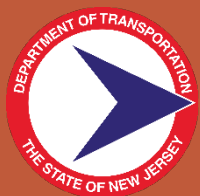




Road Safety Audit:

CR 501 (JFK Boulevard) between 43rd and 64th Streets
North Bergen Township, City of Union City,
and West New York Town, Hudson County



FEBRUARY 2019

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Executive Summary

This document is the final report of the CR 501, JFK Boulevard Road Safety Audit (RSA). It was conducted along JFK Boulevard from 43rd Street to 64th Street in North Bergen Township, Union City and West New York Town, Hudson County. An RSA is an effective way of identifying crash-causing trends and appropriate countermeasures utilizing a nontraditional approach that promotes transportation safety while maintaining mobility.

Portions of this section of JFK Boulevard were identified on NJTPA's Local Safety Program Network Screening list as high priority. According to the NJDOT crash database, 428 crashes occurred during the three-year period between January 1, 2014 and December 31, 2016 (including pedestrians/pedalcyclists) along the study area of JFK Boulevard with 122, 180, and 126 crashes occurring in 2014, 2015 and 2016, respectively. Additionally, 32 pedestrian crashes occurred over the five-year period between January 1, 2012 and December 31, 2016.

This one-day RSA was conducted on Tuesday, October 30, 2018 from 9:30 am to 3:30 pm. The pre- and post-audit meetings were held in the Hudson County Community College, North Hudson Campus, located at 4800 JFK Boulevard, Union City, NJ. Representatives from NJDOT, NJTPA, Hudson County, North Bergen Township, Union City and West New York Town were in attendance with NJDOT serving as the facilitator.

The RSA site and crash history is described in Sections II and III of this report, respectively. Section II also identifies previous and on-going studies conducted by the agency representatives. Corridor-wide and site-specific issues and recommendations, organized by location, are discussed in Section V. The most common recommendations were to improve pedestrian safety by investigating curb extensions at intersections, repairing sidewalks and ensuring ADA compliance. Additionally, many suggestions were made to upgrade traffic signals, improve, and simplify signage, and increase parking enforcement efforts.

The recommendations contained herein were developed collaboratively with the roadway owner and local stakeholders from the RSA Team (members listed in Appendix A). The study partners have expressed interest in implementing many of the recommendations as time and funds allow. Many of the maintenance items, which are typically low cost, can be addressed without additional engineering.

Please note this RSA report does not constitute an engineering report. The agency responsible for design and construction should consult a licensed professional engineer in preparing the design and construction documents, to implement any of the safety countermeasures mentioned in this report.

I. Introduction

A. Site Selection

A portion of this section of JFK Boulevard, from the 43rd Street to 64th Street, was identified on NJTPA's Local Safety Program Network Screening list as a high priority location, as shown in the below FY 2017-2018 rankings. Of note, these rankings are based on 2011-2013 vehicular and 2009-2013 pedestrian crash data.

Table 1 – JFK Boulevard NJTPA FY 2017-18 LSP Ranking (Corridor)

Location	Ped Corridor	Regional Corridor
JFK Boulevard	Not Ranked	#21 County (MP 34.9-35.9)

Table 2 – JFK Boulevard NJTPA FY 2017-18 LSP Ranking (Intersection)

Location	Intersections	Pedestrian Intersections
45th St (MP 34.73)		#226 County
46th St (MP 34.81)		#473 County
51st St (MP 35.03)	#150 County	
57th St (MP 35.41)	#173 County	
59th St (MP 35.53)		#226 County
60th St (MP 35.58)		#188 County
61st St (MP 35.65)	#78 County	#188 County

B. What is a Road Safety Audit?

A Road Safety Audit (RSA) is a formal safety performance examination of an existing or future road or intersection by a multi-disciplinary audit team. It qualitatively estimates and reports on existing and potential road safety issues, as well as identifies opportunities for improvements in safety for all road users. RSAs can be used on any size project, from minor maintenance to mega-projects, and can be conducted on facilities with a history of crashes, or during the design phase of a new roadway or planned upgrade. RSAs consider all road users, account for human factors and road user capabilities, are documented in a formal report, and require a formal response from the road owner.

The RSA program is conducted to generate improvement recommendations and countermeasures for roadway segments demonstrating a history of, or potential for, a high frequency of crashes, or an identifiable pattern of crash types. Recommendations range from low-cost, quick-turnaround safety improvements to more complex strategies. Implementation of improvement strategies identified through this process may be eligible for Local Federal Aid Safety Funds. Because the RSA process is adaptable to local needs and conditions, recommendations can be implemented incrementally as time and resources permit.

The RSA process, one of FHWA's proven safety countermeasures, is shown in the figure below.



C. The JFK Boulevard RSA Event

This one-day RSA was conducted on Tuesday, October 30, 2018 from 9:30 am to 3:30 pm. The pre- and post-audit meetings were held in the Hudson County Community College, North Hudson Campus, located at 4800 JFK Boulevard, Union City, NJ. Representatives from NJDOT, NJTPA, Hudson County, North Bergen Township, Union City and West New York Town were in attendance with NJDOT serving as the facilitator. A list of team members can be found in Appendix A.

II. Corridor Description and Analysis

A. Study Location

The study area consists of approximately 1.2 miles of JFK Boulevard within the aforementioned municipalities. This stretch of is a mix of commercial and residential properties. Commercial sites generally consist of retail, professional and service establishments. The study area includes the Hudson County Community College (HCCC) North Hudson Campus, Hudson-Bergen Light Rail (HBLR), and several cemeteries.

B. Roadway and Intersection Characteristics

JFK Boulevard is classified as an urban principal arterial with a 25 mph speed limit. The corridor study section is 4-lanes, undivided (except between 57th and 58th Streets). Some intersections have left turn lanes. The roadway has numerous curves with tangent sections in between. There are 18 signalized and 3 unsignalized intersections. Parking is permitted on both sides with a few exceptions such as along curves and where left turn lanes are present.

C. Existing Bicycle/Pedestrian Accommodations

Sidewalks are currently available along both sides and range from 4-6 feet wide. Crosswalks in various styles are provided throughout the corridor. Sidewalk and crosswalk conditions vary from newly installed to needing maintenance. There are no bicycle lanes or other bicycling infrastructure identified along the corridor.

D. Traffic Volumes

Based on available data, the 2016 ADT along JFK Boulevard is approximately 30,200 vehicles per day. A copy of the available data can be found in Appendix C.

E. Transit Service

NJ Transit bus service is provided along JFK Boulevard via routes 88, 154, and 188. Additional bus service is provided at the HBLR station (routes 22, 86 and 181), which is located adjacent to HCCC North Bergen Campus. HBLR connects the communities of Bayonne, Jersey City, Hoboken,

Weehawken, Union City (at its border with West New York) and North Bergen. Jitney buses are also prevalent throughout the corridor.

F. Community Profile

Population and income characteristics from the 2010 Census (U.S. Census Bureau) were used to identify minority populations and low-income populations. Updates to the 2010 Census were performed by the Census Bureau through the American Community Survey (ACS) estimate. The latest ACS for this study area is a five-year estimate from 2012 through 2016, except for LEP, which was from the 2011-2015 ACS. A summary of the demographics is listed below.

Table 3 – JFK Boulevard Area Demographics

Characteristic		JFK Blvd Area	County Average
Poverty		19.8%	14.5%
Race/ Ethnicity	White	9.5%	29.0%
	Hispanic/Latino	85.0%	43.1%
	Asian American	3.3%	14.7%
	Black or African American	1.4%	11.0%
	American Indian/Alaskan	0.1%	0.1%
Other ¹		0.8%	2.2%
Limited English Proficiency (LEP)		45.0%	25.3%

In addition, approximately 40% of the population uses public transportation compared to the Hudson County average of 41%. Roughly 9% of the area population walk or bike to work, which is slightly higher than the county average. Of note, 36% of homes in the area have no vehicles available.

G. Redevelopment

Each municipality has a Master Plan and recent reexamination report. The 2009 North Bergen Township reexamination noted the Avalon project as a redevelopment area; this mixed-use site was completed and is located along JFK Boulevard between 56th and 57th Streets. The 2009 Union City Master Plan identified the area along JFK Boulevard between 47th and 49th Streets, known as Uptown, as an area that facilitates mixed-use transit-oriented development. Finally, the 2015 West New York Town Master Plan envisions that the area along JFK Boulevard between 49th and 52st Streets be a Transit Oriented Development (TOD). High density residential with ground level retail is proposed through the rest of the project limits. The Master Plan also notes that JFK Boulevard should incorporate some elements of a complete street such as wider sidewalks and landscaping.

In addition, the 2008 Hudson County Master Plan Reexamination Report noted that in 2006, walking community workshops were conducted to identify barriers to walking and improve pedestrian safety in select Hudson County municipalities. Three municipalities were surveyed –North Bergen, West New York, and Union City – and studied an area bound on the west by JFK Boulevard, on the east by Bergenline Avenue, to the south by 43rd Street, and to the north by 51st Street. The study made a number of recommendations to improve pedestrian access, including pedestrian safety

¹ Percentages may not equal 100% due to rounding. Other includes individuals who identified themselves as ‘Native Hawaiian or Pacific Islander’, ‘Some Other Race Alone’ or ‘Two or More Races’

improvements and streetscaping on JFK Boulevard. Excerpts from these reports can be found in Appendix I and J, respectively.

III. Crash Findings

The analysis used in the RSA was based on reportable crashes that resulted in a fatality, injury and/or property damage as found in the NJDOT crash database. Corridor-wide crash characteristics and overrepresentations were compared to the 2016 statewide average for the county road system as further detailed below. All crashes were plotted onto collision diagrams, which can be found in Appendix D and E. Of note, crashes during 2016 may be skewed due to the reconstruction of the JFK Boulevard bridge over the Garden State Parkway (GSP) and its associated construction staging.

A. Temporal Trends

According to the NJDOT crash database, there were 428 crashes occurred during the three-year period between January 1, 2014 and December 31, 2016 (including pedestrians/pedalcyclists) along the study area of JFK Boulevard with 122, 180, and 126 crashes occurring in 2014, 2015 and 2016, respectively. Total crashes were generally followed the temporal county average.

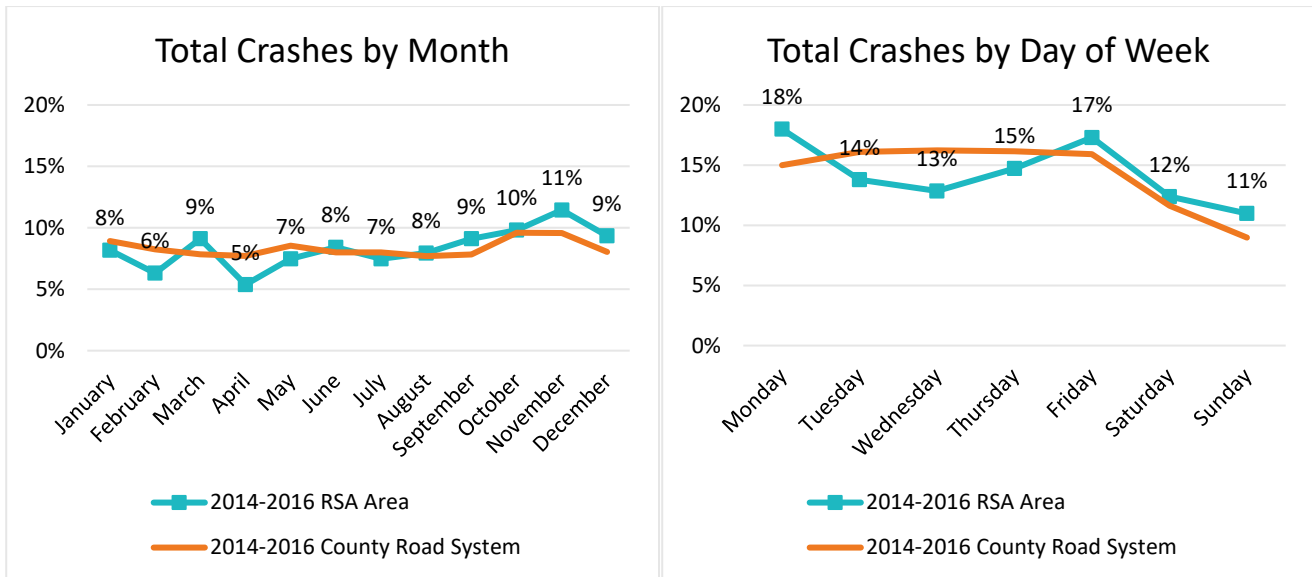


Figure 1 – Total Crashes by Month and Day of Week

Additionally, 32 pedestrian crashes occurred over the five-year period between January 1, 2012 and December 31, 2016. Most of these crashes included minor to moderate injury. More crashes occurred at non-daylight hours than the county average. Collisions with pedestrians were most common Sundays and in June. It should be noted that the low number of crashes compared to the county road system may be statistically insignificant since they could not be correlated with an identified event. For example, while the monthly chart indicates 7 pedestrian crashes occurred in June, this equates to 22% of total pedestrian crashes versus the county average of approximately 452 pedestrian crashes (10%) for the same month.

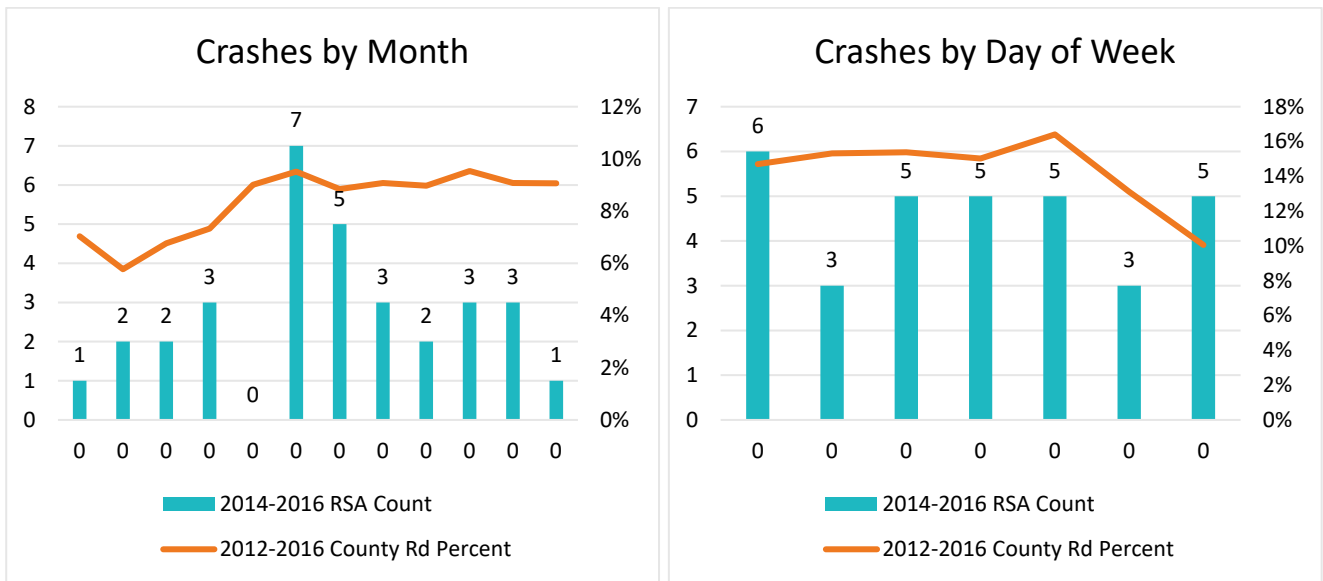


Figure 2 – Pedestrian/Bicyclist Crashes by Month and Day of Week

B. Collision Types

Overrepresented crash types over the three-year period from 2014 to 2016 included sideswipe, parked vehicle, backing, and pedestrian. Of the 32 pedestrian/cyclist crashes over the five-year period from 2012 to 2016, five were pedalcyclists (scooter, skateboard, or bicycle).

Table 4 – Overrepresented Crash Types (2014-2016)

Collision Type	Count	% of Total	2016 County Road System Average
Same Direction (Side Swipe)	117	27.34%	13.13%
Struck Parked Vehicle	52	12.15%	5.73%
Pedestrian	18	4.21%	1.83%
Pedalcyclist	4	0.93%	0.83%

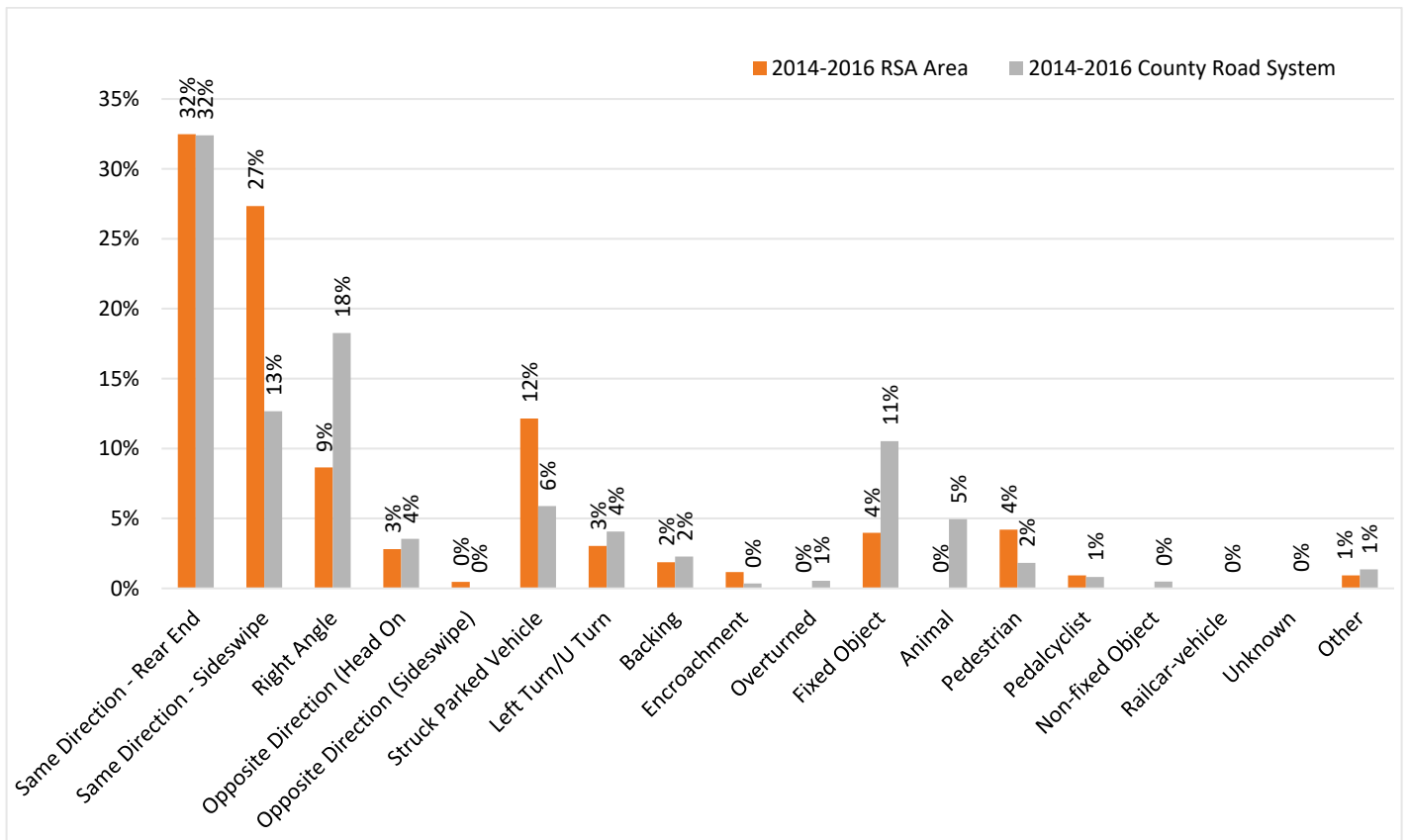


Figure 3 – Crash Type Breakdown

C. Severity

Crashes resulting in property damage only were slightly overrepresented compared to the county road system. This is likely due to the parked vehicle and sideswipe crashes, which tend to be less severe. No fatal crashes occurred during the study period.

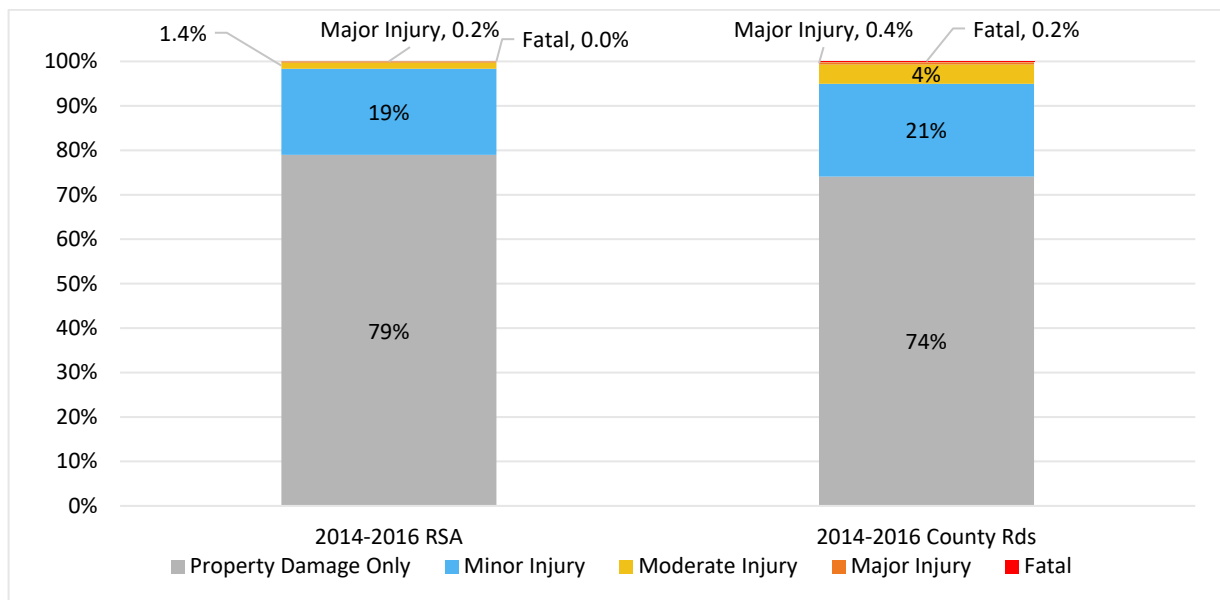


Figure 4 – Severity (All Crashes)

Pedestrian crashes resulting in minor and moderate injury were significantly overrepresented compared to the county road system from 2012 to 2016. No fatal crashes involving a pedestrian occurred during the study period.

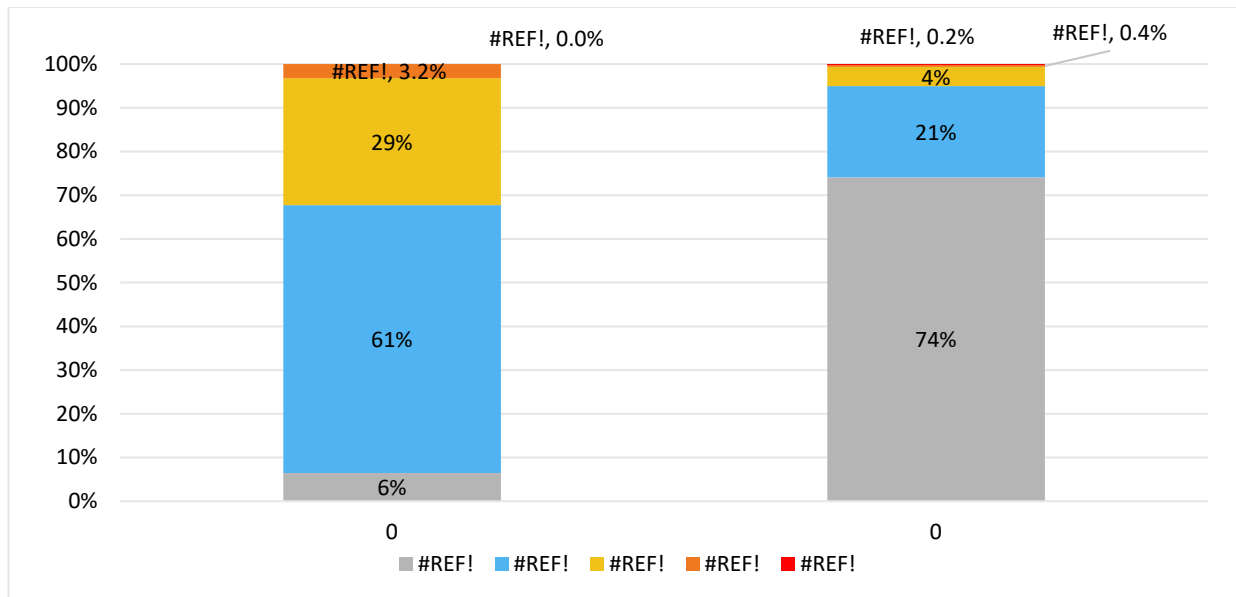


Figure 5 – Severity (Pedestrian/Bicycle Crashes)

D. Roadway Surface & Light Condition

Overrepresented crash types included dry surface and non-daylight hours. Dry surface conditions accounted for approximately 81% of total crashes. In addition, 30% of crashes occurred during dawn, dusk or at night.

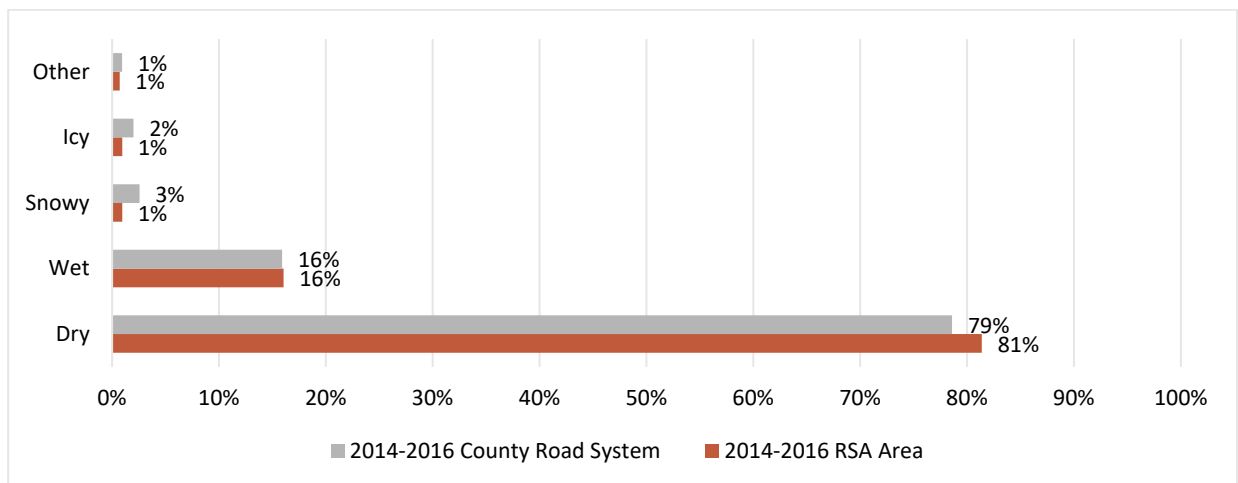


Figure 6 – Surface Conditions (All Crashes)

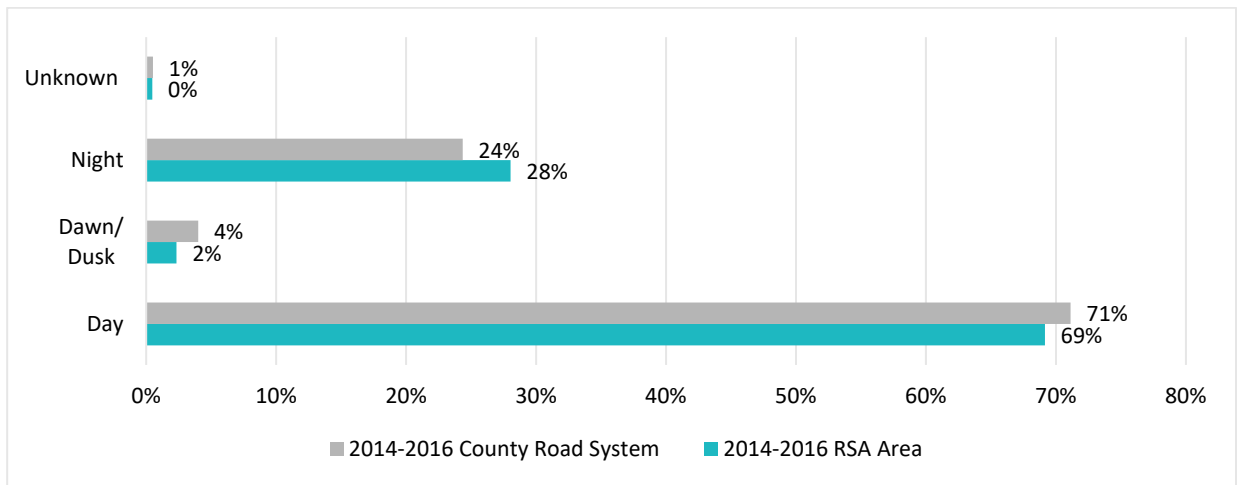


Figure 7 – Light Conditions (All Crashes)

Dry surface crashes involving pedestrians and bicyclists accounted for most of the crashes. In addition, 3 or approximately 9% of pedestrian crashes occurred during dawn or dusk hours, which is higher than the county road statewide average of 4%. Of note, the low number of crashes compared to the county road system may be statistically insignificant.

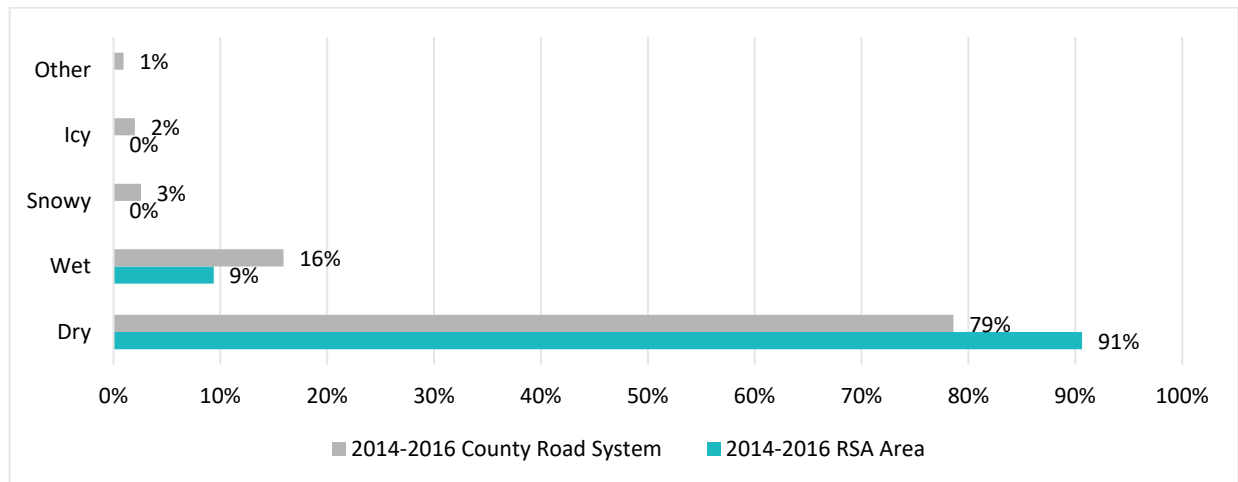


Figure 8 – Surface Conditions (Pedestrian/Bicycle Crashes)

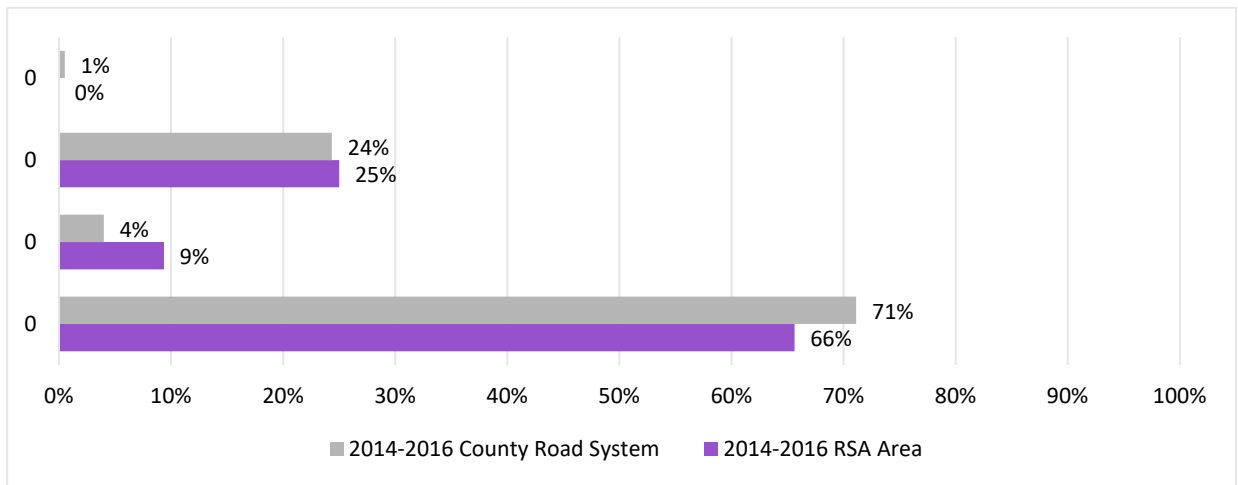


Figure 9 – Light Conditions (Pedestrian/Bicycle Crashes)

E. Location

Crashes at signalized intersections were overrepresented compared to the county road system average. Forty one percent (41%) of crashes occurred at signalized intersections compared to 14% on all county roads. Pedestrian/bicyclist crashes occurred more often at 45th Street than at any other study intersection. Crash frequency, as shown in the following figures, shows the highest concentration of vehicular and pedestrian crashes. The histogram view is grouped by 0.1-mile segments.

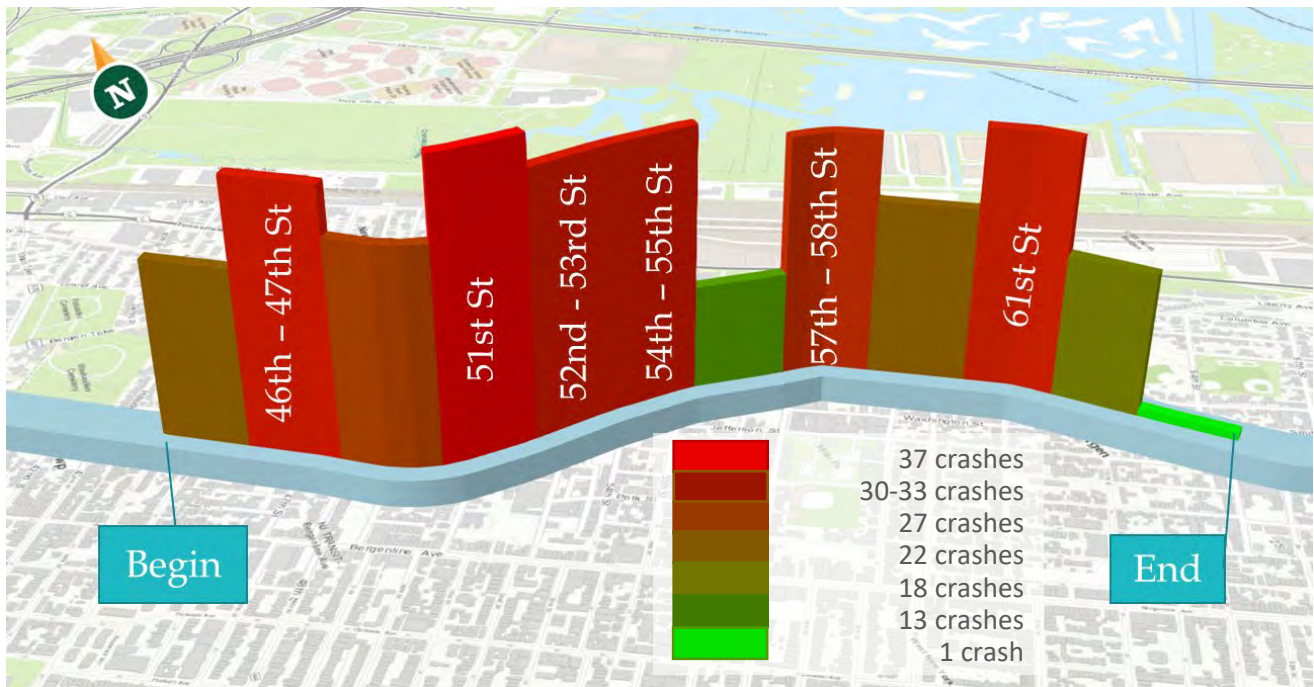


Figure 10 – Total Crash Locations (2014-2016)

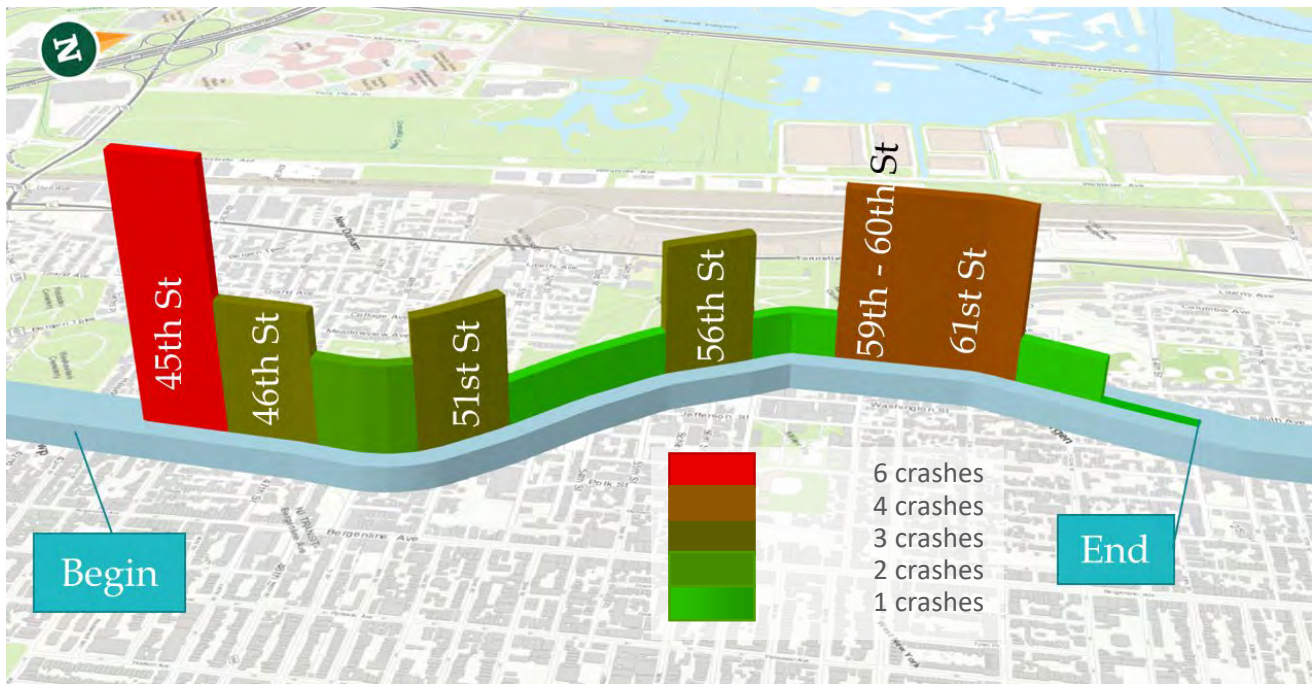


Figure 11 – Pedestrian Crash Locations (2012-2016)

IV. Identified Issues & Observations

This section summarizes the site-specific and corridor-wide safety issues identified during the RSA. They are categorized into operations (including visibility), pedestrian, bicyclist, and maintenance. Additional issues and photographs can be found in Appendix F.

Pedestrian/Bicyclist	
	
<p>1. Tree planting areas uneven and can create tripping hazards</p>	<p>2. Utility pole within ADA ramp (51st Street)</p>
	
<p>3. Pedestrian signal head not visible within the marked crosswalk (62nd Street)</p>	<p>4. Some pedestrian crossing signs pointed in the wrong direction (45th Street)</p>
	
<p>5. Vehicle partially parked on sidewalk blocks pedestrian path</p>	<p>6. Missing DWS and ADA ramp (55th Street)</p>

Operations & Visibility	Maintenance
	
<p>7. Non-functioning pedestrian signal head</p>	<p>8. Guide rail end terminal needs replacement (near 57th Street)</p>
	
<p>9. Stop bar striped significantly far from the intersection and crosswalk (55th Street)</p>	<p>10. Many signal heads were missing visors</p>

Additional issues, observations and details identified during the RSA include the following, listed from south to north:

- Many intersections have residential or commercial driveways within the same that are not controlled by the signal.
- Some pedestrian signal heads were observed partially working (i.e. don't walk would flash, but not count down, or no walk signal would appear).
- Hudson Regional Fire & Rescue Vehicles park along JFK Boulevard within the 62nd Street intersection.

V. Findings and Recommendations

This section summarizes the site-specific and corridor-wide safety issues, potential strategies, and recommendations to improve the same, safety benefit, time frame, cost, and jurisdiction. Ratings used in the recommendation tables are described as follows:

Symbol	Meaning	Definition
✓	Low safety benefit potential	May reduce total crashes by 1-25% ²
✓✓	Low to moderate safety benefit potential	May reduce total crashes by 26-49% ²
✓✓✓	Moderate safety benefit potential	May reduce total crashes by 50-74% ²
✓✓✓✓	High safety benefit potential	May reduce total crashes by 75+% ²
\$	Low cost	Could be accomplished through maintenance
\$\$	Medium cost	May require some engineering or design and funding may be readily available
\$\$\$	High cost	Longer term; may require full engineering, ROW acquisition and new funding
🕒	Short term	Could be accomplished within 1 year
🕒	Medium term	Could be accomplished in 1 to 3 years; may require some engineering
🕒	Long term	Could be accomplished in 3 years or more; may require full engineering

A. Recommendations

The following represents the specific findings and recommendations made by the RSA team. All recommendations and designs should be thoroughly evaluated with due diligence and designed as appropriate by the roadway owner and/or a professional engineer for conformance to all applicable codes, standards, and best practices.

Table 5 – Corridor-Wide Recommendations

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
Operations					
1	Consider upgrading all ramps for ADA compliance	✓✓✓ ³	\$\$\$	🕒	County
2	Consider development of an access management plan within the project limits (for vehicles and pedestrians)	✓	\$\$	🕒	County
3	Investigate on-street parking requirements where business have existing parking lots (parking study), for conformance with Title 39 and to highlight public parking lots, such as wayfinding signs	✓ ³	\$\$	🕒	Towns

² Based on existing Crash Modification Factors (CMFs), the Highway Safety Manual (HSM), FHWA Proven Safety Countermeasures and current research, where applicable. All safety benefits are approximate.

³ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
4	Consider corridor-wide signal upgrades (install backplates with retroreflected border, evaluate clearance intervals, update to countdown pedestrian signal heads, replace push buttons in compliance with ADA, etc.)	✓✓	\$\$\$	●	County
5	Investigate existing and proposed bollard locations for ADA and maintenance	N/A	\$	☉	County
6	Consider corridor-wide edge lines to delineate on-street parking area from the travel lane	✓ ³	\$	☉	County
7	Consider conducting a speed study along the corridor and investigate installing transverse rumble strips based on the study's conclusions	N/A	\$\$	●	County
8	Study roadway and pedestrian scale lighting	✓✓✓	\$\$	●	County
Bicycle/Pedestrian					
9	Inspect, repair and construct sidewalks in compliance with ADA as needed, including driveway aprons	✓✓✓	\$\$	☉	Property Owner/ County
10	Examine inlets and install bicycle-safe grates	✓ ³	\$\$	☉	County
11	Study corridor-wide implementation of curb extensions (bump outs) based on the site-specific recommendations to maintain consistency	✓✓ ³	\$\$	●	County
12	Examine crosswalks status: change to continental style, check placement and alignment	✓✓	\$	☉	County
13	Consider bicyclist accommodations, either along this corridor or a parallel route, such as bicycle lanes,	✓✓	\$	●	County
14	Consider leading pedestrian intervals (LPI) or all pedestrian phase at signalized intersections with high pedestrian activity	✓✓✓	\$	☉	County
Maintenance					
15	Inspect existing striping for wear and restripe; add raised pavement markers (RPMs) and speed limit markings (25 mph)	✓✓	\$	☉	County
16	Inspect and repair damaged or non-functioning signal equipment (i.e. ped heads at SE corner of 43 rd St, NE corner of 56 th St, SE corner of 64 th St/Jefferson St)	✓	\$	☉	County
17	Inspect and replace faded, damaged or incorrect/outdated signage as needed (i.e. signs mounted below 7', on non-breakaway posts or back-to-back signs that obscure shapes [e.g. Do Not Enter behind Stop sign])	✓	\$	☉	County

³ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
18	Inspect drainage facilities; ensure they are free of debris	✓ ³	\$\$	●	County
19	Inspect and trim foliage/vegetation to improve sign visibility and sidewalk paths	✓ ³	\$	●	County
Education					
20	Consider sidewalk, crosswalk, multimodal education campaign and code enforcement	✓ ³	\$	●	Towns/ County
21	Explore ways to deter vehicles from speeding along JFK Boulevard	✓	\$	●	Towns/ County

The following site-specific recommendations are in addition to the corridor-wide improvements, except where noted otherwise. Of note, the intersection of JFK Boulevard and 51st Street is currently under design by Hudson County. JFK Boulevard is also planned for resurfacing in 2020.

