pmb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	99	0	37				231	765				872

Signal Information				Signal Timing (s)											
Cycle, s	90.0	Reference Phase	2	↑↑	↓	↑	⇨	1	2	3	4	5	6	7	8
Offset, s	0	Reference Point	End	Green	15.0	45.0	15.0	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	2.0	0.0	0.0	0.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	99	0	37				231	765				872
Initial Queue (Q _b), veh/h	0	0	0				0	0				0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900				1900	1900				1900
Parking (N _m), man/h	None						None			None		
Heavy Vehicles (P _{HV}), %	2						2			3		
Ped / Bike / RTOR, /h	1	0	7				1	0		4	0	
Buses (N _b), buses/h	0	0	0				0	0			0	
Arrival Type (AT)	3	3	3				3	3			3	
Upstream Filtering (I)	1.00	1.00	1.00				1.00	1.00			1.00	
Lane Width (W), ft	15.0						12.0	12.0			10.0	
Turn Bay Length, ft	0						0	0			0	
Grade (Pg), %	0			0			0			0		
Speed Limit, mi/h	25	25	25				25	25			25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		20.0			20.0	70.0		50.0
Yellow Change Interval (Y), s		3.0			3.0	3.0		3.0
Red Clearance Interval (R _c), s		2.0			2.0	2.0		2.0
Minimum Green (G _{min}), s	6	6			6	6		6
Start-Up Lost Time (I), s	2.0	2.0			2.0	2.0		2.0
Extension of Effective Green (e), s	2.0	2.0			2.0	2.0		2.0
Passage (PT), s	2.0	2.0			2.0	2.0		2.0
Recall Mode	Max	Max			Max	Max		Max
Dual Entry	No	Yes			No	No		No
Walk (Walk), s	0.0	0.0			0.0	0.0		0.0
Pedestrian Clearance Time (PC), s	0.0	0.0			0.0	0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25				0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0				9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No				0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0				12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50					No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information		
Agency	MMA			Duration, h	0.25	
Analyst	MM - 2pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other	
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.95	
Intersection	Park Avenue & 16th Street	Analysis Year	2022 Build w/Imp	Analysis Period	1> 7:00	
File Name	2pmb.imp.rev.xus					
Project Description	Atir Residential					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	99	0	37				231	765				872

Signal Information													
Cycle, s	90.0	Reference Phase	2	↑↑	↓	↑	⇌	1	↑	2	3	⇌	4
Offset, s	0	Reference Point	End	Green	15.0	45.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0

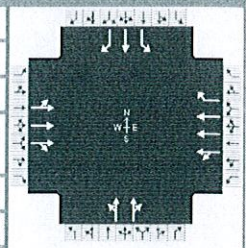
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.040	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	0.000	0.000	0.000	0.980	0.980	1.000	1.000	0.971	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.919					0.952	0.000			1.000	
Right-Turn Adjustment Factor (f_{RT})		0.000						1.000			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.991						1.000				1.000	
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.997						1.000			1.000
Movement Saturation Flow Rate (s), veh/h		0					1774	1863			1845	
Proportion of Vehicles Arriving on Green (P)	0.17	0.00	0.17	0.00	0.00	0.00	0.17	0.72	0.00	0.00	0.50	0.00
Incremental Delay Factor (k)		0.50					0.50	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0			5.0	5.0		5.0
Green Ratio (g/C)		0.17			0.17	0.72		0.50
Permitted Saturation Flow Rate (s_p), veh/h/ln		0			0	0		687
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s		0.0			0.0	0.0		0.0
Permitted Service Time (g_u), s		0.0			0.0	0.0		0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_r), s		0.0			0.0	0.0		45.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.389	0.00	1.198	0.00	1.389	0.01
Pedestrian F_s / F_{delay}	0.000	0.158	0.000	0.157	0.000	0.050	0.000	0.097
Pedestrian M_{corner} / M_{cwb}								
Bicycle C_b / d_b		51.20		50.14	1444.44	3.47	1000.00	11.25
Bicycle F_w / F_v	-3.64	0.22	-3.64		-3.64	1.73	-3.64	1.51

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 5amb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.97
Intersection	Park Avenue & 19th Street	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00
File Name	5amb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	315	39	197	361	16	113	307	431	38	376	366

Signal Information												
Cycle, s	100.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	0.0	39.0	10.0	38.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0		
				Red	0.0	2.0	0.0	2.0	0.0	0.0		

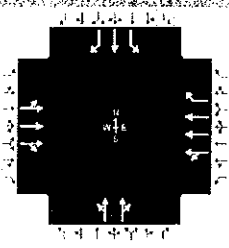
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8	7	4
Case Number	0.0	14.0		7.3		8.3	1.0	3.0
Phase Duration, s	0.0	44.0		44.0		43.0	13.0	56.0
Change Period, (Y+R _c), s	3.0	5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s	0.0	0.0		0.0		3.5	3.3	3.3
Queue Clearance Time (g _s), s						26.7	3.1	20.8
Green Extension Time (g _e), s	0.0	0.0		0.0		1.9	0.0	1.5
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						0.08	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	124	150	147	203	372	8	433		390	39	388	289
Adjusted Saturation Flow Rate (s), veh/h/ln	992	1478	1419	788	1601	1669	1504		1232	1757	1827	1087
Queue Service Time (g _s), s	5.2	6.9	7.0	18.2	8.0	0.3	21.8		24.7	1.1	13.2	18.8
Cycle Queue Clearance Time (g _c), s	5.2	6.9	7.0	25.3	8.0	0.3	24.7		24.7	1.1	13.2	18.8
Green Ratio (g/C)	0.39	0.39	0.39	0.39	0.39	0.49	0.38		0.38	0.50	0.51	0.51
Capacity (c), veh/h	441	576	553	379	1249	819	617		468	345	932	522
Volume-to-Capacity Ratio (X)	0.281	0.260	0.265	0.535	0.298	0.010	0.701		0.832	0.113	0.416	0.553
Available Capacity (c _a), veh/h	441	576	553	379	1249	819	617		468	345	932	522
Back of Queue (Q), veh/ln (50th percentile)	2.3	2.6	2.5	4.7	3.1	0.1	9.9		10.0	0.5	5.7	6.1
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	23.0	20.7	20.8	29.3	21.1	13.1	26.6		26.9	16.5	15.2	24.4
Incremental Delay (d ₂), s/veh	1.6	1.1	1.2	5.3	0.6	0.0	6.5		15.8	0.7	1.4	4.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	24.5	21.8	21.9	34.7	21.7	13.1	33.2		42.7	17.2	16.6	28.6
Level of Service (LOS)	C	C	C	C	C	B	C		D	B	B	C
Approach Delay, s/veh / LOS	22.6		C	26.1		C	37.7		D	21.5		C
Intersection Delay, s/veh / LOS	28.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.9	C	3.3	C	3.2	C
Bicycle LOS Score / LOS	0.7	A	0.8	A	1.2	A	1.7	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information				
Agency	MMA			Duration, h	0.25			
Analyst	MM - 5amb.imp.rev			Analysis Date	Nov 16, 2019			
Jurisdiction	Weehawken			Area Type	Other			
Intersection	Park Avenue & 19th Street			Time Period	Peak AM Highway Hour			
File Name	5amb.imp.rev.xus			PHF	0.97			
Project Description	Atir Residential			Analysis Year	2022 Build w/Imp		Analysis Period	1> 7:00



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	315	39	197	361	16	113	307	431	38	376	366

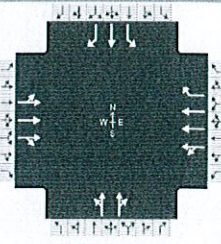
Signal Information				EB		WB		NB		SB	
Cycle, s	100.0	Reference Phase	2								
Offset, s	0	Reference Point	End								
Uncoordinated	No	Simult. Gap E/W	Off	Green	0.0	39.0	10.0	38.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	
				Red	0.0	2.0	0.0	2.0	0.0	0.0	

Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	315	39	197	361	16	113	307	431	38	376	366
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (S ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			R	0		None	
Heavy Vehicles (P _{HV}), %		17			8	0		4			3	4
Ped / Bike / RTOR, /h	0	0	6	4	0	8	36	0	53	1	0	86
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (f)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft		10.0			11.0	16.0		12.0		10.0	11.0	10.0
Turn Bay Length, ft		0			0	0		0		0	0	0
Grade (Pg), %		0			0			0		0	0	
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

