Road Safety Audit:

Paterson Plank Road (CR 681),
Harrison Street to S. Wing Viaduct

Hoboken City, Jersey City and Union City, Hudson County

DEPARTMENT OF TRANSPORTATION
THE STATE OF NEW JERSEY

November 2020

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Executive Summary

This document is the final report of the Road Safety Audit (RSA) conducted along CR 681 (Paterson Plank Road/Paterson Avenue) from Harrison Street to S. Wing Viaduct in Hoboken, Jersey City, and Union City, 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.

The aforementioned roadway section was identified on NJTPA's Local Safety Program Network Screening list as a high priority segment. According to the NJDOT crash database, there were 114 crashes from 2016 to 2018 along the study area section of CR 681, Paterson Plank Road excluding pedestrians/pedacyclists. Additionally, twelve (12) pedestrian crashes occurred over the 5-year period from 2014 to 2018. There were nine pedacyclist crashes and three pedestrian crashes.

This hybrid RSA was conducted on Tuesday, September 15, and Wednesday, September 16, 2020. Due to the COVID-19 pandemic, the pre-audit meeting was conducted online via video conference on Tuesday and a socially-distanced field visit was conducted on Wednesday. Representatives from NJDOT, FHWA, NJTPA, NJ Transit, Hudson County, Hoboken City, Jersey City and Union City were in attendance during one or both days.

The RSA site and crash history are 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. These recommendations addressed 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 improve lighting.

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

This section of CR 681 (herein Paterson Plank Road) was identified on NJTPA's Local Safety Program (LSP) Network Screening list as a high priority location, as shown in the below rankings. Of note, these rankings are based on 2014-2016 vehicular and 2012-2016 pedestrian crash data.

Table 1 – NJTPA LSP Ranking (Corridor)

Location	Ped Corridor	Regional Corridor
CR 681 (Paterson Plank Rd/Paterson Ave)	**#8** County (MP 1.04-2.04)	**#8** County (MP 1.27-2.27)

Table 2 – NJTPA LSP Ranking (Intersection)

Location	Intersections	Pedestrian Intersections
Congress St (MP 1.46)	#59 County	N/A

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 FHWAs proven safety countermeasures, is shown below.

C. The RSA Event

This hybrid RSA was conducted on Tuesday, September 15, and Wednesday, September 16, 2020. Due to the COVID-19 pandemic, the pre-audit meeting was conducted online on Tuesday and a socially-distanced field visit was conducted on Wednesday. Representatives from NJDOT, FHWA, NJTPA, NJ Transit, Hudson County, Hoboken City, Jersey City and Union City were in attendance during one or both days. 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 one (1) mile of Paterson Plank Road. The adjacent land use along the corridor is primarily residential and commercial. From Mountain Road to Congress Street, the adjacent land is wooded.

B. Roadway and Intersection Characteristics

Paterson Plank Road is an undivided urban minor arterial and the posted speed limit is 25 mph. One lane is provided in each direction north of Mountain Road, while two lanes are provided in each direction from Mountain Road to Harrison Street.

C. Existing Bicycle/Pedestrian Accommodations

Sidewalk is provided continuously along Paterson Plank Road northbound. It is also provided along the southbound direction between Harrison Street and Mountain Road and from Congress Street to S. Wing Viaduct. While generally wide, the sidewalk narrows significantly at Mountain Road. Some locations also do not have a minimum of three (3) feet around an obstruction. Crosswalk styles vary within the project limits. 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 2017 Annual Daily Traffic (ADT) along Paterson Plank Road in the vicinity of Congress Street is approximately 12,240 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 Paterson Plank Road via routes 22, 85, 87, 119, and 123. Stops are located at or near the Doric Apartments, Congress Street, 1st Street and Harrison Street. The Hudson-Bergen Light Rail (HBLR) crosses Paterson Plank Road at 1st Street/Marshall Street with stops at 2nd Street and 9th Street/Congress Street.

F. Community Profile

The American Community Survey (ACS) estimate, which updates the 2010 Census population and income characteristics, was used to identify minority and low-income populations surrounding the project limits. The latest ACS for this study area is a five-year estimate from 2014 through 2018. A summary of the demographics is listed below.

Table 3 – Study Area Demographics

Characteristic		Project Area	County Average
Poverty		17%	16%
Limited English Proficiency (LEP)		23%	25%
Race/Ethnicity	White	32%	29%
	Hispanic/Latino	50%	43%
	Asian American	12%	15%
	Black or African American	4%	11%
	American Indian/Alaskan	0%	0%
	Other[1]	2%	2%
Use Public Transportation		34%	42%
Walk/Bike to Work		6%	8%
Homes with No Vehicle Available		35%	32%

G. Redevelopment

The area surrounding Paterson Plank Road has been under redevelopment for several years, primarily converting former commercial sites into residential buildings. Of note, the recycling center (All American Recycling, located on Hope Street off of Mountain Road) will likely be sold to developers in the near future. Excerpts from the County and Municipal plans can be found in Appendix I.

III. Crash Findings

The analysis used in the RSA was based on reportable crashes found in the NJDOT crash database resulting in a fatality, injury and/or property damage. Corridor-wide crash characteristics and overrepresentations were compared to the 2018 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.

A. Temporal Trends

According to the NJDOT crash database, 114 vehicle-only crashes occurred during the three-year period between January 1, 2016 and December 31, 2018 along the study area.

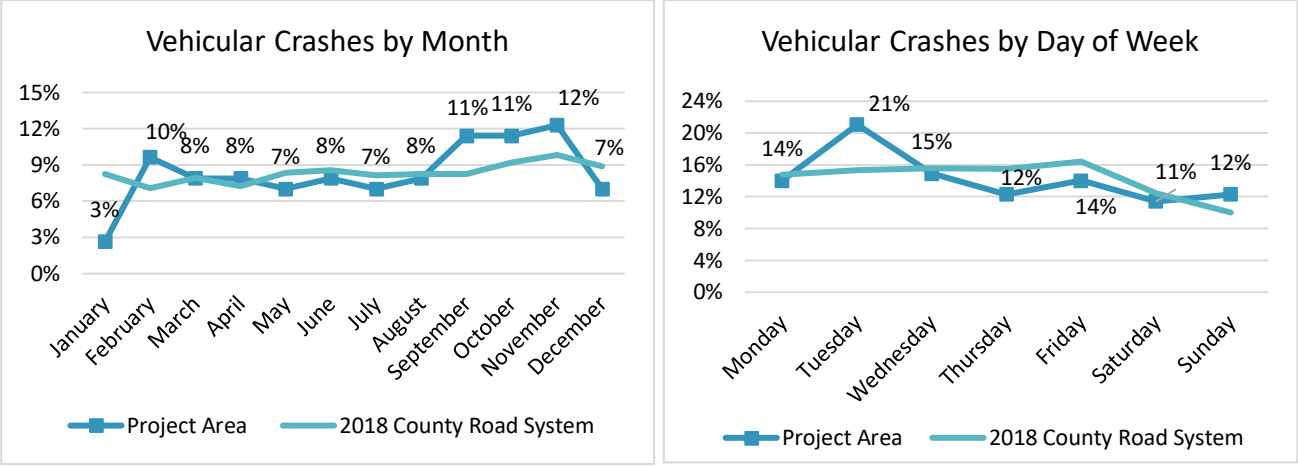


Figure 1 – Vehicular Crashes by Month and Day of Week

[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'

Total crashes varied from the county average in September-November and on Tuesday. The fall increase may be attributed to the shortening days and therefore light conditions.