Table 6 – Site-Specific Recommendations

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
43rd St/Lincoln St					
22	Consider a pedestrian only phase; verify current signal timing	✓	\$\$	●	County
23	Investigate corridor-wide recommendation 11 for curb extensions, specifically in the NW of JFK Blvd and 43rd St/Hillside	✓✓ ³	\$\$	●	County
24	Consider corridor-wide recommendation 1, 9 and 12 regarding crosswalks, sidewalk and ADA compliance	✓✓✓ ³	\$\$\$	●	County
25	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	●	County
26	Explore corridor-wide recommendation 15 regarding striping and consider installing track lines through the intersection	✓✓	\$	●	County
44th St					
27	Consider corridor-wide recommendation 1, 9 and 12 regarding crosswalks, sidewalk and ADA compliance	✓✓✓ ³	\$\$\$	●	County
28	Investigate prohibiting left turns onto 44th St	✓✓✓	\$	●	County
45th St					
29	Consider corridor-wide recommendation 1, 9 and 12 regarding crosswalks, sidewalk and ADA compliance	✓✓✓ ³	\$\$\$	●	County
30	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	●	County
31	Investigate installing a crosswalk on the north side	✓✓	\$\$	●	County
32	Investigate corridor-wide recommendation 14 for LPIs	✓✓✓	\$	●	County

³ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
33	Consider corridor-wide recommendation 11 about curb extensions, specifically the SW corner	✓✓ ³	\$\$	●	County
46th St					
34	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	●	County
35	Consider corridor-wide recommendation 4 regarding signal upgrades (NW pole base is broken and missing base cover)	✓✓	\$\$\$	●	County
36	Investigate bollard and bus shelter locations and relocate as needed (clear width on accessible route)	N/A	\$	○	County
37	Investigate corridor-wide recommendation 14 for LPIs	✓✓✓	\$	○	County
38	Consider corridor-wide recommendation 11 about curb extensions	✓✓ ³	\$\$	●	County
39	Consider corridor-wide recommendation 16 on signal repairs (NW pole base is broken and missing base cover)	✓	\$	○	County
47th St					
40	Investigate installing a left turn lane on JFK Blvd	✓	\$\$	○	County
41	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	●	County
42	Explore relocating or adding a crosswalk to the southern side	✓✓	\$\$	○	County
43	Investigate corridor-wide recommendation 14 for LPIs	✓✓✓	\$	○	County
44	Consider fully upgrading the traffic signal and separating the street light from the traffic signal	✓✓	\$\$\$	●	County
48th St					
45	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	●	County
46	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	●	County
47	Explore installing school signs for HCCC	✓ ³	\$	○	County
48	Consider corridor-wide recommendation 11 about curb extensions	✓✓ ³	\$\$	●	County
49th St					
49	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	●	County
50	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	●	County
51	Consider corridor-wide recommendation 11 about curb extensions	✓✓ ³	\$\$	●	County

³ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
52	Investigate installing a crosswalk on the north side	✓✓	\$\$	🕒	County
53	Explore striping an edge line with hatching to emphasize parking restrictions and track lines through the intersection	✓✓	\$	🕒	County
50th St					
54	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	🕒	County
51st St					
55	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	🕒	County
56	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	🕒	County
57	Consider corridor-wide recommendation 11 about curb extensions	✓✓ ³	\$\$	🕒	County
58	Investigate corridor-wide recommendation 14 for LPIs	✓✓✓	\$	🕒	County
59	Consider adding dedicated left turn lanes on approaches as needed based on traffic volumes	✓✓	\$\$	🕒	County
60	Explore striping an edge line and track lines through the intersection	✓✓	\$	🕒	County
61	Consider prohibiting left turns at the intersection and out of the QuickChek driveway on JFK Blvd	✓✓✓	\$	🕒	County
52nd/53rd St					
62	Investigate installing left turn lanes on JFK Blvd	✓✓	\$\$	🕒	County
63	Consider corridor-wide recommendation 11 about curb extensions	✓✓ ³	\$\$	🕒	County
64	Examine revising the geometry to reduce the length of the intersection proper along JFK Blvd and thus the pedestrian crossings	✓	\$\$	🕒	County
65	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	🕒	County
66	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	🕒	County
67	Consider corridor-wide recommendation 11 about curb extensions (i.e. NE corner of 52nd St)	✓✓ ³	\$\$	🕒	County
68	Consider a three-phase signal timing plan	✓	\$	🕒	County
54th St					
69	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	🕒	County

³ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
70	Consider corridor-wide recommendations 4 and 17 regarding signal and sign upgrades	✓✓	\$\$\$	●	County
71	Consider corridor-wide recommendation 11 about curb extensions	✓✓ ³	\$\$	●	County
72	Consider corridor-wide recommendation 16 on signal repairs (SW pole base cover broken)	✓	\$	●	County
73	Investigate corridor-wide recommendation 14 for LPIs	✓✓✓	\$	●	County
55th St					
74	Investigate relocating the westbound stop bar closer to the intersection	✓✓	\$	●	County
75	Explore better delineation of the gas station driveways	✓	\$\$	●	County
76	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	●	County
77	Consider corridor-wide recommendations 4 and 17 regarding signal and sign upgrades	✓✓	\$\$\$	●	County
78	Consider corridor-wide recommendation 11 about curb extensions	✓✓ ³	\$\$	●	County
56th St					
79	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	●	County
80	Consider corridor-wide recommendations 4 and 17 regarding signal and sign upgrades	✓✓	\$\$\$	●	County
81	Consider corridor-wide recommendation 11 about curb extensions	✓✓ ³	\$\$	●	County
82	Investigate corridor-wide recommendation 14 for LPIs	✓✓✓	\$	●	County
57th St					
83	Investigate installing advanced curve warning, signal ahead and/or crosswalk location signs	✓	\$	●	County
84	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	●	County
85	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	●	County
86	Explore installing impact attenuators/crash cushions at each end of the median barrier and object markers; fix damaged guide rail sections	✓✓	\$\$	●	County
87	Consider corridor-wide recommendation 11 about curb extensions	✓✓ ³	\$\$	●	County

³ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
88	Inspect and trim foliage/vegetation to improve sign visibility and sidewalk paths	✓ ³	\$	☉	County
89	Investigate missing fire hydrant along JFK Blvd between 57th and 58th Sts	N/A	\$	☉	Town
58th St					
90	Consider High Friction Surface Treatment (HFST) along the curve between 57th and 58th St	✓	\$\$	☉	County
91	Investigate installing advanced curve warning, signal ahead and/or crosswalk location signs	✓	\$	☉	County
92	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	☉	County
93	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	☉	County
94	Explore installing impact attenuators/crash cushions at each end of the median barrier and object markers	✓✓	\$\$	☉	County
95	Inspect and trim foliage/vegetation to improve sign visibility and sidewalk paths	✓ ³	\$	☉	County
96	Explore staggering traffic signals between 58th and 64th Sts to discourage speeding	✓ ³	\$	☉	County
59th St					
97	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	☉	County
98	Consider corridor-wide recommendations 4 and 17 regarding signal and sign upgrades	✓✓	\$\$\$	☉	County
99	Investigate corridor-wide recommendation 14 for LPIs	✓✓✓	\$	☉	County
60th St					
100	Investigate prohibiting turns to/from funeral home driveway or incorporating the same into the traffic signal depending on use (access management)	✓	\$\$	☉	County
101	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	☉	County
102	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	☉	County
61st St					
103	Investigate installing left turn lanes on JFK Blvd	✓✓	\$\$	☉	County
104	Explore a pedestrian refuge island	✓✓✓	\$\$	☉	County
105	Consider corridor-wide recommendation 11 about curb extensions	✓✓ ³	\$\$	☉	County

³ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
106	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	●	County
107	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	●	County
62nd St/63rd St/Washington St					
108	Investigate installing a mini-roundabout	✓✓✓✓ ⁴	\$	○	County
109	Explore installing a two-way left turn lane (TWLTL)	✓	\$\$	○	County
110	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	●	County
111	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	●	County
112	Investigate centerline rumble strips or delineators to prevent left turns from crossing into opposing lanes	✓✓✓	\$\$	○	County
113	Explore a pedestrian refuge island between 62nd and Washington Sts (may help reduce turning speeds)	✓✓✓	\$\$	●	County
114	Consider adjusting the pedestrian signal heads to align with the existing crosswalks	✓	\$	○	County
115	Consider corridor-wide recommendation 11 about curb extensions	✓✓ ³	\$\$	●	County
116	Explore installing "Stop Here on Red" signs at the inner stop bars	✓	\$	○	County
64th St/Bergenwood Ave					
117	Consider corridor-wide recommendation 1, 9 and 12 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ³	\$\$\$	●	County
118	Consider corridor-wide recommendations 4 and 17 regarding signal and sign upgrades	✓✓	\$\$\$	●	County

B. Road Owner Response

An important part of the RSA process is the road owner's response: an acknowledgment of the audit's findings and recommendations, and their planned follow-up. In responding to the RSA's findings, the road owner must bear in mind all the competing objectives involved when implementing the recommendations, and foremost among them is available resources. Because the audit process generated a long and wide-ranging list of improvements, the road owner is expected to implement these recommended improvements as time and funds allow in coordination with other projects and priorities.

Hudson County delivered their response following the finalization of the findings and recommendations table, a copy of which can be found in Appendix K.

⁴ Mini-roundabouts assumed to have the same safety benefits as a modern roundabout for the purpose of this RSA.

³ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

C. Recommendation Visualizations

Examples of some of the site-specific and corridor-wide safety recommendations identified in Tables 5 and 6, unless otherwise noted, are shown below and are based on current practices and standards. Descriptions and images of each treatment are from the *2017 NJ Complete Street Design Guide (CSDG)* and NACTO's *Urban Street Design Guide (NACTO-US)* and *Urban Bikeway Design Guide (NACTO-UB)*, including sources contained therein.

1. Pedestrian Facilities

Curb extensions visually and physically narrow the roadway at intersections and midblock locations, creating safer and shorter pedestrian crossings, while increasing the available space for streetscape. They increase the overall visibility of pedestrians by aligning them with the shoulder or parking lane and help prohibit vehicles from parking in violation of Title 39. Crossing islands, or pedestrian refuge islands, reduce the exposure time of pedestrians to vehicular traffic. They enable pedestrians to make a crossing in two stages — crossing one direction of vehicular travel lanes, pausing at the island, and then completing the crossing. They are recommended where a pedestrian must cross three lanes of traffic in one or both directions but may be implemented on smaller cross sections where space permits.

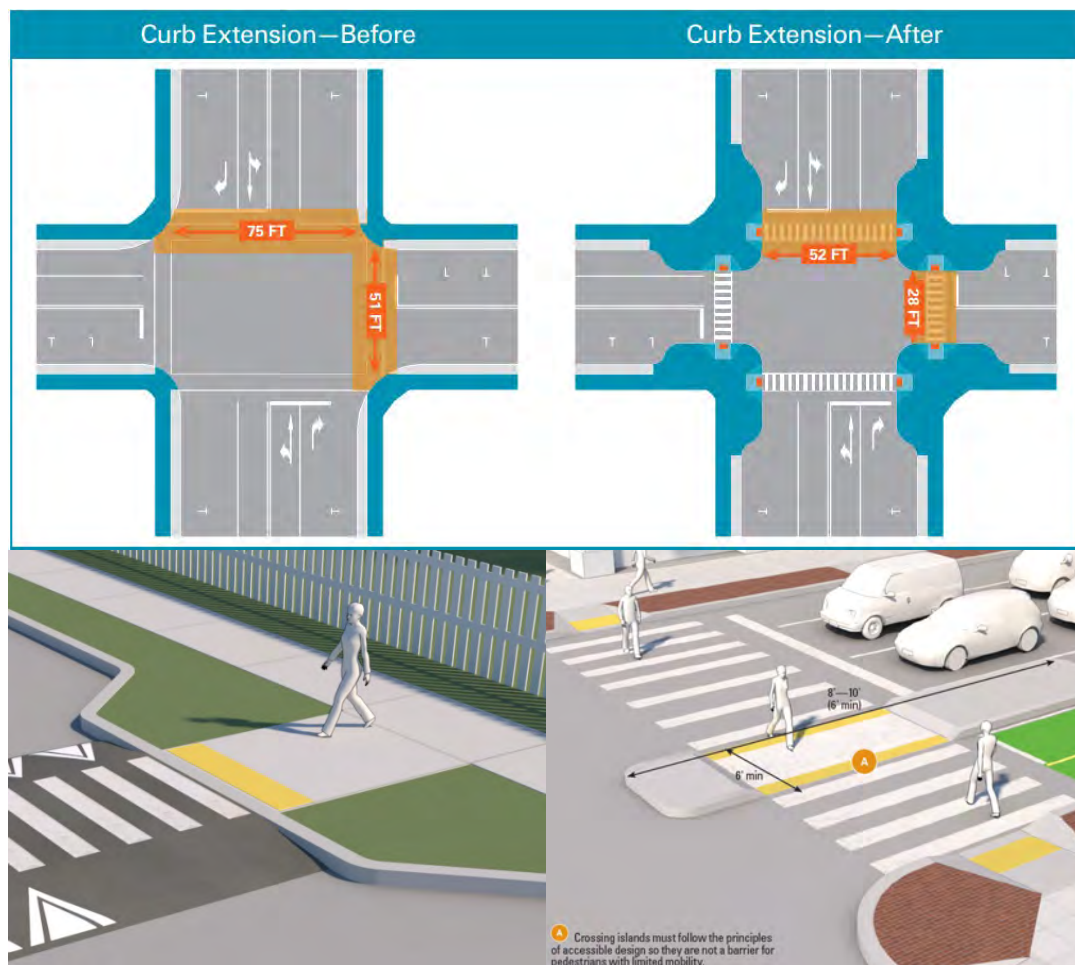


Figure 12 – Pedestrian Facility Examples

Top: Curb Extension. Left: Midblock Curb Extension. Right: Crossing Island (Source: CSDG)

ADA standards specify a minimum 5-foot clear path width to accommodate two wheelchairs passing each other. In addition to providing a more accessible facility, this minimum width also creates a more comfortable environment for pedestrians to walk side-by-side and pass each other. Sidewalk width should support the surrounding street context, land uses, and current and future pedestrian demand. The design of driveways should provide a continuous and level pedestrian zone across the vehicular path, encouraging drivers to stop for pedestrians on the sidewalk. Driveways should not be designed where the sidewalk is interrupted by the driveway.

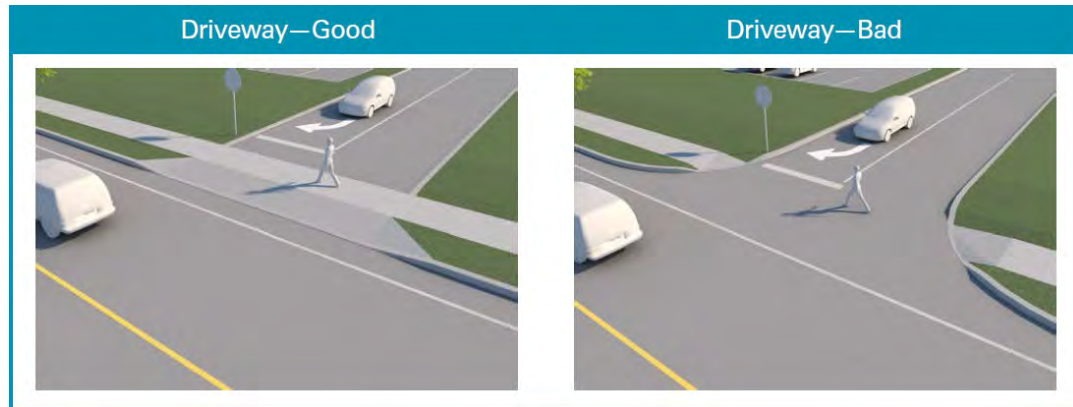


Figure 13 – Sidewalk and Driveways (Source: CSDG)

2. Bicycle Facilities

Bicycle lanes provide an exclusive space for bicyclists using pavement markings and signage. Intended for one-way travel, they are typically located on both sides of a two-way street. Bicycle lanes enable bicyclists to ride at their preferred speed, free from interference from motorists. Where it is not feasible or appropriate to provide dedicated bicycle facilities, shared-lane markings (e.g. “sharrows”) may be used to indicate a shared environment for bicycles and vehicles. Bicycle lanes and shared-lane markings should be extended through intersections and major driveways to enhance continuity, guide bicyclists through the intersection, and improve driver awareness of bicycle activity and movement.



Figure 14 – Bicycle Facility Examples

Left: Bicycle Lane Adjacent to Parking or Curb (Source: NACTO-UB). Right: Sharrow Markings along Route 71/Main Street in Bradley Beach (Source: Jusel Claro Alvarez, Google Maps Photos)

3. Mini-Roundabout

Mini-roundabout design, a type of roundabout characterized by a small diameter and traversable islands, was recommended at the intersection of JFK Boulevard and 62nd/63rd/Washington Streets. Mini-roundabouts offer most of the benefits of regular roundabouts, with the added benefit of a smaller footprint. It should create conditions that reduce vehicle speed (although not at the same level as its larger counterpart) and provide a consistent speed into, through, and out of the roundabout. Lower speeds reduce crash frequency and severity for all roadway users, allow safer and easier merging of traffic, provide more reaction time for drivers, and make the facility more accessible for novice users. Of note, most research and experience focuses on single-lane mini-roundabouts and may not be appropriate for this roadway.



Figure 15 – Single Lane Mini-Roundabout in Neighborhood Example (Source: [NATCO-US](#))

4. Roadway Reconfiguration

This treatment allows reallocation of existing street space (i.e. roadway cross section) to accommodate multi-modal users. Lane configuration and width for travel, turning movements, parking, and bicycle lanes can be adjusted to optimize use for vehicles, pedestrians, bicyclists, and transit.

Of note, JFK Boulevard was not a good candidate for a road diet (converting an existing four-lane undivided segment into a three-lane segment with two through lanes and a center two-way left turn lane), as studied in prior projects. Therefore, the roadway reconfiguration options shown on the following pages are for informational purposes only as sourced from NACTO-US.



Figure 16 – Example of a Main Street Typology (Source: [NACTO-US](#))

Top: With medium traffic volumes and high pedestrian activity, the street has significant potential for regeneration as a retail district, yet currently underperforms. Frequent destinations have resulted in multiple turning and weaving conflicts along the street.

Bottom: While road diets are not appropriate on all 4-lane cross sections, they can improve traffic flow and reduce conflicts with turning vehicles, enhancing safety. From an economic standpoint, they often rank favorably with business owners and have a positive impact on local business activity. Alternatively, a center 6-foot pedestrian safety island can be implemented in the above configuration by tapering the bike lane buffer near the intersection and shifting the through lanes to the right. Streets also benefit from dedicated loading zones near intersections. Implementation should consider availability of parallel routes, potential for mode shift, and channelization of traffic.



Figure 17 – Example of a Two-Lane Downtown Street Typology (Source: [NACTO-US](#))

***Top:** The above illustration depicts a 2-way street in a central business district that is congested by buses, bikes, people, and cars. Curbside bus stops may be undermined by double-parked vehicles and heavy rush-hour traffic. Double-parking also creates conflicts and safety hazards for all modes.*

***Bottom:** Bus bulbs serve as dedicated waiting areas for transit users while decreasing pedestrian exposure during crossings and can connect to existing sidewalk or be designed as a bus-boarding island with a bicycle cut-through. Delineation in the roadway can be created using striping, cycle tracks, and narrow travel lanes. Restricting delivery, encouraging off-peak delivery, and/or dedicated loading zones are critical to eliminating double-parking obstructions.*

5. Green Infrastructure

Bioswales are vegetated, shallow, landscaped depressions designed to capture, treat, and infiltrate stormwater runoff as it moves downstream. They are the most effective type of green infrastructure facility in slowing runoff velocity and cleansing water while recharging the underlying groundwater table. They have flexible siting requirements, allowing them to be integrated with medians, curb extensions, and other public space or traffic calming strategies.

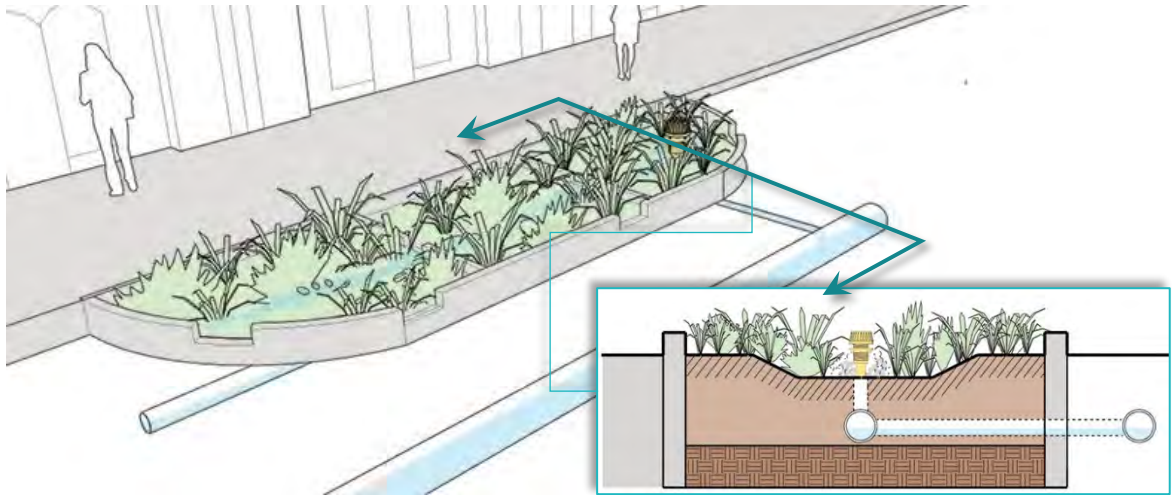


Figure 18 – Bioswale Example (Source: NACTO-US)

VI. Conclusions

The JFK Boulevard RSA was conducted to identify safety issues and corresponding countermeasures that compromise multimodal use of the roadway. The team identified a long list of issues from the field visit, as well as many practical short-, mid-, and long-term improvements during the post-audit.

The recommendations documented in this report are designed to improve safety for all users of JFK Boulevard. Some of the strategies identified can be implemented through routine maintenance; all will be constrained by available time and budgetary priorities. The audit process and the resulting final document highlight the safety issues and present the needed improvements by location organized for systematic implementation by the roadway owner.

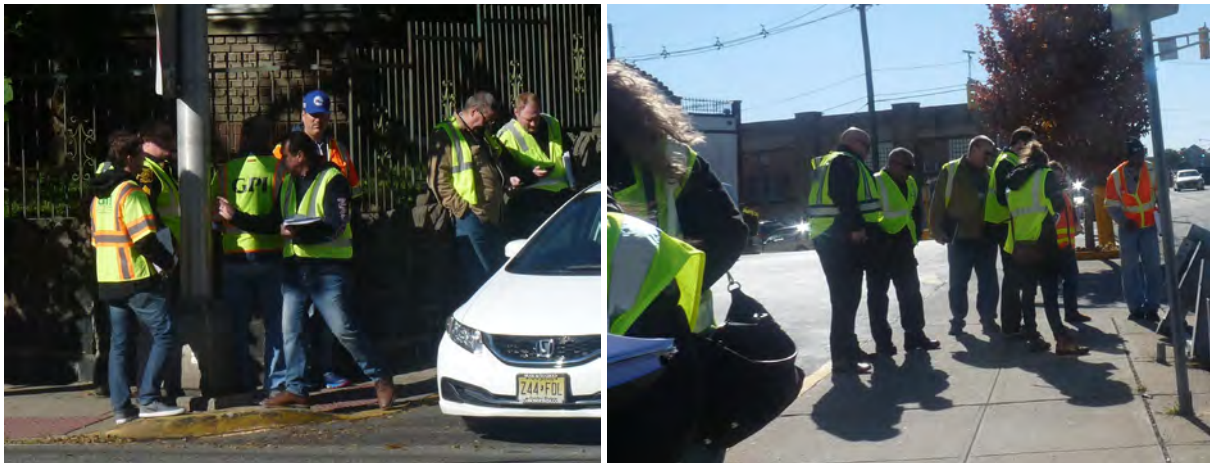
It is important to note that when it comes to improving safety, engineering strategies alone only go so far, especially in areas undergoing redevelopment. Education, with support from a targeted enforcement campaign, is an effective approach for addressing driver and pedestrian behaviors that lead to crashes. Employing a multipronged approach is an effective course of action to advance the goal of improved safety on the corridor.

APPENDIX A

RSA TEAM

Audit Team

Name	Agency
Tom Malavasi	Hudson County Engineering
Jose Sieira	Hudson County Engineering
Sean J. Keating	Hudson County Engineering
Kevin Force	Hudson County Planning
Paul Cray	West New York Town Engineer
Sgt. Andres Rana	West New York Town Police Department
Sgt. John Stahl	North Bergen Township Police Department
Sgt. Archer Cuellar	Union City Police Department
Amon Boucher	NJDOT – Bureau of Transportation Data and Safety
Angela Quevedo	NJDOT – Bureau of Transportation Data and Safety
William Riviere	NJDOT – Office of Bicycle and Pedestrian Programs
Miriana Ghaly	NJDOT – Local Aid
Elmira Buongiorno	NJ Transit
Aimee Jefferson	NJTPA
Bernie Boerchers	Greenman-Pedersen, Inc. (NJDOT Consultant)
Andrew Halloran	Greenman-Pedersen, Inc.
Christopher Marra	Greenman-Pedersen, Inc.
Julia Steponanko	Greenman-Pedersen, Inc.




A special thank you to Hudson County Community College for use of their facilities!

APPENDIX B

AREA MAP



<p>NJDOT HSIP ROAD SAFETY AUDIT JFK BOULEVARD</p> <p>N. BERGEN TWP, UNION CITY, W. NEW YORK TOWN HUDSON COUNTY</p>	
<p>PROJECT LOCATION</p>	
	<p>GPI Greenman-Pedersen, Inc. Engineering and Construction Services</p>
<p>N.T.S.</p>	

APPENDIX C

TRAFFIC DATA

NEW JERSEY DEPARTMENT OF TRANSPORTATION
Traffic Count Data Summary

Street Name: JFK Boulevard
Location: Between 40th and 41st Street
Direction: NB/SB
Milepost: Various

County: Hudson
Municipality: North Bergen Twp/Union City
Site Code: 43-15 & 43-16
Count Date: 10/31/16 - 11/22/16

Date*	11/7/2016		11/1/2016		11/2/2016		11/3/2016		11/4/2016		11/5/2016		11/6/2016		Weekday Average		Weekend Average	
Day	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Saturday					
Direction	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	EB	WB	EB	WB
12:00 AM - 1:00 AM	152	153	206	161	171	158	<i>184</i>	159	15	195	366	305	403	394	178	158	385	350
1:00 AM - 2:00 AM	98	105	104	120	113	107	<i>108</i>	143	118	124	220	251	225	285	106	119	223	268
2:00 AM - 3:00 AM	61	86	96	93	74	78	<i>80</i>	86	111	95	181	196	154	169	78	86	168	183
3:00 AM - 4:00 AM	61	84	77	111	62	80	<i>75</i>	104	79	102	142	126	132	115	69	95	137	121
4:00 AM - 5:00 AM	62	142	72	137	80	130	<i>78</i>	147	84	148	119	121	70	85	73	139	95	103
5:00 AM - 6:00 AM	144	353	146	355	167	338	<i>190</i>	352	156	352	127	211	98	123	162	350	113	167
6:00 AM - 7:00 AM	385	1008	345	891	361	952	<i>389</i>	925	365	876	254	494	176	290	370	944	215	392
7:00 AM - 8:00 AM	694	1372	699	1272	713	1341	<i>721</i>	1350	707	1353	449	686	295	435	707	1334	372	561
8:00 AM - 9:00 AM	839	1249	816	1177	864	1257	<i>909</i>	1295	823	1318	646	850	473	566	857	1245	560	708
9:00 AM - 10:00 AM	905	1012	841	1040	841	1053	<i>846</i>	1009	907	1039	861	1007	682	832	858	1029	772	920
10:00 AM - 11:00 AM	802	990	850	1002	887	1011	<i>937</i>	947	932	1054	975	1080	853	1013	869	988	914	1047
11:00 AM - 12:00 PM	328	1030	954	1031	891	1003	<i>901</i>	1007	974	1080	1018	1256	927	1066	769	1018	973	1161
12:00 PM - 1:00 PM	193	1087	449	1076	897	1013	<i>849</i>	1035	880	1111	365	1218	971	1217	597	1053	668	1218
1:00 PM - 2:00 PM	548	1031	938	1211	951	1044	<i>944</i>	1068	<i>1062</i>	1103	<i>1162</i>	1148	1037	1240	845	1089	1100	1194
2:00 PM - 3:00 PM	<i>1073</i>	977	955	1116	184	1066	<i>989</i>	1069	920	1159	<i>1083</i>	1206	1081	1206	800	1057	1082	1206
3:00 PM - 4:00 PM	646	1196	961	1215	815	1151	<i>653</i>	1218	1106	1225	<i>1097</i>	1161	1045	1119	769	1195	1071	1140
4:00 PM - 5:00 PM	1181	1232	992	1219	<i>1037</i>	1136	<i>455</i>	1165	1047	1212	935	1226	905	1074	916	1188	920	1150
5:00 PM - 6:00 PM	1254	1195	1035	1144	75	1152	<i>1075</i>	1121	1131	1240	917	1297	<i>914</i>	1015	860	1153	916	1156
6:00 PM - 7:00 PM	1212	1073	1081	1128	497	1120	<i>1070</i>	1108	1059	1259	1009	1175	<i>979</i>	547	965	1107	994	861
7:00 PM - 8:00 PM	986	886	1010	1002	<i>1051</i>	1106	<i>1068</i>	1004	1026	1157	942	1083	<i>784</i>	185	1029	1000	863	634
8:00 PM - 9:00 PM	391	727	681	831	<i>729</i>	848	<i>789</i>	794	920	934	903	928	353	654	648	800	628	791
9:00 PM - 10:00 PM	576	479	610	606	<i>694</i>	599	<i>626</i>	666	756	774	720	756	452	479	627	588	586	618
10:00 PM - 11:00 PM	469	305	458	392	<i>514</i>	378	<i>459</i>	451	648	573	617	647	368	388	475	382	493	518
11:00 PM - 12:00AM	275	252	302	271	<i>314</i>	241	<i>284</i>	282	505	443	551	447	261	276	294	262	406	362

** NJDOT 2016 Correction Factors, Region 1
 (Functional Class 14: Urban Principal) - November

* Volumes of zero replaced with data from week of 11/13/16 as noted in italics
 Data from Rt 495, Rt 1&9/Paterson Plank Road

24 Hours	13,919	18,373	14,649	16,824
Seasonal Factor**	0.997		0.997	
Axle Cor. Factor**	0.940		0.940	
Avg Volume ("ADT")	13,045	17,219	13,729	15,768
2-way ADT	30,264		29,497	
K-Factor	0.07		0.078	
D-Factor	0.57		0.53	

Rt 495, Rt 1&9/Paterson Plank Rd Bridge
 John F. Kennedy Boulevard and 43rd St
 6-10 AM 3-8 PM
 40.779473, -74.026738

Groups Printed- Cars - Medium Trucks - Heavy Trucks

Start Time	JFK Boulevard Southbound							43rd Street Westbound							JFK Boulevard Northbound							Hillside Place Eastbound							43rd Street Southeastbound							Int. Total	
	Left	Thru	Right	Hard Right	U-Turn	Peds	App. Total	Left	Thru	Bear Right	Right	U-Turn	Peds	App. Total	Left	Bear Left	Thru	Right	U-Turn	Peds	App. Total	Hard Left	Left	Thru	Right	U-Turn	Peds	App. Total	Peds EB/SE	Hard Left	Bear Left	Bear Right	Hard Right	U-Turn	Peds		App. Total
06:00 AM	0	0	0	0	0	0	0	6	0	6	1	0	0	13	0	3	59	5	0	0	67	0	4	8	4	0	1	17	0	0	0	0	0	0	0	97	
06:15 AM	0	41	0	2	0	0	43	5	0	4	5	0	0	14	0	1	70	13	0	0	84	0	3	2	3	0	0	8	0	5	3	0	0	0	4	12	161
06:30 AM	3	252	0	15	0	0	270	10	0	9	5	1	0	25	0	2	91	8	0	0	101	0	0	0	0	0	4	4	0	9	6	6	1	0	6	28	428
06:45 AM	7	259	2	21	0	0	289	20	0	4	10	0	0	34	1	0	98	6	0	0	105	0	0	0	1	0	4	5	6	11	18	5	6	0	4	50	483
Total	10	552	2	38	0	0	602	41	0	23	21	1	0	86	1	6	318	32	0	0	357	0	7	10	8	0	9	34	6	25	27	11	7	0	14	90	1169
07:00 AM	6	249	0	23	0	10	288	12	0	7	7	0	13	39	0	5	117	12	0	5	139	0	0	0	0	0	2	2	5	11	19	13	1	0	5	54	522
07:15 AM	7	313	0	35	0	6	361	20	1	2	6	0	16	45	3	3	127	15	0	7	155	0	0	0	0	0	4	4	4	16	24	5	3	0	5	57	622
07:30 AM	8	310	5	35	0	5	363	22	0	7	19	0	29	77	3	5	133	25	0	5	171	0	1	1	0	0	3	5	4	18	31	9	6	0	2	70	686
07:45 AM	8	264	4	49	0	14	339	33	1	9	15	0	19	77	0	3	142	20	0	5	170	1	0	0	1	0	2	4	5	16	35	7	3	0	4	70	660
Total	29	1136	9	142	0	35	1351	87	2	25	47	0	77	238	6	16	519	72	0	22	635	1	1	1	1	0	11	15	18	61	109	34	13	0	16	251	2490
08:00 AM	9	251	1	39	0	12	312	19	0	13	11	0	16	59	0	2	208	23	0	8	241	0	0	0	0	0	3	3	9	18	22	5	3	0	2	59	674
08:15 AM	3	219	1	25	0	7	255	23	0	17	12	0	13	65	1	9	178	18	0	3	209	0	0	0	1	0	3	4	1	11	30	9	4	0	22	77	610
08:30 AM	1	271	4	32	0	4	312	18	0	8	10	0	5	41	1	13	161	23	0	2	200	1	1	0	0	0	2	4	2	17	26	5	9	0	3	62	619
08:45 AM	1	262	14	40	0	6	323	26	1	11	8	0	8	54	3	17	148	23	0	0	191	0	0	0	0	0	5	5	4	12	18	7	9	0	5	55	628
Total	14	1003	20	136	0	29	1202	86	1	49	41	0	42	219	5	41	695	87	0	13	841	1	1	0	1	0	13	16	16	58	96	26	25	0	32	253	2531
09:00 AM	12	240	11	26	0	9	298	24	1	8	5	0	0	38	2	10	182	21	0	2	217	0	0	0	1	0	5	6	4	11	16	9	8	0	3	51	610
09:15 AM	4	204	2	18	0	7	235	15	0	8	4	0	9	36	1	10	163	18	0	4	196	1	0	0	0	0	4	5	3	13	10	8	3	0	3	40	512
09:30 AM	6	210	1	12	0	7	236	14	0	9	6	0	7	36	0	6	172	18	0	5	201	1	0	0	0	0	4	5	4	9	11	4	6	0	3	37	515
09:45 AM	6	202	3	11	0	4	226	20	0	10	6	0	7	43	2	7	204	13	0	2	228	0	0	0	0	0	2	2	4	7	19	8	8	0	3	49	548
Total	28	856	17	67	0	27	995	73	1	35	21	0	23	153	5	33	721	70	0	13	842	2	0	0	1	0	15	18	15	40	56	29	25	0	12	177	2185
*** BREAK ***																																					
03:00 PM	2	211	5	28	0	4	250	21	0	10	12	0	35	78	0	10	201	20	0	1	232	1	0	0	1	0	5	7	7	11	14	6	5	0	3	46	613
03:15 PM	2	197	3	35	0	6	243	24	0	12	14	0	19	69	4	9	246	9	0	4	272	1	1	2	2	0	3	9	10	14	11	2	4	0	11	52	645
03:30 PM	3	186	5	42	0	13	249	13	0	14	11	0	18	56	0	12	271	14	0	7	304	3	0	0	1	0	3	7	7	14	19	4	3	0	6	53	669
03:45 PM	3	212	4	26	0	9	254	9	0	13	10	0	16	48	0	9	281	10	0	5	305	2	0	0	1	0	2	5	8	21	20	6	5	0	5	65	677
Total	10	806	17	131	0	32	996	67	0	49	47	0	88	251	4	40	999	53	0	17	1113	7	1	2	5	0	13	28	32	60	64	18	17	0	25	216	2604

Rt 495, Rt 1&9/Paterson Plank Rd Bridge
 John F. Kennedy Boulevard and 43rd St
 6-10 AM 3-8 PM
 40.779473, -74.026738

Groups Printed- Cars - Medium Trucks - Heavy Trucks

Start Time	JFK Boulevard Southbound							43rd Street Westbound							JFK Boulevard Northbound							Hillside Place Eastbound							43rd Street Southeastbound							Int. Total		
	Left	Thru	Right	Hard Right	U-Turn	Peds	App. Total	Left	Thru	Bear Right	Right	U-Turn	Peds	App. Total	Left	Bear Left	Thru	Right	U-Turn	Peds	App. Total	Hard Left	Left	Thru	Right	U-Turn	Peds	App. Total	Peds EBSE	Hard Left	Bear Left	Bear Right	Hard Right	U-Turn	Peds		App. Total	
04:00 PM	6	266	2	19	0	11	304	10	0	7	10	0	24	51	1	8	272	21	0	1	303	4	6	1	1	0	2	14	13	18	14	7	5	0	4	61	733	
04:15 PM	5	255	3	27	0	7	297	16	0	16	13	0	17	62	1	6	261	25	0	9	302	6	0	0	0	0	7	13	12	22	17	6	6	0	4	67	741	
04:30 PM	2	251	3	31	0	11	298	22	0	12	15	0	19	68	0	5	250	17	0	5	277	1	0	2	1	0	2	6	3	16	17	10	4	0	4	54	703	
04:45 PM	6	248	1	22	0	9	286	12	0	9	24	0	14	59	2	7	280	19	0	2	310	1	0	0	0	0	3	4	4	18	18	12	2	0	6	60	719	
Total	19	1020	9	99	0	38	1185	60	0	44	62	0	74	240	4	26	1063	82	0	17	1192	12	6	3	2	0	14	37	32	74	66	35	17	0	18	242	2896	
05:00 PM	6	247	0	19	0	8	280	17	0	15	14	0	20	66	3	4	215	25	0	9	256	2	0	0	0	0	4	6	11	18	21	5	4	0	4	63	671	
05:15 PM	5	248	3	23	0	9	288	18	0	14	13	0	26	71	0	5	263	26	0	12	306	0	0	0	0	0	4	4	10	11	25	5	0	0	6	57	726	
05:30 PM	8	261	1	24	0	3	297	20	0	10	8	0	19	57	0	2	252	22	0	1	277	0	0	0	0	0	1	1	2	28	22	5	2	0	3	62	694	
05:45 PM	7	231	2	18	0	13	271	9	0	10	18	0	25	62	1	9	207	34	0	6	257	0	0	0	0	0	6	6	7	27	30	4	1	0	12	81	677	
Total	26	987	6	84	0	33	1136	64	0	49	53	0	90	256	4	20	937	107	0	28	1096	2	0	0	0	0	15	17	30	84	98	19	7	0	25	263	2768	
06:00 PM	3	223	3	23	0	10	262	15	0	10	21	0	12	58	1	9	205	21	0	4	240	1	0	0	1	0	3	5	8	28	25	5	3	0	7	76	641	
06:15 PM	14	271	2	22	0	9	318	14	0	10	12	0	20	56	2	3	194	16	0	5	220	0	0	0	0	0	3	3	3	25	31	6	2	0	3	70	667	
06:30 PM	3	231	3	11	0	10	258	18	0	11	9	0	7	45	2	6	241	26	0	12	287	0	0	0	0	0	9	9	7	18	22	12	5	0	5	69	668	
06:45 PM	6	234	0	12	0	5	257	13	8	7	6	0	9	43	2	7	234	19	0	5	267	2	1	0	0	0	7	10	7	17	24	5	4	0	6	63	640	
Total	26	959	8	68	0	34	1095	60	8	38	48	0	48	202	7	25	874	82	0	26	1014	3	1	0	1	0	22	27	25	88	102	28	14	0	21	278	2616	
07:00 PM	6	224	3	17	0	5	255	15	0	14	7	0	8	44	2	8	240	20	0	2	272	0	0	0	1	0	2	3	5	15	15	8	2	0	4	49	623	
07:15 PM	6	223	3	16	0	15	263	13	0	14	7	0	8	42	2	11	267	16	0	4	300	1	0	0	0	0	1	2	7	13	10	3	1	0	6	40	647	
07:30 PM	2	229	3	14	0	6	254	24	0	13	9	0	8	54	0	6	263	13	0	1	283	0	0	0	0	0	0	0	2	9	13	10	2	0	4	40	631	
07:45 PM	4	185	2	16	0	13	220	15	0	6	7	0	14	42	1	5	232	14	0	3	255	0	0	0	0	0	1	1	6	10	12	5	0	0	5	38	556	
Total	18	861	11	63	0	39	992	67	0	47	30	0	38	182	5	30	1002	63	0	10	1110	1	0	0	1	0	4	6	20	47	50	26	5	0	19	167	2457	
Grand Total	180	8180	99	828	0	267	9554	605	12	359	370	1	480	1827	41	237	7128	648	0	146	8200	29	17	16	20	0	116	198	194	537	668	226	130	0	182	1937	21716	
Apprch %	1.9	85.6	1	8.7	0	2.8		33.1	0.7	19.6	20.3	0.1	26.3		0.5	2.9	86.9	7.9	0	1.8		14.6	8.6	8.1	10.1	0	58.6		10	27.7	34.5	11.7	6.7	0	9.4			
Total %	0.8	37.7	0.5	3.8	0	1.2	44	2.8	0.1	1.7	1.7	0	2.2	8.4	0.2	1.1	32.8	3	0	0.7	37.8	0.1	0.1	0.1	0.1	0	0.5	0.9	0.9	2.5	3.1	1	0.6	0	0.8	8.9		
Cars	174	8024															8912																					21238
% Cars	96.7	98.1	100	98.4	0	100	98.2	97.2	100	96.9	97.8	100	100	98	100	97.9	97	95.2	0	100	96.9	100	100	100	100	0	100	100	100	98.9	99	99.1	100	0	100	99.2	97.8	
Medium Trucks	6	123	0	11	0	0	140	12	0	4	8	0	0	24	0	5	150	22	0	0	177	0	0	0	0	0	0	0	0	5	2	2	0	0	0	9	350	
% Medium Trucks	3.3	1.5	0	1.3	0	0	1.5	2	0	1.1	2.2	0	0	1.3	0	2.1	2.1	3.4	0	0	2.2	0	0	0	0	0	0	0	0	0.9	0.3	0.9	0	0	0	0.5	1.6	
Heavy Trucks	0	33	0	2	0	0	35	5	0	7	0	0	0	12	0	0	66	9	0	0	75	0	0	0	0	0	0	0	1	5	0	0	0	0	0	6	128	
% Heavy Trucks	0	0.4	0	0.2	0	0	0.4	0.8	0	1.9	0	0	0	0.7	0	0	0.9	1.4	0	0	0.9	0	0	0	0	0	0	0	0	0.2	0.7	0	0	0	0	0.3	0.6	

Rt 495, Rt 1&9/Paterson Plank Rd Bridge
 John F. Kennedy Boulevard and 43rd St
 6-10 AM 3-8 PM
 40.779473, -74.026738

Start Time	JFK Boulevard Southbound							43rd Street Westbound							JFK Boulevard Northbound							Hillside Place Eastbound							43rd Street Southeastbound							Int. Total
	Left	Thru	Right	Hard Right	U-Turn	Peds	App. Total	Left	Thru	Bear Right	Right	U-Turn	Peds	App. Total	Left	Bear Left	Thru	Right	U-Turn	Peds	App. Total	Hard Left	Left	Thru	Right	U-Turn	Peds	App. Total	Peds EBSE	Hard Left	Bear Left	Bear Right	Hard Right	U-Turn	Peds	

Peak Hour Analysis From 06:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:15 AM

07:15 AM	7	313	0	35	0	6	361	20	1	2	6	0	16	45	3	3	127	15	0	7	155	0	0	0	0	0	4	4	4	16	24	5	3	0	5	57	622
07:30 AM	8	310	5	35	0	5	363	22	0	7	19	0	29	77	3	5	133	25	0	5	171	0	1	1	0	0	3	5	4	18	31	9	6	0	2	70	686
07:45 AM	8	264	4	49	0	14	339	33	1	9	15	0	19	77	0	3	142	20	0	5	170	1	0	0	1	0	2	4	5	16	35	7	3	0	4	70	660
08:00 AM	9	251	1	39	0	12	312	19	0	13	11	0	16	59	0	2	208	23	0	8	241	0	0	0	0	0	3	3	9	18	22	5	3	0	2	59	674
Total Volume	32	1138	10	158	0	37	1375	94	2	31	51	0	80	258	6	13	610	83	0	25	737	1	1	1	1	0	12	16	22	68	112	26	15	0	13	256	2642
% App. Total	2.3	82.8	0.7	11.5	0	2.7		36.4	0.8	12	19.8	0	31		0.8	1.8	82.8	11.3	0	3.4		6.2	6.2	6.2	6.2	0	75		8.6	26.6	43.8	10.2	5.9	0	5.1		
PHF	.889	.909	.500	.806	.000	.661	.947	.712	.500	.596	.671	.000	.690	.838	.500	.650	.733	.830	.000	.781	.765	.250	.250	.250	.250	.000	.750	.800	.611	.944	.800	.722	.625	.000	.650	.914	.963

Peak Hour Analysis From 12:00 PM to 07:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM

04:00 PM	6	266	2	19	0	11	304	10	0	7	10	0	24	51	1	8	272	21	0	1	303	4	6	1	1	0	2	14	13	18	14	7	5	0	4	61	733
04:15 PM	5	255	3	27	0	7	297	16	0	16	13	0	17	62	1	6	261	25	0	9	302	6	0	0	0	0	7	13	12	22	17	6	6	0	4	67	741
04:30 PM	2	251	3	31	0	11	298	22	0	12	15	0	19	68	0	5	250	17	0	5	277	1	0	2	1	0	2	6	3	16	17	10	4	0	4	54	703
04:45 PM	6	248	1	22	0	9	286	12	0	9	24	0	14	59	2	7	280	19	0	2	310	1	0	0	0	0	3	4	4	18	18	12	2	0	6	60	719
Total Volume	19	1020	9	99	0	38	1185	60	0	44	62	0	74	240	4	26	1063	82	0	17	1192	12	6	3	2	0	14	37	32	74	66	35	17	0	18	242	2896
% App. Total	1.6	86.1	0.8	8.4	0	3.2		25	0	18.3	25.8	0	30.8		0.3	2.2	89.2	6.9	0	1.4		32.4	16.2	8.1	5.4	0	37.8		13.2	30.6	27.3	14.5	7	0	7.4		
PHF	.792	.959	.750	.798	.000	.864	.975	.682	.000	.688	.646	.000	.771	.882	.500	.813	.949	.820	.000	.472	.961	.500	.250	.375	.500	.000	.500	.661	.615	.841	.917	.729	.708	.000	.750	.903	.977

TechniQuest Corporation

4105 US Route 1, Suite # 10
Monmouth Junction, NJ 08852

Phone: 732-275-9510 Fax: 732-274-9510

Rt 495, Rt 1&9/Paterson Plank Rd Bridge
John F. Kennedy Boulevard and 46th St
6-10 AM 3-8 PM
40.78146, -74.024495

File Name : 43.97
Site Code : 97
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars - Medium Trucks - Heavy Trucks