Phase Information	EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
	Maximum Green (G _{max}) or Phase Split, s	23.0		44.0				21.0				43.0		13.0		56.0
Yellow Change Interval (Y), s	3.0		3.0				3.0				3.0		3.0		3.0	
Red Clearance Interval (R _c), s	0.0		2.0				2.0				2.0		0.0		2.0	
Minimum Green (G _{min}), s	6		6		6		6		6		6		6		6	
Start-Up Lost Time (f _l), s	2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0	
Extension of Effective Green (e), s	2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0	
Passage (PT), s	2.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0	
Recall Mode	Max		Max		Max		Max		Max		Max		Max		Max	
Dual Entry	No		Yes		No		Yes		No		Yes		No		Yes	
Walk (Walk), s	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
Pedestrian Clearance Time (PC), s	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	

Multimodal Information	EB			WB			NB			SB		
	85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No		0.50	No		0.50	No		0.50	No		0.50

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information		
Agency	MMA				Duration, h	0.25	
Analyst	MM - 5amb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Park Avenue & 19th Street	Analysis Year	2022 Build w/lmp	Analysis Period	1 > 7:00		
File Name	5amb.imp.rev.xus						
Project Description	Atir Residential						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	60	315	39	197	361	16	113	307	431	38	376	366

Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	0.0	39.0	10.0	38.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
				Red	0.0	2.0	0.0	2.0	0.0	0.0				

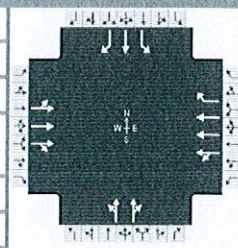
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.040	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.855	1.000	1.000	0.926	1.000	1.000	0.962	1.000	0.971	0.962	0.676
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.900	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{vz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.000	0.611			0.448			0.823		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.874			0.000			0.674			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.998			1.000			1.000			0.993		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.997			0.972			0.999
Movement Saturation Flow Rate (s), veh/h	0	3065			3202			1100		1757	1827	
Proportion of Vehicles Arriving on Green (P)	0.39	0.39	0.39	0.39	0.39	0.39	0.38	0.38	0.38	0.10	0.51	0.51
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)	0.00	0.39		0.39		0.38	0.50	0.51
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	1025		1039		1011	732	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0		0		
Permitted Effective Green Time (g_p), s	0.0	41.0		39.0		38.0	40.0	0.0
Permitted Service Time (g_u), s	0.0	31.0		32.0		37.8	13.3	0.0
Permitted Queue Service Time (g_{ps}), s		5.1		18.2		21.8	1.5	
Time to First Blockage (g_t), s	0.0	2.0		0.0		2.9	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s		2.0		0.0		2.9		
Protected Right Saturation Flow (s_R), veh/h/ln				1675				1088
Protected Right Effective Green Time (g_R), s				10.0				-3.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.08	2.107	0.12	2.545	0.01	2.443	0.01
Pedestrian F_s / F_{delay}	0.000	0.117	0.000	0.117	0.000	0.119	0.000	0.100
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	780.00	18.61	779.99	18.61	760.00	19.22	1020.00	12.01
Bicycle F_w / F_v	-3.64	0.23	-3.64	0.32	-3.64	0.68	-3.64	1.18

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	MMA			Duration, h	0.25	
Analyst	MM - 5pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other	
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96	
Intersection	Park Avenue & 19th Street	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00	
File Name	5pmb.imp.rev.xus					
Project Description	Atir Residential					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	101	417	50	183	458	71	66	433	362	17	653	322

Signal Information				Signal Timing (s)						Signal Phases					
Cycle, s	Reference Phase	Reference Point	End	Green	Yellow	Red	Green	Yellow	Red	Green	Yellow	Red	Green	Yellow	Red
100.0	2	End		0.0	3.0	0.0	39.0	3.0	0.0	10.0	3.0	0.0	38.0	3.0	0.0
0	Off	Off		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No	Simult. Gap E/W	Off		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fixed	Simult. Gap N/S	Off		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

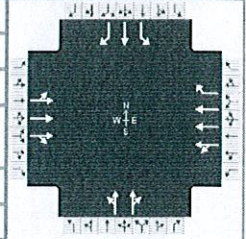
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8	7	4
Case Number	0.0	14.0		7.3		8.3	1.0	3.0
Phase Duration, s	0.0	44.0		44.0		43.0	13.0	56.0
Change Period, (Y+R _c), s	3.0	5.0		5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s	0.0	0.0		0.0		3.5	3.3	3.2
Queue Clearance Time (g _s), s						36.8	2.5	29.8
Green Extension Time (g _e), s	0.0	0.0		0.0		0.4	0.0	2.2
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						1.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	141	223	218	191	477	26	458		408	18	680	255
Adjusted Saturation Flow Rate (s), veh/h/ln	772	1632	1577	659	1631	1616	1294		1429	1810	1881	1004
Queue Service Time (g _s), s	5.4	9.6	9.8	19.6	10.4	0.8	20.1		24.8	0.5	27.8	17.7
Cycle Queue Clearance Time (g _c), s	5.4	9.6	9.8	29.4	10.4	0.8	34.8		24.8	0.5	27.8	17.7
Green Ratio (g/C)	0.39	0.39	0.39	0.39	0.39	0.49	0.38		0.38	0.50	0.51	0.51
Capacity (c), veh/h	365	636	615	329	1272	793	533		543	345	959	482
Volume-to-Capacity Ratio (X)	0.386	0.350	0.354	0.579	0.375	0.033	0.859		0.751	0.051	0.709	0.530
Available Capacity (c _a), veh/h	365	636	615	329	1272	793	533		543	345	959	482
Back of Queue (Q), veh/ln (50th percentile)	3.0	3.9	3.9	4.7	4.1	0.3	13.0		9.7	0.2	12.8	5.4
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	27.6	21.5	21.6	32.0	21.8	13.2	30.8		26.9	16.3	18.8	24.5
Incremental Delay (d ₂), s/veh	3.1	1.5	1.6	7.3	0.8	0.1	16.3		9.2	0.3	4.4	4.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	30.7	23.1	23.2	39.2	22.6	13.3	47.2		36.1	16.6	23.2	28.6
Level of Service (LOS)	C	C	C	D	C	B	D		D	B	C	C
Approach Delay, s/veh / LOS	25.0	C		26.9	C		42.0	D		24.5	C	
Intersection Delay, s/veh / LOS	30.0						C					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.3	B		2.9	C		3.3	C		3.2	C	
Bicycle LOS Score / LOS	0.8	A		0.9	A		1.2	A		2.1	B	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 5pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96
Intersection	Park Avenue & 19th Street	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00
File Name	5pmb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	101	417	50	183	458	71	66	433	362	17	653	322

Signal Information				EB		WB		NB		SB	
Cycle, s	100.0	Reference Phase	2	Green	0.0	39.0	10.0	38.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	2.0	0.0	2.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off								

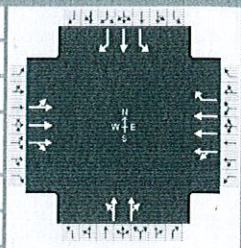
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	101	417	50	183	458	71	66	433	362	17	653	322
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	6			6			2			0		
Ped / Bike / RTOR, /h	1	0	10	8	0	46	41	0	30	14	0	77
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	10.0			11.0			16.0			12.0		
Turn Bay Length, ft	0			0			0			0		
Grade (Pg), %	0			0			0			0		
Speed Limit, mi/h	25	25	25	25	25	25	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	20.0	44.0		24.0		43.0	13.0	56.0
Yellow Change Interval (Y), s	3.0	3.0		3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s	0.0	2.0		2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information	
Agency	MMA			Duration, h	0.25	
Analyst	MM - 5pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other	
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.96	
Intersection	Park Avenue & 19th Street	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00	
File Name	5pmb.imp.rev.xus					
Project Description	Atir Residential					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	101	417	50	183	458	71	66	433	362	17	653	322

Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	0.0	39.0	10.0	38.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
				Red	0.0	2.0	0.0	2.0	0.0	0.0				