Additionally, 12 pedestrian crashes occurred over the 5-year period from 2014 to 2018; 9 were bicyclists and 3 were pedestrians. Collisions with pedestrians trended similar to county road averages.

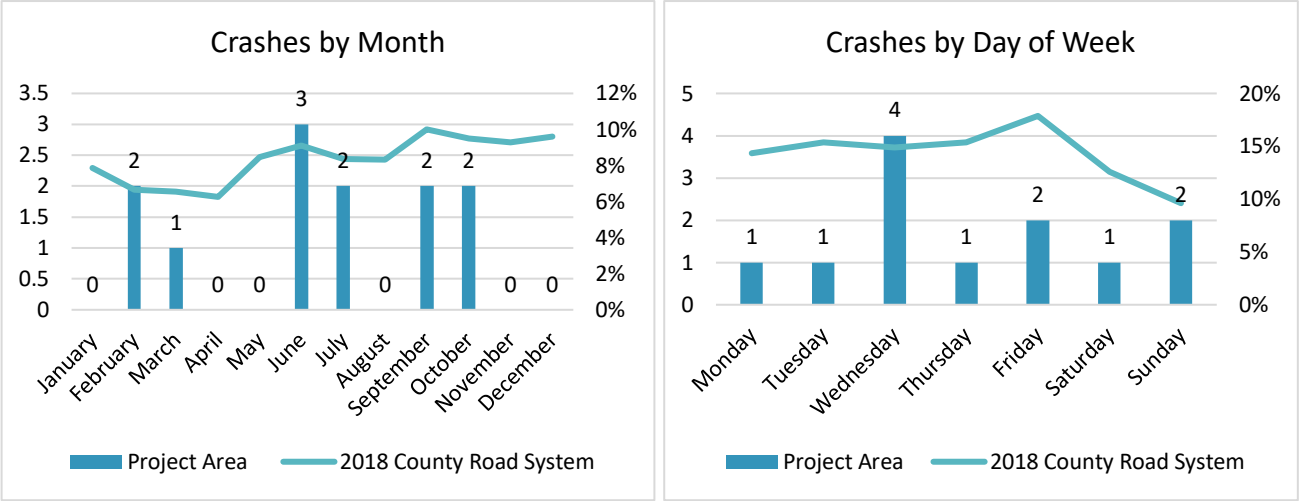


Figure 2 – Pedestrian/Bicyclist Crashes by Month and Day of Week

B. Collision Types

Overrepresented vehicle-only crash types over the 2016 to 2018 period included rear end, sideswipe, head on, backing, and fixed object.

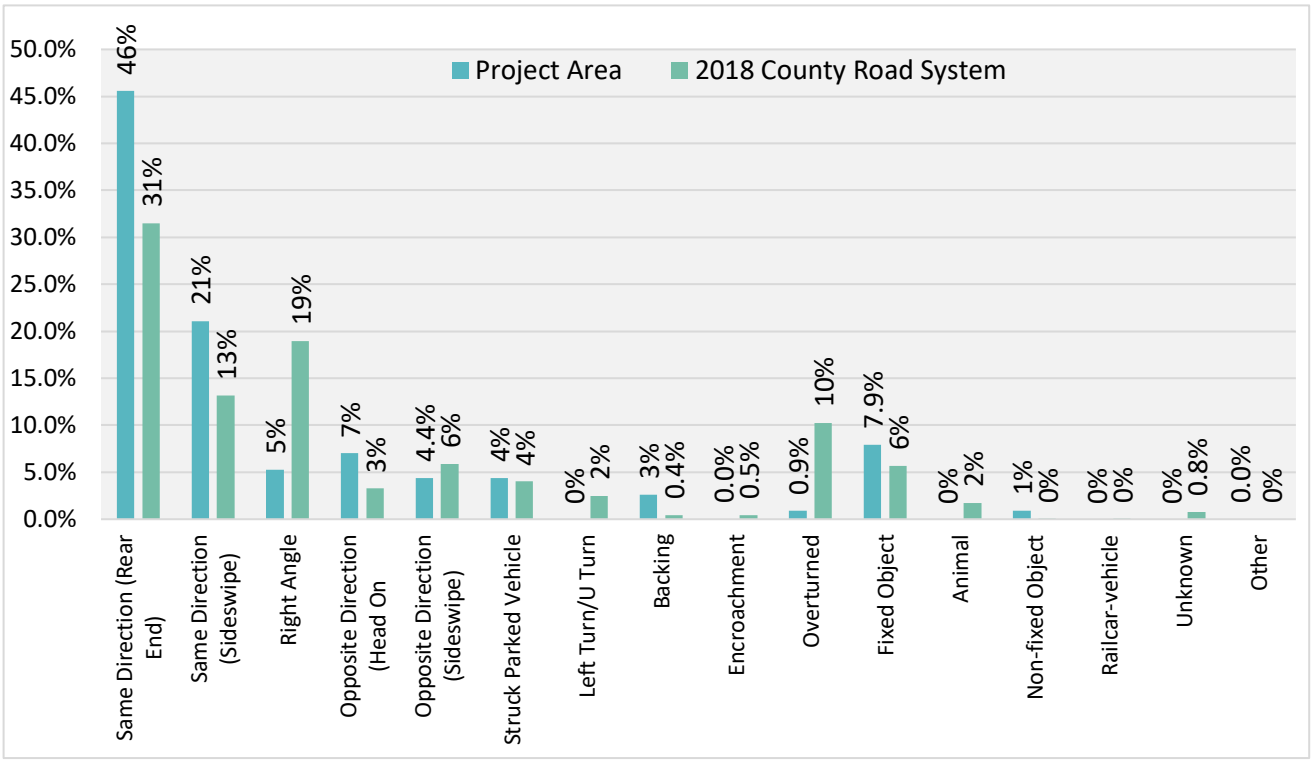


Figure 3 – Vehicular Crash Type Breakdown

The majority of pedestrian/bicycle crashes (excluded from Figure 3) included injury, occurred at night, and at signalized intersections.

C. Severity

One (1) fatal vehicular crash was identified in the three-year time period from 2016 to 2018 that was an opposite direction head on crash along the northernmost curve south of Congress Street. In addition, Hudson County provided information on the following three collisions that occurred outside the study period and included a fatality:

- Pedestrian struck near Congress Street, May 11, 2013
- Opposite direction head on crash, August 11, 2015
- Opposite direction head on crash, May 5, 2019

The County recently installed curve warning signs and chevrons, rumble stripes and reflective pavement markers, and pavement markings stating "SLOW, 25 MPH" along Paterson Plank Road.

NJ Transit also noted that two crashes involving a bus occurred at the curve – one between a bus and bicyclists and one between a bus and vehicle (for the latter, see Appendix D, Sheet 4, Crash 119).

Pedestrian crashes resulting in minor and moderate injury were significantly overrepresented compared to the county road system from 2014 to 2018.