Start Time	JFK Boulevard Southbound						Westbound						JFK Boulevard Northbound						46th Street Eastbound						Int. Total	
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total		
06:00 AM	0	133	14	0	6	153	0	0	0	0	0	0	1	86	0	0	0	87	25	0	1	0	2	28	268	
06:15 AM	0	160	13	0	1	174	0	0	0	0	4	4	2	91	0	0	0	93	31	0	6	0	0	37	308	
06:30 AM	0	226	27	0	2	255	0	0	0	0	2	2	8	101	0	0	0	109	41	0	8	0	3	52	418	
06:45 AM	0	236	31	0	1	268	0	0	0	0	2	2	5	101	0	0	0	106	42	0	6	0	3	51	427	
Total	0	755	85	0	10	850	0	0	0	0	8	8	16	379	0	0	0	395	139	0	21	0	8	168	1421	
07:00 AM	0	265	47	0	2	314	0	0	0	0	0	0	4	142	0	0	0	146	48	0	6	0	2	56	516	
07:15 AM	0	319	81	0	1	401	0	0	0	0	5	5	8	161	0	0	0	169	56	0	9	0	3	68	643	
07:30 AM	0	269	98	0	0	367	0	0	0	0	3	3	2	171	0	0	0	173	66	0	10	0	4	80	623	
07:45 AM	0	270	94	0	2	366	0	0	0	0	2	2	7	163	0	0	0	170	84	0	12	0	5	101	639	
Total	0	1123	320	0	5	1448	0	0	0	0	10	10	21	637	0	0	0	658	254	0	37	0	14	305	2421	
08:00 AM	0	261	83	0	2	346	0	0	0	0	3	3	8	236	0	0	0	244	59	0	7	0	3	69	662	
08:15 AM	0	256	65	0	1	322	0	0	0	0	3	3	6	185	0	0	0	191	72	0	8	0	0	80	596	
08:30 AM	0	260	61	0	0	321	0	0	0	0	5	5	8	189	0	0	0	197	57	0	7	0	3	67	590	
08:45 AM	0	254	57	0	3	314	0	0	0	0	3	3	4	188	0	0	0	192	70	0	11	0	8	89	598	
Total	0	1031	266	0	6	1303	0	0	0	0	14	14	26	798	0	0	0	824	258	0	33	0	14	305	2446	
09:00 AM	0	261	37	0	3	301	0	0	0	0	2	2	4	199	0	0	0	203	43	0	6	0	2	51	557	
09:15 AM	0	190	25	0	0	215	0	0	0	0	1	1	7	187	0	0	0	194	29	0	8	0	0	37	447	
09:30 AM	0	200	42	0	1	243	0	0	0	0	2	2	8	169	0	0	0	177	50	0	6	0	0	56	478	
09:45 AM	0	187	18	0	2	207	0	0	0	0	1	1	6	217	0	0	0	223	45	0	6	0	0	51	482	
Total	0	838	122	0	6	966	0	0	0	0	6	6	25	772	0	0	0	797	167	0	26	0	2	195	1964	
*** BREAK ***																										
03:00 PM	0	225	75	0	1	301	0	0	0	0	3	3	10	239	0	0	0	249	65	0	9	0	1	75	628	
03:15 PM	0	208	66	0	2	276	0	0	0	0	8	8	11	254	0	0	0	265	71	0	7	0	4	82	631	
03:30 PM	0	214	86	0	5	305	0	0	0	0	4	4	11	260	0	0	0	271	69	0	11	0	6	86	666	
03:45 PM	0	204	65	0	4	273	0	0	0	0	3	3	8	269	0	0	0	277	71	0	14	0	7	92	645	
Total	0	851	292	0	12	1155	0	0	0	0	18	18	40	1022	0	0	0	1062	276	0	41	0	18	335	2570	
04:00 PM	0	260	62	0	1	323	0	0	0	0	2	2	9	282	0	0	0	291	81	0	10	0	3	94	710	
04:15 PM	0	249	45	0	4	298	0	0	0	0	9	9	4	274	0	0	0	278	82	0	6	0	11	99	684	
04:30 PM	0	261	50	0	3	314	0	0	0	0	1	1	9	257	0	0	0	266	94	0	8	0	3	105	686	
04:45 PM	0	234	47	0	0	281	0	0	0	0	9	9	6	282	0	0	0	288	89	0	10	0	5	104	682	
Total	0	1004	204	0	8	1216	0	0	0	0	21	21	28	1095	0	0	0	1123	346	0	34	0	22	402	2762	

TechniQuest Corporation

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Rt 495, Rt 1&9/Paterson Plank Rd Bridge
John F. Kennedy Boulevard and 46th St
6-10 AM 3-8 PM
40.78146, -74.024495

File Name : 43.97
Site Code : 97
Start Date : 10/26/2016
Page No : 2

Groups Printed- Cars - Medium Trucks - Heavy Trucks

Start Time	JFK Boulevard Southbound						Westbound						JFK Boulevard Northbound						46th Street Eastbound						Int. Total	
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total		
05:00 PM	0	239	40	0	5	284	0	0	0	0	2	2	6	254	0	0	0	0	260	91	0	5	0	5	101	647
05:15 PM	0	230	47	0	11	288	0	0	0	0	3	3	5	292	0	0	0	0	297	73	0	7	0	2	82	670
05:30 PM	0	264	54	0	0	318	0	0	0	0	3	3	10	285	0	0	0	0	295	90	0	6	0	1	97	713
05:45 PM	0	218	39	0	5	262	0	0	0	0	3	3	6	251	0	0	0	0	257	92	0	2	0	11	105	627
Total	0	951	180	0	21	1152	0	0	0	0	11	11	27	1082	0	0	0	0	1109	346	0	20	0	19	385	2657
06:00 PM	0	214	38	0	2	254	0	0	0	0	3	3	8	230	0	0	0	0	238	74	0	9	0	10	93	588
06:15 PM	0	257	39	0	0	296	0	0	0	0	7	7	10	222	0	0	0	0	232	80	0	7	0	8	95	630
06:30 PM	0	209	44	0	0	253	0	0	0	0	3	3	7	274	0	0	0	0	281	80	0	14	0	3	97	634
06:45 PM	0	222	42	0	1	265	0	0	0	0	1	1	9	257	0	0	0	0	266	67	0	14	0	11	92	624
Total	0	902	163	0	3	1068	0	0	0	0	14	14	34	983	0	0	0	0	1017	301	0	44	0	32	377	2476
07:00 PM	0	219	29	0	1	249	0	0	0	0	3	3	17	253	0	0	0	0	270	70	0	8	0	10	88	610
07:15 PM	0	222	29	0	2	253	0	0	0	0	0	0	13	281	0	0	0	0	294	65	0	7	0	2	74	621
07:30 PM	0	198	30	0	0	228	0	0	0	0	13	13	19	248	0	0	0	0	267	74	0	14	0	12	100	608
07:45 PM	0	172	24	0	0	196	0	0	0	0	2	2	8	255	0	0	0	0	263	57	0	16	0	6	79	540
Total	0	811	112	0	3	926	0	0	0	0	18	18	57	1037	0	0	0	0	1094	266	0	45	0	30	341	2379
Grand Total	0	8266	1744	0	74	10084	0	0	0	0	120	120	274	7805	0	0	0	0	8079	2353	0	301	0	159	2813	21096
Apprch %	0	82	17.3	0	0.7		0	0	0	0	100		3.4	96.6	0	0	0			83.6	0	10.7	0	5.7		
Total %	0	39.2	8.3	0	0.4	47.8	0	0	0	0	0.6	0.6	1.3	37	0	0	0	38.3		11.2	0	1.4	0	0.8	13.3	
Cars	0	8031	1706	0	73	9810	0	0	0	0	118	118	264	7574	0	0	0	7838		2319	0	296	0	159	2774	20540
% Cars	0	97.2	97.8	0	98.6	97.3	0	0	0	0	98.3	98.3	96.4	97	0	0	0	97		98.6	0	98.3	0	100	98.6	97.4
Medium Trucks	0	87	9	0	0	96	0	0	0	0	2	2	2	94	0	0	0	96		16	0	1	0	0	17	211
% Medium Trucks	0	1.1	0.5	0	0	1	0	0	0	0	1.7	1.7	0.7	1.2	0	0	0	1.2		0.7	0	0.3	0	0	0.6	1
Heavy Trucks	0	148	29	0	1	178	0	0	0	0	0	0	8	137	0	0	0	145		18	0	4	0	0	22	345
% Heavy Trucks	0	1.8	1.7	0	1.4	1.8	0	0	0	0	0	0	2.9	1.8	0	0	0	1.8		0.8	0	1.3	0	0	0.8	1.6

TechniQuest Corporation

4105 US Route 1, Suite # 10
Monmouth Junction, NJ 08852

Phone: 732-275-9510 Fax: 732-274-9510

Rt 495, Rt 1&9/Paterson Plank Rd Bridge
John F. Kennedy Boulevard and 46th St
6-10 AM 3-8 PM
40.78146, -74.024495

File Name : 43.97
Site Code : 97
Start Date : 10/26/2016
Page No : 3

Start Time	JFK Boulevard Southbound						Westbound						JFK Boulevard Northbound						46th Street Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
Peak Hour Analysis From 06:00 AM to 11:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:15 AM																									
07:15 AM	0	319	81	0	1	401	0	0	0	0	5	5	8	161	0	0	0	169	56	0	9	0	3	68	643
07:30 AM	0	269	98	0	0	367	0	0	0	0	3	3	2	171	0	0	0	173	66	0	10	0	4	80	623
07:45 AM	0	270	94	0	2	366	0	0	0	0	2	2	7	163	0	0	0	170	84	0	12	0	5	101	639
08:00 AM	0	261	83	0	2	346	0	0	0	0	3	3	8	236	0	0	0	244	59	0	7	0	3	69	662
Total Volume	0	1119	356	0	5	1480	0	0	0	0	13	13	25	731	0	0	0	756	265	0	38	0	15	318	2567
% App. Total	0	75.6	24.1	0	0.3		0	0	0	0	100		3.3	96.7	0	0	0		83.3	0	11.9	0	4.7		
PHF	.000	.877	.908	.000	.625	.923	.000	.000	.000	.000	.650	.650	.781	.774	.000	.000	.000	.775	.789	.000	.792	.000	.750	.787	.969

Peak Hour Analysis From 12:00 PM to 07:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:00 PM																									
04:00 PM	0	260	62	0	1	323	0	0	0	0	2	2	9	282	0	0	0	291	81	0	10	0	3	94	710
04:15 PM	0	249	45	0	4	298	0	0	0	0	9	9	4	274	0	0	0	278	82	0	6	0	11	99	684
04:30 PM	0	261	50	0	3	314	0	0	0	0	1	1	9	257	0	0	0	266	94	0	8	0	3	105	686
04:45 PM	0	234	47	0	0	281	0	0	0	0	9	9	6	282	0	0	0	288	89	0	10	0	5	104	682
Total Volume	0	1004	204	0	8	1216	0	0	0	0	21	21	28	1095	0	0	0	1123	346	0	34	0	22	402	2762
% App. Total	0	82.6	16.8	0	0.7		0	0	0	0	100		2.5	97.5	0	0	0		86.1	0	8.5	0	5.5		
PHF	.000	.962	.823	.000	.500	.941	.000	.000	.000	.000	.583	.583	.778	.971	.000	.000	.000	.965	.920	.000	.850	.000	.500	.957	.973

TechniQuest Corporation

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Rt 495, Rt 1&9/Paterson Plank Rd Bridge
 John F. Kennedy Boulevard and 51st St
 6-10 AM 3-8 PM
 40.784332, -74.022695

File Name : 43.1
 Site Code : 1
 Start Date : 10/26/2016
 Page No : 1

Groups Printed- Cars - Medium Trucks - Heavy Trucks

Start Time	JFK Boulevard Southbound						51th Street Westbound						JFK Boulevard Northbound						51th Street Eastbound						Int. Total	
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total		
06:00 AM	0	119	48	0	2	169	25	38	4	0	5	72	3	75	0	0	3	81	24	0	7	0	3	34	356	
06:15 AM	0	137	38	0	0	175	32	39	6	0	11	88	6	85	0	0	3	94	26	0	18	0	3	47	404	
06:30 AM	0	196	45	0	2	243	51	43	10	0	10	114	2	120	0	0	3	125	37	0	14	0	8	59	541	
06:45 AM	0	207	38	0	1	246	36	38	10	0	10	94	3	99	0	0	7	109	44	0	22	0	8	74	523	
Total	0	659	169	0	5	833	144	158	30	0	36	368	14	379	0	0	16	409	131	0	61	0	22	214	1824	
07:00 AM	0	237	43	0	1	281	48	43	11	0	3	105	5	153	0	0	0	158	38	0	32	0	3	73	617	
07:15 AM	0	335	65	0	1	401	63	41	17	0	12	133	6	143	0	0	3	152	47	0	31	0	0	78	764	
07:30 AM	0	321	62	0	1	384	48	34	21	0	2	105	7	157	0	0	6	170	36	0	30	0	3	69	728	
07:45 AM	0	294	54	0	6	354	57	63	22	0	6	148	10	149	0	0	3	162	38	0	34	0	11	83	747	
Total	0	1187	224	0	9	1420	216	181	71	0	23	491	28	602	0	0	12	642	159	0	127	0	17	303	2856	
08:00 AM	0	252	37	0	2	291	33	39	17	0	2	91	3	205	0	0	6	214	50	0	19	0	5	74	670	
08:15 AM	0	286	44	0	8	338	48	40	15	0	3	106	3	190	0	0	7	200	48	0	27	0	4	79	723	
08:30 AM	0	274	54	0	7	335	49	39	17	0	1	106	8	169	0	0	7	184	42	0	26	0	4	72	697	
08:45 AM	0	276	42	0	5	323	47	35	12	0	0	94	5	182	0	1	6	194	38	2	26	0	7	73	684	
Total	0	1088	177	0	22	1287	177	153	61	0	6	397	19	746	0	1	26	792	178	2	98	0	20	298	2774	
09:00 AM	0	243	19	0	1	263	41	26	17	0	3	87	7	197	0	0	12	216	66	0	24	0	7	97	663	
09:15 AM	0	173	30	0	1	204	39	23	14	0	0	76	3	155	0	0	10	168	68	0	16	0	2	86	534	
09:30 AM	0	215	30	0	3	248	37	20	10	0	6	73	4	179	0	0	0	183	64	0	19	0	3	86	590	
09:45 AM	0	183	23	0	3	209	34	31	16	0	2	83	2	200	0	0	4	206	60	0	26	0	2	88	586	
Total	0	814	102	0	8	924	151	100	57	0	11	319	16	731	0	0	26	773	258	0	85	0	14	357	2373	
*** BREAK ***																										
03:00 PM	0	248	49	1	7	305	44	42	13	0	3	102	8	237	0	0	18	263	37	0	20	0	12	69	739	
03:15 PM	0	232	30	0	5	267	34	38	11	0	10	93	9	256	0	0	4	269	40	0	31	0	9	80	709	
03:30 PM	0	226	25	0	6	257	27	31	24	0	5	87	9	216	0	0	2	227	50	0	30	0	8	88	659	
03:45 PM	0	278	48	0	3	329	32	21	23	0	8	84	7	263	0	0	7	277	53	0	31	0	8	92	782	
Total	0	984	152	1	21	1158	137	132	71	0	26	366	33	972	0	0	31	1036	180	0	112	0	37	329	2889	
04:00 PM	0	251	43	0	5	299	38	29	18	0	13	98	8	289	0	0	10	307	53	0	33	0	11	97	801	
04:15 PM	0	239	37	0	1	277	37	29	22	0	3	91	8	262	0	0	10	280	55	0	33	0	8	96	744	
04:30 PM	0	269	50	0	7	326	34	34	23	0	5	96	10	282	0	0	14	306	58	0	20	0	11	89	817	
04:45 PM	0	211	36	0	8	255	53	26	23	0	6	108	12	322	0	0	5	339	62	0	31	0	9	102	804	
Total	0	970	166	0	21	1157	162	118	86	0	27	393	38	1155	0	0	39	1232	228	0	117	0	39	384	3166	

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Rt 495, Rt 1&9/Paterson Plank Rd Bridge
 John F. Kennedy Boulevard and 51st St
 6-10 AM 3-8 PM
 40.784332, -74.022695

File Name : 43.1
 Site Code : 1
 Start Date : 10/26/2016
 Page No : 2

Groups Printed- Cars - Medium Trucks - Heavy Trucks

Start Time	JFK Boulevard Southbound						51th Street Westbound						JFK Boulevard Northbound						51th Street Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
05:00 PM	0	200	35	0	8	243	44	25	26	0	8	103	9	268	0	0	5	282	63	0	21	0	9	93	721
05:15 PM	0	198	33	0	2	233	40	34	28	0	6	108	7	289	0	0	8	304	41	0	30	0	10	81	726
05:30 PM	0	282	35	0	2	319	39	36	26	0	8	109	6	296	0	0	9	311	54	0	33	0	6	93	832
05:45 PM	0	225	42	0	5	272	42	32	16	0	11	101	7	293	0	0	15	315	57	0	32	0	14	103	791
Total	0	905	145	0	17	1067	165	127	96	0	33	421	29	1146	0	0	37	1212	215	0	116	0	39	370	3070
06:00 PM	0	233	33	0	6	272	41	26	25	0	10	102	10	289	0	0	11	310	52	0	32	0	7	91	775
06:15 PM	0	269	37	0	8	314	40	25	31	0	6	102	13	210	0	0	1	224	56	0	31	0	3	90	730
06:30 PM	0	211	34	0	10	255	43	37	18	0	10	108	6	272	0	0	14	292	55	0	14	0	10	79	734
06:45 PM	0	229	40	0	2	271	41	33	20	0	5	99	9	254	0	0	8	271	54	0	24	0	8	86	727
Total	0	942	144	0	26	1112	165	121	94	0	31	411	38	1025	0	0	34	1097	217	0	101	0	28	346	2966
07:00 PM	0	213	30	0	3	246	34	33	16	0	7	90	7	260	0	0	7	274	56	0	29	0	5	90	700
07:15 PM	0	202	22	0	5	229	37	25	14	0	10	86	5	245	0	0	1	251	47	0	31	0	4	82	648
07:30 PM	0	196	31	0	4	231	27	29	21	0	7	84	9	232	0	0	2	243	66	0	14	0	4	84	642
07:45 PM	0	157	26	0	3	186	36	21	22	0	1	80	7	240	0	0	0	247	52	0	29	0	2	83	596
Total	0	768	109	0	15	892	134	108	73	0	25	340	28	977	0	0	10	1015	221	0	103	0	15	339	2586
Grand Total	0	8317	1388	1	144	9850	1451	1198	639	0	218	3506	243	7733	0	1	231	8208	1787	2	920	0	231	2940	24504
Apprch %	0	84.4	14.1	0	1.5		41.4	34.2	18.2	0	6.2		3	94.2	0	0	2.8		60.8	0.1	31.3	0	7.9		
Total %	0	33.9	5.7	0	0.6	40.2	5.9	4.9	2.6	0	0.9	14.3	1	31.6	0	0	0.9	33.5	7.3	0	3.8	0	0.9	12	
Cars	0	8119	1367	1	144	9631	1420	1186	630	0	218	3454	242	7605	0	1	231	8079	1759	1	905	0	231	2896	24060
% Cars	0	97.6	98.5	100	100	97.8	97.9	99	98.6	0	100	98.5	99.6	98.3	0	100	100	98.4	98.4	50	98.4	0	100	98.5	98.2
Medium Trucks	0	148	14	0	0	162	27	10	8	0	0	45	1	112	0	0	0	113	22	1	13	0	0	36	356
% Medium Trucks	0	1.8	1	0	0	1.6	1.9	0.8	1.3	0	0	1.3	0.4	1.4	0	0	0	1.4	1.2	50	1.4	0	0	1.2	1.5
Heavy Trucks	0	50	7	0	0	57	4	2	1	0	0	7	0	16	0	0	0	16	6	0	2	0	0	8	88
% Heavy Trucks	0	0.6	0.5	0	0	0.6	0.3	0.2	0.2	0	0	0.2	0	0.2	0	0	0	0.2	0.3	0	0.2	0	0	0.3	0.4

Rt 495, Rt 1&9/Paterson Plank Rd Bridge
 John F. Kennedy Boulevard and 51st St
 6-10 AM 3-8 PM
 40.784332, -74.022695

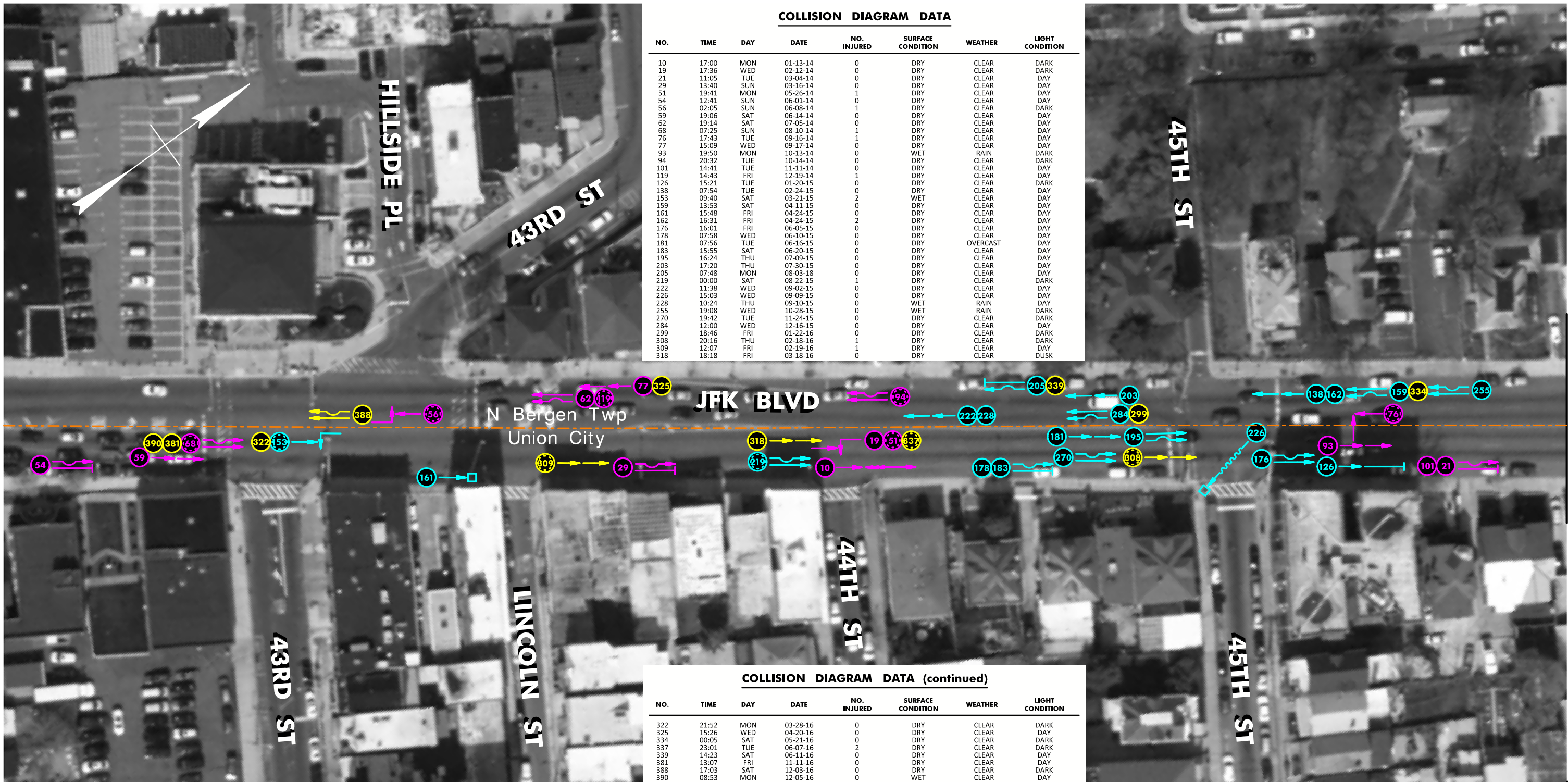
File Name : 43.1
 Site Code : 1
 Start Date : 10/26/2016
 Page No : 3

Start Time	JFK Boulevard Southbound						51th Street Westbound						JFK Boulevard Northbound						51th Street Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
Peak Hour Analysis From 06:00 AM to 11:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:15 AM																									
07:15 AM	0	335	65	0	1	401	63	41	17	0	12	133	6	143	0	0	3	152	47	0	31	0	0	78	764
07:30 AM	0	321	62	0	1	384	48	34	21	0	2	105	7	157	0	0	6	170	36	0	30	0	3	69	728
07:45 AM	0	294	54	0	6	354	57	63	22	0	6	148	10	149	0	0	3	162	38	0	34	0	11	83	747
08:00 AM	0	252	37	0	2	291	33	39	17	0	2	91	3	205	0	0	6	214	50	0	19	0	5	74	670
Total Volume	0	1202	218	0	10	1430	201	177	77	0	22	477	26	654	0	0	18	698	171	0	114	0	19	304	2909
% App. Total	0	84.1	15.2	0	0.7		42.1	37.1	16.1	0	4.6		3.7	93.7	0	0	2.6		56.2	0	37.5	0	6.2		
PHF	.000	.897	.838	.000	.417	.892	.798	.702	.875	.000	.458	.806	.650	.798	.000	.000	.750	.815	.855	.000	.838	.000	.432	.916	.952
Peak Hour Analysis From 12:00 PM to 07:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:00 PM																									
04:00 PM	0	251	43	0	5	299	38	29	18	0	13	98	8	289	0	0	10	307	53	0	33	0	11	97	801
04:15 PM	0	239	37	0	1	277	37	29	22	0	3	91	8	262	0	0	10	280	55	0	33	0	8	96	744
04:30 PM	0	269	50	0	7	326	34	34	23	0	5	96	10	282	0	0	14	306	58	0	20	0	11	89	817
04:45 PM	0	211	36	0	8	255	53	26	23	0	6	108	12	322	0	0	5	339	62	0	31	0	9	102	804
Total Volume	0	970	166	0	21	1157	162	118	86	0	27	393	38	1155	0	0	39	1232	228	0	117	0	39	384	3166
% App. Total	0	83.8	14.3	0	1.8		41.2	30	21.9	0	6.9		3.1	93.8	0	0	3.2		59.4	0	30.5	0	10.2		
PHF	.000	.901	.830	.000	.656	.887	.764	.868	.935	.000	.519	.910	.792	.897	.000	.000	.696	.909	.919	.000	.886	.000	.886	.941	.969

APPENDIX D

VEHICULAR CRASH DIAGRAMS

FILE: L:\2017\659_HSP_Program_and_Project_Development_Support\NJDOT_HSP_Year_1\Cad\HWY06_Hudson\Crash_Sheets\Crash_Sheet_1.dgn
 TIME: 3:16:04 PM
 DATE: 9/19/2018
 GREENMAN-PEDERSEN, INC.



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
10	17:00	MON	01-13-14	0	DRY	CLEAR	DARK
19	17:36	WED	02-12-14	0	DRY	CLEAR	DARK
21	11:05	TUE	03-04-14	0	DRY	CLEAR	DAY
29	13:40	SUN	03-16-14	0	DRY	CLEAR	DAY
51	19:41	MON	05-26-14	1	DRY	CLEAR	DAY
54	12:41	SUN	06-01-14	0	DRY	CLEAR	DAY
56	02:05	SUN	06-08-14	1	DRY	CLEAR	DARK
59	19:06	SAT	06-14-14	0	DRY	CLEAR	DAY
62	19:14	SAT	07-05-14	0	DRY	CLEAR	DAY
68	07:25	SUN	08-10-14	1	DRY	CLEAR	DAY
76	17:43	TUE	09-16-14	1	DRY	CLEAR	DAY
77	15:09	WED	09-17-14	0	DRY	CLEAR	DAY
93	19:50	MON	10-13-14	0	WET	RAIN	DARK
94	20:32	TUE	10-14-14	0	DRY	CLEAR	DARK
101	14:41	TUE	11-11-14	0	DRY	CLEAR	DAY
119	14:43	FRI	12-19-14	1	DRY	CLEAR	DAY
126	15:21	TUE	01-20-15	0	DRY	CLEAR	DARK
138	07:54	TUE	02-24-15	0	DRY	CLEAR	DAY
153	09:40	SAT	03-21-15	2	WET	CLEAR	DAY
159	13:53	SAT	04-11-15	0	DRY	CLEAR	DAY
161	15:48	FRI	04-24-15	0	DRY	CLEAR	DAY
162	16:31	FRI	04-24-15	2	DRY	CLEAR	DAY
176	16:01	FRI	06-05-15	0	DRY	CLEAR	DAY
178	07:58	WED	06-10-15	0	DRY	CLEAR	DAY
181	07:56	TUE	06-16-15	0	DRY	OVERCAST	DAY
183	15:55	SAT	06-20-15	0	DRY	CLEAR	DAY
195	16:24	THU	07-09-15	0	DRY	CLEAR	DAY
203	17:20	THU	07-30-15	0	DRY	CLEAR	DAY
205	07:48	MON	08-03-18	0	DRY	CLEAR	DAY
219	00:00	SAT	08-22-15	1	DRY	CLEAR	DARK
222	11:38	WED	09-02-15	0	DRY	CLEAR	DAY
226	15:03	WED	09-09-15	0	DRY	CLEAR	DAY
228	10:24	THU	09-10-15	0	WET	RAIN	DAY
255	19:08	WED	10-28-15	0	WET	RAIN	DARK
270	19:42	TUE	11-24-15	0	DRY	CLEAR	DARK
284	12:00	WED	12-16-15	0	DRY	CLEAR	DAY
299	18:46	FRI	01-22-16	0	DRY	CLEAR	DARK
308	20:16	THU	02-18-16	1	DRY	CLEAR	DARK
309	12:07	FRI	02-19-16	1	DRY	CLEAR	DAY
318	18:18	FRI	03-18-16	0	DRY	CLEAR	DUSK

COLLISION DIAGRAM DATA (continued)							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
322	21:52	MON	03-28-16	0	DRY	CLEAR	DARK
325	15:26	WED	04-20-16	0	DRY	CLEAR	DAY
334	00:05	SAT	05-21-16	0	DRY	CLEAR	DARK
337	23:01	TUE	06-07-16	2	DRY	CLEAR	DARK
339	14:23	SAT	06-11-16	0	DRY	CLEAR	DAY
381	13:07	FRI	11-11-16	0	DRY	CLEAR	DAY
388	17:03	SAT	12-03-16	0	DRY	CLEAR	DARK
390	08:53	MON	12-05-16	0	WET	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	37
INJURIES	11
FATALITIES	0
TOTAL NO. OF CRASHES	48

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2014 CRASHES
	2015 CRASHES
	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

JFK Boulevard (CR 501)
 between 43rd Street and 64th Street
 North Bergen Township, Union City &
 West New York Town Hudson County

2014 - 2016 COLLISION DIAGRAMS

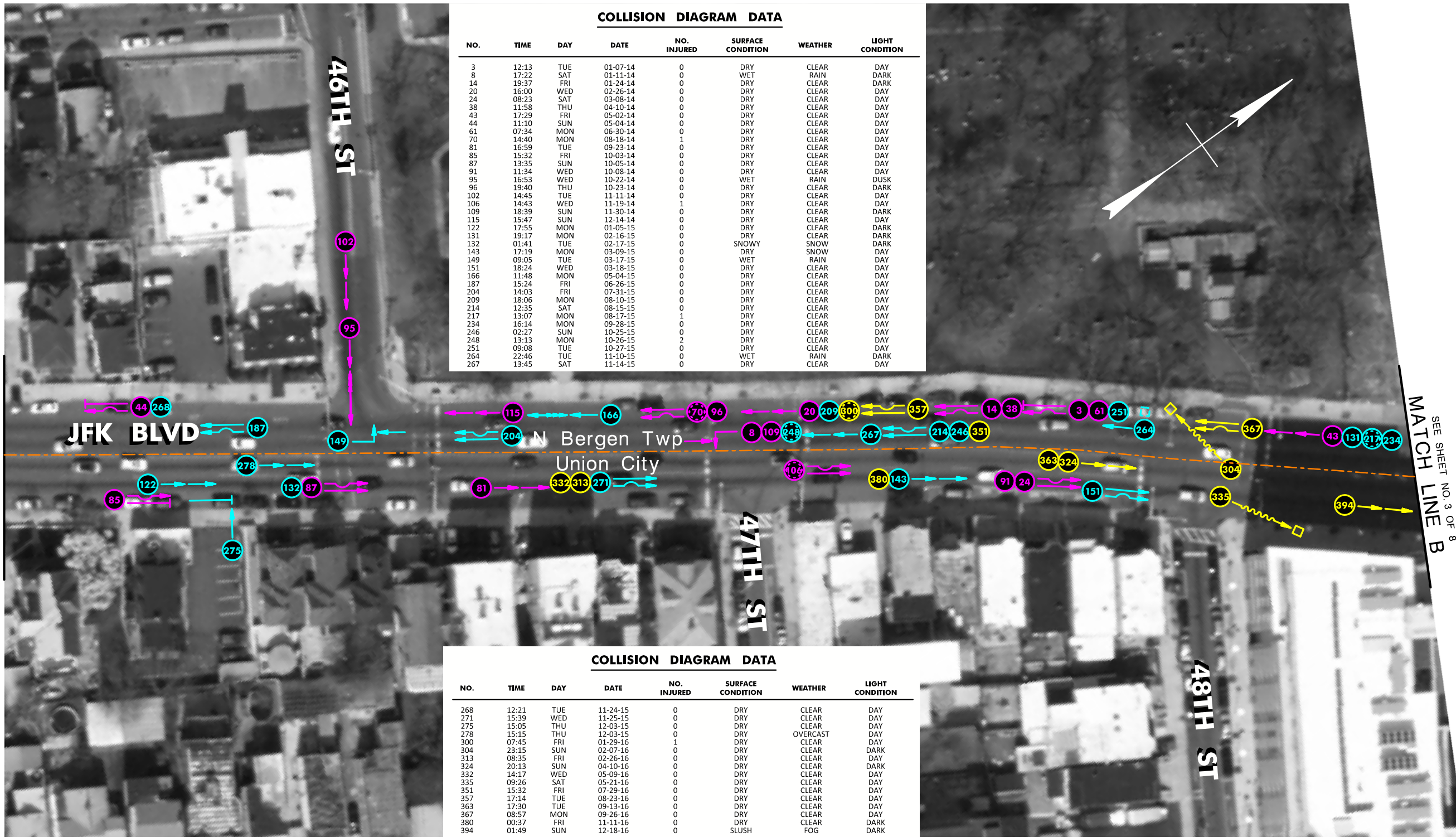
GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

MATCH LINE A
 SEE SHEET NO. 2 OF 8

1/8

FILE: L:\2017\659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_1\Cad\HWY06_Hudson\Crash_Sheets\Crash_Sheet_2.dgn
 TIME: 3:20:23 PM
 DATE: 9/19/2018



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
3	12:13	TUE	01-07-14	0	DRY	CLEAR	DAY
8	17:22	SAT	01-11-14	0	WET	RAIN	DARK
14	19:37	FRI	01-24-14	0	DRY	CLEAR	DARK
20	16:00	WED	02-26-14	0	DRY	CLEAR	DAY
24	08:23	SAT	03-08-14	0	DRY	CLEAR	DAY
38	11:58	THU	04-10-14	0	DRY	CLEAR	DAY
43	17:29	FRI	05-02-14	0	DRY	CLEAR	DAY
44	11:10	SUN	05-04-14	0	DRY	CLEAR	DAY
61	07:34	MON	06-30-14	0	DRY	CLEAR	DAY
70	14:40	MON	08-18-14	1	DRY	CLEAR	DAY
81	16:59	TUE	09-23-14	0	DRY	CLEAR	DAY
85	15:32	FRI	10-03-14	0	DRY	CLEAR	DAY
87	13:35	SUN	10-05-14	0	DRY	CLEAR	DAY
91	11:34	WED	10-08-14	0	DRY	CLEAR	DAY
95	16:53	WED	10-22-14	0	WET	RAIN	DUSK
96	19:40	THU	10-23-14	0	DRY	CLEAR	DARK
102	14:45	TUE	11-11-14	0	DRY	CLEAR	DAY
106	14:43	WED	11-19-14	1	DRY	CLEAR	DAY
109	18:39	SUN	11-30-14	0	DRY	CLEAR	DARK
115	15:47	SUN	12-14-14	0	DRY	CLEAR	DAY
122	17:55	MON	01-05-15	0	DRY	CLEAR	DARK
131	19:17	MON	02-16-15	0	DRY	CLEAR	DARK
132	01:41	TUE	02-17-15	0	SNOWY	SNOW	DARK
143	17:19	MON	03-09-15	0	DRY	SNOW	DAY
149	09:05	TUE	03-17-15	0	WET	RAIN	DAY
151	18:24	WED	03-18-15	0	DRY	CLEAR	DAY
166	11:48	MON	05-04-15	0	DRY	CLEAR	DAY
187	15:24	FRI	06-26-15	0	DRY	CLEAR	DAY
204	14:03	FRI	07-31-15	0	DRY	CLEAR	DAY
209	18:06	MON	08-10-15	0	DRY	CLEAR	DAY
214	12:35	SAT	08-15-15	0	DRY	CLEAR	DAY
217	13:07	MON	08-17-15	1	DRY	CLEAR	DAY
234	16:14	MON	09-28-15	0	DRY	CLEAR	DAY
246	02:27	SUN	10-25-15	0	DRY	CLEAR	DAY
248	13:13	MON	10-26-15	2	DRY	CLEAR	DAY
251	09:08	TUE	10-27-15	0	DRY	CLEAR	DAY
264	22:46	TUE	11-10-15	0	WET	RAIN	DARK
267	13:45	SAT	11-14-15	0	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
268	12:21	TUE	11-24-15	0	DRY	CLEAR	DAY
271	15:39	WED	11-25-15	0	DRY	CLEAR	DAY
275	15:05	THU	12-03-15	0	DRY	CLEAR	DAY
278	15:15	THU	12-03-15	0	DRY	OVERCAST	DAY
300	07:45	FRI	01-29-16	1	DRY	CLEAR	DAY
304	23:15	SUN	02-07-16	0	DRY	CLEAR	DARK
313	08:35	FRI	02-26-16	0	DRY	CLEAR	DAY
324	20:13	SUN	04-10-16	0	DRY	CLEAR	DARK
332	14:17	WED	05-09-16	0	DRY	CLEAR	DAY
335	09:26	SAT	05-21-16	0	DRY	CLEAR	DAY
351	15:32	FRI	07-29-16	0	DRY	CLEAR	DAY
357	17:14	TUE	08-23-16	0	DRY	CLEAR	DAY
363	17:30	TUE	09-13-16	0	DRY	CLEAR	DAY
367	08:57	MON	09-26-16	0	DRY	CLEAR	DAY
380	00:37	FRI	11-11-16	0	DRY	CLEAR	DARK
394	01:49	SUN	12-18-16	0	SLUSH	FOG	DARK

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	49
INJURIES	5
FATALITIES	0
TOTAL NO. OF CRASHES	54

SYMBOLS	
→	MOVING VEHICLE
←	BACKING VEHICLE
- - -	NON-INVOLVED VEHICLE
x - - -	PEDESTRIAN
- - -	BICYCLIST
○	PROPERTY DAMAGE ONLY CRASH
○ with dot	INJURY IN CRASH
○ with cross	FATAL CRASH
□	FIXED OBJECT
□ with dot	ANIMAL
□ with X	NON-FIXED OBJECT
⊗	POTHOLE

TYPES OF CRASHES	
← →	REAR END
→ →	HEAD ON
→ ↘	SIDE SWIPE
→ ~	OUT OF CONTROL
→ ○	OVERTURNED
→ ↙	LEFT TURN
→ ⊥	RIGHT ANGLE
→ ⊥	STRUCK PARKED VEHICLE

COLORS	
○ (Purple)	2014 CRASHES
○ (Cyan)	2015 CRASHES
○ (Yellow)	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

JFK Boulevard (CR 501)
 between 43rd Street and 64th Street
 North Bergen Township, Union City &
 West New York Town Hudson County

2014 - 2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_1\Cad\HWY06_Hudson\Crash_Sheets\Crash_Sheet_3.dgn
 TIME: 8:41:55 AM
 DATE: 9/2/2018

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
2	08:14	MON	01-06-14	0	WET	RAIN	DAY
23	08:18	SAT	03-08-14	0	DRY	CLEAR	DAY
31	17:26	WED	03-19-14	0	WET	RAIN	DARK
36	18:31	SUN	04-06-14	0	DRY	CLEAR	DAY
39	14:39	SAT	04-12-14	0	DRY	CLEAR	DAY
40	20:19	TUE	04-15-14	0	WET	RAIN	DARK
55	19:11	SAT	06-07-14	0	DRY	CLEAR	DAY
60	08:41	THU	06-20-14	0	WET	RAIN	DAY
69	14:03	SAT	08-16-14	0	DRY	CLEAR	DAY
73	14:12	THU	09-04-14	0	DRY	CLEAR	DAY
82	11:40	WED	09-24-14	2	DRY	CLEAR	DAY
84	04:34	SUN	09-28-14	0	DRY	CLEAR	DARK
99	19:39	SAT	11-08-14	0	DRY	CLEAR	DARK
112	09:14	TUE	12-09-14	0	WET	RAIN	DAY
114	00:13	SUN	12-14-14	0	DRY	CLEAR	DARK
120	17:21	FRI	12-19-14	0	DRY	CLEAR	DARK
147	22:58	FRI	03-13-15	1	DRY	CLEAR	DARK
152	18:40	THU	03-19-15	0	DRY	CLEAR	DAY
155	12:48	SAT	03-28-15	0	DRY	CLEAR	DAY
157	18:41	FRI	04-10-15	0	DRY	CLEAR	DUSK
158	20:31	FRI	04-10-15	0	DRY	CLEAR	DARK
160	06:40	MON	04-13-15	0	DRY	CLEAR	DAY
184	14:08	SAT	06-20-15	0	WET	RAIN	DAY
191	02:05	SUN	07-05-15	0	DRY	CLEAR	DARK
197	08:34	THU	07-16-15	1	DRY	CLEAR	DAY
220	11:08	TUE	08-25-15	0	DRY	CLEAR	DAY
225	19:42	TUE	09-08-15	0	DRY	CLEAR	DARK
241	17:52	THU	10-15-15	0	DRY	CLEAR	DAY
242	07:39	FRI	10-16-15	0	DRY	CLEAR	DAY
247	13:00	SUN	10-25-15	2	DRY	CLEAR	DAY
253	09:04	WED	10-28-15	0	DRY	CLEAR	DAY
256	01:21	FRI	10-30-15	0	DRY	CLEAR	DARK
257	05:30	MON	11-02-15	0	DRY	CLEAR	DARK
259	12:29	FRI	11-06-15	0	DRY	CLEAR	DAY
262	01:40	SUN	11-08-15	0	DRY	CLEAR	DARK



COLLISION DIAGRAM DATA (continued)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
273	23:17	SAT	11-28-15	0	DRY	CLEAR	DARK
276	15:05	THU	12-03-15	0	DRY	OVERCAST	DAY
290	18:00	TUE	01-05-16	0	DRY	CLEAR	DARK
294	22:37	SUN	01-17-16	0	ICY	SNOW	DARK
312	17:11	THU	02-25-16	0	DRY	CLEAR	DAY
315	16:57	FRI	03-11-16	0	DRY	CLEAR	DAY
316	12:54	MON	03-14-16	0	DRY	CLEAR	DAY
330	14:12	SUN	05-08-16	4		RAIN	DAY
340	14:29	THU	06-16-16	0	DRY	CLEAR	DAY
342	19:36	THU	06-23-16	0	DRY	CLEAR	DAY
352	15:33	SAT	07-30-16	0	WET	RAIN	DAY
354	08:06	THU	08-11-16	0	DRY	CLEAR	DAY
356	13:22	TUE	08-16-16	0	DRY	CLEAR	DAY
368	21:05	FRI	09-30-16	0	WET	RAIN	DARK
371	01:09	SAT	10-01-16	0	DRY	CLEAR	DARK
374	10:12	THU	10-13-16	0	DRY	CLEAR	DAY
382	09:00	TUE	11-15-16	0	WET	RAIN	DAY
387	18:57	WED	11-30-16	0	WET	RAIN	DARK
392	09:59	MON	12-12-16	0	WET	CLEAR	DAY

LEGEND

<p>NUMBER OF CRASHES WITH</p> <p>PROPERTY DAMAGE ONLY <u>49</u></p> <p>INJURIES <u>5</u></p> <p>FATALITIES <u>0</u></p> <p>TOTAL NO. OF CRASHES <u>54</u></p>	<p>SYMBOLS</p> <p>← MOVING VEHICLE</p> <p>←→ BACKING VEHICLE</p> <p>- - - NON-INVOLVED VEHICLE</p> <p>x - - PEDESTRIAN - - - BICYCLIST</p> <p>○ PROPERTY DAMAGE ONLY CRASH</p> <p>⊙ INJURY IN CRASH ⊙ FATAL CRASH</p> <p>□ FIXED OBJECT △ ANIMAL</p> <p>⊞ NON-FIXED OBJECT ⊞ POTHOLE</p>	<p>TYPES OF CRASHES</p> <p>← REAR END ↘ LEFT TURN</p> <p>→ HEAD ON ↙ RIGHT ANGLE</p> <p>~ SIDE SWIPE</p> <p>~ OUT OF CONTROL</p> <p>o OVERTURNED ⊞ STRUCK PARKED VEHICLE</p>	<p>COLORS</p> <p>⊙ 2014 CRASHES</p> <p>⊙ 2015 CRASHES</p> <p>⊙ 2016 CRASHES</p>
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

JFK Boulevard (CR 501)
 between 43rd Street and 64th Street
 North Bergen Township, Union City &
 West New York Town Hudson County