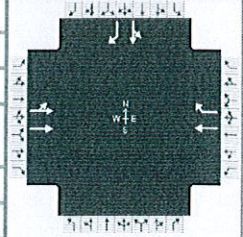
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.040	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.943	1.000	1.000	0.943	0.971	1.000	0.980	1.000	1.000	0.990	0.629
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.000	0.431			0.368			0.694		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.880			0.000			0.767			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.997			0.999			0.997			0.993		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.999			0.994			0.968			0.992
Movement Saturation Flow Rate (s), veh/h	0	3102			3262			1317		1810	1881	
Proportion of Vehicles Arriving on Green (P)	0.39	0.39	0.39	0.39	0.39	0.39	0.38	0.38	0.38	0.10	0.51	0.51
Incremental Delay Factor (k)	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0		5.0	3.0	5.0
Green Ratio (g/C)	0.00	0.39		0.39		0.38	0.50	0.51
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	929		932		769	692	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0		0		
Permitted Effective Green Time (g_p), s	0.0	41.0		39.0		38.0	40.0	0.0
Permitted Service Time (g_u), s	0.0	28.5		29.2		23.2	13.2	0.0
Permitted Queue Service Time (g_{ps}), s		10.0		19.6		20.1	0.7	
Time to First Blockage (g_r), s	0.0	0.7		0.0		7.3	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s		0.7		0.0		7.3		
Protected Right Saturation Flow (s_R), veh/h/ln				1626				1013
Protected Right Effective Green Time (g_R), s				10.0				-3.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.04	2.107	0.11	2.545	0.07	2.443	0.01
Pedestrian F_s / F_{delay}	0.000	0.117	0.000	0.117	0.000	0.119	0.000	0.100
Pedestrian M_{corner} / M_{cwb}								
Bicycle c_b / d_b	780.00	18.61	779.99	18.61	760.00	19.22	1020.00	12.01
Bicycle F_w / F_v	-3.64	0.32	-3.64	0.38	-3.64	0.71	-3.64	1.57

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 7amb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 Build w/Imp	Analysis Period	1> 7:00
File Name	7amb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	450	201			258	63				259	0	351

Signal Information				Signal Phases								
Cycle, s	60.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
Green	33.0	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

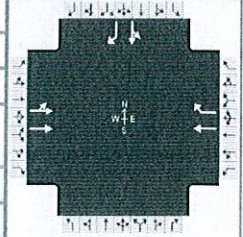
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6				4
Case Number		8.0		7.0				11.0
Phase Duration, s		38.0		38.0				22.0
Change Period, (Y+Rc), s		5.0		5.0				5.0
Max Allow Headway (MAH), s		0.0		0.0				3.4
Queue Clearance Time (gs), s								14.3
Green Extension Time (ge), s		0.0		0.0				0.5
Phase Call Probability								1.00
Max Out Probability								1.00

Movement Group Results	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Assigned Movement	5	2			6	16				7	4	14	
Adjusted Flow Rate (v), veh/h	459	205			263	51				264	351		
Adjusted Saturation Flow Rate (s), veh/h/ln	877	1586			1638	1491				1741	1575		
Queue Service Time (gs), s	25.4	3.6			5.2	1.0				7.7	12.3		
Cycle Queue Clearance Time (gc), s	30.6	3.6			5.2	1.0				7.7	12.3		
Green Ratio (g/C)	0.55	0.55			0.55	0.55				0.28	0.28		
Capacity (c), veh/h	602	872			901	820				493	446		
Volume-to-Capacity Ratio (X)	0.762	0.235			0.292	0.062				0.536	0.787		
Available Capacity (ca), veh/h	602	872			901	820				493	446		
Back of Queue (Q), veh/ln (50th percentile)	6.3	1.3			1.7	0.3				3.5	5.8		
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00				0.00	0.00		
Uniform Delay (d1), s/veh	15.4	7.0			7.2	6.3				18.2	19.8		
Incremental Delay (d2), s/veh	8.8	0.6			0.8	0.1				4.1	13.1		
Initial Queue Delay (d3), s/veh	0.0	0.0			0.0	0.0				0.0	0.0		
Control Delay (d), s/veh	24.3	7.6			8.1	6.4				22.3	32.9		
Level of Service (LOS)	C	A			A	A				C	C		
Approach Delay, s/veh / LOS	19.1		B		7.8		A		0.0		28.4		C
Intersection Delay, s/veh / LOS	20.5						C						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.9	A	2.2	B	2.7	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	1.0	A			1.5	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 7amb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00
File Name	7amb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	450	201			258	63				259	0	351

Signal Information				Signal Timing (s)								
Cycle, s	60.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
Green	33.0	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

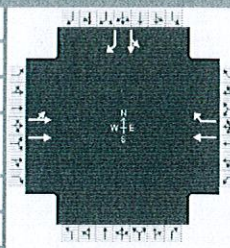
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	450	201			258	63				259	0	351
Initial Queue (Q _b), veh/h	0	0			0	0				0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900	1900				1900	1900	1900
Parking (N _m), man/h	None			None						None		
Heavy Vehicles (P _{HV}), %	9			16			8			0		
Ped / Bike / RTOR, /h	0	0		0	0	13				7	0	7
Buses (N _b), buses/h	0	0			0	0				0	0	0
Arrival Type (AT)	3	3			3	3				3	3	3
Upstream Filtering (I)	1.00	1.00			1.00	1.00				1.00	1.00	1.00
Lane Width (W), ft	12.0			12.0			12.0			12.0		
Turn Bay Length, ft	0			0			0			0		
Grade (Pg), %	0			0			0			0		
Speed Limit, mi/h	25	25			25	25				25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		38.0		38.0				22.0
Yellow Change Interval (Y), s		3.0		3.0				3.0
Red Clearance Interval (R _c), s		2.0		2.0				2.0
Minimum Green (G _{min}), s	6	6		6			6	6
Start-Up Lost Time (I _l), s	2.0	2.0		2.0			2.0	2.0
Extension of Effective Green (e), s	2.0	2.0		2.0			2.0	2.0
Passage (PT), s	2.0	2.0		2.0			2.0	2.0
Recall Mode	Max	Max		Max			Max	Max
Dual Entry	No	Yes		Yes			No	Yes
Walk (Walk), s	0.0	0.0		0.0			0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0			0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50					No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7amb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak AM Highway Hour	PHF	0.98		
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00		
File Name	7amb.imp.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	450	201			258	63				259	0	351

Signal Information				Signal Phases								
Cycle, s	60.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
Green	33.0	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

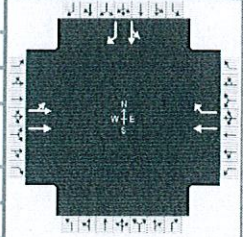
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.917	1.000	1.000	0.862	0.926	0.000	0.000	0.000	1.000	1.000	0.990
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.503			1.000						0.916	
Right-Turn Adjustment Factor (f_{RT})		0.910			0.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPb})	1.000			1.000						0.962		
Right-Turn Ped-Bike Adjustment Factor (f_{RPb})			1.000			1.000						0.988
Movement Saturation Flow Rate (s), veh/h		1586			1638						0	
Proportion of Vehicles Arriving on Green (P)	0.55	0.55	0.00	0.00	0.55	0.55	0.00	0.00	0.00	0.28	0.00	0.28
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50					0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		5.0				4.0
Green Ratio (g/C)		0.55		0.55				0.28
Permitted Saturation Flow Rate (s_p), veh/h/ln		1134		1196				0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0				0
Permitted Effective Green Time (g_p), s		33.0		0.0				0.0
Permitted Service Time (g_u), s		27.8		0.0				0.0
Permitted Queue Service Time (g_{ps}), s		25.4						
Time to First Blockage (g_r), s		0.0		33.0				0.0
Queue Service Time Before Blockage (g_{fs}), s		0.0						
Protected Right Saturation Flow (s_R), veh/h/ln				0				0
Protected Right Effective Green Time (g_R), s				0.0				0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.00	1.557	0.01	1.983	0.02	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.072	0.000	0.072	0.000	0.143	0.000	0.144
Pedestrian M_{corner} / M_{cw}								
Bicycle C_b / d_b	1100.00	6.08	1100.00	6.08		35.21	-200.00	36.30
Bicycle F_w / F_v	-3.64	0.55	-3.64	0.52	-3.64		-3.64	1.02

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 7pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 Build w/Imp	Analysis Period	1> 7:00
File Name	7pmb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h	627	203			145	134					264	0	323

Signal Information				Signal Phases								
Cycle, s	60.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off									
Force Mode	Fixed	Simult. Gap N/S	Off									
Green	33.0	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