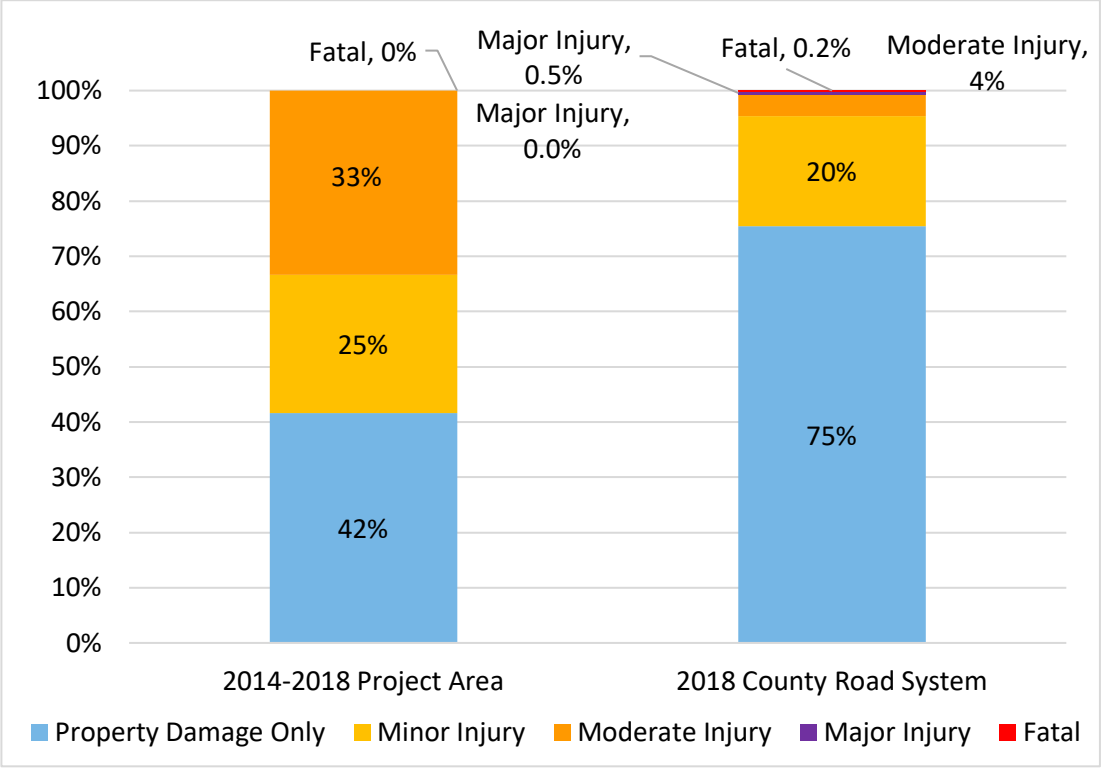


Figure 4 – Severity (Pedestrian/Bicycle Crashes)

D. Roadway Surface & Light Condition

Overrepresented crash types included wet surface (24%) and nighttime conditions (35%). All other conditions are underrepresented compared to the county road system.

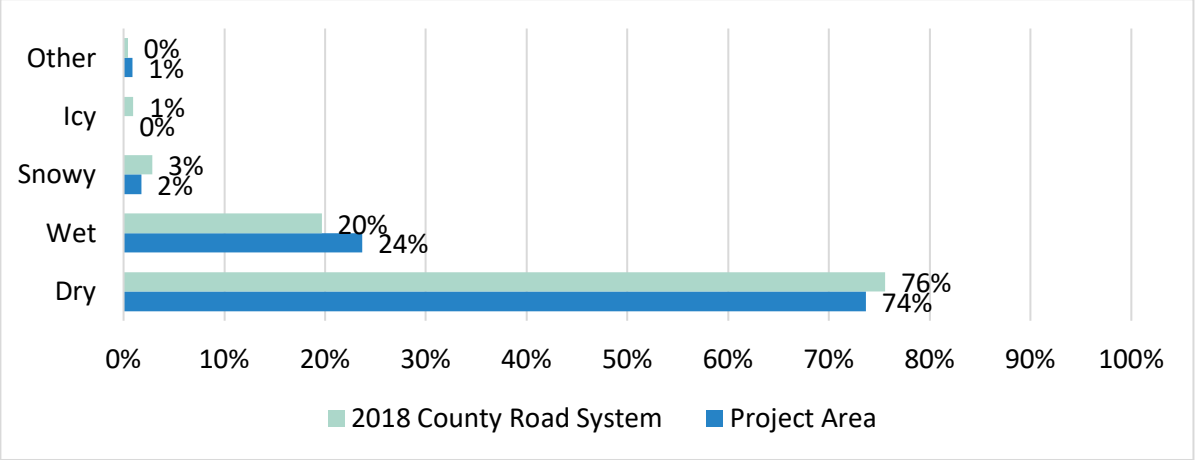


Figure 5 – Surface Conditions (Vehicular Crashes)

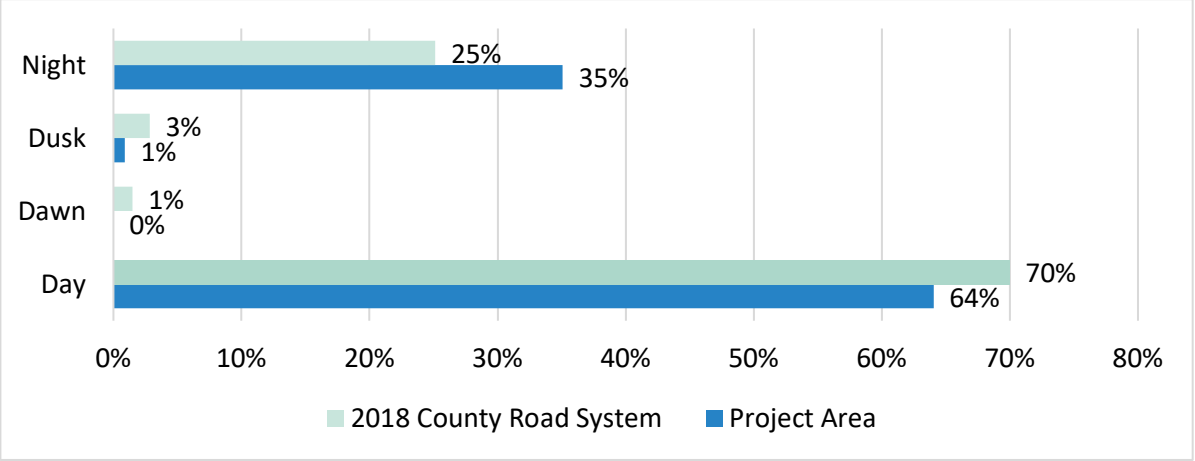


Figure 6 – Light Conditions (Vehicular Crashes)

Dry surface crashes involving pedestrians and bicyclists accounted for most of the crashes. In addition, 25% of pedestrian crashes occurred during non-daylight hours, with dusk and dawn (8% each) being higher than the county road statewide average of 3% and 1%, respectively.