2014 - 2016 COLLISION DIAGRAMS

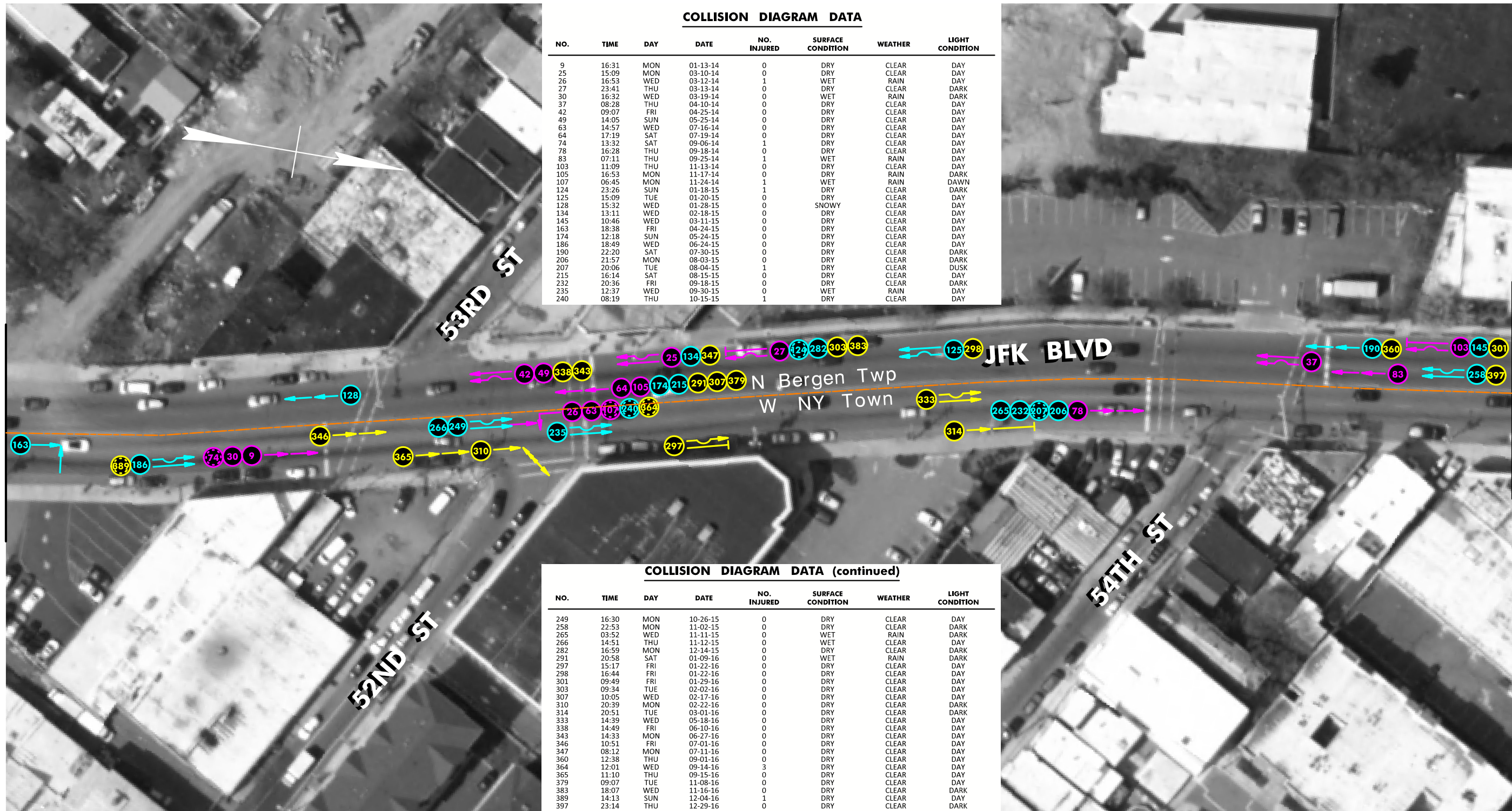
GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

FILE: L:\2017\659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_1\CatchWay06_Hudson\Crash_Sheets\Crash_Sheet_4.dgn
 TIME: 8:46:58 AM
 DATE: 9/2/2018

MATCH LINE C
 SEE SHEET NO. 3 OF 8

MATCH LINE D
 SEE SHEET NO. 5 OF 8



COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
9	16:31	MON	01-13-14	0	DRY	CLEAR	DAY
25	15:09	MON	03-10-14	0	DRY	CLEAR	DAY
26	16:53	WED	03-12-14	1	WET	RAIN	DAY
27	23:41	THU	03-13-14	0	DRY	CLEAR	DARK
30	16:32	WED	03-19-14	0	WET	RAIN	DARK
37	08:28	THU	04-10-14	0	DRY	CLEAR	DAY
42	09:07	FRI	04-25-14	0	DRY	CLEAR	DAY
49	14:05	SUN	05-25-14	0	DRY	CLEAR	DAY
63	14:57	WED	07-16-14	0	DRY	CLEAR	DAY
64	17:19	SAT	07-19-14	0	DRY	CLEAR	DAY
74	13:32	SAT	09-06-14	1	DRY	CLEAR	DAY
78	16:28	THU	09-18-14	0	DRY	CLEAR	DAY
83	07:11	THU	09-25-14	1	WET	RAIN	DAY
103	11:09	THU	11-13-14	0	DRY	CLEAR	DAY
105	16:53	MON	11-17-14	0	DRY	RAIN	DARK
107	06:45	MON	11-24-14	1	WET	RAIN	DAWN
124	23:26	SUN	01-18-15	1	DRY	CLEAR	DARK
125	15:09	TUE	01-20-15	0	DRY	CLEAR	DAY
128	15:32	WED	01-28-15	0	SNOWY	CLEAR	DAY
134	13:11	WED	02-18-15	0	DRY	CLEAR	DAY
145	10:46	WED	03-11-15	0	DRY	CLEAR	DAY
163	18:38	FRI	04-24-15	0	DRY	CLEAR	DAY
174	12:18	SUN	05-24-15	0	DRY	CLEAR	DAY
186	18:49	WED	06-24-15	0	DRY	CLEAR	DAY
190	22:20	SAT	07-30-15	0	DRY	CLEAR	DARK
206	21:57	MON	08-03-15	0	DRY	CLEAR	DARK
207	20:06	TUE	08-04-15	1	DRY	CLEAR	DUSK
215	16:14	SAT	08-15-15	0	DRY	CLEAR	DAY
232	20:36	FRI	09-18-15	0	DRY	CLEAR	DARK
235	12:37	WED	09-30-15	1	WET	RAIN	DAY
240	08:19	THU	10-15-15	1	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA (continued)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
249	16:30	MON	10-26-15	0	DRY	CLEAR	DAY
258	22:53	MON	11-02-15	0	DRY	CLEAR	DARK
265	03:52	WED	11-11-15	0	WET	RAIN	DARK
266	14:51	THU	11-12-15	0	WET	CLEAR	DAY
282	16:59	MON	12-14-15	0	DRY	CLEAR	DARK
291	20:58	SAT	01-09-16	0	WET	RAIN	DARK
297	15:17	FRI	01-22-16	0	DRY	CLEAR	DAY
298	16:44	FRI	01-22-16	0	DRY	CLEAR	DAY
301	09:49	FRI	01-29-16	0	DRY	CLEAR	DAY
303	09:34	TUE	02-02-16	0	DRY	CLEAR	DAY
307	10:05	WED	02-17-16	0	DRY	CLEAR	DAY
310	20:39	MON	02-22-16	0	DRY	CLEAR	DARK
314	20:51	TUE	03-01-16	0	DRY	CLEAR	DARK
333	14:39	WED	05-18-16	0	DRY	CLEAR	DAY
338	14:49	FRI	06-10-16	0	DRY	CLEAR	DAY
343	14:33	MON	06-27-16	0	DRY	CLEAR	DAY
346	10:51	FRI	07-01-16	0	DRY	CLEAR	DAY
347	08:12	MON	07-11-16	0	DRY	CLEAR	DAY
360	12:38	THU	09-01-16	0	DRY	CLEAR	DAY
364	12:01	WED	09-14-16	3	DRY	CLEAR	DAY
365	11:10	THU	09-15-16	0	DRY	CLEAR	DAY
379	09:07	TUE	11-08-16	0	DRY	CLEAR	DAY
383	18:07	WED	11-16-16	0	DRY	CLEAR	DARK
389	14:13	SUN	12-04-16	1	DRY	CLEAR	DAY
397	23:14	THU	12-29-16	0	DRY	CLEAR	DARK

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	47
INJURIES	9
FATALITIES	0
TOTAL NO. OF CRASHES	56

SYMBOLS	
←	MOVING VEHICLE
←→	BACKING VEHICLE
---	NON-INVOLVED VEHICLE
⋈	PEDESTRIAN
⋈	BICYCLIST
○	PROPERTY DAMAGE ONLY CRASH
⊙	INJURY IN CRASH
⊙	FATAL CRASH
□	FIXED OBJECT
△	ANIMAL
⊠	NON-FIXED OBJECT
⊗	POTHOLE

TYPES OF CRASHES	
←←	REAR END
→→	HEAD ON
←→	SIDE SWIPE
~	OUT OF CONTROL
⊖	OVERTURNED
↙	LEFT TURN
↘	RIGHT ANGLE
⊥	STRUCK PARKED VEHICLE

COLORS	
○ (Purple)	2014 CRASHES
○ (Blue)	2015 CRASHES
○ (Yellow)	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

JFK Boulevard (CR 501)
 between 43rd Street and 64th Street
 North Bergen Township, Union City &
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2014 - 2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

FILE: L:\2017\659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_1\Cad\HWY06_Hudson_Crash_Sheets\Crash_Sheet_5.dgn
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 DATE: 9/19/2018



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
13	15:41	FRI	01-24-14	0	DRY	CLEAR	DAY
15	16:08	FRI	01-31-14	0	DRY	CLEAR	DAY
17	10:49	SUN	02-09-14	4	DRY	CLEAR	DAY
18	11:30	WED	02-12-14	0	WET	SNOW	DAY
22	08:57	FRI	03-07-14	0	DRY	CLEAR	DARK
33	18:15	MON	03-31-14	0	DRY	CLEAR	DAY
41	21:05	TUE	04-15-14	0	WET	RAIN	DARK
46	18:41	FRI	05-16-14	0	WET	RAIN	DAY
53	09:03	SAT	05-31-14	0	DRY	CLEAR	DAY
65	21:50	FRI	08-01-14	0	DRY	CLEAR	DARK
79	15:35	SAT	09-20-14	0	DRY	CLEAR	DAY
88	14:22	MON	10-06-14	0	DRY	CLEAR	DAY
92	16:18	THU	10-09-14	0	DRY	CLEAR	DAY
104	18:26	FRI	11-14-14	0	DRY	CLEAR	DARK
110	15:08	WED	12-03-14	0	WET	RAIN	DAY
117	12:32	TUE	12-16-14	0	DRY	CLEAR	DAY
140	08:37	FRI	03-06-15	0	ICY	CLEAR	DAY
142	12:48	MON	03-09-15	0	DRY	CLEAR	DAY
165	18:21	FRI	05-01-15	0	DRY	CLEAR	DUSK
175	07:00	THU	05-28-15	0	DRY	OVERCAST	DAY
185	13:28	TUE	06-23-15	1	DRY	CLEAR	DAY
189	22:29	MON	06-29-15	1	DRY	CLEAR	DARK
199	13:42	SUN	07-19-15	0	DRY	CLEAR	DAY
210	13:44	THU	08-13-15	0	DRY	CLEAR	DAY
243	21:02	FRI	10-16-15	0	DRY	CLEAR	DARK
250	19:54	MON	10-26-15	0	DRY	CLEAR	DARK
260	11:22	SAT	11-07-15	0	DRY	CLEAR	DAY
269	14:54	TUE	11-24-15	0	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA (continued)							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
272	13:29	THU	11-26-15	1	DRY	CLEAR	DAY
285	13:06	THU	12-17-15	0	WET	RAIN	DAY
293	07:50	FRI	01-15-16	0	DRY	CLEAR	DAY
295	16:29	MON	01-18-16	0	DRY	CLEAR	DAY
311	22:59	TUE	02-23-16	0	WET	RAIN	DARK
317	12:26	THU	03-17-16	2	DRY	CLEAR	DAY
320	14:19	SUN	03-27-16	0	DRY	CLEAR	DAY
328	13:01	MON	05-02-16	0	DRY	OVERCAST	DAY
331	12:15	WED	05-11-16	0	DRY	CLEAR	DAY
341	14:36	FRI	06-17-16	0	DRY	CLEAR	DAY
350	12:25	MON	07-25-16	0	DRY	CLEAR	DAY
376	10:59	THU	11-03-16	0	DRY	CLEAR	DAY
377	15:47	FRI	11-04-16	0	DRY	CLEAR	DAY
393	11:20	THU	12-15-16	0	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	37
INJURIES	5
FATALITIES	0
TOTAL NO. OF CRASHES	42

SYMBOLS	
→	MOVING VEHICLE
←	BACKING VEHICLE
- - -	NON-INVOLVED VEHICLE
x - - -	PEDESTRIAN
- - -	BICYCLIST
○	PROPERTY DAMAGE ONLY CRASH
⊙	INJURY IN CRASH
⊕	FATAL CRASH
□	FIXED OBJECT
△	ANIMAL
⊗	NON-FIXED OBJECT
⊙	POTHOLE

TYPES OF CRASHES	
→ ←	REAR END
→ →	HEAD ON
→ ~	SIDE SWIPE
→ ~ ~	OUT OF CONTROL
→ ~ ~ ~	OVERTURNED
→ ⊥	LEFT TURN
→ ⊥	RIGHT ANGLE
→ ⊥	STRUCK PARKED VEHICLE

COLORS	
○	2014 CRASHES
○	2015 CRASHES
○	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

JFK Boulevard (CR 501)
 between 43rd Street and 64th Street
 North Bergen Township, Union City &
 West New York Hudson County

2014 - 2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

FILE: L:\2017\659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_1\CatchWay06_Hudson\Crash_Sheets\Crash_Sheet_6.dgn
 TIME: 3:25:48 PM
 DATE: 9/19/2018
 GREENMAN-PEDERSEN, INC.

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
7	16:57	FRI	01-10-14	0	ICY	RAIN	DARK
11	23:54	TUE	01-14-14	0	WET	CLEAR	DARK
32	15:55	MON	03-24-14	1	DRY	CLEAR	DAY
48	07:18	WED	05-21-14	0	DRY	CLEAR	DAY
58	13:51	TUE	06-10-14	1	DRY	CLEAR	DAY
71	11:47	WED	08-27-14	0	DRY	CLEAR	DAY
80	00:05	MON	09-22-14	0	DRY	CLEAR	DARK
90	21:26	MON	10-06-14	0	DRY	CLEAR	DARK
100	23:09	MON	11-10-14	0	WET	CLEAR	DARK
111	02:26	SAT	12-06-14	0	WET	RAIN	DARK
113	15:02	WED	12-10-14	1	OIL	RAIN	DAY
123	07:31	FRI	01-09-15	0	SNOWY	SNOW	DAY
129	04:49	SUN	02-01-15	0	DRY	CLEAR	DARK
136	11:07	MON	02-23-15	0	DRY	CLEAR	DAY
139	07:55	FRI	03-06-15	0	ICY	SNOW	DAY
146	13:59	WED	03-11-15	0	DRY	CLEAR	DAY
150	16:35	TUE	03-17-15	0	DRY	CLEAR	DAY
156	16:56	WED	04-09-15	0	DRY	CLEAR	DAY
167	07:35	FRI	05-08-15	0	DRY	CLEAR	DAY
171	17:22	TUE	05-19-15	0	DRY	CLEAR	DAY
180	03:16	MON	06-15-15	0	WATER	RAIN	DARK
182	20:35	FRI	06-19-15	0	DRY	CLEAR	DUSK
202	10:08	TUE	07-28-15	0	DRY	CLEAR	DAY
211	14:30	THU	08-13-15	0	DRY	CLEAR	DAY
218	12:55	SAT	08-22-15	0	DRY	CLEAR	DAY
221	23:20	FRI	08-28-15	1	DRY	CLEAR	DARK
223	14:39	FRI	09-04-15	0	DRY	CLEAR	DAY
224	01:09	SAT	09-06-15	0	DRY	CLEAR	DARK

COLLISION DIAGRAM DATA (continued)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
239	13:05	TUE	10-06-15	0	DRY	CLEAR	DARK
244	02:32	SAT	10-17-15	0	DRY	CLEAR	DARK
254	09:36	WED	10-28-15	0	WET	RAIN	DAY
261	12:19	SAT	11-07-15	0	DRY	CLEAR	DAY
281	14:00	MON	12-14-15	0	DRY	CLEAR	DAY
287	20:22	THU	12-17-15	0	WET	RAIN	DARK
305	17:18	MON	02-08-16	0	WET	SNOW	DUSK
321	15:39	MON	03-28-16	0	DRY	CLEAR	DAY
336	13:28	THU	05-26-16	2	DRY	CLEAR	DAY
348	04:47	SAT	07-16-16	0	DRY	CLEAR	DARK
355	14:18	MON	08-15-16	0	DRY	CLEAR	DAY
361	11:25	FRI	09-02-16	1	DRY	CLEAR	DAY
366	21:06	SUN	09-18-16	0	DRY	CLEAR	DARK

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	35
INJURIES	6
FATALITIES	0
TOTAL NO. OF CRASHES	41

SYMBOLS	
←	MOVING VEHICLE
←←	BACKING VEHICLE
---	NON-INVOLVED VEHICLE
⋈	PEDESTRIAN
⋈	BICYCLIST
○	PROPERTY DAMAGE ONLY CRASH
○	INJURY IN CRASH
○	FATAL CRASH
□	FIXED OBJECT
□	NON-FIXED OBJECT
△	ANIMAL
⊗	POTHOLE

TYPES OF CRASHES	
←←	REAR END
←→	HEAD ON
←	SIDE SWIPE
←	OUT OF CONTROL
←	OVERTURNED
↔	LEFT TURN
↕	RIGHT ANGLE
←	STRUCK PARKED VEHICLE

COLORS	
○	2014 CRASHES
○	2015 CRASHES
○	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

JFK Boulevard (CR 501)
 between 43rd Street and 64th Street
 North Bergen Township, Union City &
 West New York Town Hudson County

2014 - 2016 COLLISION DIAGRAMS

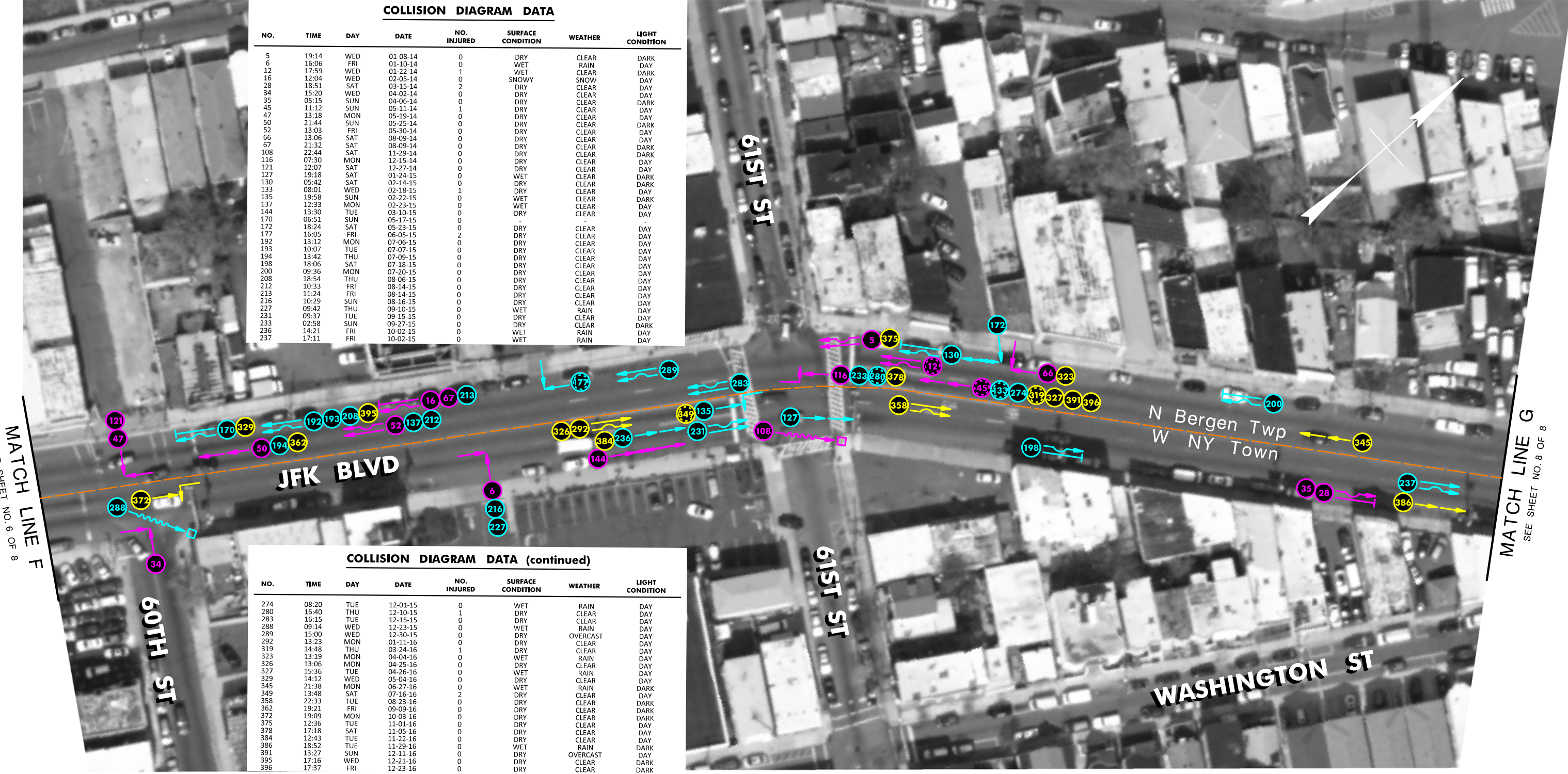
GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
5	19:14	WED	01-08-14	0	DRY	CLEAR	DARK
6	16:06	FRI	01-10-14	0	WET	RAIN	DAY
12	17:59	WED	01-22-14	1	WET	CLEAR	DARK
16	12:04	WED	02-05-14	0	SNOWY	CLEAR	DAY
28	18:51	SAT	03-15-14	2	DRY	CLEAR	DAY
34	15:20	WED	04-02-14	0	DRY	CLEAR	DAY
35	05:15	SUN	04-06-14	0	DRY	CLEAR	DARK
45	11:12	SUN	05-11-14	1	DRY	CLEAR	DAY
47	13:18	MON	05-19-14	0	DRY	CLEAR	DAY
50	21:44	SUN	05-25-14	0	DRY	CLEAR	DARK
52	13:03	FRI	05-30-14	0	DRY	CLEAR	DAY
66	13:06	SAT	08-09-14	0	DRY	CLEAR	DAY
67	21:32	SAT	08-09-14	0	DRY	CLEAR	DARK
108	22:44	SAT	11-29-14	0	DRY	CLEAR	DAY
116	07:30	MON	12-15-14	0	DRY	CLEAR	DAY
121	12:07	SAT	12-27-14	0	DRY	CLEAR	DAY
127	19:18	SAT	01-24-15	0	WET	CLEAR	DARK
130	05:42	SAT	02-14-15	0	DRY	CLEAR	DARK
133	08:01	WED	02-18-15	1	DRY	CLEAR	DAY
135	19:58	SUN	02-22-15	0	WET	CLEAR	DARK
137	12:33	MON	02-23-15	0	WET	CLEAR	DAY
144	13:30	TUE	03-10-15	0	DRY	CLEAR	DAY
170	06:51	SUN	05-17-15	0	-	-	-
172	18:24	SAT	05-23-15	0	DRY	CLEAR	DAY
177	16:05	FRI	06-05-15	2	DRY	CLEAR	DAY
192	13:12	MON	07-06-15	0	DRY	CLEAR	DAY
193	10:07	TUE	07-07-15	0	DRY	CLEAR	DAY
194	13:42	THU	07-09-15	0	DRY	CLEAR	DAY
198	18:06	SAT	07-18-15	0	DRY	CLEAR	DAY
200	09:36	MON	07-20-15	0	DRY	CLEAR	DAY
208	18:54	THU	08-06-15	0	DRY	CLEAR	DAY
212	10:33	FRI	08-14-15	0	DRY	CLEAR	DAY
213	11:24	FRI	08-14-15	0	DRY	CLEAR	DAY
216	10:29	SUN	08-16-15	0	DRY	CLEAR	DAY
227	09:42	THU	09-10-15	0	WET	RAIN	DAY
231	09:37	TUE	09-15-15	0	DRY	CLEAR	DAY
233	02:58	SUN	09-27-15	0	DRY	CLEAR	DARK
236	14:21	FRI	10-02-15	0	WET	RAIN	DAY
237	17:11	FRI	10-02-15	0	WET	RAIN	DAY

COLLISION DIAGRAM DATA (continued)							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
274	08:20	TUE	12-01-15	0	WET	RAIN	DAY
280	16:40	THU	12-10-15	1	DRY	CLEAR	DAY
283	16:15	TUE	12-15-15	0	DRY	CLEAR	DAY
288	09:14	WED	12-23-15	0	WET	RAIN	DAY
289	15:00	WED	12-30-15	0	DRY	OVERCAST	DAY
292	13:23	MON	01-11-16	0	DRY	CLEAR	DAY
319	14:48	THU	03-24-16	1	DRY	CLEAR	DAY
323	13:19	MON	04-04-16	0	WET	RAIN	DAY
326	13:06	MON	04-25-16	0	DRY	CLEAR	DAY
327	15:36	TUE	04-26-16	0	WET	RAIN	DAY
329	14:12	WED	05-04-16	0	DRY	CLEAR	DAY
345	21:38	MON	06-27-16	0	WET	RAIN	DARK
349	13:48	SAT	07-16-16	2	DRY	CLEAR	DAY
358	22:33	TUE	08-23-16	0	DRY	CLEAR	DARK
362	19:21	FRI	09-09-16	0	DRY	CLEAR	DARK
372	19:09	MON	10-03-16	0	DRY	CLEAR	DAY
375	12:36	TUE	11-01-16	0	DRY	CLEAR	DAY
378	17:18	SAT	11-05-16	0	DRY	CLEAR	DAY
384	12:43	TUE	11-22-16	0	DRY	CLEAR	DAY
386	18:52	TUE	11-29-16	0	WET	RAIN	DARK
391	13:27	SUN	12-11-16	0	DRY	OVERCAST	DAY
395	17:16	WED	12-21-16	0	DRY	CLEAR	DARK
396	17:37	FRI	12-23-16	0	DRY	CLEAR	DARK



LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	54
INJURIES	8
FATALITIES	0
TOTAL NO. OF CRASHES	62

SYMBOLS	
→	MOVING VEHICLE
←	BACKING VEHICLE
---	NON-INVOLVED VEHICLE
⊗	PEDESTRIAN
⊕	BICYCLIST
○	PROPERTY DAMAGE ONLY CRASH
⊙	INJURY IN CRASH
⊠	FATAL CRASH
□	FIXED OBJECT
△	ANIMAL
⊞	NON-FIXED OBJECT
⊗	POTHOLE

TYPES OF CRASHES	
→ ←	REAR END
→ →	HEAD ON
→ ~	SIDE SWIPE
→ ~ ~	OUT OF CONTROL
→ ~ ~ ~	OVERTURNED
→ ⊥	LEFT TURN
→ ⊥	RIGHT ANGLE
→ ⊥	STRUCK PARKED VEHICLE

COLORS	
○	2014 CRASHES
○	2015 CRASHES
○	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

JFK Boulevard (CR 501)
between 43rd Street and 64th Street
North Bergen Township, Union City &
West New York Hudson County

2014 - 2016 COLLISION DIAGRAMS

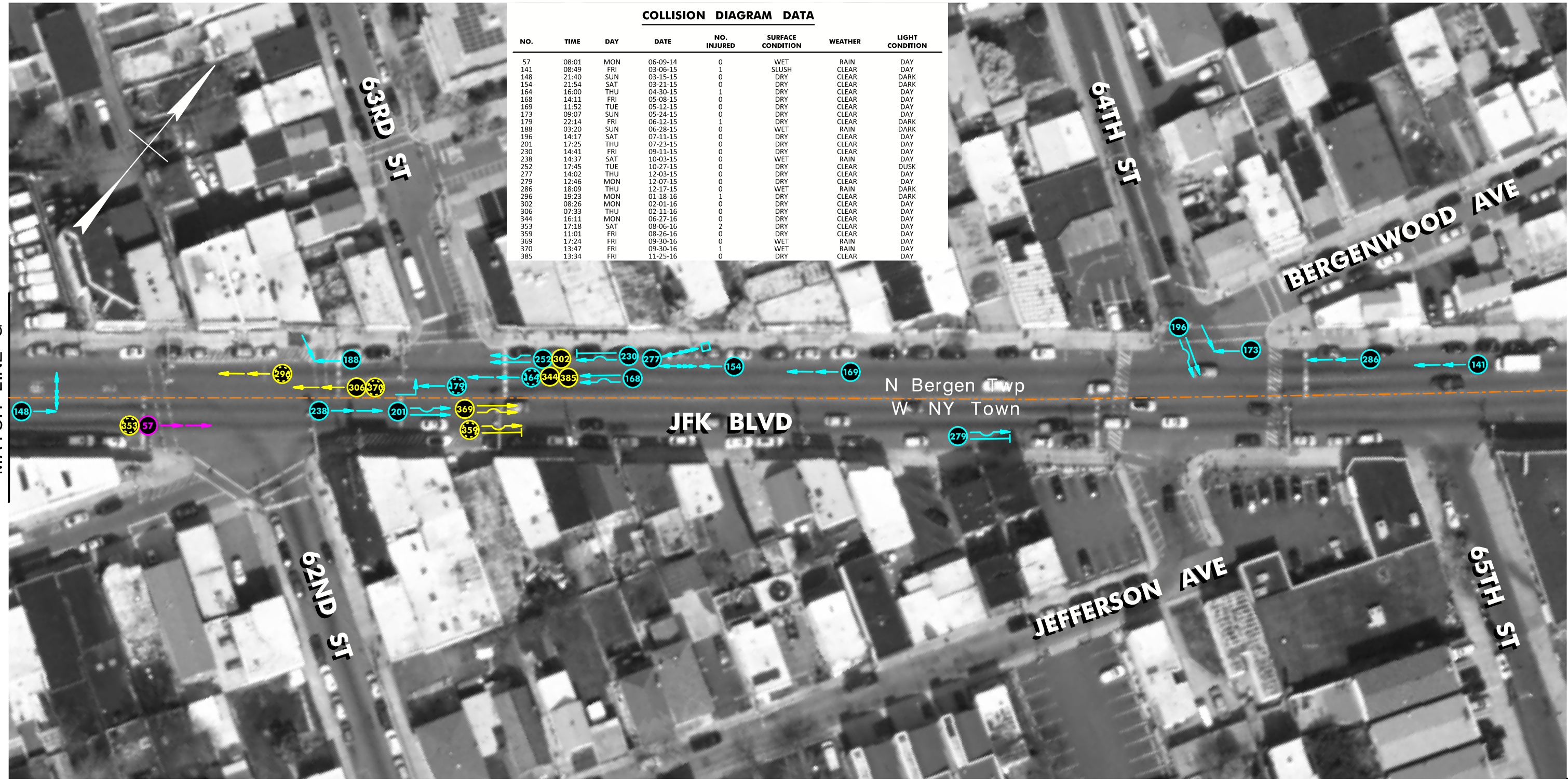
GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

DATE: 9/2/2018 TIME: 8:48:18 AM FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_1\CatchWay06_HudsonCrash_Sheets\Crash_Sheet_7.dgn

FILE: L:\2017\659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_1\CatchWay06_Hudson\Crash_Sheets\Crash_Sheet_8.dgn
 TIME: 3:27:16 PM
 DATE: 9/19/2018
 GREENMAN-PEDERSEN, INC.

SEE SHEET NO. 7 OF 8
 MATCH LINE G



COLLISION DIAGRAM DATA								
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION	
57	08:01	MON	06-09-14	0	WET	RAIN	DAY	
141	08:49	FRI	03-06-15	1	SLUSH	CLEAR	DAY	
148	21:40	SUN	03-15-15	0	DRY	CLEAR	DARK	
154	21:54	SAT	03-21-15	0	DRY	CLEAR	DARK	
164	16:00	THU	04-30-15	1	DRY	CLEAR	DAY	
168	14:11	FRI	05-08-15	0	DRY	CLEAR	DAY	
169	11:52	TUE	05-12-15	0	DRY	CLEAR	DAY	
173	09:07	SUN	05-24-15	0	DRY	CLEAR	DAY	
179	22:14	FRI	06-12-15	1	DRY	CLEAR	DARK	
188	03:20	SUN	06-28-15	0	WET	RAIN	DARK	
196	14:17	SAT	07-11-15	0	WET	CLEAR	DAY	
201	17:25	THU	07-23-15	0	DRY	CLEAR	DAY	
230	14:41	FRI	09-11-15	0	DRY	CLEAR	DAY	
238	14:37	SAT	10-03-15	0	WET	RAIN	DAY	
252	17:45	TUE	10-27-15	0	DRY	CLEAR	DUSK	
277	14:02	THU	12-03-15	0	DRY	CLEAR	DAY	
279	12:46	MON	12-07-15	0	DRY	CLEAR	DAY	
286	18:09	THU	12-17-15	0	WET	RAIN	DARK	
296	19:23	MON	01-18-16	1	DRY	CLEAR	DARK	
302	08:26	MON	02-01-16	0	DRY	CLEAR	DAY	
306	07:33	THU	02-11-16	0	DRY	CLEAR	DAY	
344	16:11	MON	06-27-16	0	DRY	CLEAR	DAY	
353	17:18	SAT	08-06-16	2	DRY	CLEAR	DAY	
359	11:01	FRI	08-26-16	0	DRY	CLEAR	DAY	
369	17:24	FRI	09-30-16	1	WET	RAIN	DAY	
370	13:47	FRI	09-30-16	1	WET	RAIN	DAY	
385	13:34	FRI	11-25-16	0	DRY	CLEAR	DAY	

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	21
INJURIES	6
FATALITIES	0
TOTAL NO. OF CRASHES	27

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2014 CRASHES
	2015 CRASHES
	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

JFK Boulevard (CR 501)
 between 43rd Street and 64th Street
 North Bergen Township, Union City &
 West New York Town Hudson County

2014 - 2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

APPENDIX E

PEDESTRIAN CRASH DIAGRAMS

FILE: L:\2017\659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_1\Cad\HWY06_Hudson\Crash_Sheets\Crash_Sheet_1.dgn
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 DATE: 4/30/2016
 GREENMAN-PEDERSEN, INC.



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
6	12:19	Fri	04-12-13	1	WET	RAIN	DAY
8	18:30	Sat	06-08-13	2	DRY	CLEAR	DAY
9	14:40	Sat	07-27-13	1	DRY	CLEAR	DAY
10	05:56	Fri	11-01-13	1	WET	RAIN	DARK
16	07:47	Mon	07-06-15	1	DRY	CLEAR	DAWN
18	16:28	Thu	10-15-15	1	DRY	CLEAR	DAY
21	18:03	Sun	06-12-16	1	DRY	CLEAR	DAY
23	00:02	Mon	07-04-16	1	DRY	CLEAR	DARK
31	15:28	Thu	11-17-16	2	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	0
INJURIES	9
FATALITIES	0
TOTAL NO. OF CRASHES	9

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FIXED OBJECT
	FATAL CRASH
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

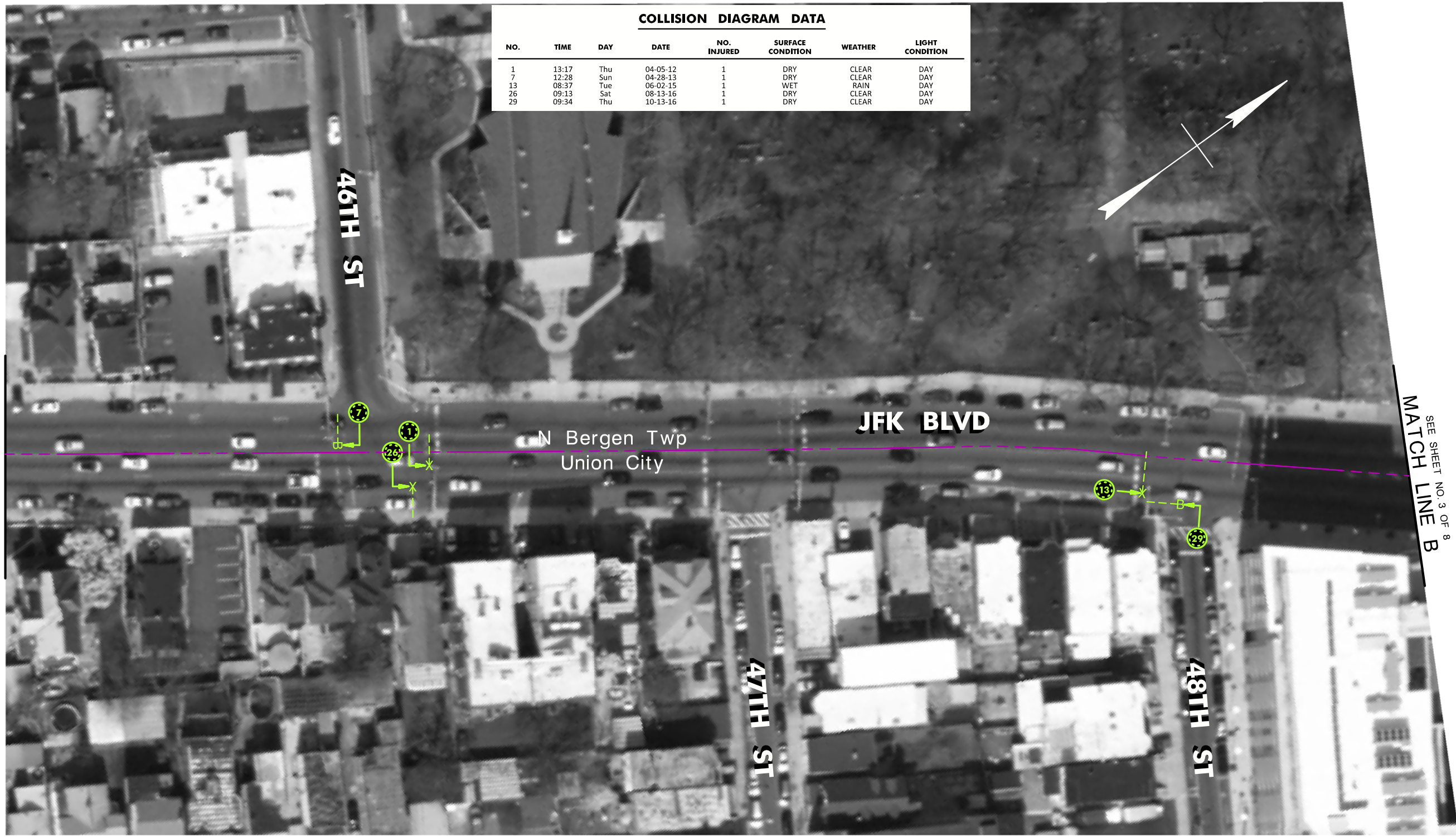
JFK Boulevard (CR 501)
 between 43rd Street and 64th Street
 North Bergen Township, Union City &
 West New York Town Hudson County

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc. Engineering and Construction Services	NOT TO SCALE
---	--------------

MATCH LINE A
SEE SHEET NO. 2 OF 8

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 DATE: 4/30/2018
 GREENMAN-PEDERSEN, INC.



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
1	13:17	Thu	04-05-12	1	DRY	CLEAR	DAY
7	12:28	Sun	04-28-13	1	DRY	CLEAR	DAY
13	08:37	Tue	06-02-15	1	WET	RAIN	DAY
26	09:13	Sat	08-13-16	1	DRY	CLEAR	DAY
29	09:34	Thu	10-13-16	1	DRY	CLEAR	DAY

SEE SHEET NO. 1 OF 8
MATCH LINE A

SEE SHEET NO. 3 OF 8
MATCH LINE B

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	<u>0</u>
INJURIES	<u>5</u>
FATALITIES	<u>0</u>
TOTAL NO. OF CRASHES	<u>5</u>

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION	
JFK Boulevard (CR 501) between 43rd Street and 64th Street North Bergen Township, Union City & West New York Town Hudson County	
2012-2016 PEDESTRIAN COLLISION DIAGRAMS	
GPI Greenman-Pedersen, Inc. Engineering and Construction Services	NOT TO SCALE

DATE: 4/30/2018
 TIME: 9:14:14 AM
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COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
12	15:57	Fri	03-06-15	1	DRY	CLEAR	DAY
20	08:40	Tue	02-09-16	1	DRY	CLEAR	DAY
22	12:57	Mon	06-13-16	1	DRY	CLEAR	DAY



LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	0
INJURIES	3
FATALITIES	0
TOTAL NO. OF CRASHES	3

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

JFK Boulevard (CR 501)
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2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

FILE: L:\2017\659_HSP_Program_and_Project_Development\Support\NDDOT_HSP_Year1\Cadd\HW\06_Hudson\Cash_Sheets\Cash_Sheet_4.dgn

TIME: 9:15:59 AM

DATE: 4/30/2018

GREENMAN-PEDERSEN, INC.

MATCH LINE C
SEE SHEET NO. 3 OF 8



MATCH LINE D
SEE SHEET NO. 5 OF 8

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
11	15:22	Fri	01-17-14	1	DRY	CLEAR	DAY
32	12:43	Wed	12-07-16	1	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	0
INJURIES	2
FATALITIES	0
TOTAL NO. OF CRASHES	2

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

JFK Boulevard (CR 501)
between 43rd Street and 64th Street
North Bergen Township, Union City &
West New York Town Hudson County

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NJDOT_HSP_Year_1\Cad\HWY06_Hudson\Crash_Sheets\Crash_Sheet_5.dgn
 TIME: 9:55:15 AM
 DATE: 4/30/2018
 GREENMAN-PEDERSEN, INC.



MATCH LINE D
 SEE SHEET NO. 4 OF 8

MATCH LINE E
 SEE SHEET NO. 6 OF 8

LEGEND

NUMBER OF CRASHES WITH

- PROPERTY DAMAGE ONLY _____
- INJURIES _____
- FATALITIES _____
- TOTAL NO. OF CRASHES _____

SYMBOLS

- ← MOVING VEHICLE
- ←→ BACKING VEHICLE
- - - NON-INVOLVED VEHICLE
- x - - - PEDESTRIAN
- - - BICYCLIST
- PROPERTY DAMAGE ONLY CRASH
- ⊕ INJURY IN CRASH
- ⊙ FATAL CRASH
- FIXED OBJECT
- △ ANIMAL
- ⊠ NON-FIXED OBJECT
- ⊗ POTHOLE

TYPES OF CRASHES

- ← REAR END
- HEAD ON
- ←→ SIDE SWIPE
- ~ OUT OF CONTROL
- ↻ OVERTURNED
- ↔ LEFT TURN
- ↕ RIGHT ANGLE
- ↔ STRUCK PARKED VEHICLE

COLORS

⊕ PEDESTRIAN CRASH

5 / 8

NEW JERSEY DEPARTMENT OF TRANSPORTATION	
JFK Boulevard (CR 501) between 43rd Street and 64th Street North Bergen Township, Union City & West New York Town Hudson County	
2012-2016 PEDESTRIAN COLLISION DIAGRAMS	
GPI Greenman-Pedersen, Inc. Engineering and Construction Services	NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_1\Cadd\Hy06_Hudson\Crash_Sheets\Crash_Sheet_6.dgn

TIME: 9/19/08 AM

DATE: 4/20/2018

GREENMAN-PEDERSEN, INC.



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
2	22:19	Sun	06-08-12	1	DRY	CLEAR	DARK
17	22:26	Mon	09-07-15	1	DRY	CLEAR	DARK
24	10:41	Wed	07-13-16	1	DRY	CLEAR	DAY

MATCH LINE E
SEE SHEET NO. 5 OF 8

MATCH LINE F
SEE SHEET NO. 7 OF 8

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	0
INJURIES	3
FATALITIES	0
TOTAL NO. OF CRASHES	3

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS

PEDESTRIAN CRASH

6/8

NEW JERSEY DEPARTMENT OF TRANSPORTATION

JFK Boulevard (CR 501)
between 43rd Street and 64th Street
North Bergen Township, Union City &
West New York Town Hudson County

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development\Support\INDOT_HSP_Year_1\Catchway\06_Hudson\Crash_Sheets\Crash_Sheet_7.dgn
 DATE: 4/30/2018
 TIME: 9:20:24 AM
 GREENMAN-PEDERSEN, INC.



COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
4	09:40	Mon	02-04-13	1	DRY	CLEAR	DAY
5	18:00	Wed	03-20-13	1	DRY	CLEAR	DUSK
14	21:38	Wed	06-03-15	1	DRY	CLEAR	DARK
15	15:11	Wed	07-01-15	1	DRY	CLEAR	DAY
27	14:12	Tue	08-23-16	0	DRY	CLEAR	DAY
30	16:39	Sun	10-23-16	1	DRY	CLEAR	DAY

MATCH LINE F
SEE SHEET NO. 6 OF 8

MATCH LINE G
SEE SHEET NO. 8 OF 8

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	1
INJURIES	5
FATALITIES	0
TOTAL NO. OF CRASHES	6

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

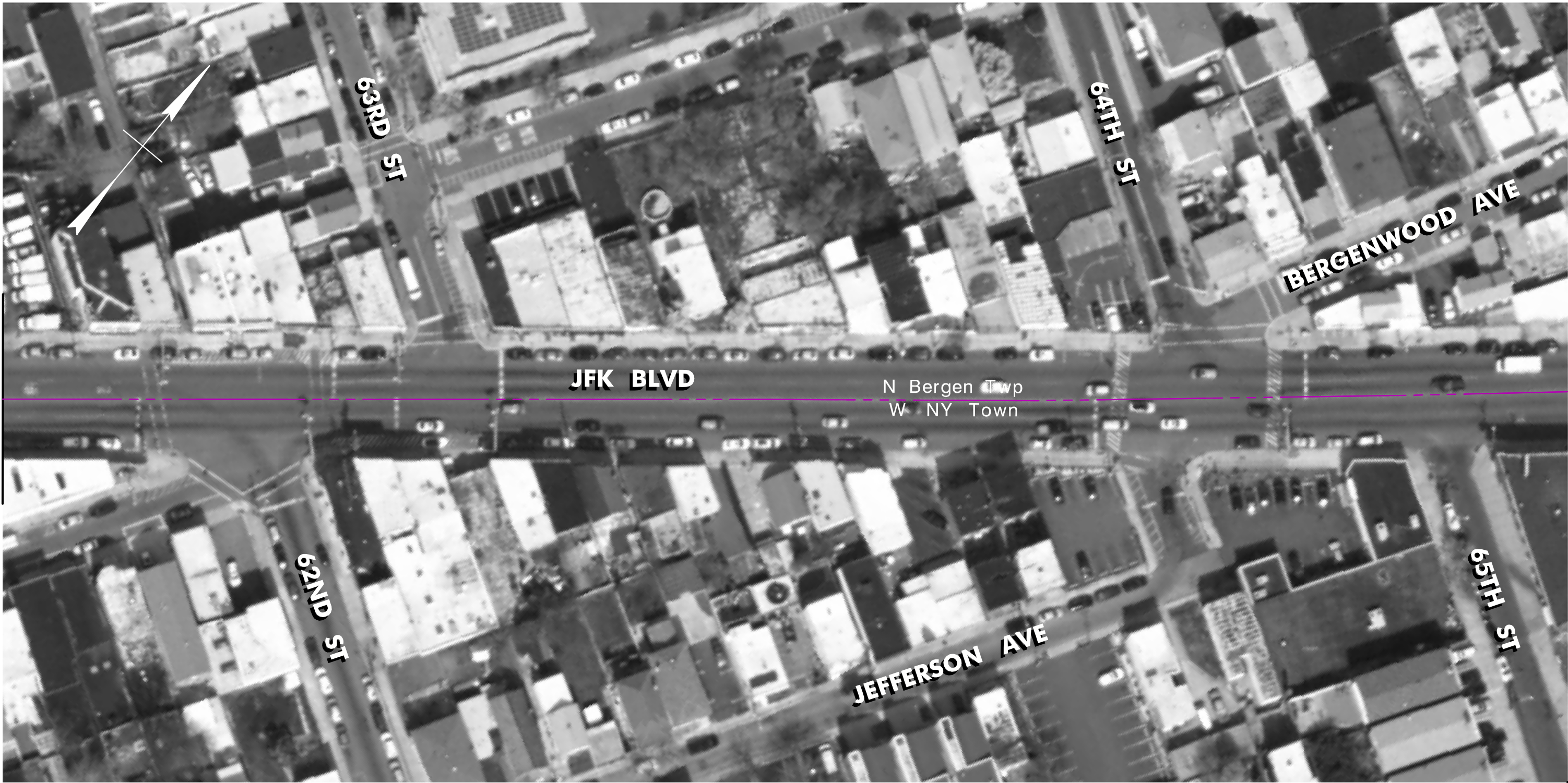
JFK Boulevard (CR 501)
 between 43rd Street and 64th Street
 North Bergen Township, Union City &
 West New York Town Hudson County

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

FILE: L:\2017\2016 HSP - Program and Project Development Support\NJDOT_HSP_Year 1\Cad\Draw\06 Hudson\Crash_Sheets\Crash_Sheet 8.dwg
 DATE: 4/30/2016
 TIME: 9:21:29 AM
 GREENMAN-PEDERSEN, INC.