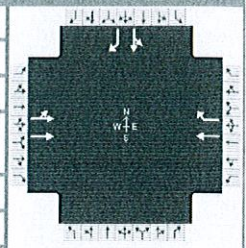
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6				4
Case Number		8.0		7.0				11.0
Phase Duration, s		38.0		38.0				22.0
Change Period, (Y+R _c), s		5.0		5.0				5.0
Max Allow Headway (MAH), s		0.0		0.0				3.5
Queue Clearance Time (g _s), s								15.5
Green Extension Time (g _e), s		0.0		0.0				0.4
Phase Call Probability								1.00
Max Out Probability								1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16				7	4	14
Adjusted Flow Rate (v), veh/h	704	228			163	106				297	358	
Adjusted Saturation Flow Rate (s), veh/h/ln	1072	1647			1638	1525				1568	1502	
Queue Service Time (g _s), s	30.0	3.9			3.0	2.0				10.0	13.5	
Cycle Queue Clearance Time (g _c), s	33.0	3.9			3.0	2.0				10.0	13.5	
Green Ratio (g/C)	0.55	0.55			0.55	0.55				0.28	0.28	
Capacity (c), veh/h	709	906			901	839				444	426	
Volume-to-Capacity Ratio (X)	0.993	0.252			0.181	0.126				0.668	0.842	
Available Capacity (c _a), veh/h	709	906			901	839				444	426	
Back of Queue (Q), veh/ln (50th percentile)	15.6	1.4			1.0	0.6				4.3	6.5	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00				0.00	0.00	
Uniform Delay (d ₁), s/veh	17.4	7.1			6.7	6.5				19.0	20.2	
Incremental Delay (d ₂), s/veh	32.1	0.7			0.4	0.3				7.7	18.0	
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0				0.0	0.0	
Control Delay (d), s/veh	49.6	7.7			7.2	6.8				26.7	38.3	
Level of Service (LOS)	D	A			A	A				C	D	
Approach Delay, s/veh / LOS	39.3	D		7.0	A		0.0			33.0	C	
Intersection Delay, s/veh / LOS	32.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.9	A	2.2	B	2.8	C	2.3	B
Bicycle LOS Score / LOS	1.3	A	0.9	A			1.6	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 7pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89
Intersection	Harbor B'lvd & Waterfront	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00
File Name	7pmb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h	627	203			145	134					264	0	323

Signal Information				Signal Phases									
Cycle, s	60.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off										
Force Mode	Fixed	Simult. Gap N/S	Off										
Green	33.0	17.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	3.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

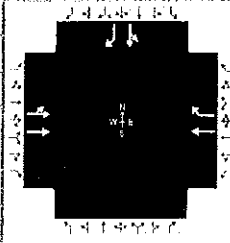
Traffic Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h	627	203			145	134					264	0	323
Initial Queue (Q _b), veh/h	0	0			0	0					0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900			1900	1900					1900	1900	1900
Parking (N _m), man/h	None			None						None			
Heavy Vehicles (P _{HV}), %	5			16			5			11			4
Ped / Bike / RTOR, /h	1	0		6	0	40				17	0	4	
Buses (N _b), buses/h	0	0			0	0				0	0	0	
Arrival Type (AT)	3	3			3	3				3	3	3	
Upstream Filtering (I)	1.00	1.00			1.00	1.00				1.00	1.00	1.00	
Lane Width (W), ft	12.0			12.0			12.0			12.0			12.0
Turn Bay Length, ft	0			0			0			0			0
Grade (P _g), %	0			0			0			0			0
Speed Limit, mi/h	25	25			25	25					25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s		38.0		38.0			
Yellow Change Interval (Y), s		3.0		3.0				3.0
Red Clearance Interval (R _c), s		2.0		2.0				2.0
Minimum Green (G _{min}), s	6	6		6			6	6
Start-Up Lost Time (I), s	2.0	2.0		2.0			2.0	2.0
Extension of Effective Green (e), s	2.0	2.0		2.0			2.0	2.0
Passage (PT), s	2.0	2.0		2.0			2.0	2.0
Recall Mode	Max	Max		Max			Max	Max
Dual Entry	No	Yes		Yes			No	Yes
Walk (Walk), s	0.0	0.0		0.0			0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0		0.0			0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25				0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0				9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No				0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0				12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50					No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 7pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken	Time Period	Peak PM Highway Hour	PHF	0.89		
Intersection	Harbor Blvd & Waterfront	Analysis Year	2022 Build w/lmp	Analysis Period	1 > 7:00		
File Name	7pmb.imp.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	627	203			145	134				264	0	323

Signal Information				Signal Phases								
Cycle, s	60.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	Off	Green	33.0	17.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	0.0	0.0	0.0	0.0		
			Red	2.0	2.0	0.0	0.0	0.0	0.0			

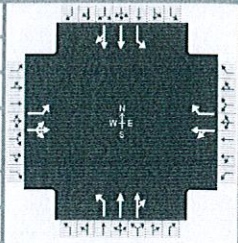
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f _w)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f _{HV})	1.000	0.952	1.000	1.000	0.862	0.952	0.000	0.000	0.000	1.000	0.901	0.962
Approach Grade Adjustment Factor (f _g)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f _p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f _{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f _a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f _{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f _{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Adjustment Factor (f _{LT})		0.592			1.000						0.916	
Right-Turn Adjustment Factor (f _{RT})		0.910			0.000						0.000	
Left-Turn Pedestrian Adjustment Factor (f _{LPB})	0.996			1.000						0.962		
Right-Turn Ped-Bike Adjustment Factor (f _{RPB})			1.000			0.995						0.970
Movement Saturation Flow Rate (s), veh/h		1647			1638						0	
Proportion of Vehicles Arriving on Green (P)	0.55	0.55	0.00	0.00	0.55	0.55	0.00	0.00	0.00	0.28	0.00	0.28
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50					0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t _L)		5.0		5.0				4.0
Green Ratio (g/C)		0.55		0.55				0.28
Permitted Saturation Flow Rate (s _p), veh/h/ln		1237		1171				0
Shared Saturation Flow Rate (s _{sh}), veh/h/ln		0		0				0
Permitted Effective Green Time (g _p), s		33.0		0.0				0.0
Permitted Service Time (g _v), s		30.0		0.0				0.0
Permitted Queue Service Time (g _{ps}), s		30.0						
Time to First Blockage (g _t), s		0.0		33.0				0.0
Queue Service Time Before Blockage (g _{ts}), s		0.0						
Protected Right Saturation Flow (s _R), veh/h/ln				0				0
Protected Right Effective Green Time (g _R), s				0.0				0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F _w / F _v	1.198	0.00	1.557	0.01	1.983	0.06	1.557	0.00
Pedestrian F _s / F _{delay}	0.000	0.072	0.000	0.072	0.000	0.143	0.000	0.144
Pedestrian M _{corner} / M _{cw}								
Bicycle C _b / d _b	1100.00	6.08	1100.00	6.08		35.21	-200.00	36.30
Bicycle F _w / F _v	-3.64	0.77	-3.64	0.44	-3.64		-3.64	1.08

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 8amb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.97
Intersection	Waterfront Ter & Baldwin	Analysis Year	2022 Build w/imp	Analysis Period	1> 7:00
File Name	8amb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	178	107	39	2	54	67	46	471	2	247	606	480

Signal Information				Signal Timing						Signal Phases				
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	8.0	36.0	25.0	18.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
				Red	0.0	2.0	2.0	2.0	0.0	0.0				

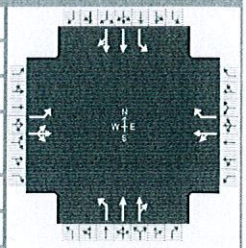
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	1	6	5	2
Case Number		10.0		11.0	1.1	4.0	1.1	4.0
Phase Duration, s		30.0		23.0	11.0	41.0	11.0	41.0
Change Period, (Y+R _c), s		5.0		5.0	3.0	5.0	3.0	5.0
Max Allow Headway (MAH), s		3.1		3.2	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		11.6		7.2	3.7		10.0	
Green Extension Time (g _e), s		0.5		0.1	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.00	0.13		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	184	149			58	63	47	243	243	255	583	499
Adjusted Saturation Flow Rate (s), veh/h/ln	1707	1762			1841	1107	1757	1759	1758	1630	1881	1606
Queue Service Time (g _s), s	9.6	7.4			2.8	5.2	1.7	11.1	11.1	8.0	31.0	31.1
Cycle Queue Clearance Time (g _c), s	9.6	7.4			2.8	5.2	1.7	11.1	11.1	8.0	31.0	31.1
Green Ratio (g/C)	0.24	0.24			0.17	0.17	0.42	0.34	0.34	0.42	0.34	0.34
Capacity (c), veh/h	406	419			316	190	217	603	603	374	645	551
Volume-to-Capacity Ratio (X)	0.451	0.356			0.183	0.332	0.219	0.403	0.404	0.680	0.905	0.906
Available Capacity (c _a), veh/h	406	419			316	190	217	603	603	374	645	551
Back of Queue (Q), veh/ln (50th percentile)	4.3	3.4			1.4	1.6	0.8	4.9	4.9	3.0	16.9	14.8
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	34.1	33.3			37.2	38.2	24.0	26.3	26.3	25.8	32.9	32.9
Incremental Delay (d ₂), s/veh	3.6	2.4			1.3	4.6	2.3	2.0	2.0	9.6	18.5	21.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	37.7	35.7			38.5	42.8	26.3	28.3	28.3	35.3	51.4	54.0
Level of Service (LOS)	D	D			D	D	C	C	C	D	D	D
Approach Delay, s/veh / LOS	36.8	D		40.8	D		28.1	C		49.3	D	
Intersection Delay, s/veh / LOS	42.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	0.7	A	0.9	A	1.6	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 8amb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.97
Intersection	Waterfront Ter & Baldwin	Analysis Year	2022 Build w/imp	Analysis Period	1> 7:00
File Name	8amb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	178	107	39	2	54	67	46	471	2	247	606	480