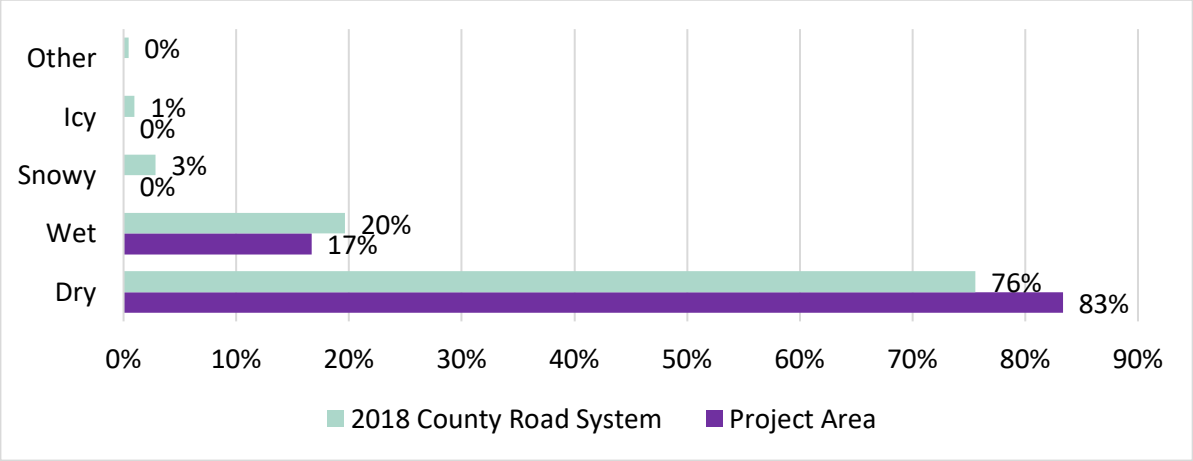


Figure 7 – Surface Conditions (Pedestrian/Bicycle Crashes)

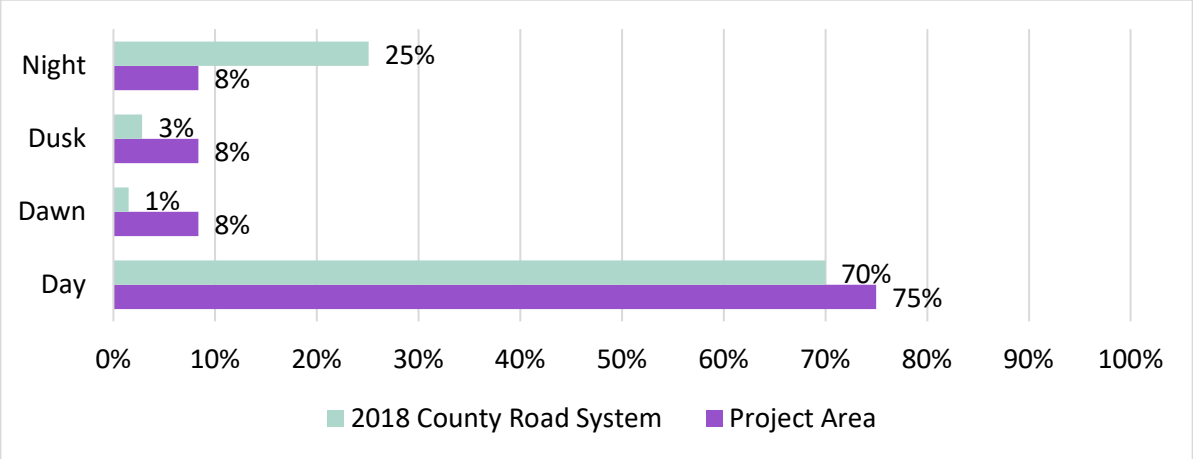


Figure 8 – Light Conditions (Pedestrian/Bicycle Crashes)

E. Location

Crashes occurring between intersections were overrepresented compared to the county road system average. Seventy-four percent (74%) of crashes occurred between intersections compared to sixty-four percent (64%) on all county roads. In addition, eight (8) of the twelve (12) pedestrian/bicyclist crashes occurred at signalized intersections. 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 and shows crashes that could be geolocated as well as a number of police crash reports where location-based differences were noted.

Figure 9 – Total Crash Locations (2016-2018)

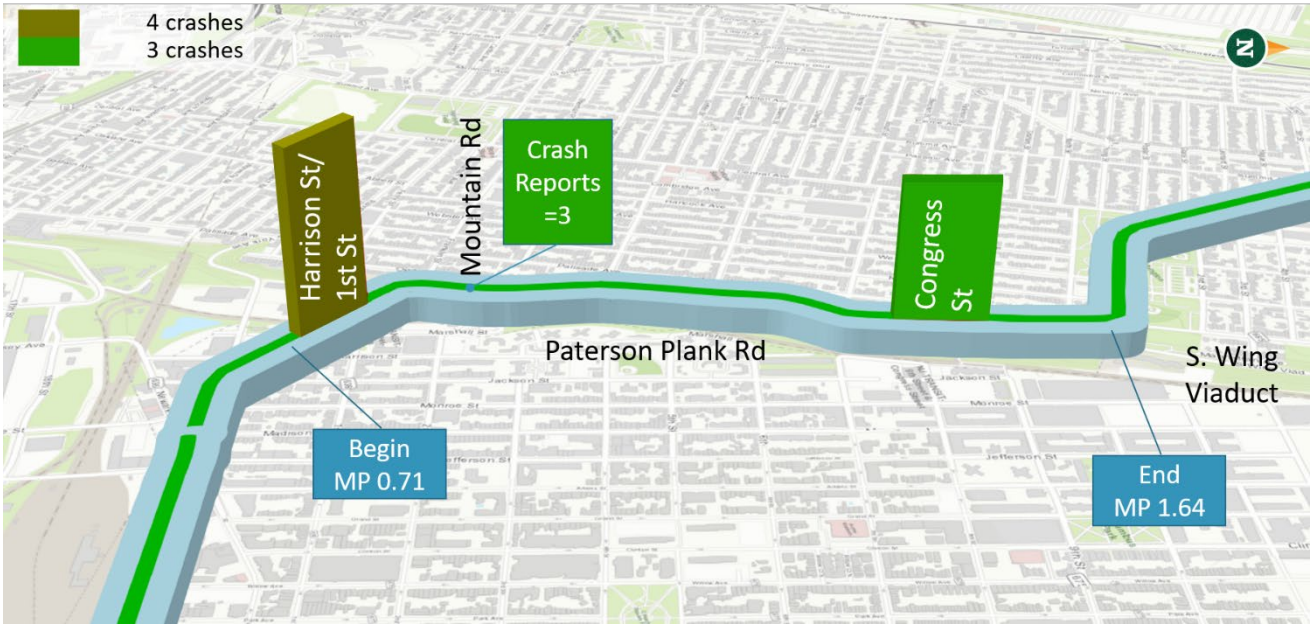


Figure 10 – Pedestrian Crash Locations (2014-2018)

IV. Identified Issues & Observations

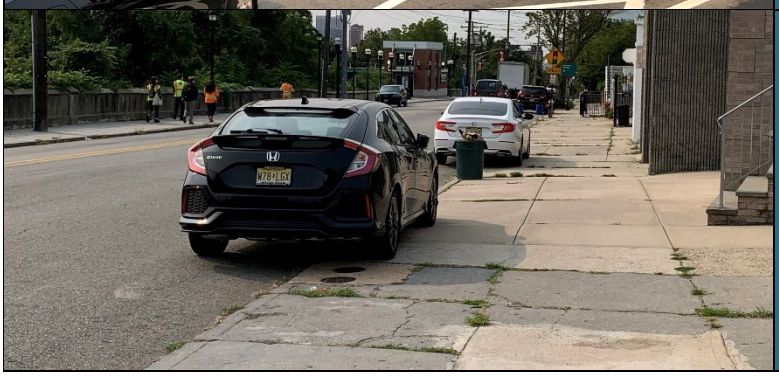
This section summarizes the common corridor-wide safety issues identified during the RSA. They are categorized into operations (including visibility) and maintenance issues, and pedestrian and bicyclist issues. Additional site-specific issues and photographs can be found in Appendix F.