SEE SHEET NO. 7 OF 8
 MATCH LINE G

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	0
INJURIES	0
FATALITIES	0
TOTAL NO. OF CRASHES	0

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION	
JFK Boulevard (CR 501) between 43rd Street and 64th Street North Bergen Township, Union City & West New York Town Hudson County	
2012-2016 PEDESTRIAN COLLISION DIAGRAMS	
Greenman-Pedersen, Inc. Engineering and Construction Services	NOT TO SCALE

APPENDIX F

SITE PHOTOGRAPHS

Lack of "pull-through" signal indications for JFK northbound may confuse motorist



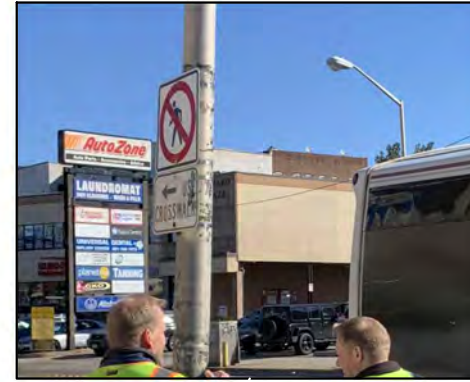
Bollards encumber pedestrian path around bus shelter



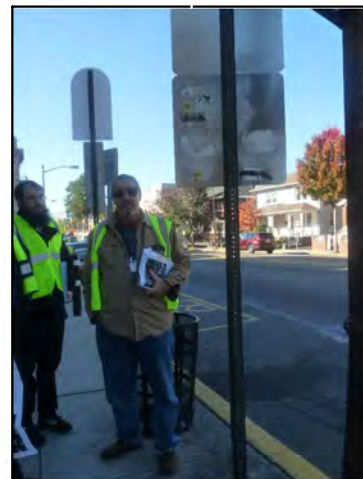
Tree close to signal; may block visibility of signalheads



Sign directs pedestrians to marked crossing farther away than the one to the south



Insufficient clear width for ADA compliance



Signs are mounted too low



Vehicle parked too close to the intersection and can block the view of / for pedestrians in the crosswalk



Improper use of signs for roadway conditions and "makeshift" signs



Foreground: Utility pole within curb ramp
Background: Crosswalk may not follow pedestrian path



Standing water at curb ramp and edge of road, which can freeze in cold conditions, and create a hazard for pedestrians

**NJDOT HSIP
ROAD SAFETY AUDIT
JFK BOULEVARD**

N. BERGEN TWP, UNION CITY, W. NEW YORK TOWN
HUDSON COUNTY

SITE PHOTOGRAPHS



GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

N.T.S.

Bollards encumber pedestrian path around bus shelter (clear area less than 4' wide)



Signal heads for adjacent intersection are obscured by vegetation and curve



No detectable warning surfaces on paver curb ramps



Overhead utilities obscure some signal heads



Portion of traffic signalpole foundation not removed; could pose tripping hazard



No advanced curve or signalhead warning
Signs are not mounted at proper height



Median barrier lacks current impact attenuators



Crosswalks do not align with pedestrian signal heads and locations block visibility of / for pedestrians (Similar intersection has different marked crosswalk locations)



Long crosswalk with worn striping and one curb ramp that does not align to any marked crossing may be confusing to road users (Similar intersection has different marked crosswalk locations)

**NJDOT HSIP
ROAD SAFETY AUDIT
JFK BOULEVARD**

**N. BERGEN TWP, UNION CITY, W. NEW YORK TOWN
HUDSON COUNTY**

SITE PHOTOGRAPHS



GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

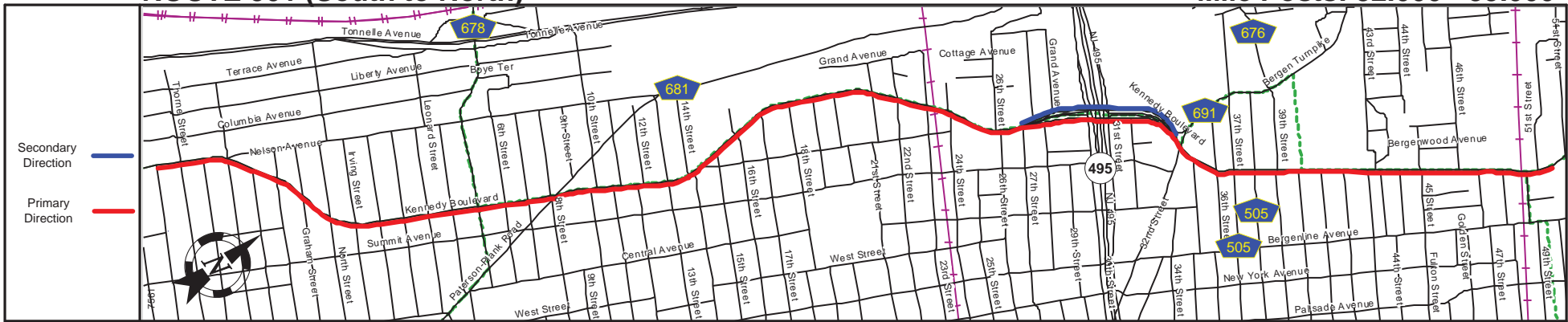
N.T.S.

APPENDIX G

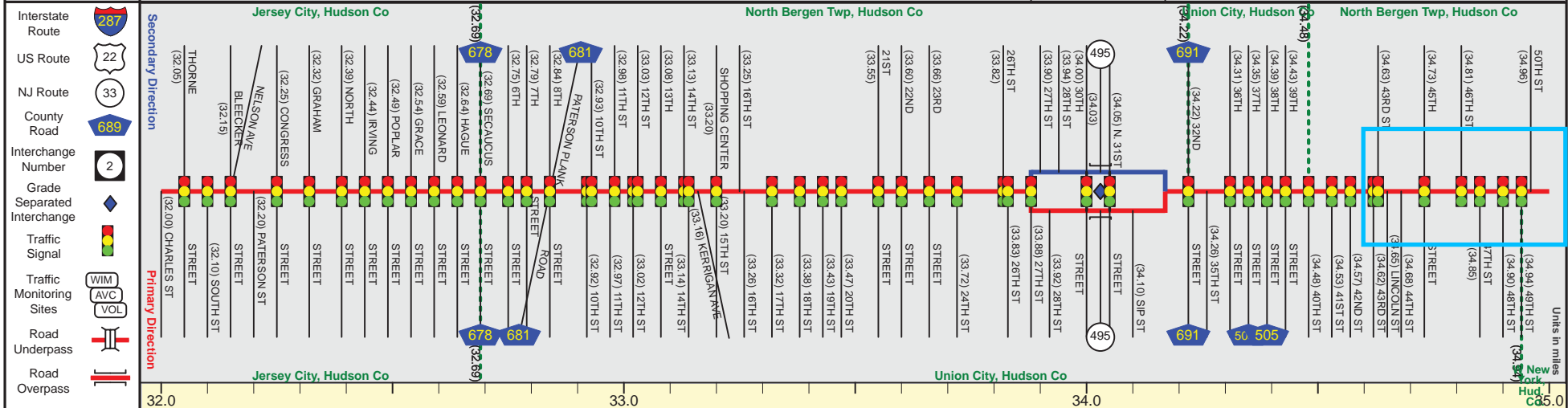
STRAIGHT LINE DIAGRAMS

ROUTE 501 (South to North)

Mile Posts: 32.000 - 35.000



Pavement	30
Shoulder	0
Number of Lanes	2
Speed Limit	25
Street Name	Kennedy Boulevard



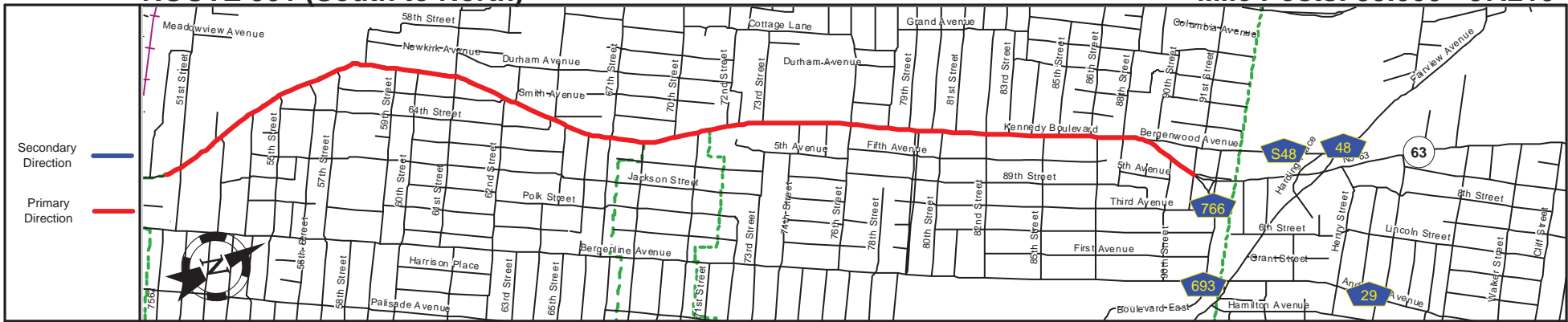
Street Name	Kennedy Boulevard			
Jurisdiction	County			
Functional Class	Urban Principal Arterial			
Federal Aid - NHS Sy	NHS			
Control Section				
Speed Limit	25			
Number of Lanes	4	2	4	
Med. Type	None	Positive	None	
Med. Width	0	VAR	0	
Pavement	60	30	60	
Shoulder	0			
Traffic Volume				
Traffic Sta. ID				
Structure No.	0917154			
Enlarged Views				

SRI = 0000501

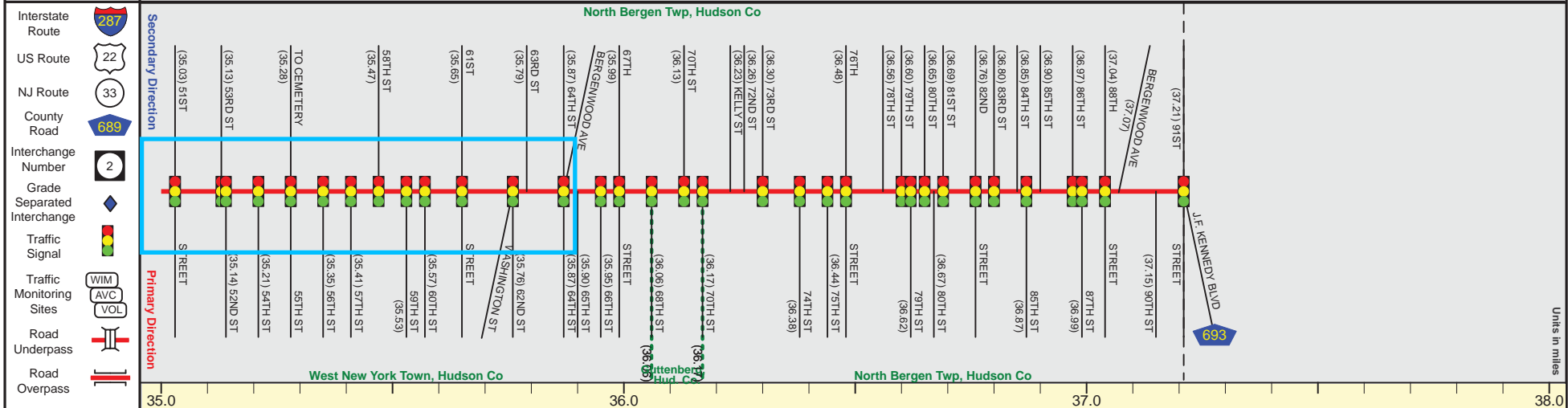
Date last inventoried: November 2012

ROUTE 501 (South to North)

Mile Posts: 35.000 - 37.210



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



Street Name	Kennedy Boulevard
Jurisdiction	County
Functional Class	Urban Principal Arterial
Federal Aid - NHS Sy	NHS
Control Section	
Speed Limit	25
Number of Lanes	4
Med. Type	None
Med. Width	0
Pavement	60
Shoulder	0
Traffic Volume	
Traffic Sta. ID	
Structure No.	
Enlarged Views	

MP 37.21 = Begin Coinc With NJ 63 MP 0.00
 MP 37.21-39.62 See NJ 63 MP 0.00-2.41

SRI = 0000501

Date last inventoried: November 2012

APPENDIX H

PRE-AUDIT PRESENTATION



Audit Team Introductions

- *Funded by Federal Highway Administration and NJDOT*
- NJDOT, Bureau of Transportation Data & Safety
 - Bicycle & Pedestrian Programs
 - Local Aid
- NJTPA
- Hudson County
- North Bergen, Union City, West New York
- Greenman-Pedersen, Inc., NJDOT Consultant



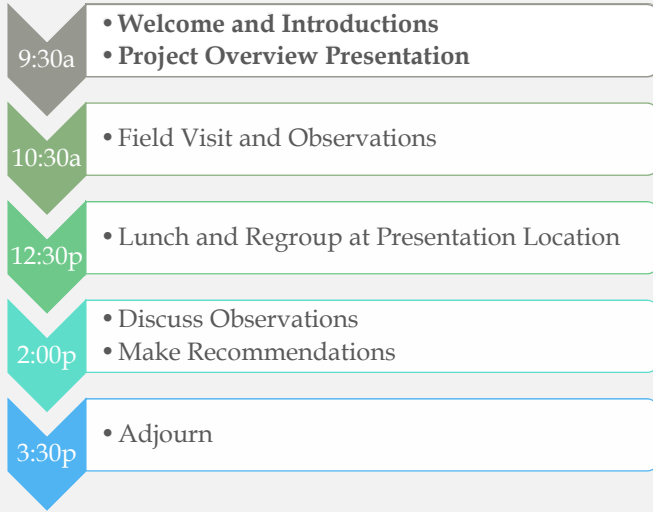






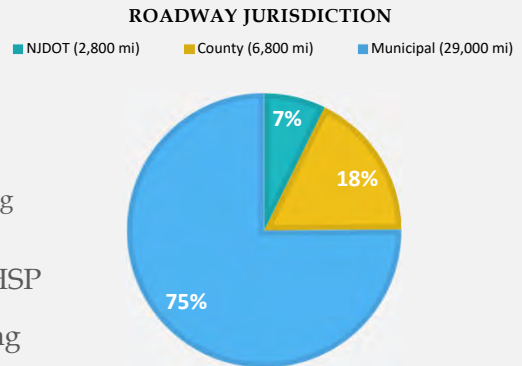

2

Today's Schedule



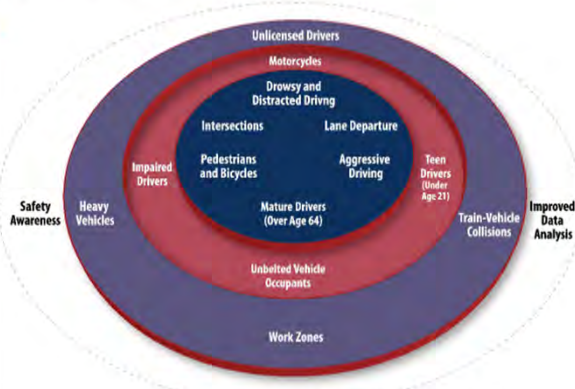
Highway Safety Improvement Program/ Local Safety Program

- GOAL: Reduce serious injury and fatality (K+A) crashes on all of NJ's public roads
 - 40,000 centerline miles of public roads
 - 33% K+A crashes occur on state highways
 - 57% K+A crashes occur on local roads
- Toward zero deaths on all public roads
 - Established 2.5%/year reduction in 5-year rolling average
- Performance-based goals consistent with SHSP
- Data-driven, strategic approach to improving highway safety



Highway Safety Improvement Program (HSIP)

New Jersey Prioritization of Safety Emphasis Areas



Legend

- 1st Priority (>2,000 fatality and serious injury crashes)
- 2nd Priority (1,000 to 2,000 fatality and serious injury crashes)
- 3rd Priority (<1,000 fatality and serious injury crashes)

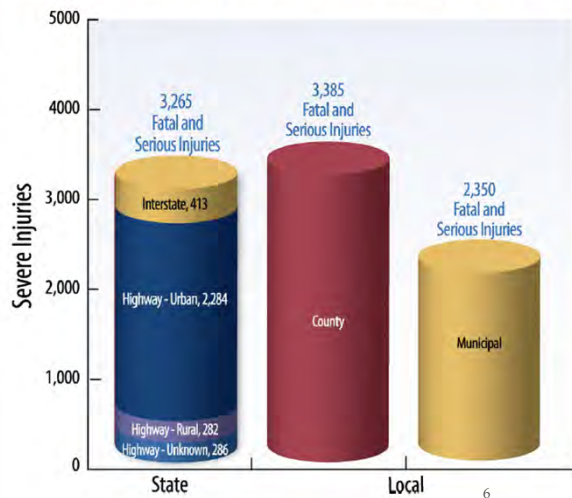
Note: Fatality and serious injury crashes are those crashes that result in one or more fatalities or serious injuries, or both. The exception to this categorization is for Mature Drivers, which are considered a first priority emphasis area due to the increasingly older population in New Jersey.

- 14 Emphasis Areas
- Pedestrian Safety and Intersection Focus State
- Top priority: lane departure, intersections, and pedestrians
- 7 sub-programs including Local Safety Program
- Core Federal Aid Program, NJ receives ~\$57M

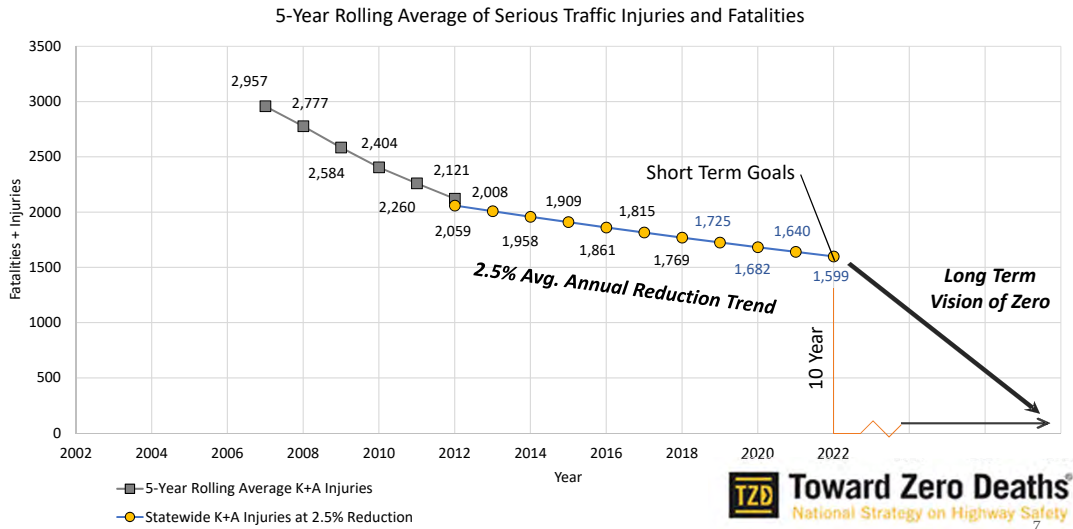
Local Safety Program (LSP)

- NJDOT supports LSP:
 - Dedication of HSIP funds
 - Technical assistance
 - Screening lists for MPOs
 - Road Safety Audits
- MPOs support LSP:
 - Local Road Safety/High Risk Rural Roads
 - PE/FD Assistance Program
- Focus annual HSIP funding:
 - 40% on state highways
 - 60% percent on county and municipal network

Fatal and Serious Injuries by Roadway System by Roadway System, 2008 to 2012

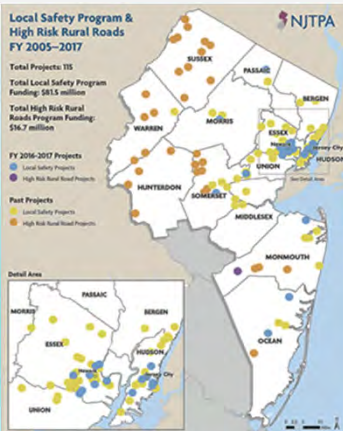


National Strategy – Toward Zero Deaths



Federal Transportation Funding

through the
North Jersey Transportation Planning Authority
 The Metropolitan Planning Organization for Northern New Jersey



Local Safety and High Risk Rural Roads Programs

Over \$98 million in funding since 2005 on County and Local Roadways
 Relatively quick-fix safety improvements

Highway Safety Improvement Program (HSIP) funds

Emphasizes a data-driven, strategic approach to improving highway safety

Network Screening

Identifies locations experiencing:
 High crash frequencies
 Severe crash injuries
 Specific crash types such as right-angle or roadway departures

Community Outreach

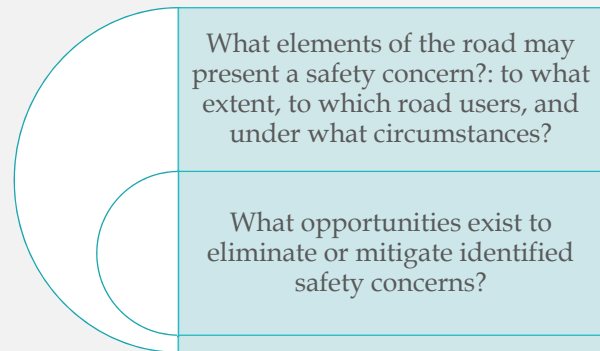
Provides the public, local stakeholders and officials with an opportunities for provide comments and ask questions



RSA Purpose

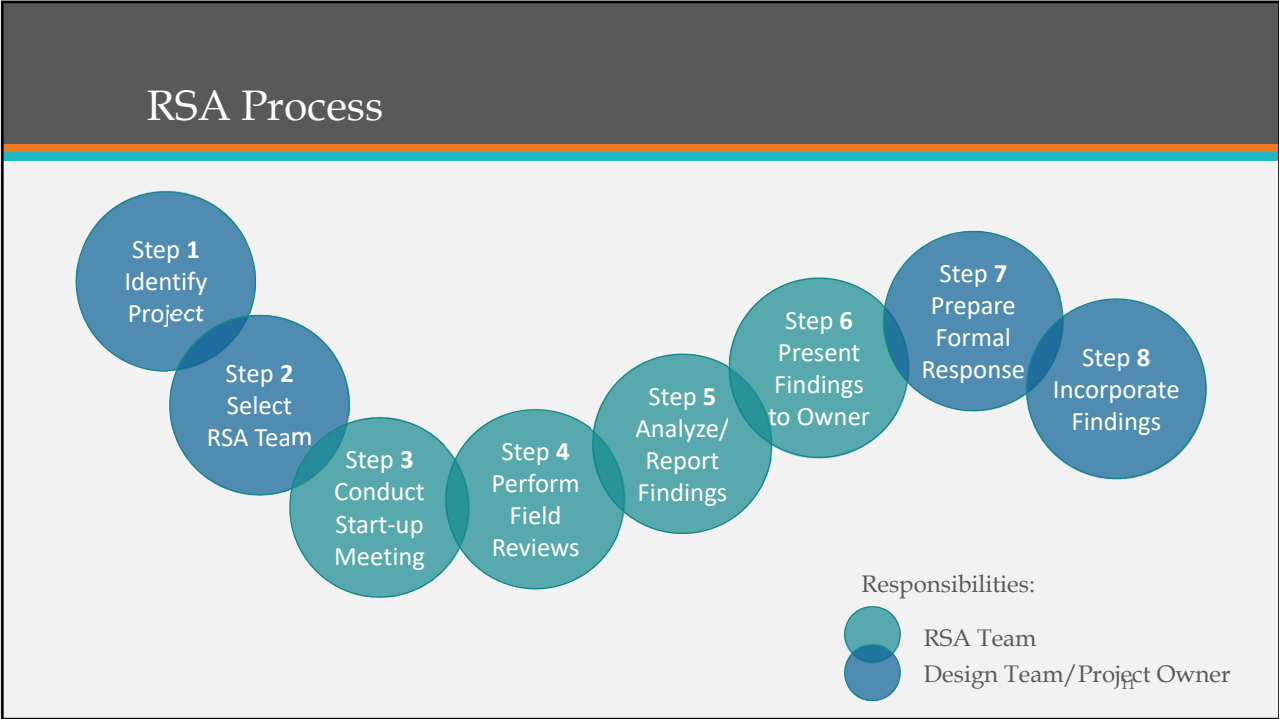
- Formal safety performance examination
- Qualitatively estimates and reports on potential road safety issues
- Identifies safety improvement opportunities for all road users.
- Independent, multidisciplinary audit team

• Goals:



RSA Benefits

- Pro-actively address safety
 - Audited designs should produce fewer, less severe crashes
 - Identify low-cost/high-value improvements
 - Enhance consistency in how safety is considered; promote "safety culture"
 - Provide continuous advancement of safety skills and knowledge
 - Contribute feedback on safety issues for future projects
 - Support optimized savings of lives, money and time
- Not a replacement for:
 - Design quality control
 - Standard compliance
 - Traffic or safety impact studies
 - Safety conscious planning
 - Road safety inventory programs
 - Traffic safety modeling efforts



FHWA Proven Safety Countermeasures

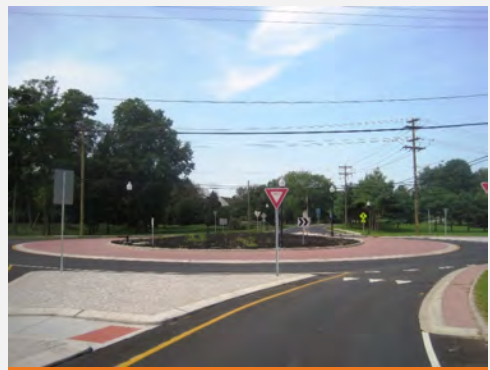
Roadside Design Improvement at Curves	Reduced Left-Turn Conflict Intersections	Systemic Application of Multiple Low Cost Countermeasures at Stop-Controlled Intersections	Leading Pedestrian Interval	Local Road Safety Plan
USLIMITS2	Enhanced Delineation and Friction for Horizontal Curves	Longitudinal Rumble Strips and Stripes on Two-Lane Roads	Median Barrier	Safety Edges
Backplates with Retroreflective Borders	Corridor Access Management	Dedicated Left- and Right-Turn Lanes at Intersections	Roundabouts	Yellow Change Intervals
Medians and Pedestrian Crossing Islands in Urban and Suburban Areas	Pedestrian Hybrid Beacon	Road Diet	Walkways	Road Safety Audit

Descriptions provided in your handouts

FHWA Proven Safety Countermeasures



Road Diet
Maplewood Township, Essex County

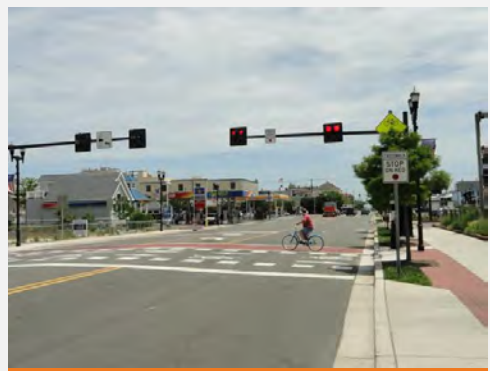


Roundabout
Chesterfield Township, Burlington County

FHWA Proven Safety Countermeasures

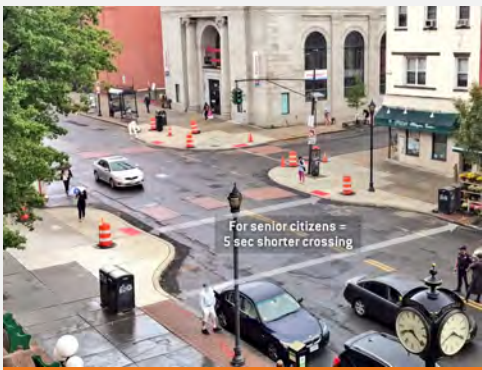


Backplates with Retroreflective Borders

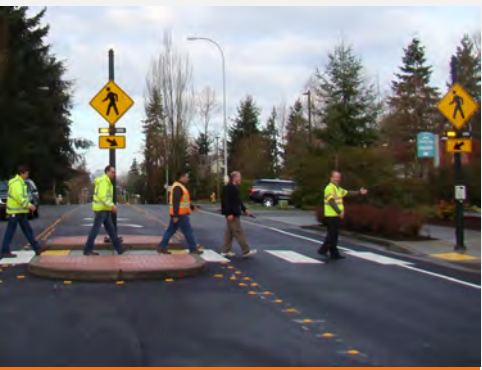


Pedestrian Hybrid Beacon (HAWK)
Ocean City, Cape May County

Additional Considerations



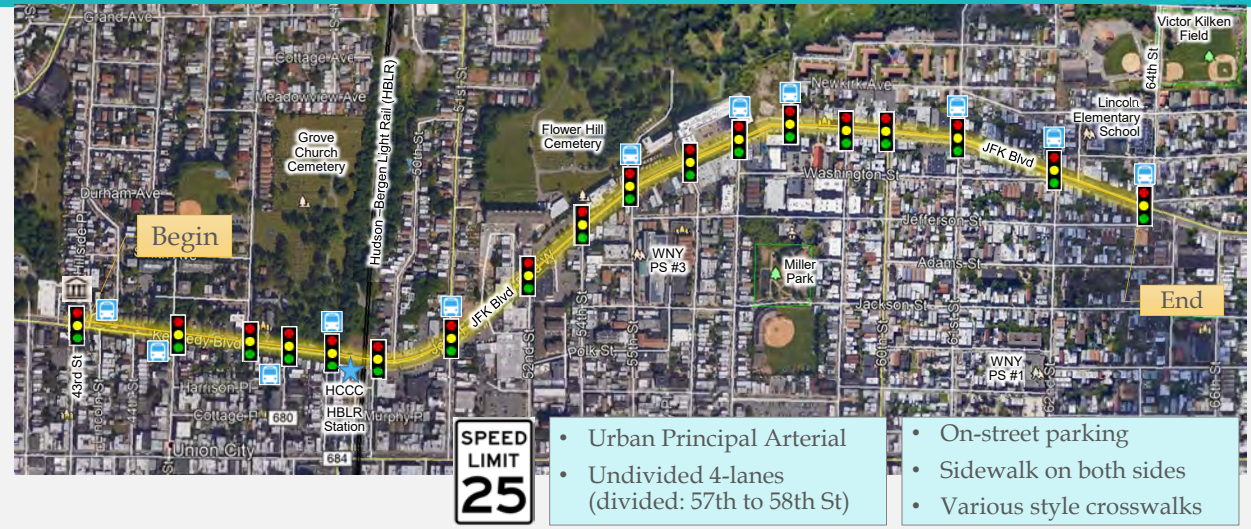
Curb Extensions
Hoboken City, Hudson County



Enhanced signing / pedestrian crossings
Bellevue City, WA

Area Map

NJT Routes 88, 154, and 188 (22, 86, 181 at HBLR Station)



Project Area



- Traffic Data
 - Nov. 2016 ADT: around 30,200 vpd
- Land Use
 - Commercial/retail/residential
 - High density
 - Hudson CC
- Census Demographics
 - 85% Hispanic/Latino
 - 9% White, 3% Asian, 1% Black
 - 20% below poverty level
 - 40% use public transportation
 - 9% walk or bike to work

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NJTPA's FY 2017-2018 LSP Network Screening List

Regional Corridors	Ped Corridors	Intersections (County)	Ped Intersections (County)
#21: CR 501 (MP 34.9 - 35.9)	Not Ranked	#78: 61st St (MP 35.65) #150: 51st St (MP 35.03) #173: 57th St (MP 35.41)	#188: 60th & 61st St (MP 35.58 & 35.65) #226: 45th & 59th St (MP 34.73 & 35.53) #473: 46th St (MP 34.81)

Lists use 2009-2013 crash data

18

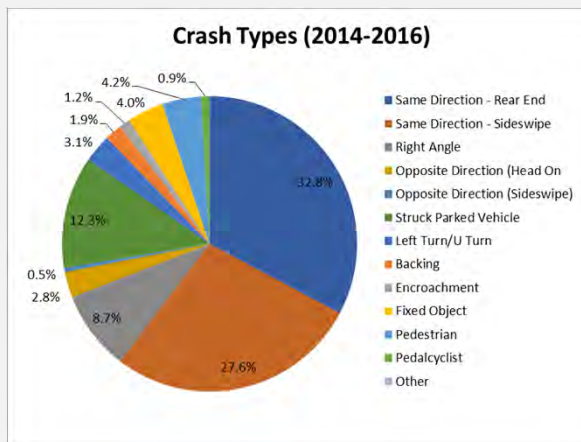
Crash Data

428 Crashes (2014-2016)

- Overrepresentations:
 - Sideswipe, Parked Vehicle, Left Turn
 - Pedestrian/Pedalcyclist (22)
 - At Signalized Intersection
 - Night

32 Pedestrian Crashes (2012-2016)

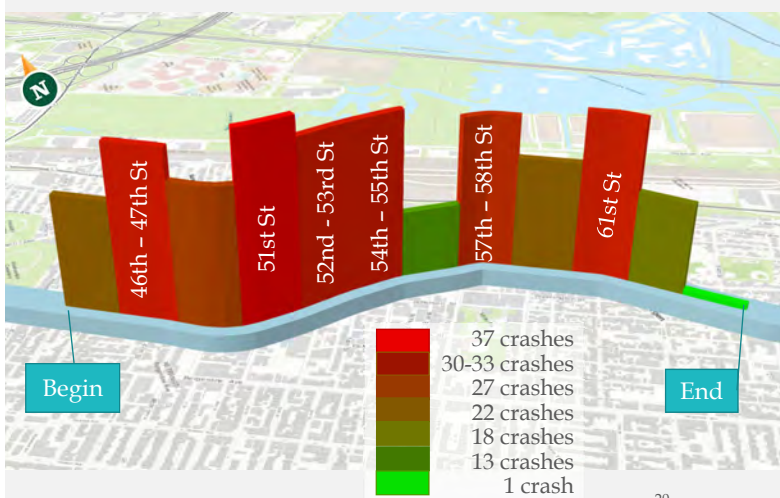
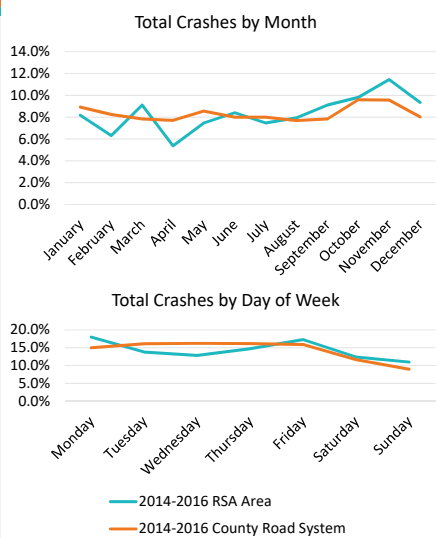
- Overrepresentations:
 - Injury
 - At Signalized Intersection



19

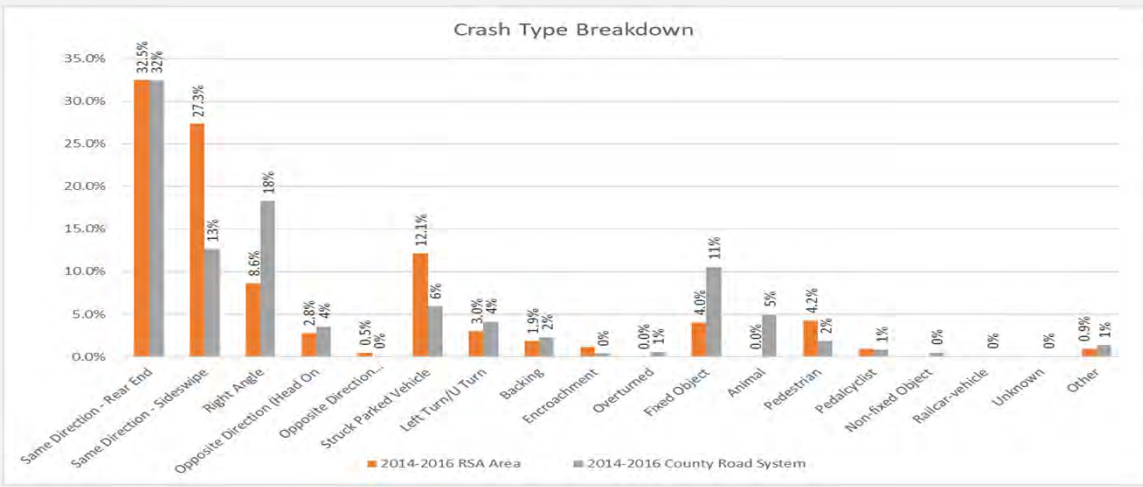
Crash Data (2014-2016)

Histogram View by 0.1 Mile



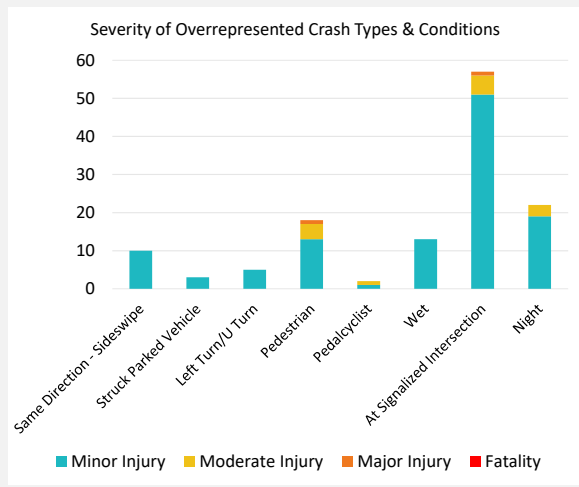
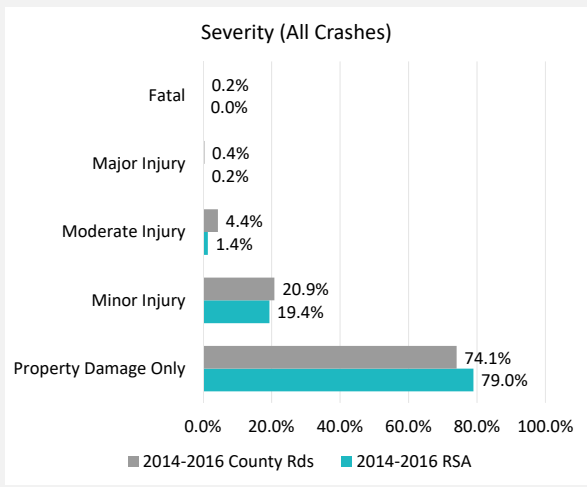
20

Crashes: RSA Project Area v. County Road System



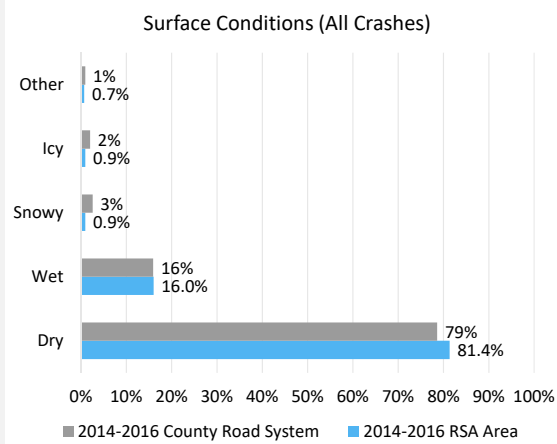
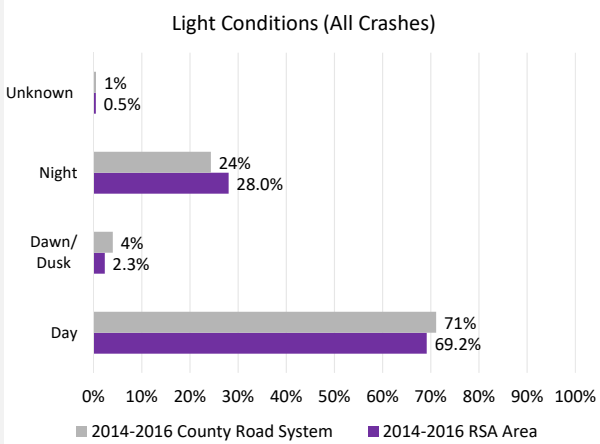
21

Crashes: Severity



22

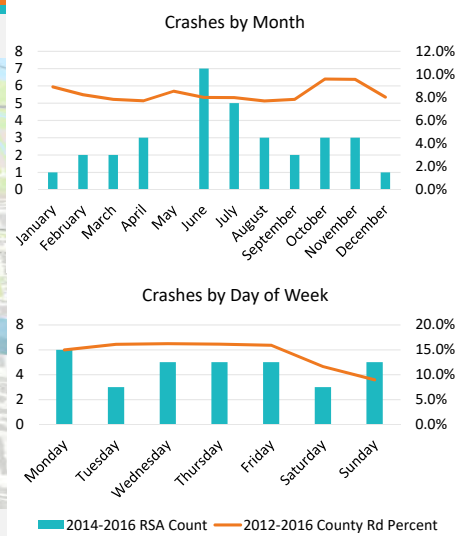
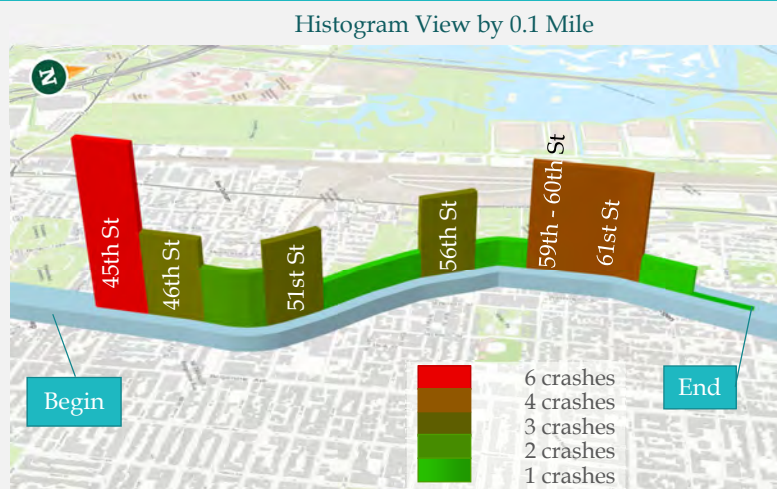
Crashes: Light & Surface Conditions

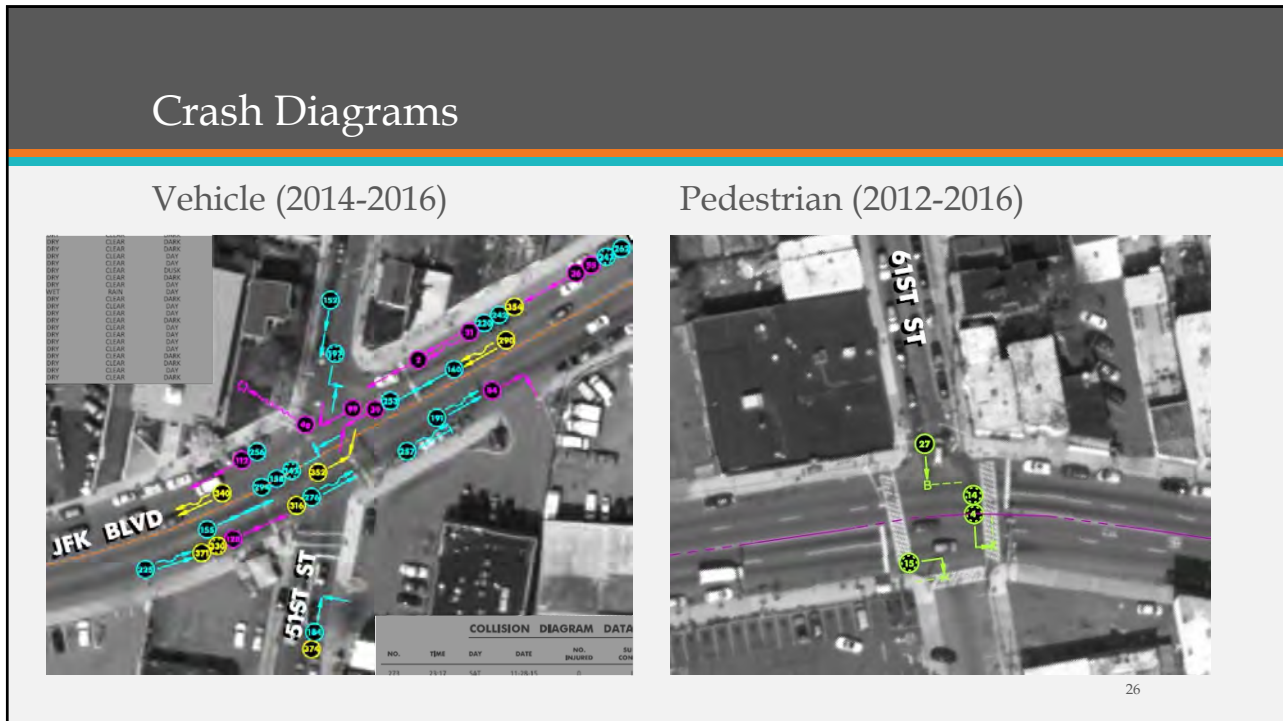
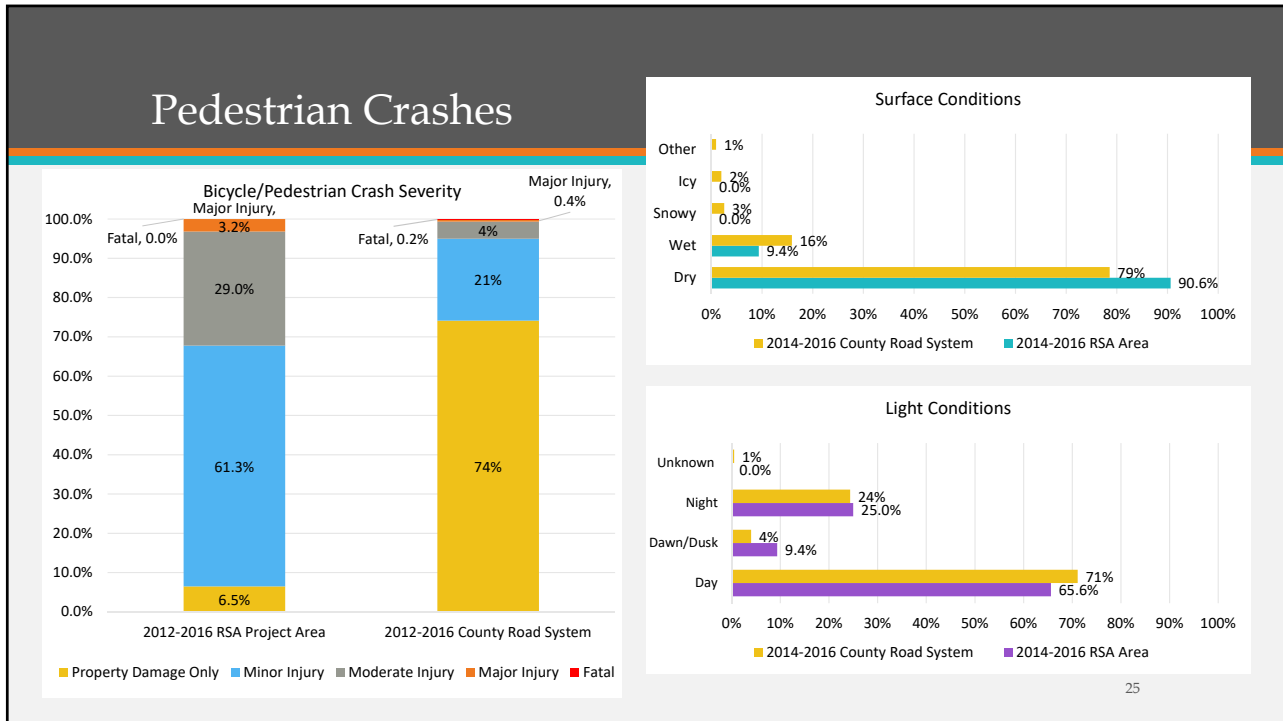


23

Pedestrian Crash Data (2012-2016)

24





Field Visit Itinerary

9:30a

- Welcome and Introductions
- Project Overview Presentation

10:30a

- **Field Visit and Observations**

12:30p

- Lunch and Regroup at Presentation Location

2:00p

- Discuss Observations
- Make Recommendations

3:30p

- Adjourn

- ✓ Verify Identified Issues
- ✓ Observe Operations
- ✓ Note Other Safety Concerns
- ✓ Document Findings
 - Photographs
 - Checklist
- ✓ Safety First!
 - Use proper safety equipment
 - Stay alert to your surroundings

27

Field Visit & Observations

(pause presentation)


Post Audit Analysis

(resume presentation)



RSA Schedule

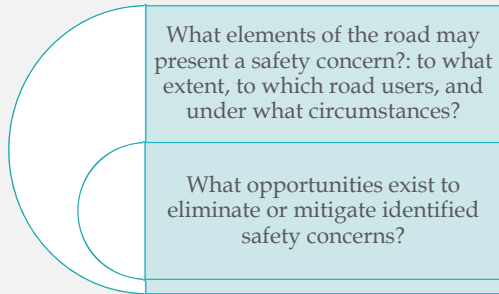
9:30a	<ul style="list-style-type: none"> • Welcome and Introductions • Project Overview Presentation
10:30a	<ul style="list-style-type: none"> • Field Visit and Observations
12:30p	<ul style="list-style-type: none"> • Lunch and Regroup at Presentation Location
2:00p	<ul style="list-style-type: none"> • Discuss Observations • Make Recommendations
3:30p	<ul style="list-style-type: none"> • Adjourn



30

Post Audit Analysis

Observations



Recommendations

- What corridor safety issues did you observe?
- What localized safety issues did you observe?
- What improvements would you make?
- Are any of the FHWA countermeasures beneficial?