Signal Information				EB		WB		NB		SB	
Cycle, s	105.0	Reference Phase	2								
Offset, s	0	Reference Point	End	Green	8.0	36.0	25.0	18.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0	0.0

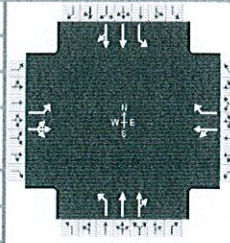
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	178	107	39	2	54	67	46	471	2	247	606	480
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	6	3		3	45		3	8		11	1	
Ped / Bike / RTOR, /h	0	0	1	2	0	6	1	0	1	4	0	36
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0			12.0	12.0	12.0	12.0		11.0	11.0	
Turn Bay Length, ft	0	0			0	0	0	0		0	0	
Grade (Pg), %		0			0			0		0		
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		30.0		23.0	11.0	41.0	11.0	41.0
Yellow Change Interval (Y), s		3.0		3.0	3.0	3.0	3.0	3.0
Red Clearance Interval (R _c), s		2.0		2.0	0.0	2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (I _f), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	No	No	No	No	No	No	No
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information			
Agency	MMA				Duration, h	0.25		
Analyst	MM - 8amb.imp.rev	Analysis Date	Nov 16, 2019		Area Type	Other		
Jurisdiction	Weehawken, NJ		Time Period	Peak AM Highway Hour	PHF	0.97		
Intersection	Waterfront Ter & Baldwin		Analysis Year	2022 Build w/imp	Analysis Period	1 > 7:00		
File Name	8amb.imp.rev.xus							
Project Description	Atir Residential							



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	178	107	39	2	54	67	46	471	2	247	606	480

Signal Information														
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	8.0	36.0	25.0	18.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
				Red	0.0	2.0	2.0	2.0	0.0	0.0				

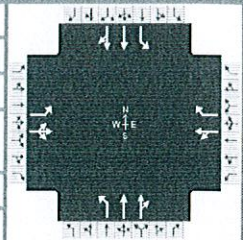
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.971	1.000	1.000	0.971	0.690	0.971	0.926	1.000	0.901	0.990	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.998		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.955			0.000			0.999			0.854	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			0.999			0.999		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			0.997			0.999			0.994
Movement Saturation Flow Rate (s), veh/h		1300			1776		1757	3510		1630	2014	
Proportion of Vehicles Arriving on Green (P)	0.24	0.24	0.24	0.17	0.17	0.17	0.08	0.34	0.34	0.08	0.34	0.34
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0		5.0	3.0	5.0	3.0	5.0
Green Ratio (g/C)		0.24		0.17	0.42	0.34	0.42	0.34
Permitted Saturation Flow Rate (s_p), veh/h/ln		1707		0	514	0	832	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0	36.0	0.0	36.0	0.0
Permitted Service Time (g_u), s		0.0		0.0	2.9	0.0	22.9	0.0
Permitted Queue Service Time (g_{ps}), s					2.9		13.6	
Time to First Blockage (g_r), s		0.0		0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.00	2.107	0.05	1.557	0.01	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.144	0.000	0.163	0.000	0.125	0.000	0.125
Pedestrian M_{corner} / M_{cw}								
Bicycle C_b / d_b	342.86	36.04		58.67	685.71	22.67	685.71	22.67
Bicycle F_w / F_v	-3.64	0.55	-3.64	0.20	-3.64	0.44	-3.64	1.10

HCS 2010 Signalized Intersection Results Summary

General Information					Intersection Information			
Agency	MMA				Duration, h	0.25		
Analyst	MM - 8pmb.imp.rev	Analysis Date	Nov 16, 2019		Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour		PHF	0.94		
Intersection	Waterfront Ter & Baldwin	Analysis Year	2022 Build w/Imp		Analysis Period	1> 7:00		
File Name	8pmb.imp.rev.xus							
Project Description	Atir Residential							



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	371	81	46	7	45	121	59	744	7	118	359	353

Signal Information														
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	8.0	36.0	25.0	18.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
				Red	0.0	2.0	2.0	2.0	0.0	0.0				

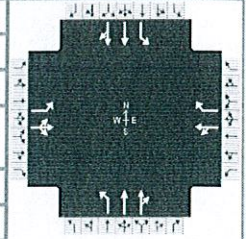
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	1	6	5	2
Case Number		10.0		11.0	1.1	4.0	1.1	4.0
Phase Duration, s		30.0		23.0	11.0	41.0	11.0	41.0
Change Period, (Y+R _c), s		5.0		5.0	3.0	5.0	3.0	5.0
Max Allow Headway (MAH), s		3.1		3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		24.6		11.6	4.2		7.6	
Green Extension Time (g _e), s		0.1		0.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		1.00		0.04	0.34		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	395	135		55	118		63	400	398	126	382	361
Adjusted Saturation Flow Rate (s), veh/h/ln	1792	1651		1887	1191		1810	1881	1876	1483	1863	1567
Queue Service Time (g _s), s	22.6	7.1		2.6	9.6		2.2	18.6	18.6	5.6	17.8	20.6
Cycle Queue Clearance Time (g _c), s	22.6	7.1		2.6	9.6		2.2	18.6	18.6	5.6	17.8	20.6
Green Ratio (g/C)	0.24	0.24		0.17	0.17		0.42	0.34	0.34	0.42	0.34	0.34
Capacity (c), veh/h	427	393		324	204		299	645	643	265	639	537
Volume-to-Capacity Ratio (X)	0.925	0.344		0.171	0.578		0.210	0.619	0.619	0.474	0.598	0.671
Available Capacity (c _a), veh/h	427	393		324	204		299	645	643	265	639	537
Back of Queue (Q), veh/ln (50th percentile)	13.0	3.1		1.3	3.4		1.0	8.9	8.9	2.3	8.4	8.5
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	39.1	33.2		37.1	40.0		21.0	28.8	28.8	22.0	28.5	29.4
Incremental Delay (d ₂), s/veh	28.3	2.4		1.1	11.4		1.6	4.4	4.4	6.0	4.1	6.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	67.4	35.6		38.3	51.4		22.6	33.2	33.2	27.9	32.6	36.0
Level of Service (LOS)	E	D		D	D		C	C	C	C	C	D
Approach Delay, s/veh / LOS	59.3	E		47.2	D		32.4	C		33.3	C	
Intersection Delay, s/veh / LOS	39.7						D					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.9	C		2.9	C		2.3	B		2.3	B	
Bicycle LOS Score / LOS	1.4	A		0.8	A		1.2	A		1.2	A	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 8pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.94		
Intersection	Waterfront Ter & Baldwin	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00		
File Name	8pmb.imp.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	371	81	46	7	45	121	59	744	7	118	359	353

Signal Information														
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off											
Force Mode	Fixed	Simult. Gap N/S	Off	Green	8.0	36.0	25.0	18.0	0.0	0.0				
				Yellow	3.0	3.0	3.0	3.0	0.0	0.0				
				Red	0.0	2.0	2.0	2.0	0.0	0.0				

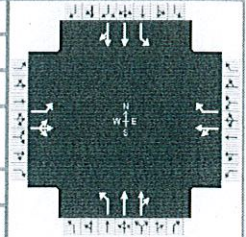
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	371	81	46	7	45	121	59	744	7	118	359	353
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	1	8			0	34	0	1		22	2	
Ped / Bike / RTOR, /h	1	0	0	5	0	10	3	0	1	5	0	14
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0			12.0	12.0	12.0	12.0		11.0	11.0	
Turn Bay Length, ft	0	0			0	0	0	0		0	0	
Grade (P _g), %		0			0			0		0		
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		30.0		23.0	11.0	41.0	11.0	41.0
Yellow Change Interval (Y), s		3.0		3.0	3.0	3.0	3.0	3.0
Red Clearance Interval (R _c), s		2.0		2.0	0.0	2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (I), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Dual Entry	No	No	No	No	No	No	No	No
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 8pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	Other
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.94
Intersection	Waterfront Ter & Baldwin	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00
File Name	8pmb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	371	81	46	7	45	121	59	744	7	118	359	353