A. Pedestrian/Bicyclist

	Observation / *Photo Location* Curb ramp not ADA compliant and missing detectable warning surface (DWS). *Paterson Plank Rd and S. Wing Viaduct NE corner*
	Broken concrete wall abutting sidewalk. Wall appears to be less than 4 feet high in some locations. *Paterson Plank Rd NB near Congress St*
 	No shoulders or bicycle lanes. Road alignment makes it difficult for motorists to see bicyclists. *Paterson Plank Rd south of Congress St*

	Observation / *Photo Location* Curb ramp/DWS over an inlet and additional DWS direction misleading (no crossing). *Paterson Plank Rd SB between Mountain Rd and HBLR crossing*
	Worn striping (crosswalks, railroad markings, general striping). DWS does not contrast concrete sidewalk. *Paterson Plank Rd SB at the HBLR crossing*

B. Operations, Visibility, and Maintenance

	Observation / *Photo Location* Queuing along Paterson Plank Rd approaching Palisade Ave (note Do Not Block Intersection" sign and markings) *Paterson Plank Rd at S. Wing Viaduct*
	Vehicles partially parked on the sidewalk, which is in poor condition. *Paterson Plank Rd SB between S. Wing Viaduct and Congress St*

	Observation / *Photo Location* Damaged guide rail section. (Note rub rail may not be needed.) *Paterson Plank Rd SB south of Congress St*
	Signal heads may blend into the background; optically programmed indications may need realignment. Overall lack of overhead street name signs at many locations. *Paterson Plank Rd NB at the HBLR crossing*
 	Signs missing (left) or obscuring the roadway (right) that are tripping and striking hazards, respectively. *North of HBLR crossing (left) and Paterson Plank Rd at S. Wing Viaduct (right)*

The Audit Team also observed motorists traveling along Paterson Plank Road northbound at the HBLR crossing continuing through the red light(s) and flashing "Train Coming" blank-out sign, continuing north past Mountain Road. The train heading southbound had to stop at the roadway crossing. Of note, a Diagnostic Team Meeting (DTM) was held in 2019 for this crossing with representatives from NJDOT, NJ Transit and Hudson County. Documentation of the DTM is included in Appendix J.

V. Findings and Recommendations

This section summarizes the site-specific and corridor-wide safety issues, potential strategies, and recommendations to improve the same. The safety benefit, time frame, cost, and jurisdiction are listed alongside each recommendation. Ratings used in the tables are described as follows. N/A indicates safety benefit not determined.

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%[3]
✓✓✓	Moderate safety benefit potential	May reduce total crashes by 50-74%[3]
✓✓✓✓	High safety benefit potential	May reduce total crashes by 75+%[3]
$	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 and analysis
◕	Long term	Could be accomplished in 3 years or more; may require full engineering and analysis

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 4 – Corridor-Wide Recommendations

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
	Operations				
1	Consider upgrading all ramps for ADA compliance	✓✓✓[3]	**$$$**	◑	County
2	Consider corridor-wide signal upgrades (8” to 12” signal heads, install backplates with retroreflected border, evaluate clearance intervals, update to countdown pedestrian signal heads, replace push buttons for ADA compliance, signal timings, lighting, etc.)	✓✓	**$$$**	◕	County/ NJ Transit
3	Consider conducting a lighting analysis for the corridor	✓✓✓	**$$**	◑	County

[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 upgrading and repairing the guide rail	✓[4]	$	◔	County
5	Consider upgrading and repairing the wall along the southbound sidewalk; ensure wall height consistently meets standards; investigate architectural treatments	✓[4]	$$	◑	County
	Bicycle/Pedestrian				
6	Inspect, repair and construct sidewalks in compliance with ADA as needed, including driveway aprons	✓✓✓	$$	◔	County
7	Examine inlets and install bicycle-safe grates	✓[4]	$$	◔	County
8	Examine crosswalks status: check placement and alignment	✓✓	$	◔	County
	Maintenance				
9	Inspect existing striping for wear and restripe accordingly; add RPMs where appropriate	✓✓	$	◔	County
10	Inspect and replace missing, faded, damaged or incorrect/outdated signage as needed (i.e. signs mounted below 7-ft, on non-breakaway posts or back-to-back signs that obscure shapes)	✓	$	◔	City/ County
11	Inspect drainage facilities; ensure they are free of debris	✓[4]	$$	◑	County
12	Clear vegetation on and along sidewalks	✓[4]	$	◔	County
13	Inspect retaining walls to see if they're structurally sound and what is their remaining lifespan	N/A	$$$	◕	County
14	Consider adding street trees along this corridor	N/A	$$	◑	City/ County
	Education				
15	Consider sidewalk, crosswalk, multimodal education campaign and code enforcement	✓[4]	$	◑	City/ County

The following site-specific recommendations are in addition to the corridor-wide improvements, except where noted otherwise. Of note, the improvements listed below were either recently completed or are proposed by the County at the time of the RSA.

Recent work

- Extra signage, 25MPH and curve ahead signs, rumble stripes and 25 MPH Slow pavement markings
- Center line rumble strips and RPM (Reflector pavement markings)
- Lighting upgraded to 400W fixtures (utility pole mounted fixtures)

2021 Projects

- Mill and pave Paterson Plank Road from Marshall Street in Hoboken to 14th Street Viaduct in Union City (includes use of High Friction Surface Treatment on curves)

[4] 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.

- Signal upgrades at S. Wing Viaduct (Package Y) with physical connection and coordination with Palisade Avenue

Table 5 – Site-Specific Recommendations

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
	S. Wing Viaduct (Manhattan Ave)				
16	Consider tightening southwestern curb radii to decrease turning travel speeds and increase safety for pedestrians	✓	**$**	◔	County
17	Consider corridor-wide recommendation 1, 6 and 8 regarding crosswalks, sidewalk and ADA compliance	✓✓✓[5]	**$$$**	◕	County
18	Investigate pavement markings for left turn lane channelization (i.e., more directional arrows and short dotted lines)	✓	**$**	◔	County
19	Consider evaluating and repairing signage to reduce clutter and overhangs into roadway	✓	**$**	◔	County
20	Consider relocating bus stops closer to intersections with more essentials, such as seating and shelter for transit users.	✓	**$**	◔	County/City /NJ Transit
21	Consider corridor-wide recommendation 2 regarding signal upgrades	✓✓	**$$$**	◕	County
	S. Wing Viaduct to Congress St				
22	Consider shifting the centerline east or adding edge lines to delineate shoulder/parking area	✓[5]	**$**	◔	County
23	Consider adding mid-block pedestrian crossing(s) with appropriate ramps, signing, striping, etc.	✓✓[5]	**$$**	◑	County
24	Investigate centerline rumble strips	✓✓✓	$$	◑	County
	Congress St (Access to HBLR 9th Street Station)				
25	Consider corridor-wide recommendation 1, 6 and 8 regarding crosswalks, sidewalk and ADA compliance	✓✓✓[5]	**$$$**	◕	County
26	Consider corridor-wide recommendation 2 regarding signal upgrades	✓✓	**$$$**	◕	County
27	Investigate a curb extension in the NW and SW corner	✓✓[5]	**$$**	◕	County
28	Determine if a Lead Pedestrian Interval (LPI) or pedestrian only phase at this intersection is feasible	✓	**$**	◑	County
29	Consider adding a crosswalk at southern leg of intersection (or install no pedestrian crossing signs)	✓✓	**$**	◔	County
30	Investigate re-routing the bus turn around route	N/A	**$$**	◕	NJ Transit
31	* Consider adding No Turn on Red signage for the southbound movement	✓[5]	**$**	◔	County