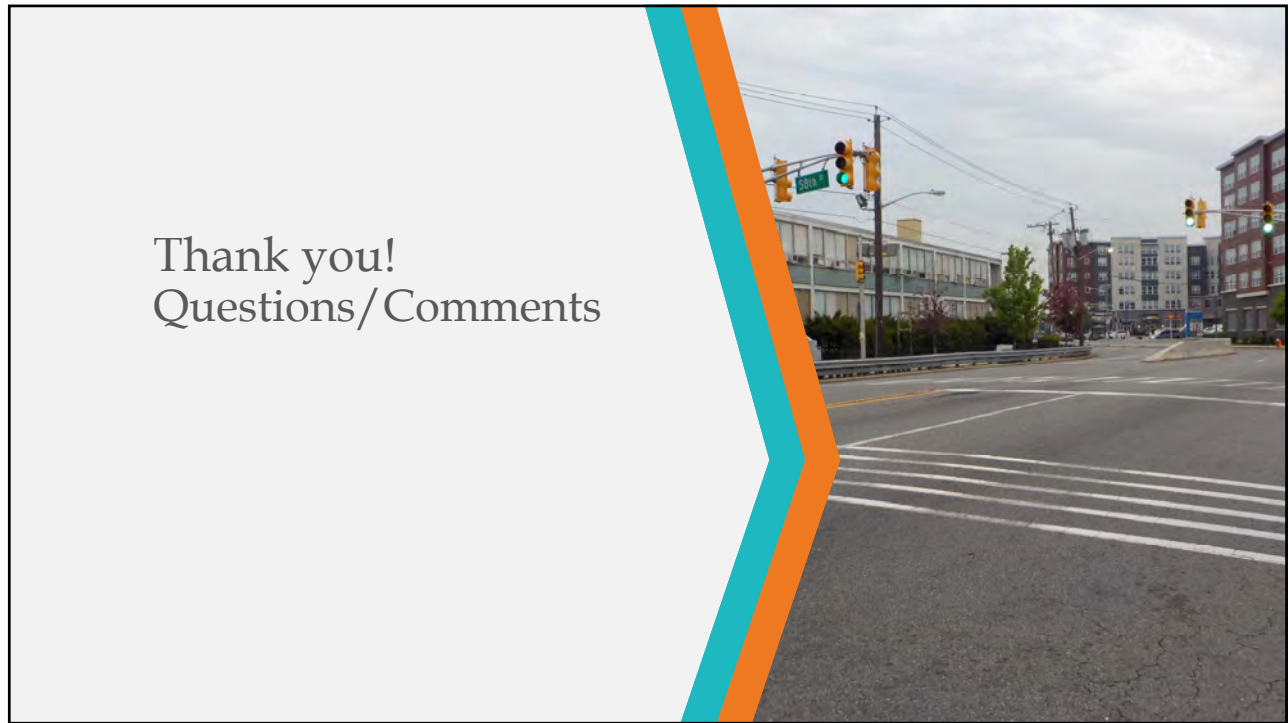
31

Next Steps

- Preparation of RSA Report
- Review/comments from RSA Team
- Preparation of Preliminary Final Report
- Road Owner Response
- Preparation of Final Report
- Approximate timeframe: 12 weeks



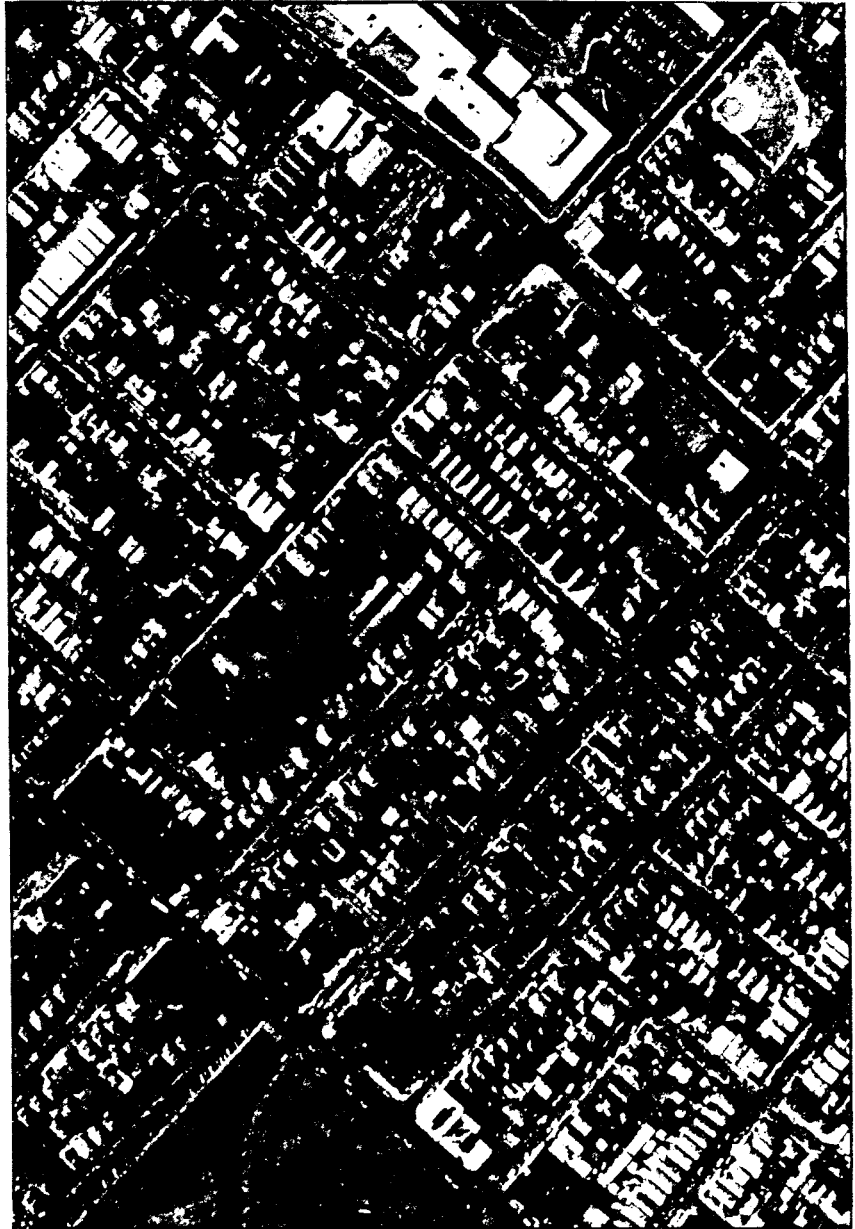
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APPENDIX I

EXCERPTS FROM MUNICIPAL MASTER PLANS/REEXAMINATION REPORTS

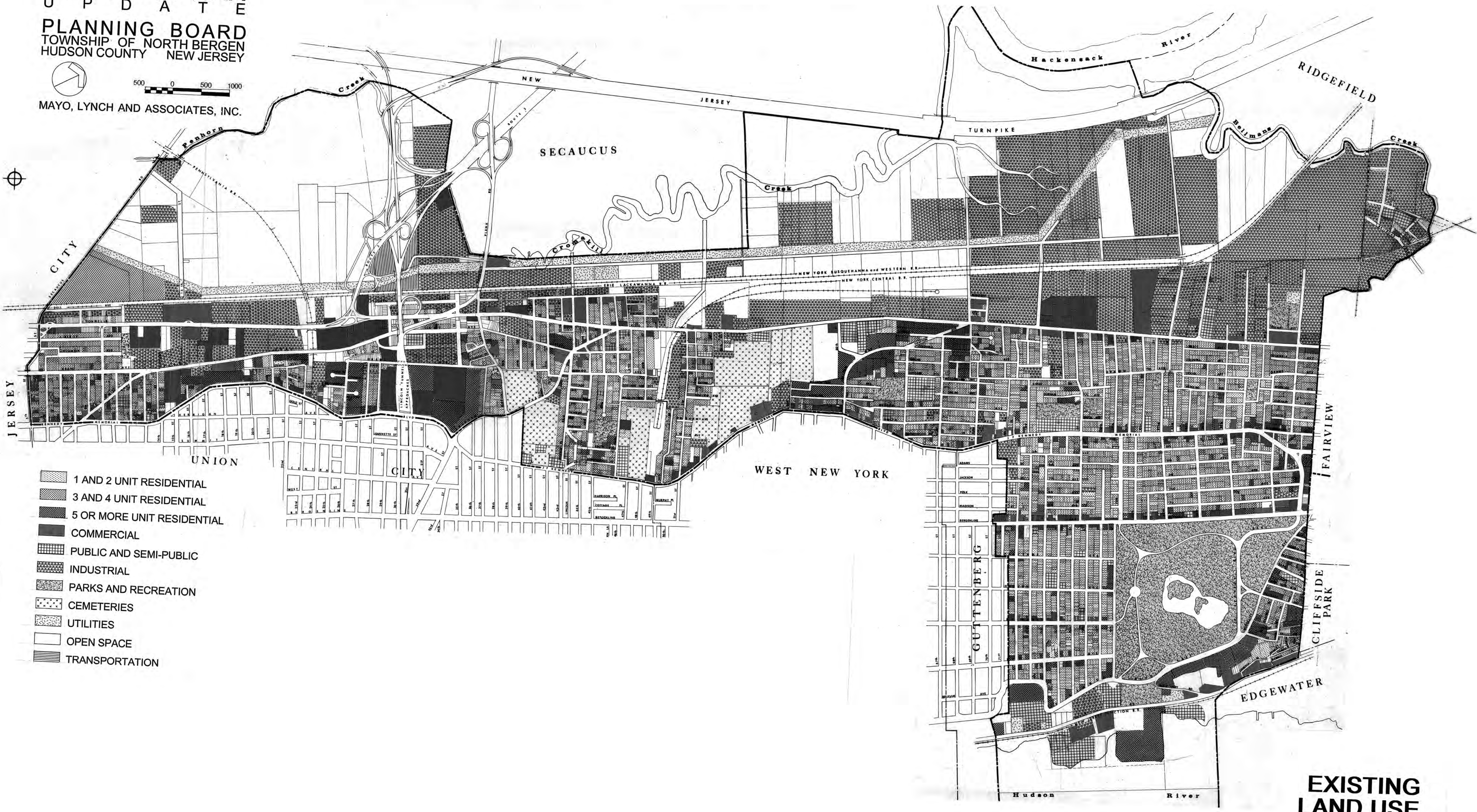
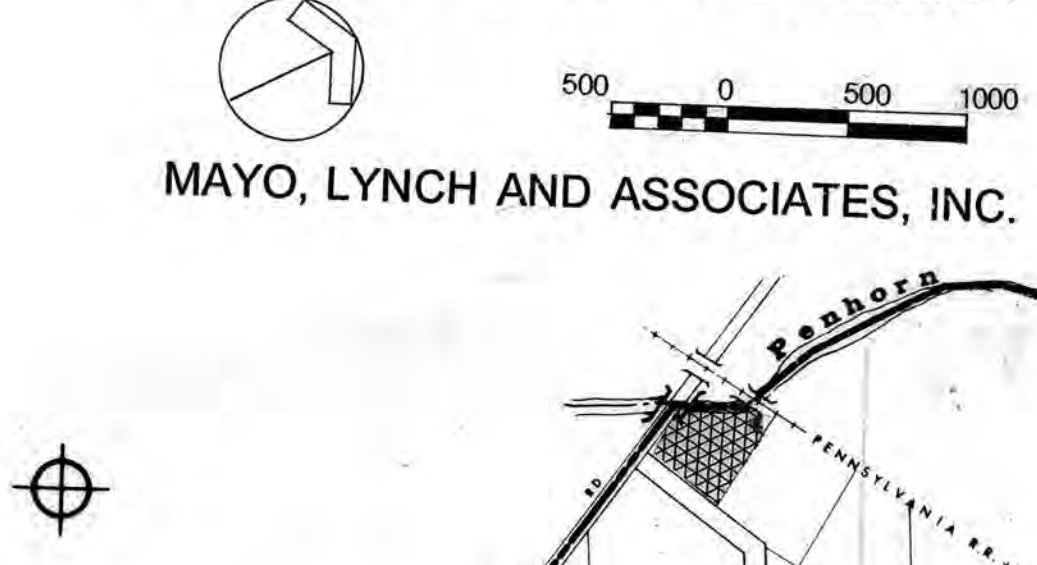
MASTER PLAN
U P D A T E
PLANNING BOARD
TOWNSHIP OF NORTH BERGEN
HUDSON COUNTY NEW JERSEY



MAYO, LYNCH AND ASSOCIATES, INC.
VANDOR + VANDOR
April 1994

**MASTER PLAN
UPDATE**
PLANNING BOARD
TOWNSHIP OF NORTH BERGEN
HUDSON COUNTY NEW JERSEY

MAYO, LYNCH AND ASSOCIATES, INC.

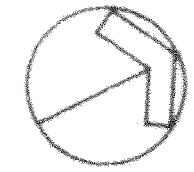


- 1 AND 2 UNIT RESIDENTIAL
- 3 AND 4 UNIT RESIDENTIAL
- 5 OR MORE UNIT RESIDENTIAL
- COMMERCIAL
- PUBLIC AND SEMI-PUBLIC
- INDUSTRIAL
- PARKS AND RECREATION
- CEMETERIES
- UTILITIES
- OPEN SPACE
- TRANSPORTATION

**EXISTING
LAND USE**

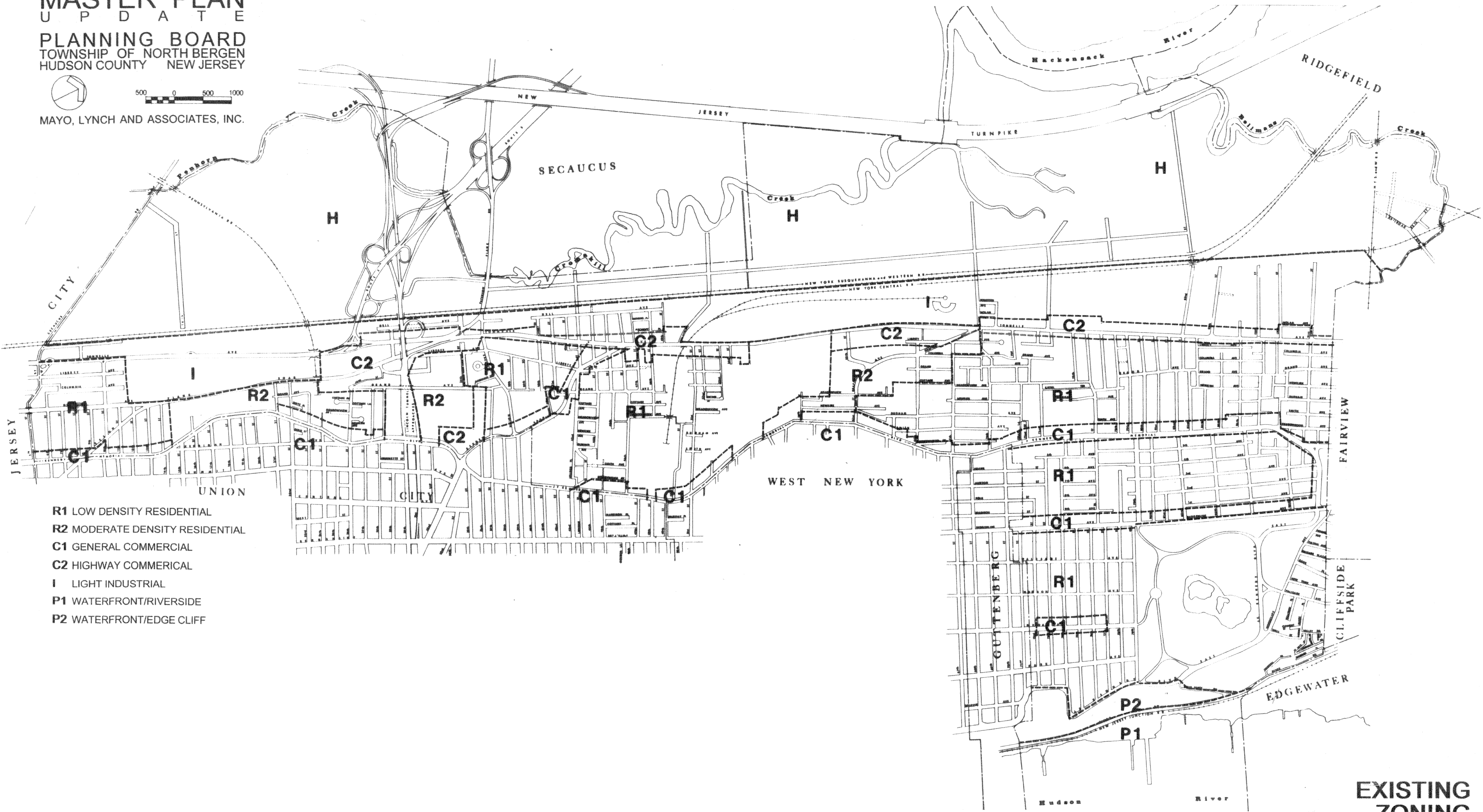
MASTER PLAN UPDATE

PLANNING BOARD
TOWNSHIP OF NORTH BERGEN
HUDSON COUNTY NEW JERSEY



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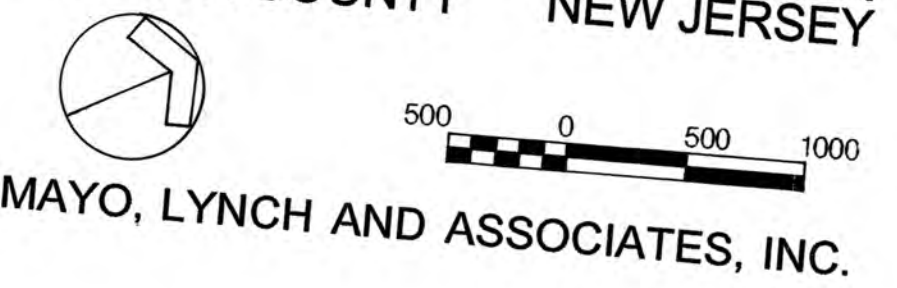
MAYO, LYNCH AND ASSOCIATES, INC.



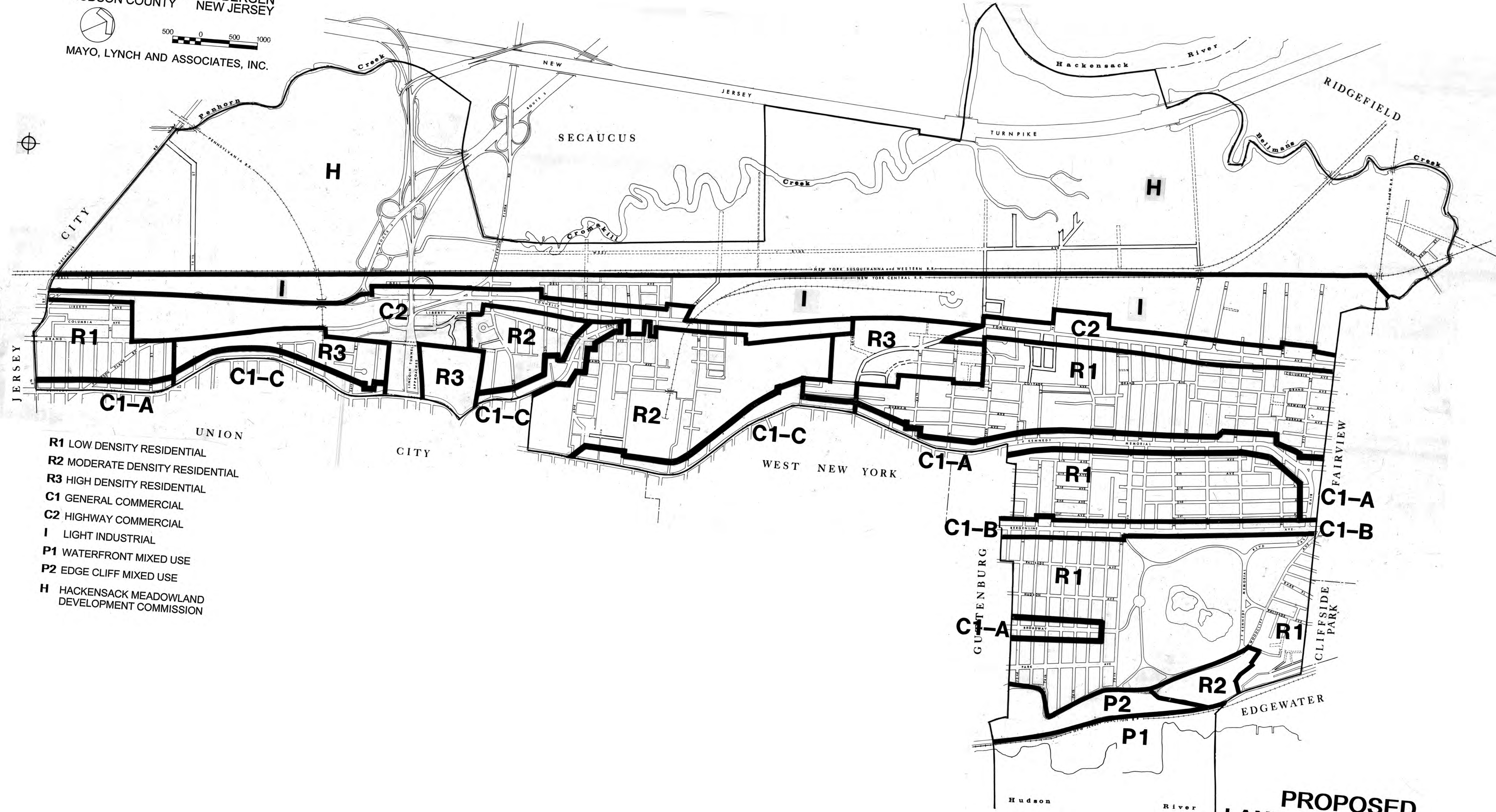
- R1 LOW DENSITY RESIDENTIAL
- R2 MODERATE DENSITY RESIDENTIAL
- C1 GENERAL COMMERCIAL
- C2 HIGHWAY COMMERCIAL
- I LIGHT INDUSTRIAL
- P1 WATERFRONT/RIVERSIDE
- P2 WATERFRONT/EDGE CLIFF

**EXISTING
ZONING**

U P D A T E
PLANNING BOARD
 TOWNSHIP OF NORTH BERGEN
 HUDSON COUNTY NEW JERSEY

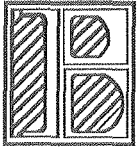


MAYO, LYNCH AND ASSOCIATES, INC.



- R1** LOW DENSITY RESIDENTIAL
- R2** MODERATE DENSITY RESIDENTIAL
- R3** HIGH DENSITY RESIDENTIAL
- C1** GENERAL COMMERCIAL
- C2** HIGHWAY COMMERCIAL
- I** LIGHT INDUSTRIAL
- P1** WATERFRONT MIXED USE
- P2** EDGE CLIFF MIXED USE
- H** HACKENSACK MEADOWLAND DEVELOPMENT COMMISSION

**PROPOSED
 LAND USE PLAN**



BURGIS ASSOCIATES, INC.

COMMUNITY PLANNING AND DEVELOPMENT CONSULTANTS

PRINCIPALS:

Joseph H. Burgis PP, AICP

Brigette Bogart PP, AICP

Edward Snieckus PP, CLA, ASLA

*Community Planning
Land Development and Design
Landscape Architecture*

PERIODIC REEXAMINATION OF THE MASTER PLAN TOWNSHIP OF NORTH BERGEN HUDSON COUNTY, NEW JERSEY

BA # 1960.03

**SEPTEMBER 24, 2009
REVISED: OCTOBER 8, 2009
ADOPTED: OCTOBER 22, 2009**

Redevelopment Corporation Law, Blighted Area Act, and Local Housing Authorities Law, with a single comprehensive statute. At the same time, the MLUL was also amended to require, as part of a master plan reexamination, that the issues raised in the LRHL be addressed.

In order to facilitate further redevelopment of Columbia Park, the Planning Board has designated the site as an 'area in need of redevelopment'. The Avalon project (formerly the Alfran project) located at 5601-5711 Kennedy Boulevard was designated an 'area in need', and a redevelopment plan was prepared. The project has received all approvals, but construction has not begun. Otherwise, there are no other locations that are under consideration for redevelopment at this time.

SUPPLEMENTAL STUDIES

As previously noted, the township requested specific studies for several particular areas. The areas include Tonnelle Avenue from 45th Street, north to the vacated Malone's Lane, the Duro-Test site, located between Kennedy Boulevard West and Paterson Plank Road in the vicinity of 24th Street, residential properties in the R-2 zone, and the waterfront zones and their height restrictions. In addition, the township seeks to address several parking issues within the community.

1. The Tonnelle Avenue corridor was analyzed from 45th Street, north to the vacated Malone's Lane, including the trailer park located on Tonnelle Avenue and 48th Street. The study area is depicted in the accompanying aerial photograph map as well as an existing land use map.

The land use survey indicates there are a variety of uses surrounding the train station, including single-family, two and three family, a five acre trailer park, multifamily, commercial and industrial uses. Most of this corridor is located within the C-2 Commercial District. The parcels on the east side of Tonnelle, between 47th and 48th streets, are in the R-2 Residential District. The parcels on the west side of Tonnelle, north of the railroad tracks, are located in the I Industrial District. The zoning designations for this corridor are consistent with the land use plan designations, including Highway Business (C-2), Intermediate Density Residential (R-2), and Industrial (I). The trailer park, referenced above, is located in the C-2 zone along Tonnelle Avenue, but the bulk of the trailer park is in the R-2 zone. As noted in the 2003 report, and in the zoning ordinance, residential uses are not permitted in the C-2 zone.

As discussed above, this corridor appears to be in transition, as industrial activity is decreasing. With the construction of the light rail and the improved bus stop in this area, there is an opportunity for the township to revitalize this portion of the community. The development of the train station presents an opportunity for a transit village-type of zoning, encompassing a number of properties situated within walking distance of the station.

Transit villages allow for people to live and work in a manner with less or no reliance on automobile use. Transit villages are consistent with the principles of smart growth as advocated in the State Plan. Accordingly, there are many incentives available resulting from the designation as a transit village.

The township should seek to revitalize this corridor with a mixture of retail and residential development. Given the context of an urban transit village, an appropriate building height along this corridor would be six stories, at a maximum of 65 feet, with five floors of residential development above one story of retail.

The accompanying pictures depict the varying character of development within this corridor.

MASTER PLAN TOWN OF WEST NEW YORK



Adopted: January 28, 2015



Guttenberg

EXISTING LAND USE

TOWN OF WEST NEW YORK

HUDSON COUNTY
NEW JERSEY

LEGEND

Existing Land Use

- Vacant
- Residential
- Commercial
- Industrial
- Apartment
- School
- Public Property
- Church
- Other Exempt
- Unknown Classification



1 inch = 550 feet

This map was developed using NJDEP and County GIS digital data, but this secondary product has not been verified by NJDEP and is



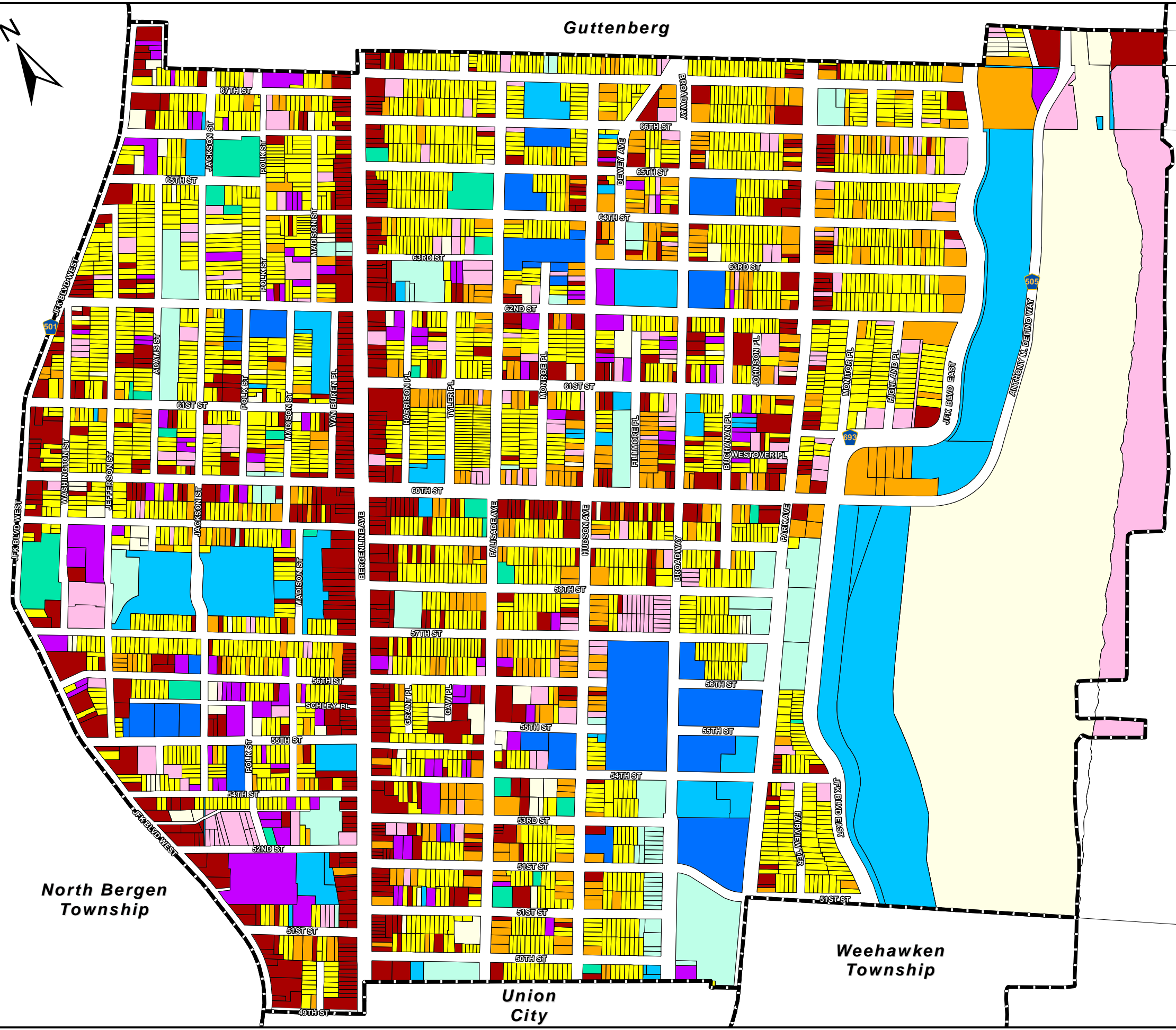
April 2014

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North Bergen
Township

Weehawken
Township

Union
City





Guttenberg

EXISTING ZONING

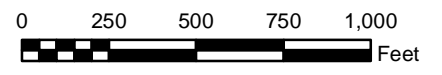
TOWN OF WEST NEW YORK

HUDSON COUNTY
NEW JERSEY

LEGEND

Zone Districts

- R-M MEDIUM DENSITY
- R-H HIGH DENSITY
- C-R RETAIL & SERVICE
- C-H HEAVY IMPACT
- I-L LIGHT IMPACT
- CWD CONTROLLED WATERFRONT DEVELOPMENT



1 inch = 550 feet

This map was developed using NJDEP and County GIS digital data, but this secondary product has not been verified by NJDEP and is



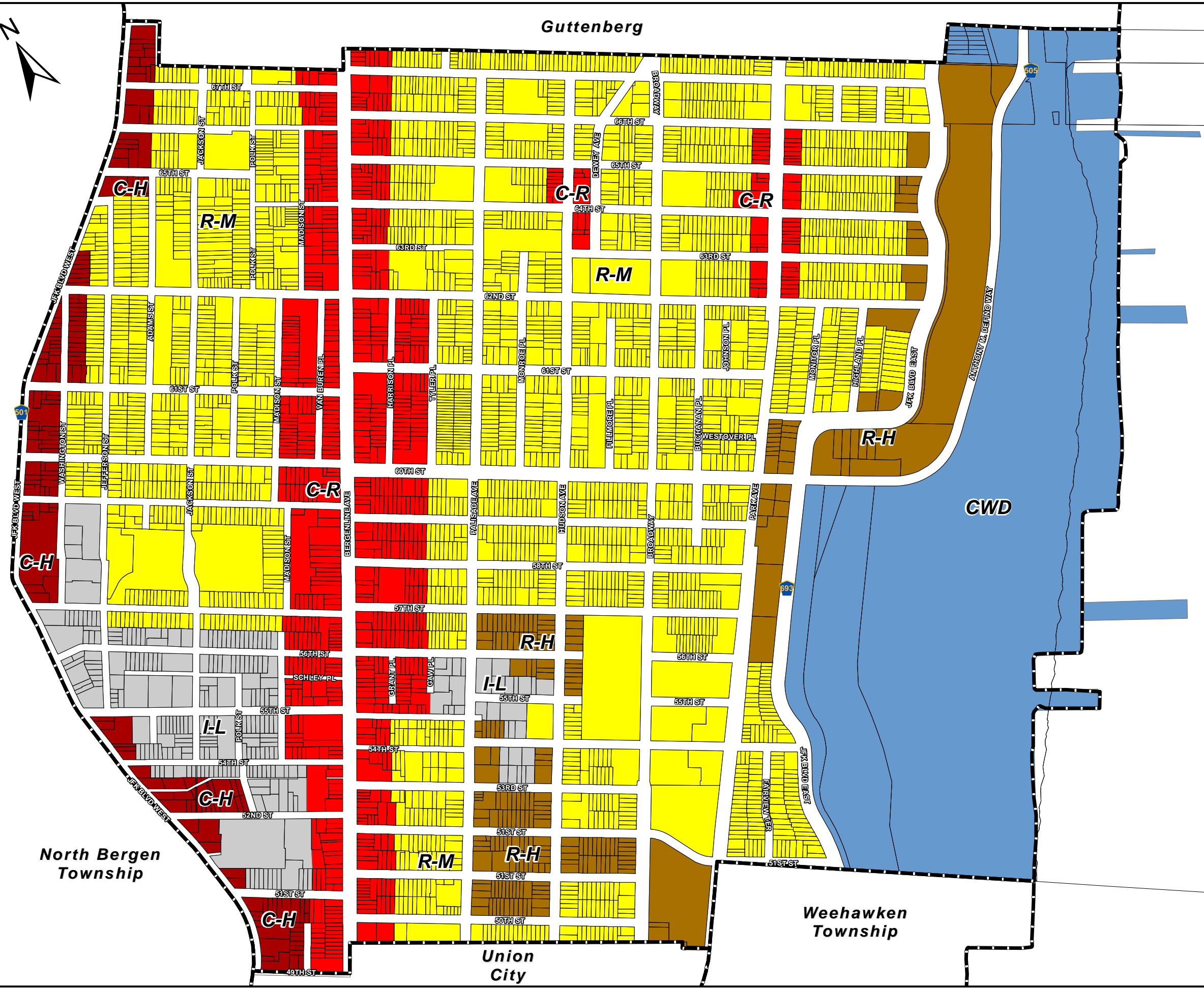
April 2014

\\HQPAS1\Survey\GIS\GISPROJECTS\Municipal\U-Z\WPNP\WPNP-00111\17\WNY Zoning Map.mxd

North Bergen
Township

Weehawken
Township

Union
City



Along the waterfront Roseland Properties and K. Hovnanian have approvals to build approximately 4,000 units as per the redevelopment plan. Of this, 2,400 units have been built including townhouses, stacked townhouses and mid-rise multi-family units. In addition, 121,000 sq. ft. of retail is allowed along the waterfront with 76,000 sq. ft. built to date.

The commercial spine of West New York is Bergenline Avenue. The avenue is lined with retail stores along its entire length in West New York. According to the U.S. Census there are some 200 retail employers in West New York, most no doubt along Bergenline Avenue. There are also smaller retail centers along Park Avenue north of 60th Street, in scattered locations along Palisade Avenue, Hudson Avenue and 60th Street and also along JFK Boulevard West. The retail center on Bergenline Avenue is hampered by relatively narrow sidewalks and lack of cohesive well designed signage except for the area north of 62nd Street which has well designed uniform signage thanks to a UEZ grant.

Speaking of UEZ (Urban Enterprise Zone) has existed in West New York for some time. With the UEZ, shoppers pay just 3.5% sales tax and the sales tax stays in the Town to be used for capital improvements and economic development activities.

In addition to the main commercial streets there are other major streets of note with distinctive character. Palisade Avenue, Hudson Avenue and Broadway all of which run north-south are typical urban streets with apartments and in some locations ground floor retail. Sixtieth Street east of Bergenline Avenue also shares many of these same characteristics. Park Avenue north of 60th Street also is similar in this regard. Park Avenue south of 60th Street however changes character with high-rises (over 20 stories) on the east transitioning into a low density area further south. Because of the set back of the high-rises, Park Avenue has an open feel in this area in contrast to the portion of the Avenue north of 60th Street.

JFK Boulevard West and Boulevard East each have their own separate character which is very different from each other as well as the other streets described above. JFK Boulevard West is a four lane artery that passes through what is typically called a highway commercial environment. There is quite a variety of commercial and some industrial uses including car dealerships, discount stores, restaurants, etc. There are numerous traffic signals and a complete lack of pedestrian amenities and trees. Boulevard East on the other hand passes through an urban landscape of refined multi-family mid-rise and high-rise structures as well as single and two-

family homes which face upon the west side of the Boulevard and look east to the Manhattan skyline. Most of the eastern side of the Boulevard is parkland. The street is well treed with few traffic signals. Boulevard East and the adjacent parkland is the crown jewel of West New York.

FUTURE LAND USE PLAN

Against this backdrop the Master Plan is charged with proposing land uses for the future. The Land Use Plan should respect the future vision statement for the Town and address the goals and objectives for the Master Plan that has been developed. The future Land Use Plan that is being envisioned here is based on the following concepts:

1. The Controlled Waterfront Development District is a given. No revisions to this area are proposed.
2. Stable, unique areas of the Town should be preserved. This includes those predominantly single-family neighborhoods. A new low density zone district should be created for these areas.
3. Bergenline Avenue and JFK Boulevard West need help. They are unique areas with unique problems that need to be addressed separately. A “complete street” should be studied for Bergenline Avenue and streetscape improvements made to JFK Boulevard West.
4. The north-south streets such as Palisade Avenue and Park Avenue are capable of handling higher density than are the narrow east-west streets of the Town. This should be considered in formulating the Land Use Plan.
5. Boulevard East must be carefully planned to preserve its unique aesthetic appeal. Any new construction must be context sensitive.
6. The area surrounding the Hudson Bergen Light Rail Station at 49th Street and Bergenline Avenue should be developed as a transit village with Transit Oriented Design (TOD). This essentially means a high density urban environment with a mix of residential, retail and public uses all within walking distance of the light rail station.
7. Portions of the current medium density residential district should incorporate bulk standards and design guidelines to allow up to five-story elevator apartment buildings in appropriate locations.

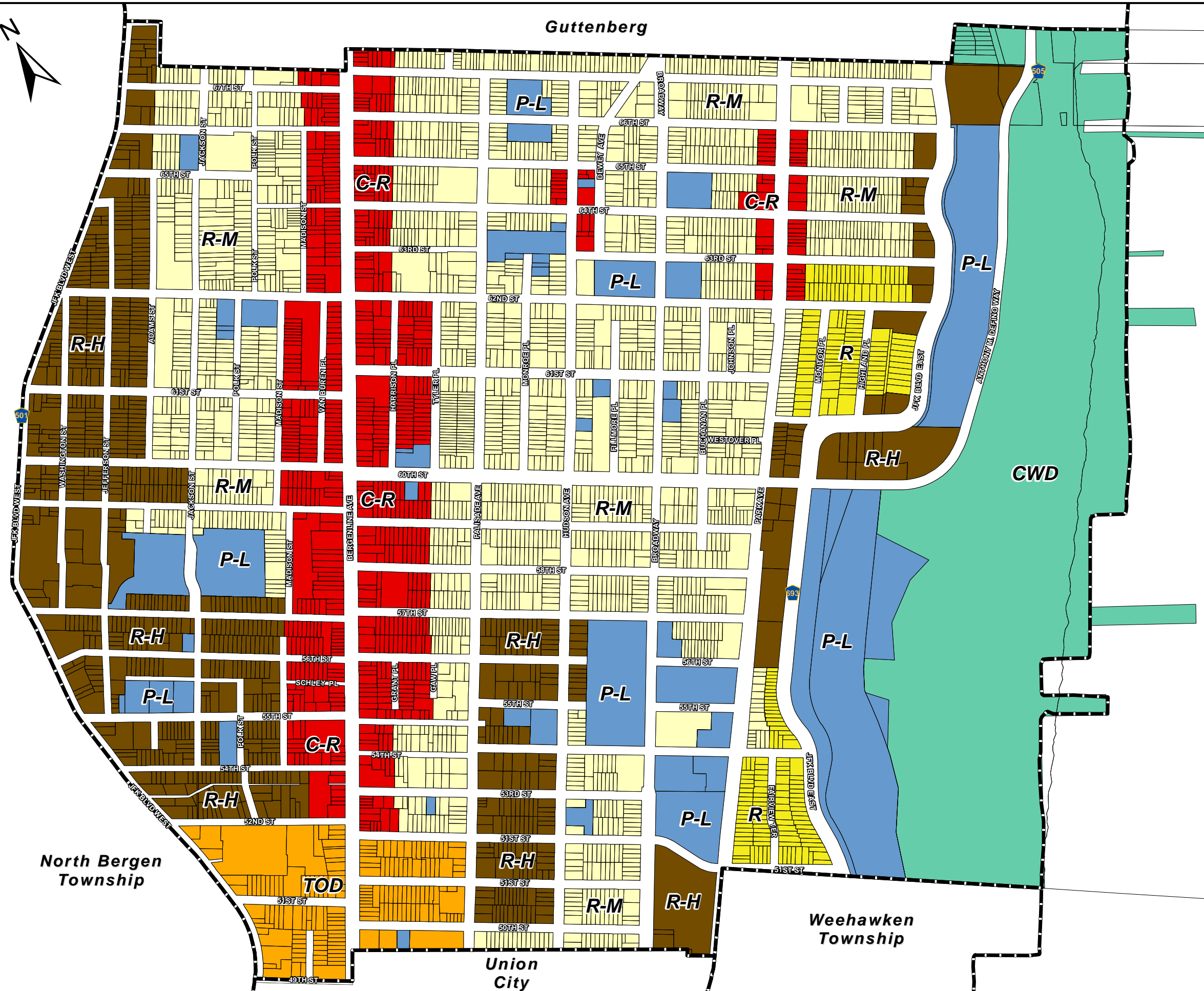


Guttenberg

PROPOSED FUTURE LAND USE PLAN

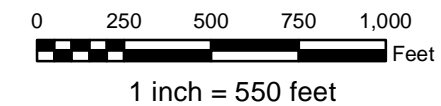
TOWN OF WEST NEW YORK

HUDSON COUNTY
NEW JERSEY



LEGEND

- Proposed Zoning**
- R - One and Two-Family
 - R-M - Medium Density
 - R-H - High Density
 - C-R - Retail
 - TOD - Transit Oriented Development
 - CWD - Waterfront Development
 - P-L - Public Lands



This map was developed using NJDEP and County GIS digital data, but this secondary product has not been verified by NJDEP and is



December 1, 2014

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North Bergen
Township

Union
City

Weehawken
Township

JFK Boulevard West

JFK Boulevard West is a street searching for an identity. It is a major four-lane traffic artery passing through on the edge of Town. It is a County Road and also serves as the border between West New York and North Bergen Township to the west. There are a wide variety of land uses along JFK Boulevard West in both West New York and in North Bergen. In places the landscape on the North Bergen side falls off quickly as part of the Palisades escarpment and there are no buildings present. In other areas cemeteries occupy the landscape rising up the hillside to front on JFK Boulevard West. The result is a streetscape that seems to have missing teeth on the western side. In addition to many mixed land uses, building heights also are inconsistent. One would be hard pressed to identify the primary character of the street. Is it primarily a traffic artery, is it a retail street, is it a service oriented street, is it oriented to servicing automobiles, are offices the primary use, how about residential? Actually all of the above are true to some degree.