Signal Information												
Cycle, s	105.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	8.0	36.0	25.0	18.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.0	3.0	3.0	3.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	Off	Red	0.0	2.0	2.0	2.0	0.0	0.0		

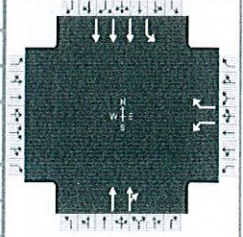
	EB			WB			NB			SB		
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.990	0.926	1.000	1.000	1.000	0.746	1.000	0.990	1.000	0.820	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.993		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.938			0.000			0.997			0.841	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			0.998			0.999		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			0.999			0.991			0.996			0.993
Movement Saturation Flow Rate (s), veh/h		1053			1633		1810	3727		1483	1863	
Proportion of Vehicles Arriving on Green (P)	0.24	0.24	0.24	0.17	0.17	0.17	0.08	0.34	0.34	0.08	0.34	0.34
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0		5.0	3.0	5.0	3.0	5.0
Green Ratio (g/C)		0.24		0.17	0.42	0.34	0.42	0.34
Permitted Saturation Flow Rate (s_p), veh/h/ln		1792		0	728	0	567	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0	36.0	0.0	36.0	0.0
Permitted Service Time (g_u), s		0.0		0.0	13.4	0.0	15.4	0.0
Permitted Queue Service Time (g_{ps}), s					2.1		5.9	
Time to First Blockage (g_r), s		0.0		0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.00	2.107	0.02	1.557	0.01	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.144	0.000	0.163	0.000	0.125	0.000	0.125
Pedestrian M_{corner} / M_{cw}								
Bicycle C_b / d_b	342.86	36.04		58.67	685.71	22.67	685.71	22.67
Bicycle F_w / F_v	-3.64	0.87	-3.64	0.29	-3.64	0.71	-3.64	0.72

HCS 2010 Signalized Intersection Results Summary

General Information					Intersection Information			
Agency	MMA				Duration, h	0.25		
Analyst	MM - 9amb.imp.rev	Analysis Date	Nov 16, 2019		Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour		PHF	0.93		
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2022 Build w/Imp		Analysis Period	1 > 7:00		
File Name	9amb.imp.rev.xus							
Project Description	Atir Residential							



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				402		224		304	81	248	1364	

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	34.0	28.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0			
				Red	0.0	2.0	2.0	0.0	0.0	0.0			

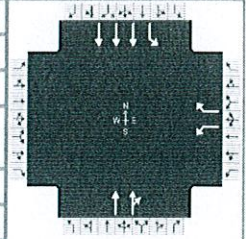
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				33.0		39.0	18.0	57.0
Change Period, (Y+R _c), s				5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s				3.3		0.0	3.3	0.0
Queue Clearance Time (g _s), s				24.8			10.1	
Green Extension Time (g _e), s				0.7		0.0	0.3	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				1.00			0.26	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				432		241		201	193	267		1467
Adjusted Saturation Flow Rate (s), veh/h/ln				1608		1314		1629	1532	1551		1273
Queue Service Time (g _s), s				22.8		13.9		7.9	8.1	8.1		23.7
Cycle Queue Clearance Time (g _c), s				22.8		13.9		7.9	8.1	8.1		23.7
Green Ratio (g/C)				0.31		0.31		0.38	0.38	0.57		0.58
Capacity (c), veh/h				500		409		615	579	587		2206
Volume-to-Capacity Ratio (X)				0.864		0.589		0.326	0.333	0.454		0.665
Available Capacity (c _a), veh/h				500		409		615	579	587		2206
Back of Queue (Q), veh/ln (50th percentile)				11.1		5.0		3.2	3.1	3.0		6.6
Queue Storage Ratio (RQ) (50th percentile)				0.00		0.00		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				29.2		26.2		19.9	19.9	11.0		13.0
Incremental Delay (d ₂), s/veh				17.7		6.1		1.4	1.5	2.5		1.6
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				47.0		32.3		21.3	21.5	13.5		14.6
Level of Service (LOS)				D		C		C	C	B		B
Approach Delay, s/veh / LOS	0.0			41.7		D	21.4		C	14.5		B
Intersection Delay, s/veh / LOS	22.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.0	C	2.3	B	0.7	A
Bicycle LOS Score / LOS				F	0.8	A	1.4	A

HCS 2010 Signalized Intersection Input Data

General Information					Intersection Information		
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9amb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.93		
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00		
File Name	9amb.imp.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				402		224		304	81	248	1364	

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	34.0	28.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	0.0	2.0	2.0	0.0	0.0	0.0				

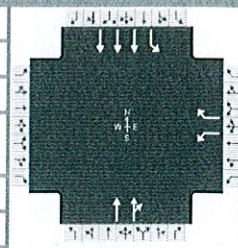
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				402		224		304	81	248	1364	
Initial Queue (Q _b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N _m), man/h					None				None			
Heavy Vehicles (P _{HV}), %				1		10		5		5	22	
Ped / Bike / RTOR, /h							1	0	19	2	0	
Buses (N _b), buses/h				0		0		0	0	0	0	
Arrival Type (AT)				3		3		3	3	3	3	
Upstream Filtering (f)				1.00		1.00		1.00	1.00	1.00	1.00	
Lane Width (W), ft				12.0		12.0		11.0		11.0	11.0	
Turn Bay Length, ft				0		0		0		0	0	
Grade (Pg), %		0				0		0		0	0	
Speed Limit, mi/h				25		25		25	25	25	25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s				33.0		39.0	18.0	57.0
Yellow Change Interval (Y), s				3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s				2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s			6			6	6	6
Start-Up Lost Time (l), s			2.0			2.0	2.0	2.0
Extension of Effective Green (e), s			2.0			2.0	2.0	2.0
Passage (PT), s			2.0			2.0	2.0	2.0
Recall Mode			Max			Max	Max	Max
Dual Entry			No			No	No	No
Walk (Walk), s			0.0			0.0	0.0	0.0
Pedestrian Clearance Time (PC), s			0.0			0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking				No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	MMA	Duration, h	0.25		
Analyst	MM - 9amb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak AM Highway Hour	PHF	0.93
Intersection	JFK Boulevard E. & Baldwi	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00
File Name	9amb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				402		224		304	81	248	1364	

Signal Information														
Cycle, s	90.0	Reference Phase	2	↓ ↓ ↗ ↘						↙ ↘ ↗ ↘				
Offset, s	0	Reference Point	End	↑ ↑						↙ ↘ ↗ ↘				
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	34.0	28.0	0.0	0.0	0.0	↙ ↘ ↗ ↘			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0	↙ ↘ ↗ ↘			
				Red	0.0	2.0	2.0	0.0	0.0	0.0	↙ ↘ ↗ ↘			

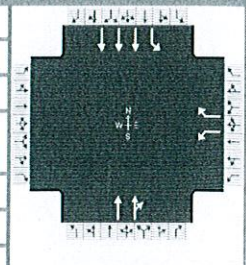
	EB			WB			NB			SB		
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.000	0.000	0.000	0.990	0.990	0.909	1.000	0.952	1.000	0.952	0.820	1.000
Approach Grade Adjustment Factor (f_g)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.908	1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})					0.000			1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})					0.000			0.941			1.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})				0.997			1.000			0.999		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})						0.997			0.999			1.000
Movement Saturation Flow Rate (s), veh/h					0			2631		1551	3947	
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.31	0.00	0.31	0.00	0.38	0.38	0.17	0.58	0.00
Incremental Delay Factor (k)				0.50		0.50		0.50	0.50	0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0		5.0	3.0	5.0
Green Ratio (g/C)				0.31		0.38	0.57	0.58
Permitted Saturation Flow Rate (s_p), veh/h/ln				1608		367	863	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	36.0	0.0
Permitted Service Time (g_u), s				0.0		0.0	25.9	0.0
Permitted Queue Service Time (g_{ps}), s							4.5	
Time to First Blockage (g_l), s				0.0		34.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.03	2.224	0.00	1.557	0.00	0.000	0.00
Pedestrian F_s / F_{delay}	0.000	0.157	0.000	0.158	0.000	0.115	0.000	0.083
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b		50.14		51.20	755.56	17.42	1155.56	8.02
Bicycle F_w / F_v	-3.64		-3.64		-3.64	0.32	-3.64	0.95