[5] 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
32	Consider a pedestrian (and bicyclist) education program	✓[5]	$	◑	City/ County
	Congress St to Mountain Rd				
33	Investigate whether a jersey barrier is feasible to physically separate traffic along Paterson Plank Road	✓✓✓[5]	$$$	◕	County
34	For the northernmost curve, consider installation of speed reduction markings per MUTCD Section 3B.22	✓[6]	$	◔	County
35	Consider revising misguided directional signs for pedestrian access to Mountain Road	✓[6]	$	◔	County
36	Investigate installing High Friction Surface Treatment (HFST) along the existing curves	✓	$	◔	County
37	Consider a pedestrian hawk signal to cross Paterson Plank Road from the Ogden Ave pedestrian path	✓✓	$$	◑	County
38	Explore upgrading the existing guide rail or replacing with a ½ jersey barrier	✓✓	$$$	◕	County
39	Consider installing a speed feedback sign	✓✓	$$	◑	County/ City
40	Investigate a mirror system for driveways backing into Paterson Plank Road to see oncoming traffic	N/A	$$	◕	Town
41	Consider corridor-wide recommendation 9 and 10 regarding pavement markings and signing	✓✓	$	◔	County
42	Consider corridor-wide recommendation 7 regarding bicycle safe inlet grates	✓[6]	$$	◔	County
43	Consider adding staircase from back of second street rail station to sidewalk	N/A	$$$	◕	NJ Transit
	Mountain Rd				
44	Consider widening the NB sidewalk where less than six feet provided	✓[6]	$	◔	County
45	Investigate adding overhead street name signs	✓[6]	$	◔	NJ Transit
46	Consider corridor-wide recommendation 1, 6 and 8 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓[6]	$$$	◕	County
47	Consider corridor-wide recommendation 2 regarding signal upgrades, including signal timings	✓✓	$$$	◕	NJ Transit
48	Consider corridor-wide recommendation 9 and 10 regarding pavement markings and signing	✓✓	$	◔	County
49	Investigate alignment of optically programmed signal heads and adjust as needed	✓	$$$	◕	NJ Transit
50	Explore installing a pedestrian crosswalk at the intersection's southern leg (or install no pedestrian crossing signs)	✓[6]	$	◔	NJ Transit
51	* Investigate conducting a road diet between Mountain Rd and Harrison St	✓✓	$$	◑	County/NJ Transit

[6] 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
	HBLR Crossing				
52	Investigate adding more concrete slabs at the HBLR crossing to increase pedestrian safety	✓	$$	◕	NJ Transit
53	Consider corridor-wide recommendation 1, 6 and 8 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓[6]	$$$	◕	NJ Transit
54	Consider corridor-wide recommendation 2 regarding signal upgrades, including audible pushbuttons and existing non-functioning pushbuttons	✓✓	$$$	◕	NJ Transit
55	Investigate alignment of optically programmed signal heads and adjust as needed	✓	$$$	◑	NJ Transit
56	Consider replacing the "Train Coming" blank-out signs with white LEDs to improve visibility	✓[8]	$$	◑	NJ Transit
57	Consider installing railroad crossing gates and lights for vehicles and pedestrians[7]	✓✓✓	$$$	◕	NJ Transit
58	Consider corridor-wide recommendation 9 and 10 regarding pavement markings and signing	✓✓	$	◔	County
59	* Consider adding near side "Train Coming" signals	✓[8]	$$	◑	NJ Transit
	1st Ave/Marshall St				
60	Consider corridor-wide recommendation 1, 6 and 8 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓[8]	$$$	◕	NJ Transit
61	Consider corridor-wide recommendation 2 regarding signal upgrades, including signal timings	✓✓	$$$	◕	NJ Transit
62	Investigate alignment of optically programmed signal heads and adjust as needed	✓	$$$	◑	NJ Transit
63	Consider replacing the "Train Coming" blank-out signs with white LEDs to improve visibility	✓[8]	$$	◑	NJ Transit
64	Investigate adding overhead street name signs	✓	$	◔	NJ Transit
65	Consider converting Marshall Street to one way (away) from Paterson Plank Road	✓[8]	$$	◕	NJ Transit/ City
	Harrison St				
66	Consider installing a pedestrian crosswalk at the intersection's northern leg (or install no pedestrian crossing signs)	✓[8]	$	◔	County
67	Consider corridor-wide recommendation 1, 6 and 8 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓[8]	$$$	◕	County
68	Consider corridor-wide recommendation 2 regarding signal upgrades, including signal timings	✓✓	$$$	◕	County
69	Consider corridor-wide recommendation 9 and 10 regarding pavement markings and signing	✓✓	$	◔	County

[7] Note that based on the 2019 DTM (see Appendix J), no recommendation was made to install these items.
[8] 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.

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 J.

C. Recommendation Visualizations

Examples of some of the site-specific and corridor-wide safety recommendations identified in Tables 4 and 5 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. These examples are meant to be generic and for informational purposes only.

1. Pedestrian Facilities

Curb extensions physically and visually 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.

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, as well as current and future pedestrian demand.

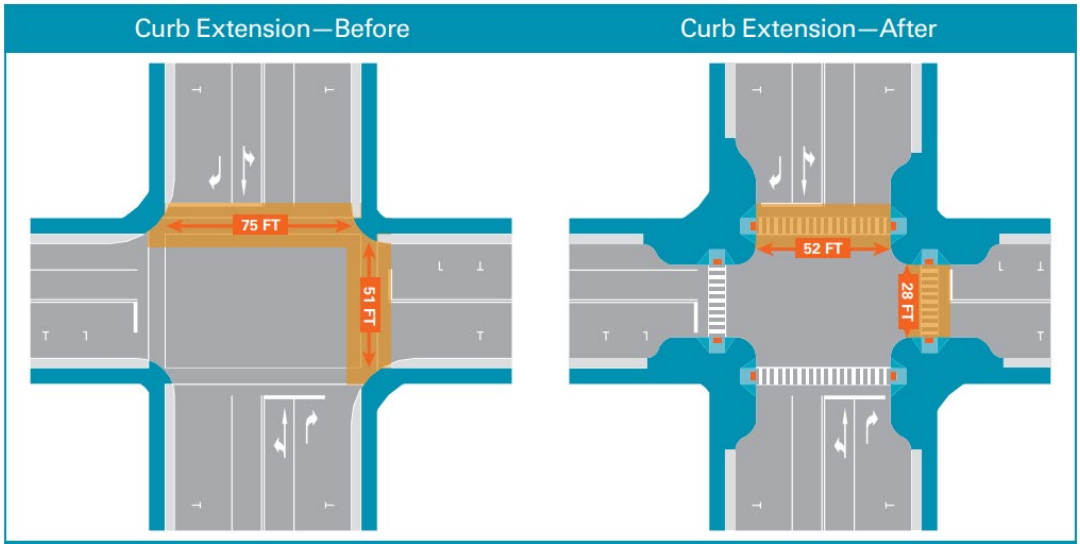


Figure 11 – Intersection Curb Extension Example (Source: CSDG)