No matter how the function of the street is characterized its appearance can be characterized as harsh. Sidewalks are narrow, frequently interrupted by driveways, and there is virtually no landscaping. It seems to be a world dedicated to asphalt and concrete. At public visioning sessions the consensus was that more development or redevelopment is needed including businesses and residences with wider sidewalks, more trees and better lighting.

Recommendations for JFK Boulevard West

JFK Boulevard West, unlike Bergenline Avenue, is not an ideal candidate for a full complete street makeover. However, some elements of a complete street such as wider sidewalks and landscaping should be considered. Any street related design should be done in conjunction with North Bergen Township and Hudson County. As far as land use, West New York should encourage higher density housing with ground level retail along JFK Boulevard West. Bonuses should be considered for the introduction of public open spaces such as sitting areas and plazas.

Residential Districts

The United States and New Jersey in particular are becoming more urbanized. The U.S. Census Bureau projects that almost 90% of U.S. residents are expected to remain in or move to metropolitan areas by 2050. U.S. Census Bureau data also shows that in 2013 nearly 32% of



Mid-Rise and High-Rise Residential Buildings on Boulevard East

An area which presents itself for the highest densities and tallest buildings in West New York is the area surrounding the Bergenline Avenue Hudson-Bergen Light Rail Station. This area is an ideal candidate for Transit Oriented Development or TOD. Transit Oriented Development is a planning approach that encourages high-density mixed use centers clustered around transit stations. High-density residential uses are connected by pedestrian ways to the transit station eliminating the need for motorized transportation between the residence and transit stops. In addition TOD's typically contain other uses such as retail, restaurants, recreation facilities and other public services to serve the multitude of residents that live in the TOD. A one-quarter to one-half mile radius from a transit station is generally considered to be appropriate for TOD since a half mile corresponds to the distance someone can walk in ten minutes at 3 mph. A ten minute walk is a common estimate of the distance people will walk to reach a rail station. Therefore it is recommended that the blocks in West New York south of 52nd Street between JFK Boulevard West and Palisade Avenue be considered for TOD.

Recommended Standards for Residential Uses

The following are general guidelines recommended to use in developing zoning requirements for differing residential uses in West New York. Rather than expressing intensity of development in terms of allowed number of residential units per acre for multi-family structures, it is recommended that intensity of development be controlled by floor-area-ratio (FAR) as is done in

systems. Transit improvements should include coordination between bus carriers with standardized fares, improved transfers and links to the existing HBLR System. Further, the HBLR station at Bergenline Avenue in Union City should be promoted as a local transit hub and Port Imperial Ferry Terminal will continue to serve as a major transfer point to New York City. Also, the Hudson River Waterfront Walkway will provide pedestrian and bike connections along the waterfront.

In 2007 the Hudson County Bus Circulation and Infrastructure Study was completed. The Study focused on recommending improvements to existing physical infrastructure to improve the efficiency, safety, and traffic flow for public transit and general traffic in Hudson County. The study identified transit corridors in the County where there is significant bus traffic. Among these corridors were:

- Bergenline Avenue (North Bergen, West New York, Guttenberg, Union City)
- Boulevard East (North Bergen, West New York, Guttenberg, Weehawken)
- JFK Boulevard (North Bergen, West New York, Guttenberg, Union City)

The study recommended a variety of improvements to the bus circulation and infrastructure, including the following in West New York:

- Boulevard East - add signage to improve bus stop operation.
- Bergenline Avenue - install left turn lanes and move bus stops to reduce traffic blockages.
- Bergenline Avenue (between 48th Street and 50th Street) - Modify signal cycle lengths to improve traffic progression.

In a community where many people walk to work, the bus stop, school or to go shopping, “walkability” is important. Walkability has become a buzzword in recent years and essentially describes not a pedestrian-only environment but an environment in which people feel comfortable walking. In 2006, walkable community workshops were conducted to identify barriers to walking and improve pedestrian safety in select Hudson County municipalities. Three municipalities were surveyed - the Township of North Bergen, Town of West New York, and the City of Union City. The area studied was an area bound on the west by JFK Boulevard West, on the east by Bergenline Avenue, on the south by 43rd Street, and on the north by 51st Street. The study made a number of recommendations to improve pedestrian access, including the following:

- Pedestrian Safety Improvements on JFK Boulevard West
- Streetscaping of JFK Boulevard West
 - Add street furniture to the study area
 - Improve lighting throughout the study area

Walkable community workshops were also conducted by the North Jersey Transportation Planning Authority (NJTPA) in other areas of Hudson County. The walkable community workshops identified a number of general recommendations that could be applied to West New York in order to improve pedestrian and bicycling safety and mobility:

- Reduce vehicle speeds through design modifications, traffic calming, reducing speed limits and vigorous enforcement;
- Increase pedestrian visibility through lighting, improving sight lines, etc.;
- Increase pedestrian crossing time;
- Install missing sidewalks;
- Repair and widen existing sidewalks;
- Repair broken signs, signals and street furniture;
- Provide adequate information in the form of legible street signs, wayfinding signs and information kiosks;
- Provide adequate pedestrian-scale lighting;
- Address ADA issues by providing accessible signals, unobstructed pedestrian walkways and appropriate crossing treatments;
- Create a sense of place through physical design;
- Providing bicycle accommodations.



Bicycle Presence on Bergenline Avenue

In addition to the pedestrian and bicycle improvements listed above, the planting of street trees can also promote walking as an alternative means of transportation as they enhance the streetscape and create a more pleasing environment through which one can walk.

Many of these same recommendations came out of three public workshop meetings conducted in association with the development of this Master Plan. In particular at Public Workshop #3 the public expressed the need for more direct east-west streets, traffic calming, improved streetscapes, better sidewalks, more legible street signs and public plazas. Also a desire was expressed at Public Workshop #3 for east-west jitney routes at least one each in the north, south and central portions of the Town.

UC

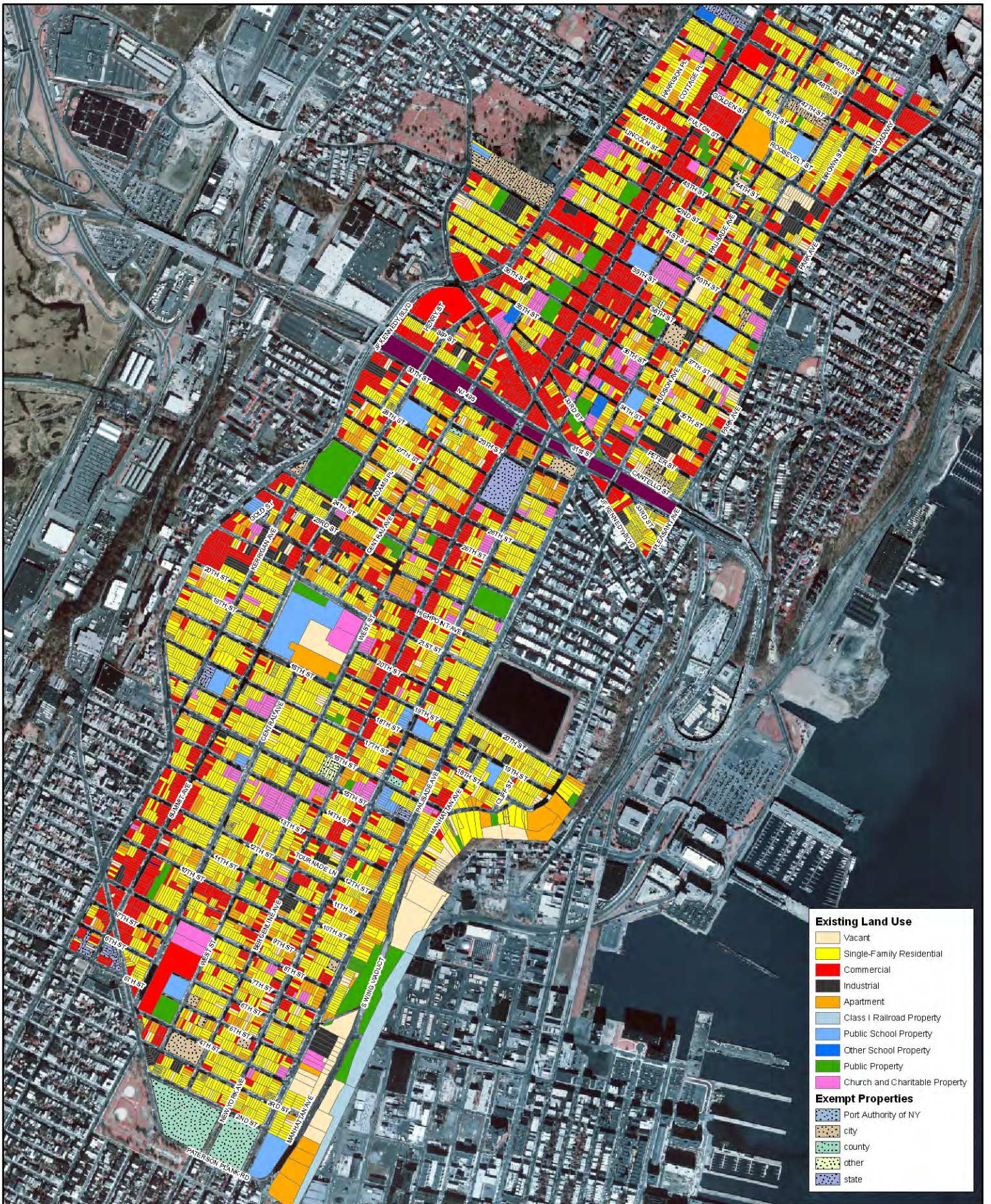
April 2009

Union City

Master Plan

ADOPTED APRIL 23 2009

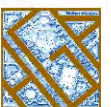


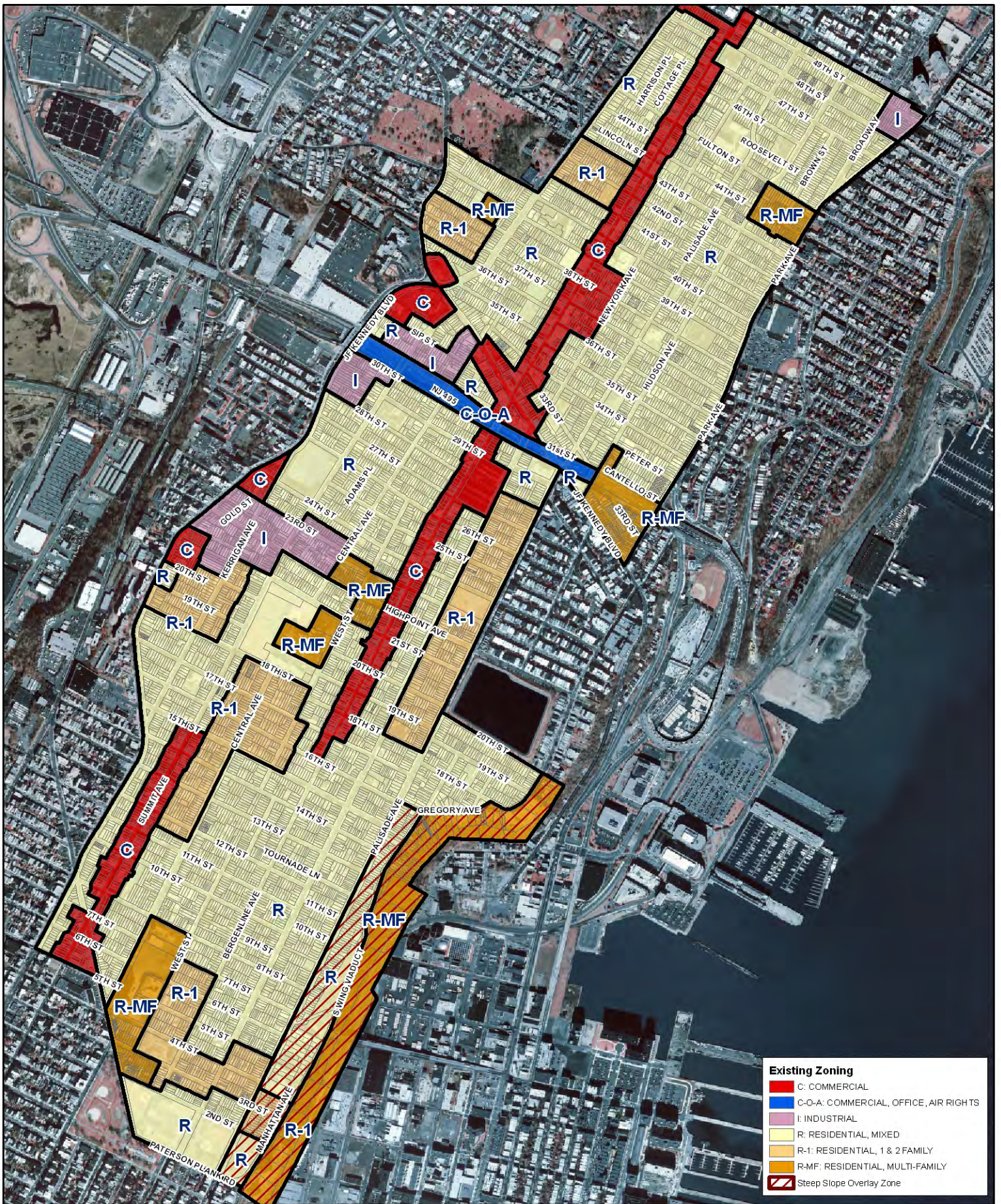


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 Data Source: NJ State 2002 Digital Orthophotography; Union City MOD N Data

Existing Land Use Map

Master Plan
 Union City, Hudson County





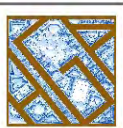
Existing Zoning

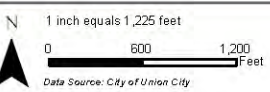
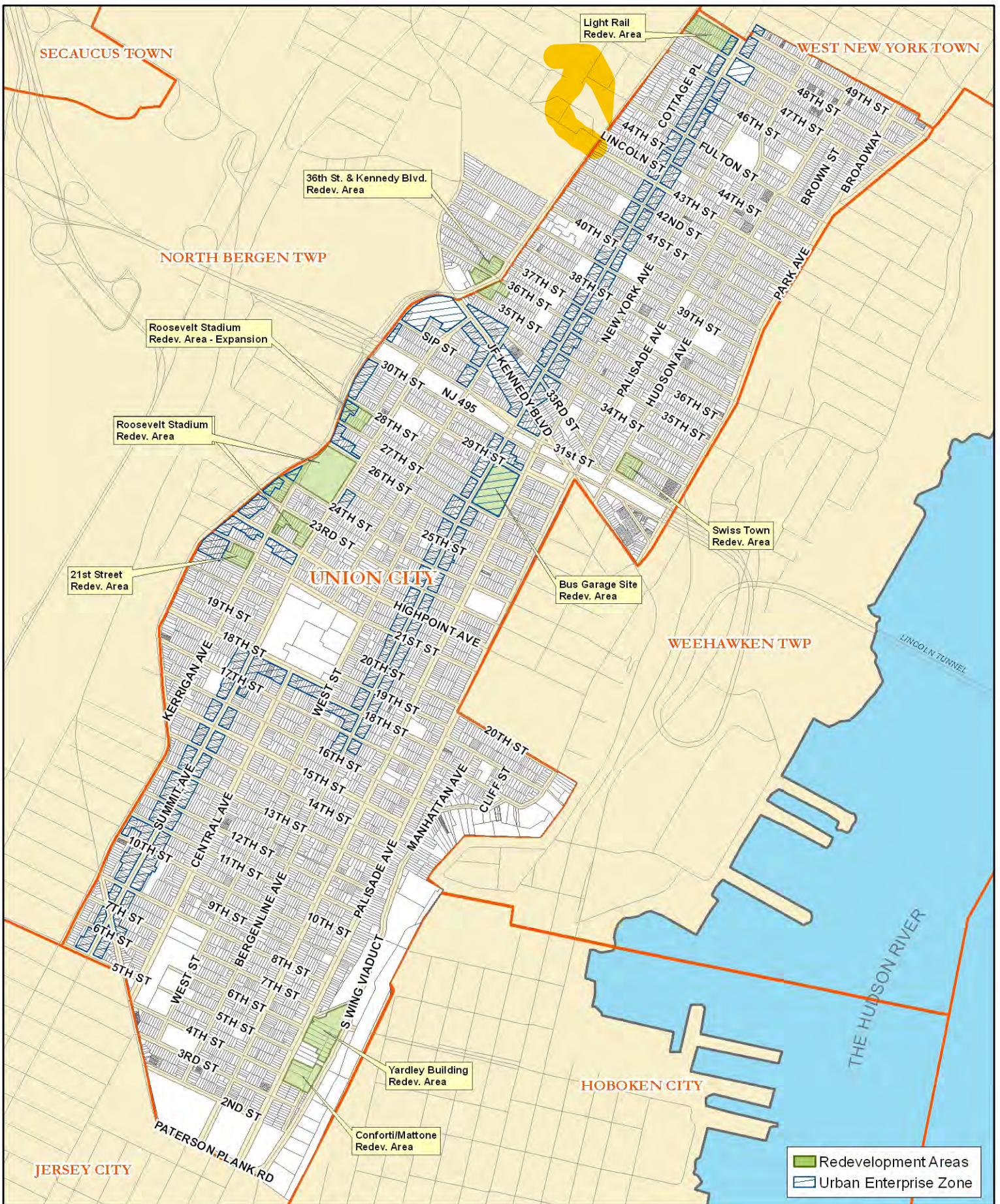
- C: COMMERCIAL
- C-O-A: COMMERCIAL, OFFICE, AIR RIGHTS
- I: INDUSTRIAL
- R: RESIDENTIAL, MIXED
- R-1: RESIDENTIAL, 1 & 2 FAMILY
- R-MF: RESIDENTIAL, MULTI-FAMILY
- Steep Slope Overlay Zone

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 1 inch equals 1,200 feet
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 Data Source: N.J. State 2002 Digital Orthophotography; Zoning Map of Union City

Existing Zoning Map

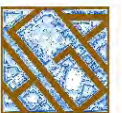
Master Plan
 Union City, Hudson County

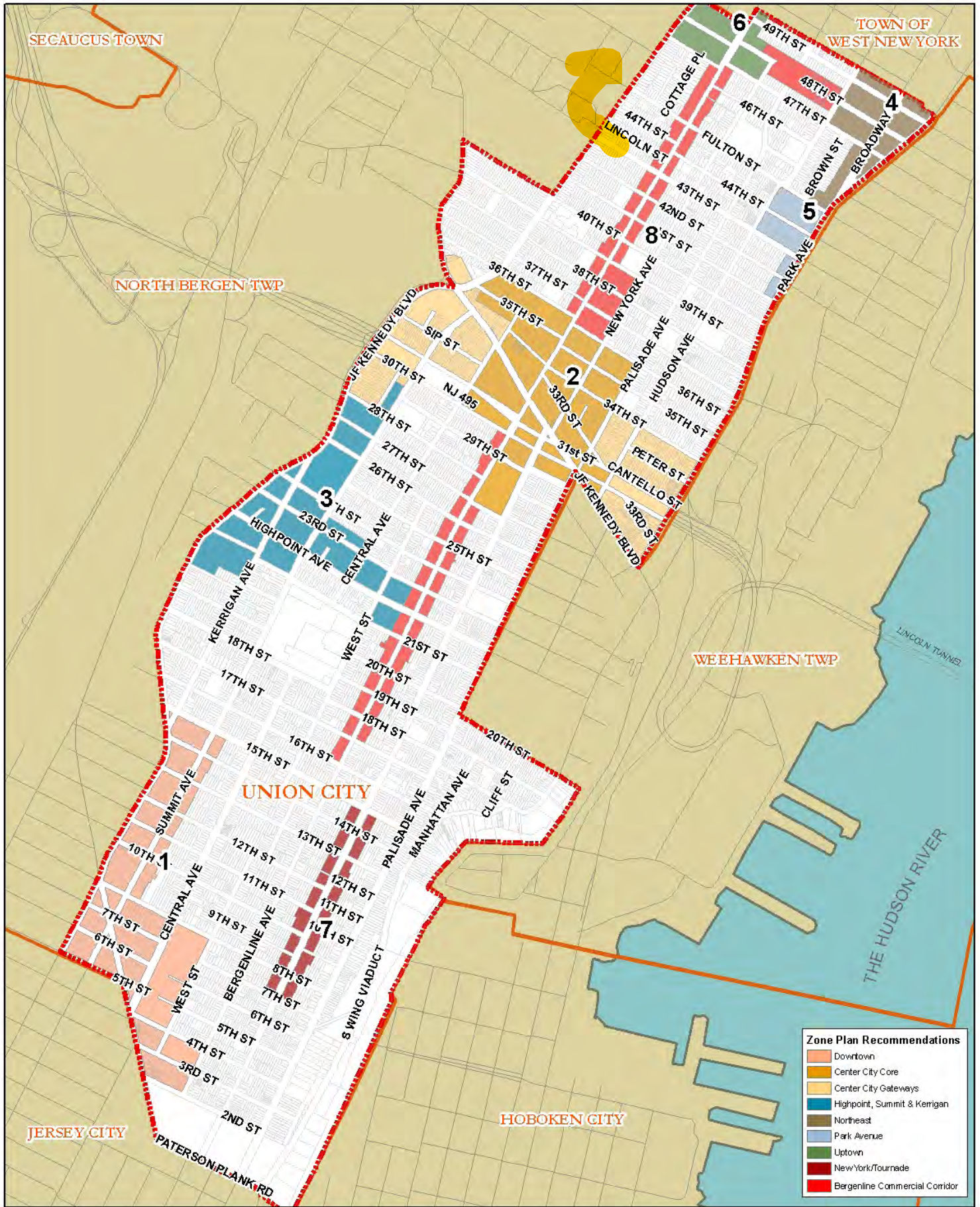




Redevelopment Areas & UEZ Map

Master Plan
Union City, Hudson County



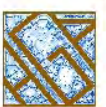


Zone Plan Recommendations

■	Downtown
■	Center City Core
■	Center City Gateways
■	Highpoint, Summit & Kerrigan
■	Northeast
■	Park Avenue
■	Uptown
■	New York/Tournaide
■	Bergenline Commercial Corridor

1 inch equals 1,200 feet
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 Data Source: MDDIV Data and Zoning Map of Union City

Specific Recommendation Areas
 Master Plan
 Union City, Hudson County





Park Avenue (Area #5)

Area #5 is located immediately south of Area #4 and has retail uses limited to the Park Avenue frontage. A few workshops and smaller industrial uses are located in the blocks south of Fulton Street. These two blocks also contain a significant number of vacant parcels.

Recommendations for this area include:

- Allow for new residential land uses consistent with newer structures in the area;
- Limit retail/commercial uses to the Park Avenue frontage;
- Prohibit drive-thru businesses;
- Prohibit vehicular access points and surface parking lots along Park Avenue and Hudson Avenue.

Uptown (Area #6)

Area #6 area is located in the northwestern corner of the City and consists of six blocks north of 47th Street between JFK Boulevard and New York Avenue. It contains the newly constructed Train Station building, the Bank of America building at the intersection of 47th Street and Bergenline Avenue, mixed-use buildings with street level retail on both sides of Bergenline Avenue, 1-4 family residential buildings in the blocks south of the train station, and one large tract of land owned by the Hudson County Community College.

More can be done to take advantage of the Bergenline Avenue light rail station. As such, recommendations for this area are:

Design Principles:

- Create an Uptown District that facilitates mixed-use transit oriented development that capitalizes on the presence of the train station and also on its location along the Bergenline Avenue commercial corridor.
- Encourage street level commercial uses throughout the area;
- Encourage new residential buildings;
- Create plazas and community spaces that center on Transportation access points;
- Explore opportunities for structured parking facilities that incorporate shared parking;
- Create an active "pedestrian first" approach throughout the district;
- Consider developing a specific Transit Oriented Redevelopment Plan for the area;
- Coordinate with adjacent municipalities and conduct regional planning exercises for the area.

Land Use:

- Permit a wide variety of retail uses;
- Permit a wide variety of residential uses, except new one-family dwelling units – discourage residential uses at the street level near the Station;
- Permit office uses, but prohibit them at the street level near the Station;
- Prohibit public storage, auto-mechanic shops, gas stations and warehouses of any size;
- Mandate parking for newer mixed-use buildings (except along Summit Avenue) to be located on-site, as structured parking;
- Permit public and community facilities.

Other Bulk Recommendations:

- Establish build-to-lines;
- Review the maximum building heights in light of the surrounding character of the neighborhood and the opportunities that the light-rail station provides;
- Provide density bonuses for contributions to the City's open space system;



CIRCULATION

Goal: Bicycle/Pedestrian

Action Strategy	Implementation Agent	Timeline
Create Green Infrastructure Map - composite view/map of overall Recreation, Open Space, Bike, and Pedestrian access to identify areas of potential improvement, including recommendations for strategic links throughout the remainder of the community.	Planning Board	Medium Term
Implement provisions of existing Bike and Pedestrian Plan	Board of Commissioners, Planning Board, Engineer	Short Term
Establishment of pedestrian connections between schools and business zones	Public input, school board, businesses, Planning Board, UEZ, Chamber of Commerce	Medium Term
Continue to review and revise Bike and Pedestrian Plan as additional elements are constructed and as Business Districts continue to develop/redevelop	Planning Board, Engineer	Long Term

Goal: Parking

Action Strategy	Implementation Agent	Timeline
Create a Comprehensive Parking Strategy for the City	Board of Commissioners, Planning Board, Parking Authority	Short Term
Promote alternatives (bike and pedestrian) for local access to merchants	Planning Board (may be with a Planning /Design Consultant)	Short Term
Establish better drop off and pickup locations at Train Station (kiss and ride)	Planning Board, Engineer, State DOT	Medium Term
Continue to study options for structured parking in Central Business District for shared use by commuters and Central Business District merchants and residents	Planning Board, Parking Authority, Chamber of Commerce, Stakeholders, State DOT	Long Term


Goal: Traffic / Vehicular Circulation

Action Strategy	Implementation Agent	Timeline
Incorporate traffic calming measures into Site Planning process for new applications before Planning Board in areas of concern	Board of Commissioners, Planning Board, Engineer	Short Term
Analyze and determine solutions for traffic circulation issues throughout the City in a Circulation Element of Master Plan, focusing on: <ul style="list-style-type: none"> • Cut through traffic on residential Streets • Delivery Truck traffic • County transportation Corridors • Bus Routes 	Planning Board, Engineer, (may be with a Consultant)	Medium Term
Continue to study circulation issues throughout the City	Planning Board, Engineer, public input sessions	Long Term

PARKS AND OPEN SPACE

Action Strategy	Implementation Agent	Timeline
Create Green Infrastructure Map - composite view/map of overall Recreation, Open Space, Bike, and Pedestrian access to identify areas of potential improvement, including recommendations for strategic links throughout the remainder of the community.	Board of Commissioners, Planning Board (may be with a Planning /Design Consultant)	Short Term
Create a Recreation & Open Space Plan and Recreation Element of the Land Use Master Plan	Board of Commissioners, Planning Board	Medium Term
Review opportunities to expand the Parks and Recreation system through Planning and Redevelopment	Board of Commissioners, Planning Board	Medium Term

APPENDIX J

EXCERPTS FROM HUDSON COUNTY MASTER PLAN
REEXAMINATION REPORT

HUDSON COUNTY

Reexamination of the *Master Plan*

August 2008

Hudson County Master Plan



MASTER PLAN GOALS & OBJECTIVES

Upon review of the changes in demographics, employment, and transportation patterns as well as new policies promulgated through a number of planning documents, and the County's desire to address the impacts of climate change, it was determined that the goals and objectives of this Re-ex determined that changes to the Goals and Objectives are warranted. As such the Goal and Objectives have been amended.

General Goals:

1. To protect the health, safety and welfare of Hudson County residents.
2. To improve the overall quality of life in Hudson County.
3. To provide for the economic revitalization of the County's commercial and industrial base.
4. To preserve the character of existing well-established neighborhoods.
5. To provide a safe and efficient transportation system.
6. To increase the tax base.
7. To expand recreational opportunities for County residents.
8. To preserve and protect the natural environment.
9. To preserve historic sites and cultural resources throughout the County.
10. To reduce "green house gas" emissions and mitigate the local affects of Climate change.

Land Use

Goals

1. To maintain and improve areas that provide centers for employment, education, entertainment facilities, services, shopping and other resources.
2. To encourage existing manufacturing and industrial uses to remain, modernize and expand and to encourage new manufacturing and industrial uses to locate in the County.
3. To provide for a full range of retail businesses and personal services in suitable locations to serve the needs of the County.
4. To assist in the implementation of the development and redevelopment of the waterfronts of the Hudson, Passaic and Hackensack Rivers.
5. To integrate land use planning with transportation planning and capacities, including all modes, but particularly pedestrian and bicycle and to promote development intensities that will support mass transit.
6. To promote compact and mixed-use development patterns.
7. To promote the development of walkable communities fully linked and integrated with the pedestrian transportation grid.
8. To encourage redevelopment in areas in need of rehabilitation.
9. To encourage remediation and reuse of environmentally contaminated sites.
10. To minimize the negative affects of development and redevelopment on the natural and built environments.
11. To discourage development on environmentally sensitive sites.



Objectives

General

1. Encourage development and redevelopment that utilizes alternative transportation measures for bicycle, pedestrian and transit-friendly design practices and capitalizes on existing and planned transportation improvements.
2. Consider the established character of existing neighborhoods as a factor in the evaluation of new development and redevelopment projects.
3. Provide assistance to municipalities in the preparation of urban design standards for infill development to create “urban neighborhoods of place” that reflect the character of existing neighborhoods.
4. Encourage municipalities to adopt performance controls for nuisance factors that occur when incompatible uses are located in close proximity.
5. Encourage municipalities to consider design standards for new construction that create a sense of unity and order in the design of buildings, streets, sidewalks, shade trees, signage and other structures.
6. Encourage municipalities to create separate standards for unified streetscape improvements that improve pedestrian circulation in downtown areas as well as enhanced access to jobs.
7. Encourage developments to utilize alternative transportation measures that decrease traffic congestion and improve level-of-service.
8. Reduce the negative affects of stormwater run-off including non-point source pollution through BMPs (Best Management Practices).
9. Reduce the amount of impervious coverage that contributes to flooding, adverse drainage conditions and the “urban heat island” affect.
10. Discourage development in floodplains, flood hazard areas and disturbance of steep slopes and wetlands which contribute to flooding, adverse drainage conditions, stormwater run-off and non-point source pollution.
11. Promote the use of green building design to reduce “greenhouse gas” emissions, reduce stormwater run-off and non-point source pollution, and the “urban heat island” affect.





Waterfront Areas

4

1. Encourage the construction of a continuous coordinated waterfront walkway along the County's waterfronts.
2. Encourage the development of marinas and ports, where appropriate.
3. Integrate waterfront development with adjacent neighborhoods by assuring strong physical linkages and appropriate infill development and discourage gated communities that separate the remainder of the community from the waterfront.
4. Create strong physical linkages between waterfront walkways and interior neighborhoods.
5. Reduce the amount of impervious coverage, which contributes to storm-water run-off, non-point source pollution and combined sewer overflows.

Industrial Areas

1. Improve the developability of industrial areas through measures such as infrastructure and access improvements.
2. Encourage and assist in the retention and expansion of existing industries in the County.
3. Take advantage of possible niche opportunities in existing and emerging industries such as apparel, telecommunications, business services, food processing, import/export, third-party logistics, telecommunications, trucking and warehousing.
4. Establish industrial areas with sufficient access to transportation facilities.
5. Encourage the development and expansion of industrial activities that use regional resources, labor skills and other local assets and advantages.
6. Encourage the location of industrial sites near railroad and port facilities which utilize the movement of freight by rail and barge.



7. Encourage industrial developments to utilize alternative transportation measures for the movement of employees and visitors.
8. Reduce the amount of impervious coverage, which contributes to stormwater run-off and non-point source pollution.
9. Encourage industrial sites to minimize impervious coverage and utilize green building technology to reduce “green house gas” emissions, stormwater run-off and non-point source pollution.
10. Work with industry to ensure environmental conditions are improved particularly as the location of industry relates to neighborhoods downstream.

Commercial Areas

1. Establish local community-based organizations such as special improvement districts, neighborhood improvement districts and local development corporations to help revitalize neighborhood commercial and residential areas.
2. Encourage convention, cultural and entertainment activities within the core areas of the County to spur economic growth.
3. Encourage the grouping of compatible retail establishments into functional commercial centers to promote synergy among businesses.
4. Encourage municipalities to provide creative solutions to parking and loading issues.

5. Promote the viability of Downtown commercial districts by retaining first floor retail sales and services.
6. Encourage the development of complementary land uses in proximity to commercial areas.
7. Establish design and aesthetic controls in commercial areas to create and maintain attractive shopping areas.
8. Identify and create financial and technical assistance programs available to businesses from the County, State and Federal government.
9. Assist in the coordination of community revitalization projects that are multi-jurisdictional.
10. Encourage the location of commercial development near existing transit services and facilities.
11. Encourage commercial developments to utilize alternative transportation measures for the movement of employees and visitors.
12. Encourage commercial development to utilize alternative transportation measures like walking, bicycling, jitney shuttles and telecommuting.
13. Discourage the development of commercial sites in areas inaccessible by walking, bicycling, and mass transit.
14. Encourage commercial developments to minimize impervious coverage and utilize green building practices to reduce “green house gas” emissions and stormwater run-off.

Residential

1. Protect existing neighborhoods from incompatible development.
2. Discourage illegal additions of dwelling units to residential structures.
3. Promote home ownership to increase incentives for housing maintenance and improvements.
4. Encourage development at densities that support mass transit.
5. Encourage transit-oriented development near existing or proposed transit facilities.
6. Encourage compact development within walking distance of mixed-use centers.
7. Encourage traditional neighborhood design that is walkable and has strong linkages to the pedestrian circulation network.
8. Encourage residential developments to utilize pedestrian and bicycle facilities.
9. Encourage residential developments to minimize impervious coverage and utilize green building technology to reduce “green house gas” emissions and stormwater run-off.
10. Encourage residential developments to utilize green building practices to reduce “green house gas” emissions, stormwater run-off and non-point source pollution.
11. Analyze and monitor health and economic data to ensure health and access to employment opportunities are enhanced

Circulation

Goals

1. To provide a safe and efficient transportation system.
2. To provide transportation improvements which support economic development.
3. To expand the Hudson Bergen Light Rail system areas to promote transit and use of the county not served by mass transit.
4. To promote alternate transportation modes including bicycling, tele-commuting, transit and walking.
5. To coordinate land use activities with the transportation network.
6. To support system coordination, efficiency and safety.
7. To reduce traffic and mitigate congestion on local roads and highways and improve air quality.
8. To protect and improve quality of life.
9. To reduce “green house gas” emissions from mobile sources.
10. To promote a pedestrian-first approach in Downtown areas.
11. To provide pedestrian and bicycle access along all roadways, particularly those roads that leads residents to job centers.
12. To promote the design and re-design of public roadways to comply with ADA standards



Objectives

1. Provide cost effective transportation systems that support business by providing for the efficient movement of goods and people.
2. Plan transit and roadway infrastructure system improvements to support existing economic activity centers and promote development of new activity centers along transit corridors and at transit hubs.
3. Maintain the efficient movement of goods with planning for safe and efficient truck travel and promotion of the transport of freight by rail and barge.
4. Encourage the siting and expansion of inter-modal facilities at locations where existing infrastructure can accommodate the movement of freight.
5. Promote the timely construction and expansion of the Hudson Bergen Light Rail Transit (HBLRT) system.
6. Encourage the expansion of rail systems to serve major residential and commercial developments at the Peninsula at Bayonne Harbor, Bergen Point, Westside-Newark Bay, the Bergen Arches, West Hudson, the Secaucus Transfer Station and the Meadowlands.
7. Consider the County as an extension of the New York City system and work to coordinate even greater investment in the public transportation system through partnerships with NJ Transit, Port Authority and the MTA.
8. Consider the PATH system as an integral part of the Hudson County system and pursue expansion opportunities with PANYNJ.
9. Coordinate local bus and shuttle service, pedestrian ways and parking with transit stations, residential and commercial locations.
10. Coordinate public and private bus service, information on service, transfers, fares and bus passes.
11. Improve the ease and speed of modal change by creating multi-modal transit centers, with parking at outlying transit locations, improved signage both to the center and within it, and separate pedestrian connectors where volumes warrant.
12. Promote the expansion of existing ferry service and integration of transit (including HBLRT) lines feeding ferry terminals.
13. Encourage pedestrian/bike traffic by providing appropriate, safe and attractive facilities between population and employment centers.
14. Provide scenic walkways and bikeways along the County's Waterfront(s).
15. Complete missing links in the Hudson River Waterfront Walkway along the water's edge from the Bergen County border to the Bayonne Bridge and between major attractions.
16. Complete the Hackensack River Greenway along the water's edge from the Bayonne Bridge to the Cromakill Creek.
17. Complete the Passaic River Walkway from the Bergen County border to the Jackson St. Bridge.
18. Complete the East Coast Greenway via off-road trails linking Newark with the Hudson River Waterfront.

19. Complete the Hudson County portion of the Liberty-Watergap trail linking Liberty State Park with the Delaware Watergap.
20. Coordinate the development and design of comprehensive and continuous walkway and bikeway facilities among the communities.
21. Promote public access to the Hudson River Waterfront and pedestrian open space and circulation opportunities.
22. Improve on-street and off-street parking by establishing parking management practices, providing additional signage and increasing capacity, where appropriate.
23. Reduce Vehicle Miles Traveled (VMT) by County residents and commuters.
24. Reduce Vehicle Hours Traveled (VHT) by County residents and commuters.
25. Reduce traffic congestion and improve the Level of Service (LOS) along local roads and intersections.
26. Improve local air quality and reduce air pollution and green house emissions by encouraging alternative modes of transportation and commutation.
27. Reduce stormwater run-off and non-point source pollution from roadways through implementation of Best Management Practices (BMPs).
28. Introduce "Intercept Parking" Facilities near major rail and road corridors
29. Develop addition bridge route at the Passaic River in South Kearny
30. Improve handi-capped accessibility to public streets by implementing ADA design standards for sidewalks, ramps, and parking

Economic

Goals

1. To develop a diversified economy to maintain full employment.
2. To develop an equitable distribution of jobs across the County that includes support services and facilities consistent with the needs of the population.
3. To provide for the economic revitalization of the County's commercial and industrial base.
4. To retain existing businesses and attract new industries.
5. To reduce the tax burden on residential uses by encouraging additional development that generates significant tax benefits.
6. To encourage remediation of contaminated sites through various programs such as loans and technical assistance.

Objectives

1. Create a sound and integrated land use and transportation policy agenda that focuses on Placemaking and enhancement of "business climate."
2. Focus on the strength of the ratable base by focusing on an collective approach rather than individual ratables. Creation of a sustainable economic tax base will work to promote additional ratables.
3. Promote job training and retraining services to close the employment "skills gap" and meet the employment needs of the County and the region.



- *Kearny*

As they become implemented, the Town's two redevelopment plans will achieve a number of the goals and objectives of the County Master Plan. Both the Passaic Avenue and Schuyler Avenue Redevelopment Plans call for mixed use development as well as open space/recreation areas. One of the goals of the Passaic Avenue Redevelopment Plan is to reclaim the Passaic waterfront for public use; the Plan establishes a walkway along the entire length of the Passaic River within the Area boundaries, and also calls for a riverfront park. The Schuyler Avenue Redevelopment Plan contemplates creating development along the once abandoned Kingsland Line; additional park space to compliment both the existing and proposed residential development, while proposing strategies to handle truck traffic. The County Master Plan's goals regarding coordination of land use and transportation and the use of transit-friendly design could potentially be realized if the Kingsland line is reactivates and Kearny plans accordingly.

Additionally, the NJ Meadowlands Commission declared over 800 acres along Harrison Avenue as a redevelopment area that is slated for primarily warehouse, distribution and accessory retail.

- *North Bergen*

The NJMC completed the 16th Street Redevelopment Plan in January 1999. The site contains 57 acres and permitted uses will

include warehousing, motor freight facilities and an inter-modal transit facility, capitalizing on the transportation infrastructure of the surrounding area.

- *Secaucus*

The NJ Meadowlands Commission has completed a Redevelopment Plan for a 285 acre site known as Laurel Hill, located at the southern terminus of New County Road just west of the New Jersey Turnpike. The Plan permits a convention center along with mixed use development and studios. The project is intended to be compatible with Allied Junction/ Secaucus Transfer by incorporating transit-oriented development for the area.

- *City of Union City*

There are currently four redevelopment areas in the City. The first area is known as the "Bus Garage" property, which is to be developed with mixed residential and commercial uses. The others include the Yardley Building Redevelopment Area, which is located in the southeastern portion of the City, along the eastern side of Palisade Avenue between 4th Street and 7th Street. The Swiss Town Redevelopment Plan proposes multi-family residential uses, active and passive recreation, and open space. The Roosevelt Stadium Redevelopment Area, consisting of an older, antiquated municipal stadium that is currently being transformed through a State funded pilot project that will rebuild the school and place the stadium on top of the development.



It is a goal of Hudson County to promote alternate transportation modes including walking through the creation of appropriate, safe and attractive pedestrian/bike facilities between population and employment centers.

In 2006, walking community workshops were conducted to identify barriers to walking and improve pedestrian safety in select Hudson County municipalities. Three municipalities were surveyed – the Township of North Bergen, Town of West New York, and the City of Union City – and studied an area bound on the west by JFK Boulevard, on the east by Bergenline Avenue, to the south by 43rd street, and to the north by 51st street. This area is a very dense mixed-use community with extensive bus service and light rail service. The study made a number of recommendations to improve pedestrian access, including the following:

- Pedestrian Safety Improvements on JFK Boulevard
- Streetscaping of JFK Boulevard
- Add street furniture to the study area
- Improve lighting throughout the study area

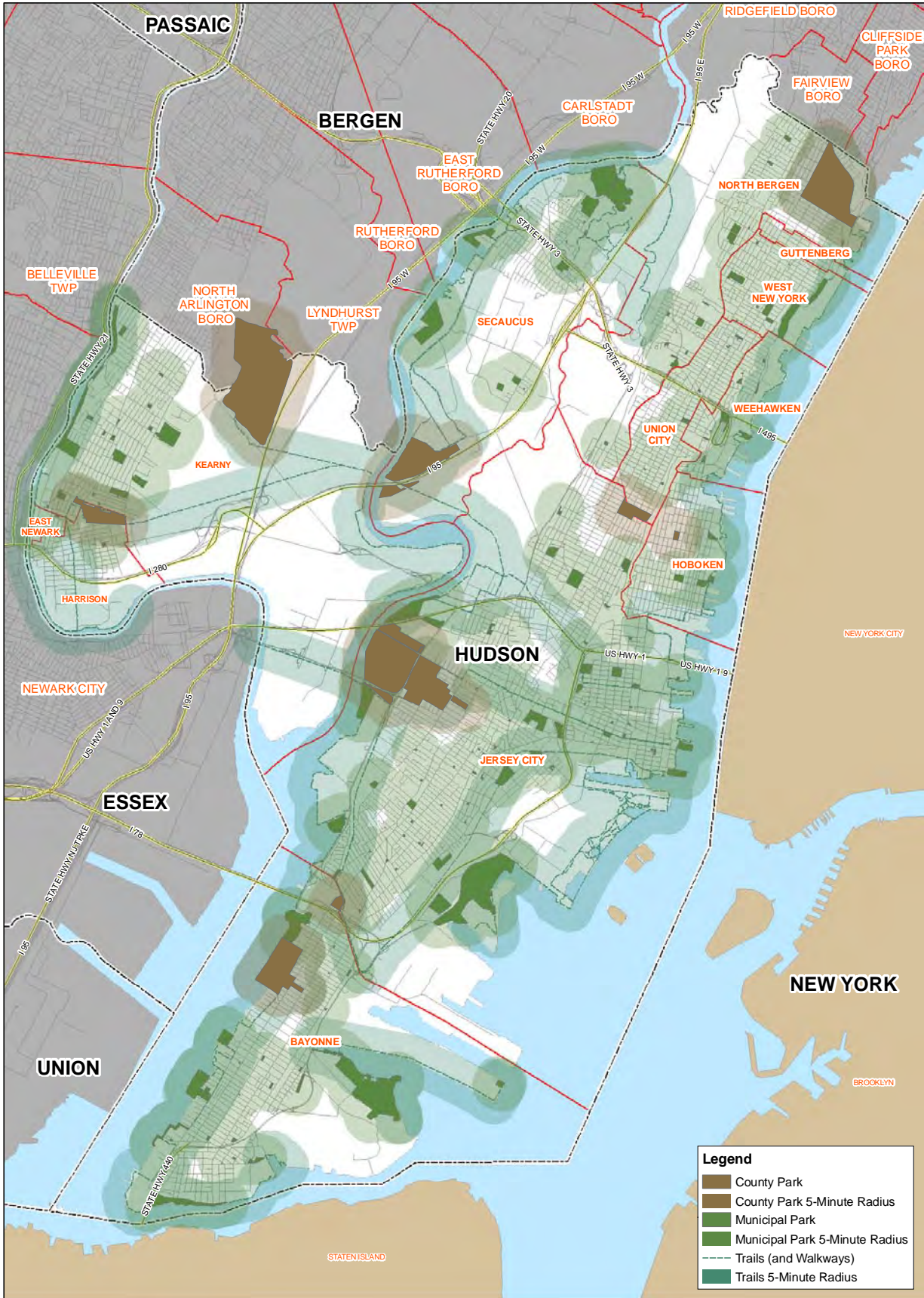
The Township of West New York has the second highest proportion (14%) of residents who walk to work in the County, while the City of Union City and the Town of West New York has 12.2% and 4.7% of residents who walk, respectively. Pedestrian improvements will assist the large number of pedestrians in getting to and from work. The NJTPA also funded walkable community workshops in the Lafayette neighborhood in Jersey City, as well as other large cities and communities in North Jersey. The study, completed in

December of 2006, identified a number of general recommendations that could be applied in order to improve pedestrian and bicycling;

- Reduce vehicle speeds through design modifications, traffic calming, reducing speed limits and vigorous enforcement.
- Increase pedestrian visibility through lighting, improving sight lines, etc.
- Increase pedestrian crossing time.
- Install missing sidewalks.
- Repair and widen existing sidewalks.
- Repair broken signs, signals and street furniture.
- Provide adequate information in the form of legible street signs, wayfinding signs and information kiosks.
- Provide adequate pedestrian-scale lighting
- Address ADA issues by providing accessible signals, unobstructed pedestrian walkways and appropriate crossing treatments, including curb ramps with truncated dome treatments.
- Create a sense of place through physical design (following a pre-approved design template), improving the business climate and providing activities.
- Provide bicycle accommodations.