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	MMA			Duration, h	0.25		
Analyst	MM - 9pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	CBD		
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00		
File Name	9pmb.imp.rev.xus						
Project Description	Atir Residential						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				286		175		449	185	326	842	

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	34.0	28.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0			
				Red	0.0	2.0	2.0	0.0	0.0	0.0			

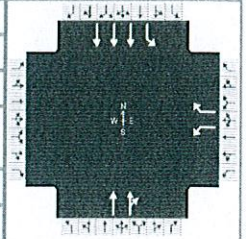
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				33.0		39.0	18.0	57.0
Change Period, (Y+R _c), s				5.0		5.0	3.0	5.0
Max Allow Headway (MAH), s				3.3		0.0	3.3	0.0
Queue Clearance Time (g _s), s				16.1			12.5	
Green Extension Time (g _e), s				0.9		0.0	0.2	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.01			1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement				3		18	2	12	1	6		
Adjusted Flow Rate (v), veh/h				298		182	338	310	340	877		
Adjusted Saturation Flow Rate (s), veh/h/ln				1608		1403	1676	1517	1597	1339		
Queue Service Time (g _s), s				14.1		9.3	13.9	14.4	10.5	10.6		
Cycle Queue Clearance Time (g _c), s				14.1		9.3	13.9	14.4	10.5	10.6		
Green Ratio (g/C)				0.31		0.31	0.38	0.38	0.57	0.58		
Capacity (c), veh/h				500		436	633	573	499	2320		
Volume-to-Capacity Ratio (X)				0.596		0.418	0.534	0.540	0.680	0.378		
Available Capacity (c _a), veh/h				500		436	633	573	499	2320		
Back of Queue (Q), veh/ln (50th percentile)				6.0		3.4	6.0	5.6	4.5	3.0		
Queue Storage Ratio (RQ) (50th percentile)				0.00		0.00	0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh				26.2		24.5	21.8	21.9	13.6	10.3		
Incremental Delay (d ₂), s/veh				5.2		2.9	3.2	3.6	7.3	0.5		
Initial Queue Delay (d ₃), s/veh				0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh				31.4		27.5	25.0	25.5	20.9	10.7		
Level of Service (LOS)				C		C	C	C	C	B		
Approach Delay, s/veh / LOS	0.0			29.9		C	25.3		C	13.6		B
Intersection Delay, s/veh / LOS				20.1						C		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.0	C	2.3	B	0.7	A
Bicycle LOS Score / LOS				F	1.0	A	1.2	A

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	MMA			Duration, h	0.25
Analyst	MM - 9pmb.imp.rev	Analysis Date	Nov 16, 2019	Area Type	CBD
Jurisdiction	Weehawken, NJ	Time Period	Peak PM Highway Hour	PHF	0.96
Intersection	JFK Boulevard E. & Baldwin	Analysis Year	2022 Build w/Imp	Analysis Period	1 > 7:00
File Name	9pmb.imp.rev.xus				
Project Description	Atir Residential				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				286		175		449	185	326	842	

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	34.0	28.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0				
				Red	0.0	2.0	2.0	0.0	0.0	0.0				

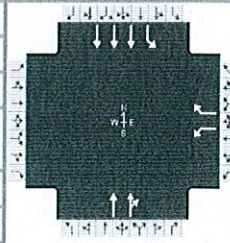
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				286		175		449	185	326	842	
Initial Queue (Q _b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N _m), man/h					None			None			None	
Heavy Vehicles (P _{HV}), %				1		3		2		2	16	
Ped / Bike / RTOR, /h							0	0	12	3	0	
Buses (N _b), buses/h				0		0		0	0	0	0	
Arrival Type (AT)				3		3		3	3	3	3	
Upstream Filtering (I)				1.00		1.00		1.00	1.00	1.00	1.00	
Lane Width (W), ft				12.0		12.0		11.0		11.0	11.0	
Turn Bay Length, ft				0		0		0		0	0	
Grade (Pg), %		0			0			0			0	
Speed Limit, mi/h				25		25		25	25	25	25	

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s				33.0		39.0	18.0	57.0
Yellow Change Interval (Y), s				3.0		3.0	3.0	3.0
Red Clearance Interval (R _c), s				2.0		2.0	0.0	2.0
Minimum Green (G _{min}), s			6			6	6	6
Start-Up Lost Time (I), s			2.0			2.0	2.0	2.0
Extension of Effective Green (e), s			2.0			2.0	2.0	2.0
Passage (PT), s			2.0			2.0	2.0	2.0
Recall Mode			Max			Max	Max	Max
Dual Entry			No			No	No	No
Walk (Walk), s			0.0			0.0	0.0	0.0
Pedestrian Clearance Time (PC), s			0.0			0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking				No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information			
Agency	MMA			Duration, h	0.25			
Analyst	MM - 9pmb.imp.rev	Analysis Date	Nov 16, 2019		Area Type	CBD		
Jurisdiction	Weehawken, NJ		Time Period	Peak PM Highway Hour	PHF	0.96		
Intersection	JFK Boulevard E. & Baldwi	Analysis Year	2022 Build w/Imp		Analysis Period	1 > 7:00		
File Name	9pmb.imp.rev.xus							
Project Description	Atir Residential							



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				286		175		449	185	326	842	

Signal Information															
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off	Green	15.0	34.0	28.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.0	3.0	3.0	0.0	0.0	0.0					
				Red	0.0	2.0	2.0	0.0	0.0	0.0					

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.000	0.000	0.000	0.990	0.990	0.971	1.000	0.980	1.000	0.980	0.862	1.000
Approach Grade Adjustment Factor (f_g)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.908	1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})						0.000		1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})						0.000		0.905			1.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})				0.997			1.000				1.000	
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})						0.997			1.000			1.000
Movement Saturation Flow Rate (s), veh/h					0			2311		1597	4151	
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.31	0.00	0.31	0.00	0.38	0.38	0.17	0.58	0.00
Incremental Delay Factor (k)				0.50		0.50		0.50	0.50	0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0		5.0	3.0	5.0
Green Ratio (g/C)				0.31		0.38	0.57	0.58
Permitted Saturation Flow Rate (s_p), veh/h/ln				1608		642	702	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	36.0	0.0
Permitted Service Time (g_u), s				0.0		0.0	19.6	0.0
Permitted Queue Service Time (g_{ps}), s							15.3	
Time to First Blockage (g_t), s				0.0		34.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.02	2.224	0.00	1.557	0.00	0.000	0.00
Pedestrian F_s / F_{delay}	0.000	0.157	0.000	0.158	0.000	0.115	0.000	0.083
Pedestrian M_{corner} / M_{cw}								
Bicycle C_b / d_b		50.14		51.20	755.56	17.42	1155.56	8.02
Bicycle F_w / F_v	-3.64		-3.64		-3.64	0.53	-3.64	0.67

2022 BUILD CONDITIONS AT EASTERN DRIVEWAY

TWO-WAY STOP CONTROL SUMMARY

Analyst: drivewayamb
 Agency/Co.: MMA
 Date Performed: 11/18/19
 Analysis Time Period: Peak AM Highway Hour
 Intersection: South Harbor & D'wy
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 Build
 Project ID: Atir Residential
 East/West Street: South Harbor Blvd
 North/South Street: Site Driveway
 Intersection Orientation: EW

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		1	0		15	228	
Peak-Hour Factor, PHF		0.85	0.85		0.85	0.85	
Hourly Flow Rate, HFR		1	0		17	268	
Percent Heavy Vehicles		--	--		2	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		1	0		0	1	
Configuration			TR			LT	
Upstream Signal?		No				No	

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		10		39			
Peak Hour Factor, PHF		0.85		0.85			
Hourly Flow Rate, HFR		11		45			
Percent Heavy Vehicles		2		2			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			4	7	8	9	10	11
Lane Config		LT		LR				
v (vph)		17		56				
C(m) (vph)		1607		937				
v/c		0.01		0.06				
95% queue length		0.03		0.19				
Control Delay		7.3		9.1				
LOS		A		A				
Approach Delay				9.1				
Approach LOS				A				

HCS+: Unsignalized Intersections Release 5.6

Phone:
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-----TWO-WAY STOP CONTROL (TWSC) ANALYSIS-----

Analyst: drivewayamb
 Agency/Co.: MMA
 Date Performed: 11/18/19
 Analysis Time Period: Peak AM Highway Hour
 Intersection: South Harbor & D'wy
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 Build
 Project ID: Atir Residential
 East/West Street: South Harbor Blvd
 North/South Street: Site Driveway
 Intersection Orientation: EW Study period (hrs): 0.25