Top: Curb Extension. Bottom: Midblock Curb Extension with Raised Crosswalk. (Source: CSDG)

Figure 12 – Midblock Curb Extension Example (Source: CSDG)

The design of driveways should provide a continuous and level pedestrian path across the vehicular zone, encouraging drivers to stop for pedestrians on the sidewalk. Driveways should not be designed where the sidewalk is interrupted by the driveway.

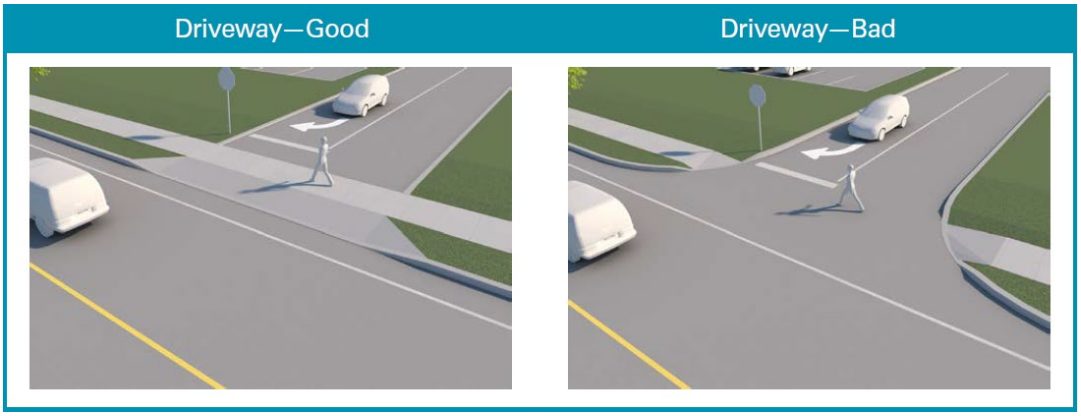


Figure 13 – Sidewalk and Driveways (Source: CSDG)

2. Light Rail Crossings

Light Rail Vehicle (LRV) crossings through intersections are frequent and occur in a wide variety of alignment configurations and operating environments. Traffic control signals may be used instead of flashing-light signals/gates at highway-light rail grade crossings within highway-highway intersections where LRV speeds do not exceed 35 mph[9]. Crossings can use active traffic control devices, where once a train is detected, advance notice (or "warning time") is given to road users to clear the tracks in advance of the train's arrival. Active control devices must activate and operate in a logical sequence, which may include "preemption" of traffic signals to clear vehicles and pedestrians from the crossing, as well as activation of flashing-light devices, gates, or blank-out signs[10].

[9] FHWA. Manual on Uniform Traffic Control Devices (MUTCD), Section 8C.05. 2009 Edition with May 2012 Revisions.
[10] FHWA. Highway-Rail Crossing Handbook, 3rd Edition. July 2019. (Report No. FHWA-SA-18-040/FRA-RRS-18-001.)

Excessive warning time has been determined to be a contributing factor in some crashes. Motorists stopped at an activated flashing-light signal that see no train approaching or see a distant train moving very slowly might ignore the warning signals and cross the tracks[10]. This was observed at the HBLR crossing as noted in Section IV of this report.

Figure 14 – Light Rail Crossing Examples
Top: LRV Crossing with flashing-light signals/gates (Source: LA Metro Light Rail).
Bottom: HBLR crossing signal at Paterson Plank Road (Source: Corey Best).

VI. Conclusions

The Paterson Plank Road RSA was conducted to identify safety issues and corresponding countermeasures that compromise the multimodal nature of this 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 road users. Some of the strategies identified can be implemented through routine maintenance; however, 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 and the Towards Zero Deaths vision.