In addition to the pedestrian and bicycle improvements listed above, the planting of street trees can also promote walking as an alternative means of transportation as they enhance the streetscape and create a more pleasing environment through which one can walk.



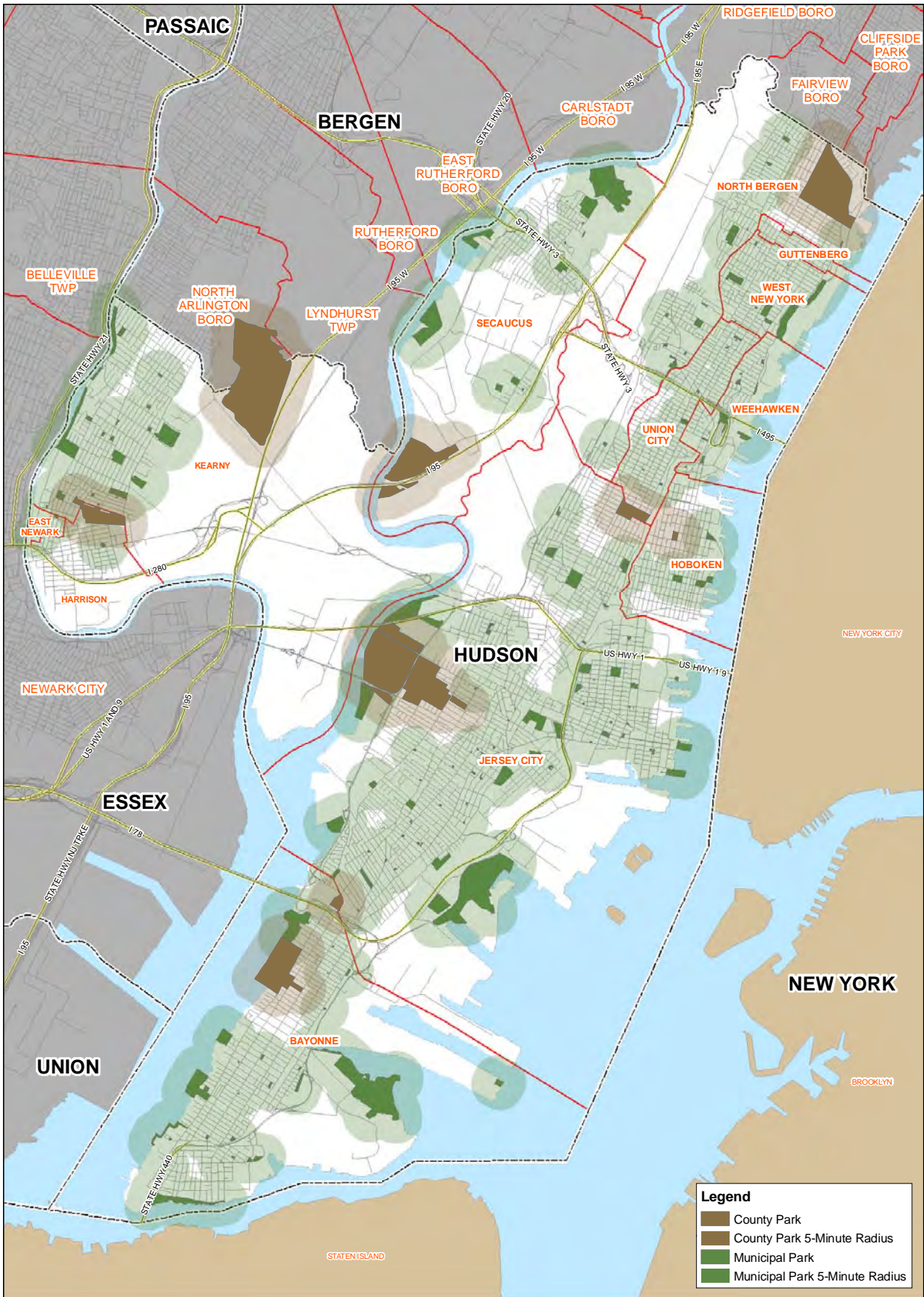


Five Minute Walk - Proposed/Existing Parks & Trails
 Re-Examination Report - 2008
 Hudson County, New Jersey

1 inch equals 5,000 feet

0 2,500 5,000 10,000 Feet





Five Minute Walk - County and Municipal Parks
 Re-Examination Report - 2008
 Hudson County, New Jersey

1 inch equals 5,000 feet

0 2,500 5,000 10,000 Feet



Future Transportation Improvements - Climate Change

The transportation sector is a major source of U.S. carbon emissions. Transportation is responsible for one-third of U.S. CO₂ emissions, and is the fastest growing major source in the U.S. economy. Furthermore, private automobiles are responsible for 62 percent of transportation-related CO₂ emissions⁹ (EPA 2006). Given this context, non-polluting forms of transportation such as biking and walking could represent an important strategy for reducing CO₂ emissions. In addition, adopting innovative design approaches to the County's transportation network could also have positive impacts on CO₂ emissions outside of traditional transportation related issues, such as the multi-layer effect of a "Green" streetscape design. As reported in more detail in the Utilities Plan, a "Green streetscape design can;

- Encourage and enhance non-motorized transportation opportunities;
- Simultaneously improve drainage conditions;
- Provide shading to reduce surface temperature and increase albedo (the amount of the sun's energy that is reflected back into space);

The Pedestrian Shift

Hudson County can continue to encourage the shifting of trips to active modes like walking and biking as a means to address climate change. Promoting a transportation strategy that encourages walking, biking and transit has the potential to reduce vehicular trips and the congestion along local roads, save energy, and reduce air and noise pollution. Trips shorter than three miles represent nearly half of all trips made in the U.S. (FHWA 2006). This means that nearly half of all trips are within a 15-to 20-minute bike ride. While many of these trips are presently taken by the private automobile, many more of these trips can be converted to biking, walking and transit with the right investments in infrastructure and programs- particularly as they relate to access to jobs.

Hudson County's dense land-use pattern and proximity to employment, schools, and shopping make it well-suited to promote bicycling and walking as viable transportation options. Hudson County has also participated in a number of studies to promote the use of public transportation, bicycling, and walking within the County. One of particular interest is the 2007 Hudson County Bus Circulation and Infrastructure Study.

9 http://www.railstrails.org/resources/documents/whatwedo/TrailLink%2007%20Program_Climate.pdf

10 <http://onlinepubs.trb.org/onlinepubs/millennium/00011.pdf>

Preserving Neighborhood Character

One of the key goals of Kearny's Master Plan for a number of years has been to protect the character and value of residential neighborhoods by regulating the type and intensity of land uses. As such, one of the key goals of the Town's Strategic Vision Plan is to preserve and protect the established residential character of the Town and provide for compatible infill development. The Strategic Vision Plan contains a number of recommendations intended to help achieve that goal, including rezoning portions of R-2 neighborhoods to R-1; redefining the first story to include garage space; reduce the maximum height; increase building coverage and setbacks; revising the definition of 'half story' to include roof pitch and to relate the size of the half story to the floor below; and establishing design standards.

Green Buildings

The Town of Kearny also meets the County's goals regarding sustainability. The Town recently adopted a Green Building Ordinance that encourages all new projects in the Town to meet minimum LEED standards; requires that Town-funded facility projects meet the LEED "Silver" rating standards; and provides density and floor area ratio incentives for projects within formally designated redevelopment areas, which meet various LEED ratings criteria.

Transportation

The Town's Strategic Vision Plan contains a number of recommendations regarding mass transit and transportation improvements. Key goals of the Plan include improving and en-

hancing the Town's transportation network, encouraging expansion of the public transit system and promoting walking and alternative modes of transportation. Specific recommendations of the Plan include the use of jitneys, expanded bus service, partnering with NJDOT to explore the concept of a Passaic River taxi; "context sensitive" improvements such as bike lanes, traffic calming techniques, and widened sidewalks; a potential Harrison Avenue/Belleville Turnpike connector road, and, as mentioned above, coordinating land use decisions with the potential reactivation of the Kingsland rail line and possible new commuter rail station in Kearny.

City of Union City

The Union City Master Plan effectively addresses the above goals and the plan's larger recommendations. The City is in the process of adopting a new Master Plan and a draft is currently being reviewed by City officials. The Union City Master Plan process was initiated by a SWOT analysis, which served as the basis for formulating the plan's goals and objectives. This Master Plan's focuses on maintaining and improving activity and development along the traditional thoroughfares of Bergenline Avenue and Summit Avenue, working towards increasing active and passive recreation space within the City, and the focus on increasing transportation links between Union City and other municipalities. Accordingly, the City's Master Plan is generally consistent with and meets the goals of the Hudson County Master Plan.



In addition to the above general goals, the Hudson County Master Plan also focused on several specific issues related to Union City:

- Encourage redevelopment that utilizes transit-friendly design practices and capitalizes on existing and planned transportation improvements.
- Consider the established character of existing neighborhoods as a factor in the evaluation of new development and redevelopment projects.
- Provide assistance to municipalities in the preparation of urban design standards for infill development to create “urban neighborhoods of place” that reflect the character of existing neighborhoods.
- Encourage municipalities to consider design standards for new construction that create a sense of unity and order in the design of buildings, signs and other structures and separate standards for unified streetscape improvements in downtown areas.
- Encourage the grouping of compatible retail establishments into functional commercial centers to promote synergy among businesses.
- Improve on-street and off-street parking by establishing parking management practices, providing additional signage and increasing capacity, where appropriate.
- Encourage the preservation of the County’s historic districts to provide a focus for the revitalization of historic residential and commercial areas.

- Expand existing parks and encourage development of new parks where feasible.
- Encourage coordination between municipal and county park departments and boards of education to maximize the potential for recreational programs that meet the needs of the population.
- Support measures to protect scenic views

Union City’s planning efforts demonstrate consistency with the above-mentioned goals, objectives, and strategies in the following ways:

Design Standards

The Union City Master Plan goals include the creation of centers of activity in order to promote a sense of place and to improve the blighted appearance of the city. The Master Plan identified eight areas within the city that are appropriate for zoning changes;

- Downtown Area
- Center-City
- Highpoint, Summit, and Kerrigan Avenues
- Northeast Union City
- New York Avenue Between 7th and 12th Street
- Bergenline Avenue Commercial District

The Master Plan recommends that each of these areas establish strong design standards that promote mixed-uses, pedestrian-friendly design, and incorporate public spaces. Development and redevelopment of these areas should be center-based development that is design driven to creating development patterns where the community can walk, shop and gather around.

Expanding parks/open spaces

The Union City Master Plan recognizes the existing open-space assets of the City and has a goal to acquire land for new open spaces. The Master Plan recommends the development of a network of open spaces so that every corner of the city is within a 5-minute walking distance from a park, playground or other public spaces. The Master Plan also recommends that the city work to improve the provision of recreational facilities for residents of all ages within the City.

The Union City Master Plan is also consistent the County's goal of increasing municipal cooperation with educational and county institutions to increase recreation opportunities. The Master Plan recommends the creation of a facility-sharing program, as part of developer agreements in redevelopment plans, for indoor and outdoor recreational facilities. The Plan also recommends that the City explore additional opportunities to share City, County and School parks and recreational activity space given the built-out nature of the City and its needs to provide recreational space.

The Union City Master Plan does not directly address a number of the plans adopted by Hudson County subsequent to the 2002 County Master Plan, but does address the County's Urban Forestry Plan to plant 10,000 new trees over the next 10 years. Consistent with that goal, The Union City Master Plan has a goal to conserve natural resources by increasing the shade cover/canopy of the City by 20% over the next five years. Specifically, the Master Plan recommends the following

- Establishment of a shade tree commission;
- Completion of a Community Forestry Plan;
- Seek funding sources/grants to plant and maintain trees;
- Participate in the Cool Cities Program and plant 250 trees per year;
- Engage volunteers in tree plantings;
- Provide care and maintenance of trees

Township of North Bergen

The Township of North Bergen Master Plan was last Updated and Reexamined in 1993. The Township adopted re-examination reports in 1994 and 1998. The Township also has an Affordable Housing Element prepared in 1992/1993 and a Circulation Element (prepared sometime in the 1990s, no date). The Township is currently working on completing a new re-examination report, which is to be completed sometime in 2008. The general goals from the 1987 Master Plan were not



changed in the 1993 Re-examination. They are:

- To expand the tax base to promote the economic well being of North Bergen and its residents;
- To promote environmental quality;
- To expand housing opportunities for the Township's residents;
- To promote safe and efficient circulation;
- To protect the integrity of neighborhoods; and
- To provide visual and physical access to the waterfront and to the Palisades Cliff

The 1994 Update indicates that commercial and residential development had returned to the Township in large quantities since 1987, thus stabilizing and increasing the tax base. Neighborhood Rehabilitation Program grants had been used to improve neighborhoods and generate affordable housing. It also notes that an outdated sewer system had been replaced since the previous report, thus moving toward the objective of environmental quality. Other direct initiatives to specifically meet this objective are not apparent. The plan notes difficulties in protecting the integrity of neighborhoods in that non-conforming commercial uses had been built in residential districts (and some residential in commercial) without the acquisition of appropriate variances, and residential development and redevelopment had occurred in excess of the permitted vacancy in much of the single family residential zone.

The Circulation Plan Element describes the Township's major roadways, bus service, parking policies, areas of congestion concern, roadway projects, and intermodal facilities. Recommended improvements include numerous roadway upgrades, elimination of certain at-grade railroad crossings, widening of Secaucus Road, and conducting a comprehensive parking study. The Plan has four "primary goals."

- Separation of local and regional truck traffic
- Separation of heavy truck and auto traffic
- Minimize topographic barriers
- Provision of "missing linkages" in the circulation system

The Township has collaborated with NJDOT, NJTransit, and various state committees and agencies to help address regional transportation concerns in the Hudson River Waterfront Corridor. Particular concerns are present in several areas:

- It is noted that the presence of numerous jitney operators providing service along Boulevard East, Bergenline Avenue and Kennedy Boulevard as well as traditional bus service providers created competition, confusion, and congestion. It raises the issue of uncertain schedules of jitney operators, difficulty in determining whether all van operators are properly certified, and lack of availability of transfers between the different operators.

- To promote the conservation of energy through the use of planning practices designed to reduce energy consumption and to provide for maximum utilization of renewable energy sources.
- To formulate a storm water management plan and implementation ordinance to reduce the increase (sic) runoff from new land development, to assure safety of bridges and culverts, to induce water recharge into the ground, to lessen non-point pollution and to maintain the integrity of stream channels.
- To encourage active participation in the planning process by Weehawken's citizens.
- To promote maximum practicable recovery and recycling of recyclable materials from municipal solid waste through the use of planning practices designed to incorporate the State Recycling Plan goals and to complement the municipal recycling programs.
- To improve the physical character of the retail commercial businesses along Park Avenue through streetscape improvements, infrastructure maintenance, the use of zoning controls to permit outdoor seating as appropriate and to enforce the Ordinance.

Weehawken's master plan is newer and more progressive than many in the County. Its objectives address important circulation and environmental issues that are not touched on in other plans. The county should take this opportunity to collaborate with the Township on these issues.

Town of West New York

The Town of West New York Master Plan was last Reexamined in 2001. Prior to that, the Town's Master Plan consisted of the following reports and studies:

- o Updated Population Report (August, 1975)
- o Existing Uses of Land (October, 1975)
- o Revised Land Use Plan (October, 1975)
- o Community Facilities Analysis & Plan (November, 1975)
- o Land Use Plan (November, 1978; Revised July 1, 1986)
- o Housing Element (July, 1988)
- o Recycling Plan Element (June, 1990)

The Land Use Plan, last revised in 1986, recognized that West New York was a small, largely built-out municipality which, aside from the waterfront, had very little developable land. The 2001 Reexamination noted that a redevelopment plan had been adopted for orderly development of the waterfront and additionally some smaller area redevelopment plans had been adopted in order to create affordable housing. A UEZ has been created which encompasses much of the central business district and community development funds have been used to rehab both housing and commercial businesses. Although some of the objectives have been addressed through updates to the zoning ordinance, the Reexamination states that the objectives remain the same (although it seems to me that some of the objectives have become obsolete). The following are some key objectives that relate to the County's Master Plan and the Reexamination Process:



Land Use Plan

- To enable West New York's continued growth through a plan which acknowledges the existing pattern of development but recommends controls to reduce existing incompatible land uses and restricts over intensification of land use.
- To enable, promote and assist in the upgrading of the central business district which is a valuable asset to the West New York residents and an important source of tax revenue to the Town.
- To control the development of the Hudson River Waterfront area so that the most desirable combination of residential, compatible nonresidential and public uses is achieved according to carefully administered comprehensive controls which protect the area's natural assets and enhance the Town's land use pattern and also provide land for needed recreational facilities. Special effort must be made to acquire Waterfront land for public recreational use in sizeable quantities.

Housing Element

- To stimulate and encourage a comprehensive development plan for the Hudson River Waterfront that would include the type of housing to serve the needs of the residents of West New York, either through set-asides of affordable units or the provision of a housing trust fund to rehabilitate units elsewhere in the Town.

Community Facilities Plan

- "Parks: West New York was found to be severely deficient in acreage provided and it was recommended that existing parks should be expanded or redeveloped, new sites should be acquired, if possible and neighborhood centers for senior citizens and the young should be developed." The reexamination states that existing parks have been rehabilitated with Green Acres funds, but does not make clear to what extent the lack of park space has been addressed through the waterfront redevelopment and other redevelopment which has taken place since the community facilities plan was adopted in 1975.

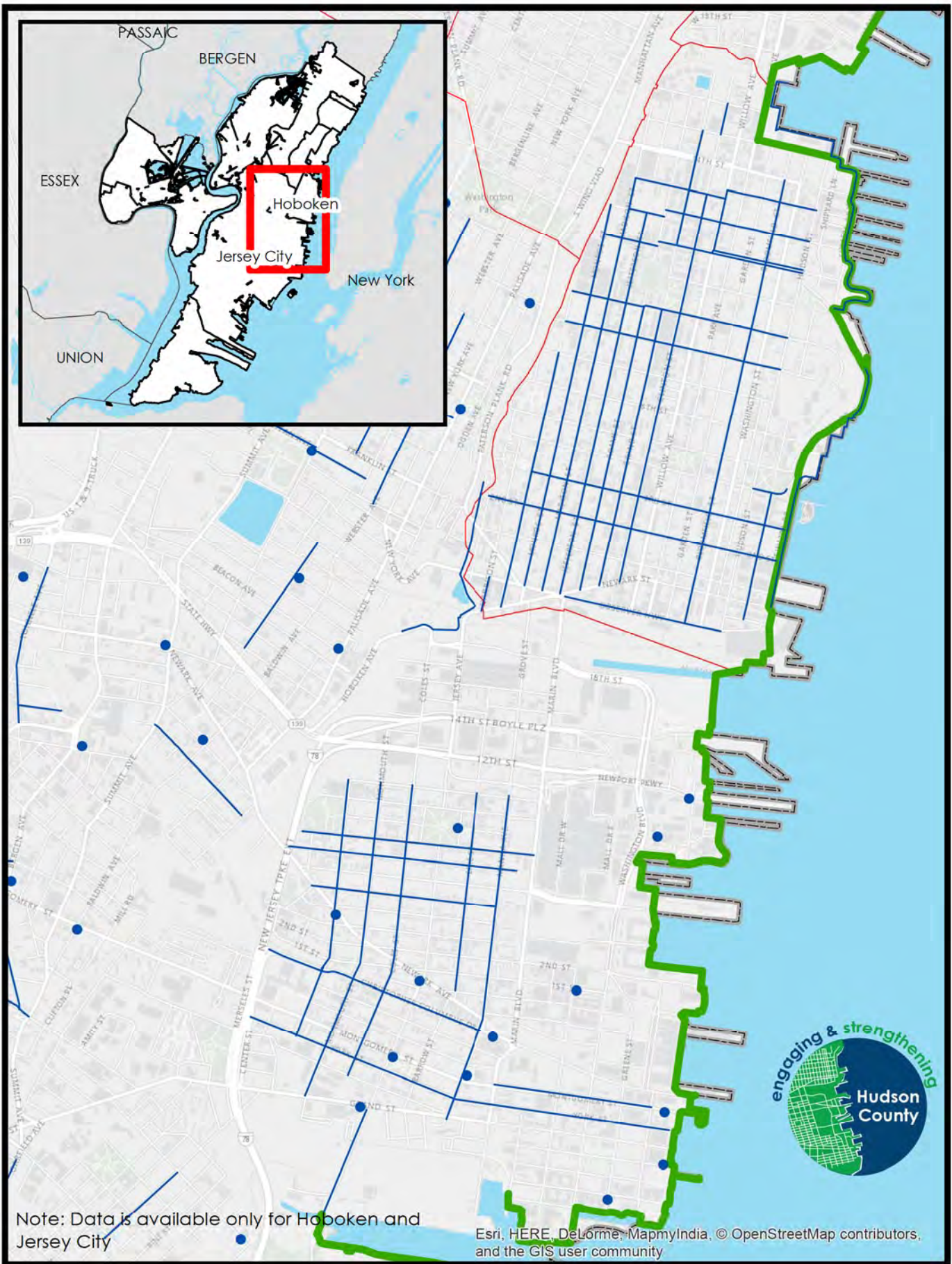
West New York does not have a circulation element. Traffic issues (particularly around county roads such as Bergenline Avenue) will need to be discussed with Town staff. Aside from the Recycling Plan Element, environmental quality issues are not specifically addressed in the Master Plan. Water Quality/stormwater/drainage concerns and other potential environmental issues should be addressed in discussions with borough staff. The county may want to encourage the Town to adopt a circulation plan to address congestion issues and the related emissions of greenhouse gases and other pollutants.



Hudson County Master Plan Re-examination Report

Hudson County, New Jersey
August 2016





Bicycle Infrastructure

- CitiBike Stations
- Bicycle lane/sharrows
- Hudson River Waterfront Walkway

0 0.125 0.25 0.5 Miles



2008 Recommendations - Now

General

"Create a definition for circulation/traffic in the County Site Plan & Subdivision Ordinance to amend and expand to encompass a more holistic view of traffic and circulation as well as Waterfront walkways. Impacts that affect county roads, but not necessary on county roads should also be considered for review as well."

As noted in the Land Use recommendations, the definition for circulation has been updated in the Hudson County Land Development Regulations (LDR) to include pedestrian and bicycle circulation as well as waterfront walkways. However, the connection between circulation and building design is not established. The County does review proposed developments that may impact county roads or circulation assets.

"Adopt innovative design approaches to the county's transportation network that work to positively impact CO₂ emissions outside of traditional transportation related implementation strategies. Such approaches should employ a multi-year effect by including a "green" streetscape design that couples pedestrian friendly design with innovative storm water control measures. Additionally, street trees should be considered an integral part of the county's infrastructure as they not only are aesthetic enhancements, but cool paved surfaces and expand longevity, enhance pedestrian safety, and aid in traffic calming."

The 2016 LDR update incorporates "green" streetscape designs, pedestrian friendly designs, and innovative stormwater control measures through the classification of county roadways as Street Typologies and through the requirement of development applications to provide Green Stormwater Infrastructure (GSI) techniques. Street trees are also incorporated into the regulations as an integral component of complete streets and the county drainage system. The LDR states, *"Street trees shall be provided along all roadways."*

The following design guidelines are standard to trees planted in all development projects requiring County approvals and/or along or near a County Road right of-way such that by their proximity are reasonably expected to impact the County road right-of-way or infrastructure after reaching maturity." The County has also established the Hudson County Shade Tree Fund that applicants can pay into if their site poses a hardship to plant a tree along their right-of-way. The County uses these funds to plant trees along other County roads. Municipal efforts to lower CO₂ emissions include Washington Street and Observer Highway in Hoboken since both streets implement Complete Streets designs and will have sustainable design features.

"Review and enact standards for applications for development that mandate level of service D or better before review."

The 2016 Hudson County LDR notes, *"Any development that causes a location on a roadway to operate in excess of capacity Level E for vehicles is discouraged. However, vehicular level of service should not be the only metric used to determine the traffic impact. For instance, if a development reduces the motor vehicle level of service, but improves conditions for pedestrians, transit, and/or bicyclists, a motor vehicle level of service in excess of capacity Level E may be acceptable, at the discretion of the Planning Board and the County Engineer. If there are no improvements for other modes to offset the impact to the motor vehicle level of service, a developer may address traffic problems resulting from the development by incorporating design modification or by contributing to the cost of off-site traffic improvements."*

"Ensure that traffic reports need to identify not only vehicle trips but also identify trips generated by public transportation, pedestrian and bicycle."

The 2016 LDR update introduces a requirement for a Multi-Modal Impact Report (MMIR), as part of a Traffic Impact Report. A Multi-Modal Impact Report measures the movement of people and other modes rather than vehicles and is required *"for all sites located within areas studied by a Road Safety Audit, areas within ¼ mile of a PATH stop,*

light rail stop, Journal Square Bus Terminal and other possible bus depots/hubs at the County's discretion. The goal of the study is to determine the locations of increased pedestrian circulation and the associated likelihood of increased vehicular/pedestrian collisions."

"Provide internal site circulation of large sites which will expand the idea of street-grid where applicable through an integrated land use and circulation approach."

The 2016 LDR update states in the General Conditions of the Circulation and Roadways Design Standards Section that, *"the proposed streets and walkways interior to the development shall be designed to provide optimal, well-balanced pedestrian, bicycle, and vehicular circulation for the development for any existing streets, roads, and walkways, which may adjoin the development or may be constructed in the future."*

"Provide adequate information in the form of legible street signs, wayfinding signs and information kiosks."



The 2016 LDR update states that developers must provide all required signage under municipal, County, and NJDOT requirements and in accordance with the Manual on Uniform Traffic Control Devices (MUTCD). Further, signs that are pedestrian oriented are encouraged. Specifically, county roadways classified as a Downtown Avenue often serve many users not from the neighborhood, so clear and comprehensive pedestrian and vehicular wayfinding is essential. The LDR also states that *"bicycle wayfinding signage should be used on all thoroughfares where bicycling is expected or encouraged. At a minimum, it should be provided where bicycle lanes, cycle tracks, or shared lane markings are used."*

"Require applicants contribute to their share of roadway improvements that address all transportation modes, and include environmental and aesthetic standards."

Through the 2016 LDR update, Hudson County applicants are now required to provide the existing and reasonably anticipated future multi-modal peak hour flows for off-tract improvements and are required to pay a proportionate share towards those improvements. Improvements may include street improvements, alignment, channelization, barriers, new or improved traffic signalization, signs, curbs, sidewalks, trees, or other improvements.

"Review the Cyber-District Study and determine how tele-commuting can be utilized as a means to reduce auto congestion."

Published in 2002, the Hudson County Cyber District Feasibility Study defines a cyber district as *"a spatial area in which digital networks play a strategic role in its physical and economic development."* The recommendations for the study were based on the opportunity and need to dramatically improve the level of network utilization by institutions, business and individuals throughout the county. Little development has occurred with the Cyber-District

study and there has been no sign of a countywide effort to encourage telecommuting. Globally, however, network utilization has evolved through innovations such as smartphones, tablets, and other technological advances. According to 2016 data, approximately 20-25% of the workforce teleworks at some frequency. As a result, U.S. telecommuting has grown since 2013.³²

"Review and consider major infrastructure improvement projects that assist communities of the County create and enhance parks and pedestrian environments such as the decking of I-495 in Union City."

The potential for decking I-495 in Union City continues to be explored. Highway decking (or capping) has been successfully used across the country to create vibrant parks and safe pedestrian environments. In addition, spaces underneath viaducts, like the Hoboken 14th St.

Viaduct Park have been converted into urban parks that serve the local communities. Other infrastructure improvement projects that integrate enhanced recreational facilities include 1600 Park and Southwest Park in Hoboken.

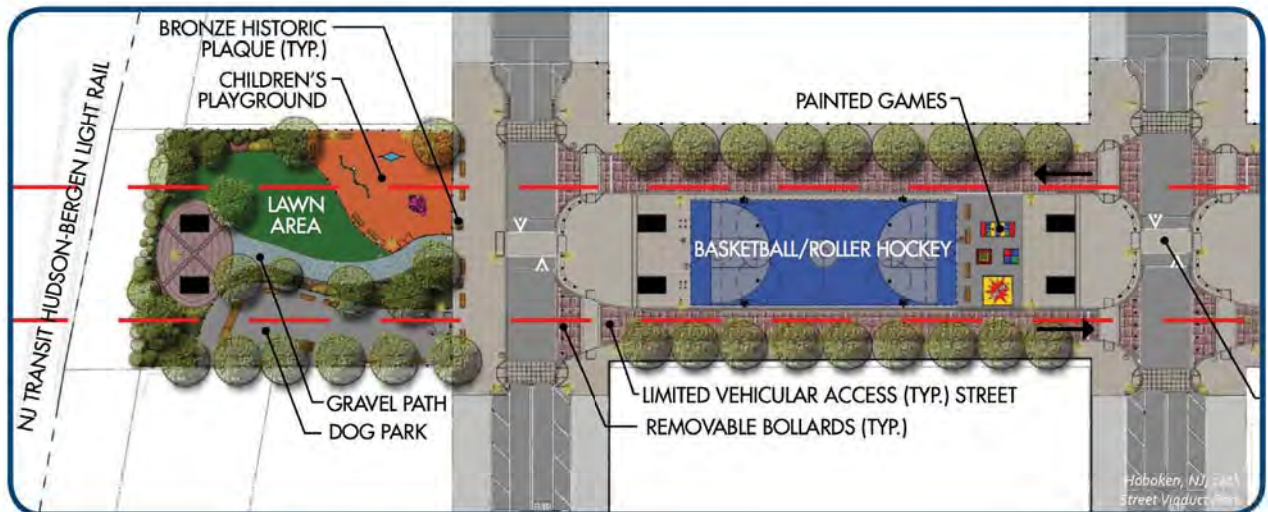
"Consider the circulation needs of the Port."

The needs of the port are vital to the state economy. Many of the intermodal facilities in Hudson County serve the port and utilize freight rail. According to NJTPA data, Hudson County received the second greatest proportion of inbound intermodal freight and the greatest proportion of outbound rail freight in the state, so improving rail access to Port Jersey is vital to the rail-supported portion of the state economy. Local serving yards in Hudson County include Bayonne, Greenville (Jersey City), and North Bergen. Greenville Yards serves Global Marine Terminal making it a critical node in the rail system. PANYNJ is redesigning the facility to handle an anticipated increase in traffic (Greenville Yard Express Rail Project).

According to New Jersey's 2015 State Rail Plan, port related proposed improvements in Hudson County include the construction of the Northbound Connector at Greenville Yards to the National Docks Secondary and the rehabilitation of Dock Bridge (Newark-Harrison) over the Passaic River (PATH, NJ TRANSIT, and Amtrak all run over this bridge, which is owned by Amtrak). The Bayonne Bridge is also being raised to allow navigational clearance of large container ships to Port Newark



Hoboken, NJ; 14th Street Viaduct Park



Hoboken, NJ; 14th Street Viaduct Park

and the Elizabeth-Port Authority Marine Terminal. Additionally, PANYNJ is undertaking a \$600 million rail program to improve access to NJ's ports and involves dedicating rail facilities for each of the major container terminals and six inter-regional rail facilities that connect to the ports.³³

Bicycle and Pedestrian

"A county-wide bicycle and pedestrian study should be undertaken to identify bicycle and pedestrian improvements throughout the county."

In 2009, the River Road/Hudson Waterfront Circulation Study was published in cooperation with Bergen County and the NJTPA. Several sidewalk gaps were identified. In 2012, the Hudson County Division of Planning, in partnership with the Hudson Transportation Management Association (TMA), conducted a preliminary bike share feasibility study and was expanded on in 2015 by the *"Exploration of a Public Bike Share Program in Hudson County."*³⁴ However, a full county bicycle and pedestrian study is still needed.

"Create and encourage provisions to provide secure bicycle racks at major employment centers and development nodes. Consideration should also be given to provide secure and/or indoor storage as well and shower and changing facilities for commercial and institutional uses."

Jersey City (Citi Bike) and Hoboken (Hudson Bike Share) have created bike share systems that rely on residential density transit stops/systems among other factors for station placement. The systems also have the potential to expand to other municipalities. The county has also embraced bicycle storage for the purpose of both accommodating and encouraging bicycle use within the county. The LDR states, "bicycle parking racks shall be provided for multi-family, non-residential and mixed-use development projects. The racks shall accommodate bicycle at a ratio of one (1) bicycle rack for every ten (10) vehicular parking spaces provided." Additionally, "Street furniture for bicyclists such as bike racks and bike shelters, is encouraged in areas of high

bicycle use, and may be required at the discretion of the County Engineer." Public transit stops may also include bicycle racks. Neighborhood Streets (one of the Street Typologies) should also provide pedestrian and bicycle access to neighbors, school and convenience retail. And, to encourage bicycling as a commuting option, the 2016 LDR Update recommends that on County roadways classified as an Industrial Boulevard, bicycle parking should be provided at key locations for commuters. According to the regulations, bike racks shall comply with the latest edition of the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guidelines.

"Provide complete pedestrian and bicycle circulation throughout the site design and take into consideration of off-site generators of pedestrians and bicyclists."

The 2016 LDR update states in the General Conditions of the Circulation and Roadways Design Standards Section that, *"the proposed streets and walkways interior to the development shall be designed to provide optimal, well-balanced pedestrian, bicycle, and vehicular circulation for the development for any existing streets, roads, and walkways, which may adjoin the development or may be constructed in the future."*

According to the 2016 LDR update, applicants are required to submit a Multi-Modal Impact Report (MMIR) as part of a Traffic Impact Report if the site is *"located within areas studied by a Road Safety Audit, areas within ¼ mile of a PATH stop, light rail stop, Journal Square Bus Terminal and other possible bus depots/hubs."* The goal of the MMIR is to determine the location of increased pedestrian circulation and associated likelihood of increased vehicular/pedestrian collisions paired with the appropriate mitigation measures, if required.

"Increase pedestrian visibility through lighting, improving sight lines, etc."

There are several methods for increasing pedestrian visibility on the street including lighting crosswalks and curb radii. According to the 2016

LDR update, pedestrian lighting and high visibility crosswalks are encouraged on all County roadways except Industrial Boulevards, and all signalized intersections should have marked crosswalks. Downtown Avenues are recommended to have decorative textured crosswalks for even higher visibility. Other recommendations from the LDR include:

- Curb extensions where crossing distances would benefit from being shortened
- Gateway treatments and pedestrian crossing areas such as intersections and crosswalks should be given additional lighting considerations
- Dramatic reduction of the curb radii to improve site safety

"Mandate the installation of missing sidewalks and repair and widen existing sidewalks where access is necessary. Shade trees should also be included."

Site and off-tract improvements for sidewalks may be required as part of the allocation formula for roadways. Further, the LDR establishes recommended sidewalk and sidewalk zone dimensions to provide safe and accessible pedestrian circulation.

"Provisions for the contribution to a sidewalk improvement fund should also be considered. Especially for those sites where off-tract improvements are needed. Shade trees should also be considered."

Section IX of the 2016 LDR update establishes the purpose, requirements, scope of improvements, and cost allocation for off-site and off-tract improvements required as part of a proposed development. Included in these requirements are the cost sharing of street improvements, channelization, barriers, new or improved traffic signalization, signs, curbs, sidewalks, trees, and other improvements where needed.

"Work with the NJTPA and municipalities to educate the public, planning and zoning officials on maintaining and reestablishing strong urban design standards that incorporate reduced and shared parking requirements. Where appropriate, waivers from Residential Site Improvement Standards should be a permanent consideration, such as Downtown and Transit Oriented Development (TOD) districts."

This recommendation is a duplicate from the Land Use Plan Element. It is further discussed there.

"Complete the Hudson River Waterfront Walkway, complete the Hackensack River Greenway, complete the Passaic River Greenway, complete the Liberty-Watergap Trail, and complete the East Coast Greenway."

Progress made on completing walkways and greenways is further discussed in the Community Facilities Plan Element.

Mass Transit

"Consider developing a County-wide Transit-Oriented Development (TOD) Plan that works with all Hudson municipalities, NJ TRANSIT and the PANYNJ that works to maximize the public investment in mass transit. Education and visioning should be considered a component of such a plan."

A countywide TOD plan has not been completed. However, a number of other plans such as the Bayonne/Greenville/ Journal Square BRT Study and the Jersey City/ Hoboken Sub-regional Transportation Study have been completed and take into account TOD in the planning process. Additionally, there have been TOD plans developed in Jersey City, Bayonne, Harrison, and Kearny. There are a number of available resources that can be used by communities to encourage TOD and Transit Supportive Development (TSD). These include:

- Planning for Transit-Friendly Land Uses, NJ TRANSIT, 1994
- Building a Transit-Friendly Community, NJ TRANSIT, 2010
- Eliminating Barriers to Transit-Oriented Development, NJDOT, 2010
- Targeting Transit: Assessing Development around New Jersey's Transit Stations, NJ Future, 2012
- Manual of Best Practices for Transit-Oriented Development, NJDOT, 2013
- Planning for Transit-Supportive Development, Federal Transit Administration (FTA), 2014

"Continue to work with NJTRANSIT to implement the recommendations of the Bus Circulation and Infrastructure Study."

The 2007 Bus Circulation Study made a number of important recommendations, however, the recommendation for the County to establish a jitney ordinance that regulates such service continues to be the most salient issue among the other recommendations from this plan. Thus far, no regulations have been established, but the recommendations from the Hudson County Jitney Study should be incorporated in governing jitneys.

"Continue to review and expand the HBLR and other mass transit opportunities throughout the county such as extending the PATH line and interconnections with Staten Island."

Since 2008, the 8th Street station in Bayonne has opened on the HBLRT. Additionally, a Draft Environmental Impact Study (DEIS) to extend the HBLR into Bergen County along the Northern Branch Corridor was completed in 2012. This study examined an alignment between North Bergen to the Tenafly/Cresskill. Currently, a supplemental DEIS (SDEIS) is underway that explores the extension to the Englewood Hospital, but not into Tenafly. A PATH extension is being explored to Newark Liberty International Airport,

which would provide Hudson County residents greater accessibility to the airport via public transportation. The County and the City support a western extension of the HBLR from the current Westside Avenue Station. The extension of the HBLR into Staten Island has been discussed by the Port Authority and NJ TRANSIT, but no formal studies have taken place.



Jersey City, NJ, HBLRT



There have been several significant events since the 2008 Re-examination Report, which have profoundly affected development in Hudson County.

2016 Goals and Objectives

Goal 1: Ensure existing infrastructure for all modes is in good repair and can support the needs of the County and the region.

- Objective a: Maintain existing transportation infrastructure within the county for freight, residents and visitors.
- Objective b: Connect people and places with safe, convenient and reliable transportation options including east/west connections.

Goal 2: To support system coordination regionally.

- Objective a: Consider the County as an extension of the New York City system and work to coordinate even greater investment in the public transportation system through partnerships with NJ TRANSIT, Port Authority and the MTA.
- Objective b: Consider the PATH system as an integral part of the Hudson County system and pursue expansion opportunities with PANYNJ.
- Objective c: Coordinate public and private bus service, including jitneys, by providing information on service, transfers, fares and bus passes.
- Objective d: Coordinate with municipalities to provide a single payment method for all on-street parking throughout the county.

Goal 3: To provide a safe and efficient transportation system.

- Objective a: Maintain the efficient movement of goods with planning for safe and efficient truck travel and promotion of the transport of freight by rail and barge.
- Objective b: Maintain the efficient movement of people with planning for safe and efficient pedestrian, bicycle, public transportation, and vehicular travel.
- Objective c: Increase education, training outreach and field audit programs to reduce crashes and improve transportation safety.
- Objective d: Improve mobility for senior citizens and people with disabilities.

Goal 4: Reduce traffic congestion.

- Objective a: Identify improvements that will allow buses to more quickly and reliably travel along congested roadways.
- Objective b: Use technology to improve transportation operations (i.e. ITS).

Goal 5: To promote alternate transportation modes including bicycling, telecommuting, transit and walking.

- Objective a: Improve conditions at existing transit hubs throughout the County.
- Objective b: Continue to implement the Hudson County complete streets policy.
- Objective c: Continue to encourage a regional bike share program.
- Objective d: Promote public access to the Hudson River Waterfront Walkway and pedestrian open space and circulation opportunities such as scenic walkways and bikeways along the county's waterfronts.
- Objective e: Improve pedestrian and bicyclist on-site circulation.
- Objective f: To promote pedestrian-first approach in downtown areas.

Goal 6: Increase transit system capacity in strategic locations.

- Objective a: Continue to review and expand the Hudson Bergen Light Rail and other mass transit opportunities throughout the County.
- Objective b: Encourage the expansion of rail systems to serve major residential and commercial developments, such as the Jersey City Bayfront Development.



Goal 7: To coordinate land use activities with the transportation network.

- Objective a: Encourage the siting and expansion of inter-modal facilities at locations where existing infrastructure can accommodate the movement of freight.
- Objective b: Develop better connections between land use activities (i.e. grocery store) and the transportation needs of Hudson County residents.
- Objective c: Encourage municipalities to develop parking management practices, improve wayfinding, and study the need for increased parking capacity, where needed.

Goal 8: To provide transportation improvements which support economic development.

- Objective a: Provide cost effective transportation systems that support business by providing for the efficient movement of goods and people.
- Objective b: Plan transit and roadway infrastructure system improvements to support existing economic activity centers and promote development of new activity centers along transit corridors and at transit hubs.
- Objective c: Establish a transportation/employment program for those who are unable to get to employment services, interviews and training.
- Objective d: To provide pedestrian and bicycle access along all roadways, particularly those roads that leads residents to job centers.

Goal 9: Redesign existing streets to allow for pedestrians, bikes and green infrastructure.

- Objective a: Utilize the Land Development Regulations to incorporate green infrastructure into county roadways, especially during County roadway improvement or utility projects.
- Objective b: Consider the Street Typologies that are outlined in the Hudson County Land Development Regulations In future county roadway projects.
- Objective c: Reduce stormwater run-off and non-point source pollution from roadways through implementation of Best Management Practices (BMPs).

Goal 10: To reduce “green house gas” emissions from mobile sources and improving air quality.

- Objective a: Reduce Vehicle Miles Traveled (VMT) by County residents and commuters.
- Objective b: Reduce Vehicle Hours Traveled (VHT) by County residents and commuters.

Objective c: Reduce energy consumption and pollution from motor vehicles by encouraging use of public transit.

Objective d: To promote the design and re-design of public roadways to comply with ADA standards.



APPENDIX K

ROAD OWNER RESPONSE



COUNTY OF HUDSON
DEPARTMENT OF ROADS AND PUBLIC PROPERTY
OFFICE OF THE COUNTY ENGINEER
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COUNTY ENGINEER

JOSEPH F. GLEMBOCKI, PE
ASSISTANT COUNTY ENGINEER

ROBERT A YANNAZZO, AIA
CHIEF ARCHITECT

February 12, 2019

Julia Steponanko, P.E., Project Manager
Greenman-Pederson Inc. (GPI)
100 Corporate Drive
Lebanon, New Jersey 08833

RE: Hudson County Response to Road Safety Audit Recommendations
JF Kennedy Boulevard from 43rd Street to 64th Street in the Township of
North Bergen, City of Union city and Town of West New York
Hudson County

Ms. Steponanko:

The County of Hudson thanks the Road Safety Audit team for their participation in this important effort to evaluate traffic safety on JF Kennedy Boulevard between 43rd Street and 64th Street to better accommodate all road users along the corridor.

Hudson County is committed to improving safety and implementing appropriate elements of our Complete Streets policy along all county roadways to better serve the traveling public.

The County has reviewed the recommendations outlined in the report of the Road Safety Audit (RSA), dated January 19, 2019 and while the County cannot commit to specific improvements without further assessment, municipal support and funding, we generally agree with many of the findings and recommendations.

In general, the identified improvements primarily include corridor-wide and site-specific recommendations, as follows:

- Corridor-wide upgrade of all ramps for ADA compliance
- Implementation of curb extensions (bump-outs) at some locations
- Development of access management plan for vehicles and pedestrians within project limits
- Roadway and pedestrian lighting
- Corridor-wide signal upgrades
- Investigate on street parking within project limits
- Conduct a speed study within project limits
- Corridor-wide upgrade of all striping and signage
- Inspect and evaluate drainage facilities for proper drainage

Based on the recommendations of the RSA Team, as a next step, the County will apply thru the North Jersey Planning Authority (NJTPA) for the Local Capital Project Delivery Program, Concept Development Phase Study for further study and to obtain funding for the implementation of these recommendations.

Should you have any questions, please do not hesitate to contact this office at 201-369-4340.

Sincerely,



Thomas Malavasi, P.E., P.P., CME, CPWM
County Engineer

cc: Denise D'Alessandro, Director, Roads and Public Property
Joseph F. Glembocki, P.E., Assistant County Engineer
Jose M Sieira, Director of Traffic and Transportation
Sean J. Keating, Principal Engineer
Byron Nicholas, Supervising Transportation Planner