-----Vehicle Volumes and Adjustments-----

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1	0	15	228	
Peak-Hour Factor, PHF		0.85	0.85	0.85	0.85	
Peak-15 Minute Volume		0	0	4	67	
Hourly Flow Rate, HFR		1	0	17	268	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10		39			
Peak Hour Factor, PHF	0.85		0.85			
Peak-15 Minute Volume	3		11			
Hourly Flow Rate, HFR	11		45			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
RT Channelized?						
Lanes	0		0			
Configuration		LR				

-----Pedestrian Volumes and Adjustments-----

Movements	13	14	15	16
Flow (ped/hr)	0	16	6	1

Lane Width (ft)	12.0	11.0	11.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	1	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
--	----------------------	--------------------	-----------------	----------------------	------------------------	-----------------------	-------------------------------

S2 Left-Turn
Through
S5 Left-Turn
Through

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared in volume, major th vehicles:		268
Shared in volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		2	2		2			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.4		6.2			
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		2	2		2			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
V(t)	V(l,prot)	V(t)	V(l,prot)	

V prog

Total Saturation Flow Rate, s (vph)
 Arrival Type
 Effective Green, g (sec)
 Cycle Length, C (sec)
 Rp (from Exhibit 16-11)
 Proportion vehicles arriving on green P
 g(q1)
 g(q2)
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

alpha
 beta
 Travel time, t(a) (sec)
 Smoothing Factor, F
 Proportion of conflicting flow, f
 Max platooned flow, V(c,max)
 Min platooned flow, V(c,min)
 Duration of blocked period, t(p)
 Proportion time blocked, p

	0.000	0.000
--	-------	-------

Computation 3-Platoon Event Periods Result

p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
--	-----------------------------	-------------------------------------	--------------------------------------

p(1)
 p(4)
 p(7)
 p(8)
 p(9)
 p(10)
 p(11)
 p(12)

Computation 4 and 5
 Single-Stage Process

Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R

V c, x	7	309	23
s			
Px			
V c, u, x			

C r, x
 C plat, x

Two-Stage Process

7	8	10	11
---	---	----	----

V(c,x)
s
P(x)
V(c,u,x)

1500

C(r,x)
C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	23	
Potential Capacity	1054	
Pedestrian Impedance Factor	0.98	1.00
Movement Capacity	1036	
Probability of Queue free St.	0.96	1.00
Step 2: LT from Major St.	4	1
Conflicting Flows	7	
Potential Capacity	1614	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1607	
Probability of Queue free St.	0.99	1.00
Maj L-Shared Prob Q free St.	0.99	
Step 3: TH from Minor St.	8	11
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	0.99	0.99
Cap. Adj. factor due to Impeding mvmnt	0.98	0.98
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Conflicting Flows	309	
Potential Capacity	683	
Pedestrian Impedance Factor	1.00	0.99
Maj. L, Min T Impedance factor		0.98
Maj. L, Min T Adj. Imp Factor.		0.99
Cap. Adj. factor due to Impeding mvmnt	0.98	0.93
Movement Capacity	673	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
C sep	673		1036			
Volume	11		45			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						
n max						
C sh		937				
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		17		56				
C(m) (vph)		1607		937				
v/c		0.01		0.06				
95% queue length		0.03		0.19				
Control Delay		7.3		9.1				
LOS		A		A				
Approach Delay				9.1				
Approach LOS				A				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.99
v(i1), Volume for stream 2 or 5		268
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		0.99
d(M,LT), Delay for stream 1 or 4		7.3
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		0.1

TWO-WAY STOP CONTROL SUMMARY

Analyst: drivewaypmb
 Agency/Co.: MMA
 Date Performed: 11/18/19
 Analysis Time Period: Peak PM Highway Hour
 Intersection: South Harbor & D'way
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 Build
 Project ID: Atir Residential
 East/West Street: South Harbor Blvd
 North/South Street: Site Driveway
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound				Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume		1	0		44	225		
Peak-Hour Factor, PHF		0.85	0.85		0.85	0.85		
Hourly Flow Rate, HFR		1	0		51	264		
Percent Heavy Vehicles		--	--		2	--	--	
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		1	0		0	1		
Configuration			TR			LT		
Upstream Signal?		No				No		

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		5		24			
Peak Hour Factor, PHF		0.85		0.85			
Hourly Flow Rate, HFR		5		28			
Percent Heavy Vehicles		2		2			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			4	7	8	9	10	11
Lane Config		LT			LR			
v (vph)		51			33			
C(m) (vph)		1607			935			
v/c		0.03			0.04			
95% queue length		0.10			0.11			
Control Delay		7.3			9.0			
LOS		A			A			
Approach Delay					9.0			
Approach LOS					A			

HCS+: Unsignalized Intersections Release 5.6

Phone:
E-Mail:

Fax:

-----TWO-WAY STOP CONTROL (TWSC) ANALYSIS-----

Analyst: drivewaypmb
 Agency/Co.: MMA
 Date Performed: 11/18/19
 Analysis Time Period: Peak PM Highway Hour
 Intersection: South Harbor & D'way
 Jurisdiction: Weehawken
 Units: U. S. Customary
 Analysis Year: 2022 Build
 Project ID: Atir Residential
 East/West Street: South Harbor Blvd
 North/South Street: Site Driveway
 Intersection Orientation: EW Study period (hrs): 0.25

-----Vehicle Volumes and Adjustments-----

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1	0	44	225	
Peak-Hour Factor, PHF		0.85	0.85	0.85	0.85	
Peak-15 Minute Volume		0	0	13	66	
Hourly Flow Rate, HFR		1	0	51	264	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5		24			
Peak Hour Factor, PHF	0.85		0.85			
Peak-15 Minute Volume	1		7			
Hourly Flow Rate, HFR	5		28			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
RT Channelized?						
Lanes	0		0			
Configuration		LR				

-----Pedestrian Volumes and Adjustments-----

Movements	13	14	15	16
Flow (ped/hr)	0	16	6	1

Lane Width (ft)	12.0	11.0	11.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	1	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		264
Shared ln volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		2	2		2			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.4		6.2			
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		2	2		2			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
V(t)	V(l,prot)	V(t)	V(l,prot)	

V prog

Total Saturation Flow Rate, s (vph)
 Arrival Type
 Effective Green, g (sec)
 Cycle Length, C (sec)
 Rp (from Exhibit 16-11)
 Proportion vehicles arriving on green P
 g(q1)
 g(q2)
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

alpha
 beta
 Travel time, t(a) (sec)
 Smoothing Factor, F
 Proportion of conflicting flow, f
 Max platooned flow, V(c,max)
 Min platooned flow, V(c,min)
 Duration of blocked period, t(p)
 Proportion time blocked, p

	0.000		0.000	
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Computation 3-Platoon Event Periods Result

p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Process Stage II
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p(1)
 p(4)
 p(7)
 p(8)
 p(9)
 p(10)
 p(11)
 p(12)

Computation 4 and 5
 Single-Stage Process

Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R

V c, x	7	373		23				
s								
Px								
V c, u, x								

C r, x
 C plat, x

Two-Stage Process

7	8	10	11
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V(c,x)
s
P(x)
V(c,u,x)

1500

C(r,x)
C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	23	
Potential Capacity	1054	
Pedestrian Impedance Factor	0.98	1.00
Movement Capacity	1036	
Probability of Queue free St.	0.97	1.00
Step 2: LT from Major St.	4	1
Conflicting Flows	7	
Potential Capacity	1614	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1607	
Probability of Queue free St.	0.97	1.00
Maj L-Shared Prob Q free St.	0.96	
Step 3: TH from Minor St.	8	11
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	0.99	0.99
Cap. Adj. factor due to Impeding mvmnt	0.96	0.96
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Conflicting Flows	373	
Potential Capacity	628	
Pedestrian Impedance Factor	1.00	0.99
Maj. L, Min T Impedance factor		0.96
Maj. L, Min T Adj. Imp Factor.		0.97
Cap. Adj. factor due to Impeding mvmnt	0.96	0.93
Movement Capacity	605	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	605		1036			
Volume	5		28			
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh		935				
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		51		33				
C(m) (vph)		1607		935				
v/c		0.03		0.04				
95% queue length		0.10		0.11				
Control Delay		7.3		9.0				
LOS		A		A				
Approach Delay				9.0				
Approach LOS				A				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.97
v(i1), Volume for stream 2 or 5		264
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		0.96
d(M,LT), Delay for stream 1 or 4		7.3
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		0.3