APPENDIX A

RSA TEAM

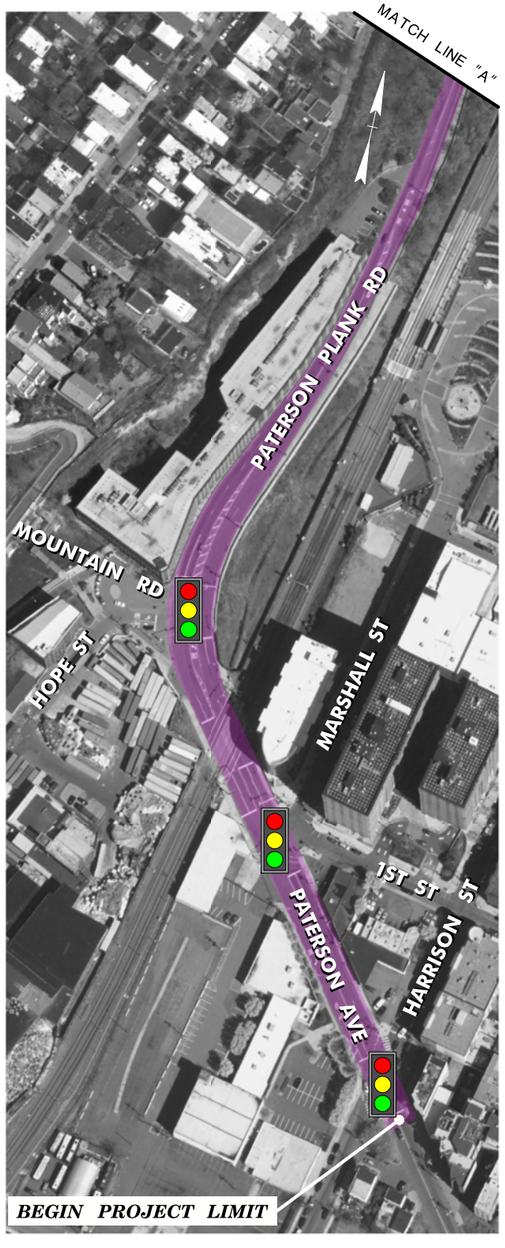
Audit Team

Name	Agency	Online Pre-Audit	Field Visit
Tom Malavasi	Hudson County Engineering	X	X
Jose Sieira	Hudson County Engineering	X	X
Joseph Glembocki	Hudson County Engineering	X	
Sean Keating	Hudson County Engineering	X	
Byron Nicholas	Hudson County Engineering	X	X
Kevin Force	Hudson County Planning	X	X
Lt. Luigi DeCecco	Hudson County Sheriff's Office	X	X
Elias Guseman	Jersey City Planning	X	X
Tanya Marione	Jersey City	X	
James Massaro	Union City Engineering (Maser Consulting)	X	X
Kimberli Craft	Hoboken City Engineering	X	
Kate Hester	Hudson TMA		X
Elmira Buongiorno	NJ Transit, Bus Operations	X	X
Rich Koch	Doric Apartments, VP Board of Directors		X
Daniel Perez	Hoboken Housing Authority	X	
Marc Recko	Hoboken Housing Authority	X	
Keith Skilton	FHWA	X	
Grace Faughnan	NJDOT – BSBPP	X	X
Yuriy Assekritov	NJDOT – BSBPP	X	X
Virgilio Tan	NJDOT – BSBPP	X	
Reba Oduro	NJDOT – BSBPP	X	
Mohammad A. Islam	NJDOT – BSBPP	X	X
Peter Boulos	NJDOT – Bureau of Traffic Engineering	X	X
Sasha Frimpong	NJTPA	X	
Aimee Jefferson	NJTPA	X	
Bernie Boerchers	Greenman-Pedersen, Inc. (NJDOT Consultant)	X	X
Andrew Halloran	Greenman-Pedersen, Inc.	X	X
Aidan Sheehan	Greenman-Pedersen, Inc.	X	X
Julia Steponanko	Greenman-Pedersen, Inc.	X	X

BSBPP – Bureau of Safety, Bicycle and Pedestrian Programs

APPENDIX B

AREA MAP



LEGEND

SIGNALIZED INTERSECTION

PROJECT CORRIDOR

NJDOT HSIP – ROAD SAFETY AUDIT
PATERSON PLANK ROAD (CR 681)

HOBOKEN, JERSEY CITY AND UNION CITY
HUDSON COUNTY

PROJECT LOCATION

GPI Engineering Design Planning Construction Management

N.T.S.

APPENDIX C

TRAFFIC DATA

New Jersey Department of Transportation

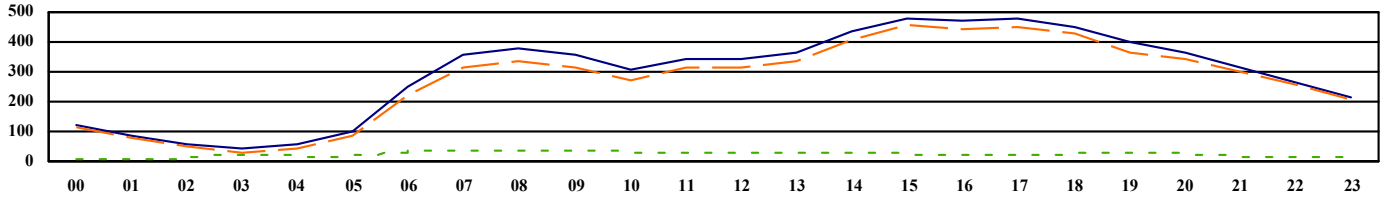
24 Hour Directional Summary, North Bound for Mar 20, 2017

110943, , Paterson-Plank Road-1.51, 09000681__, Jersey City
FC16 HUDSON County

Bet Congress St and Wing Viaduct

	Total	Total	Peak	Peak
Private:	6,402.9	92.0	454.3	95.4
Single:	451.4	6.5	18.5	3.9
Combo:	23.8	0.3	1.0	0.2
Trucks:	475.2	6.8	19.5	4.1
Total:	6,959.9		476.3	

Peak Hour: 15
Axle Factor: 0.99



	VOL	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+
0	119.3	1.0	99.5	10.8	0.3	3.5	3.8	0	0.5	0	0	0	0	0
1	83.0	0	69.5	6.5	0.3	4.0	2.5	0	0	0.3	0	0	0	0
2	55.8	0	43.3	5.3	0	2.3	2.8	0	2.0	0.3	0	0	0	0
3	43.3	0.5	24.5	2.5	0	8.3	6.0	0	1.0	0.5	0	0	0	0
4	55.8	0	36.3	6.5	1.3	3.5	5.3	0	2.5	0.5	0	0	0	0
5	97.3	0.3	67.0	13.0	2.3	7.0	6.5	0	0.8	0.5	0	0	0	0
6	244.0	0	189.7	28.0	3.0	18.3	4.3	0	0	0.7	0	0	0	0
7	353.7	1.7	279.7	30.0	7.7	28.0	5.3	0.3	0	1.0	0	0	0	0
8	375.7	0.3	287.7	42.3	11.7	28.0	4.7	0	0	0.7	0	0	0	0.3
9	351.7	0.3	268.7	40.7	11.3	18.7	9.7	0.7	0.3	1.3	0	0	0	0
10	302.7	0.7	220.7	48.7	3.7	18.7	8.7	0	0	1.7	0	0	0	0
11	339.0	0	255.0	56.7	3.0	17.7	5.7	0	0	1.0	0	0	0	0
12	343.0	0.8	269.8	42.5	2.8	18.5	6.5	0.5	0.8	0.8	0.3	0	0	0
13	358.0	0.5	279.5	49.3	2.5	20.8	4.3	0	0	1.0	0.3	0	0	0
14	432.0	0.5	341.0	62.8	3.3	20.5	2.3	0	0	1.8	0	0	0	0
15	476.3	1.0	385.5	67.8	2.5	15.0	3.3	0.3	0.3	0.8	0	0	0	0
16	466.8	1.0	384.5	57.5	4.8	16.3	1.8	0	0.5	0.5	0	0	0	0
17	474.3	1.8	404.3	43.8	5.3	18.5	0.8	0	0	0	0	0	0	0
18	445.5	3.0	387.8	32.3	3.3	18.3	0.3	0	0.8	0	0	0	0	0
19	395.5	1.5	333.5	29.5	3.5	26.5	1.0	0	0	0	0	0	0	0
20	358.3	1.5	308.8	26.5	4.8	15.5	1.3	0	0	0	0	0	0	0
21	310.3	0.8	270.0	24.3	2.0	12.3	1.0	0	0	0	0	0	0	0
22	264.8	2.0	234.0	16.3	1.5	9.3	1.5	0	0	0.3	0	0	0	0
23	214.5	1.5	181.0	18.5	1.5	8.5	3.3	0	0.3	0	0	0	0	0
Total	**6,959.9**	**20.5**	**5,620.8**	**761.6**	**81.8**	**357.6**	**92.1**	**1.8**	**9.6**	**13.3**	**0.5**	**0**	**0**	**0.3**
%	**100.0**	**0.3**	**80.8**	**10.9**	**1.2**	**5.1**	**1.3**	**0**	**0.1**	**0.2**	**0**	**0**	**0**	**0**

New Jersey Department of Transportation

Daily Volume from 03/20/2017 through 03/24/2017

Site Names: 110943, , Paterson-Plank Road-1.51, 09000681__, Jersey City
County: HUDSON
Funct. Urban Minor Arterial
Location: Bet Congress St and Wing Viaduct

Seasonal Factor Group: RG1_FC16
Daily Factor Group: RG1_FC16
Axle Factor Group: RG1_FC16
Growth Factor Group: RG1_FC16

	Sun 03/19/2017			Mon 03/20/2017			Tue 03/21/2017			Wed 03/22/2017			Thu 03/23/2017			Fri 03/24/2017			Sat 03/25/2017		
	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N
00:00							233	125	108	213	107	106	218	113	105	301	143	158			
01:00							133	58	75	152	64	88	152	76	76	172	78	94			
02:00							84	32	52	100	46	54	92	47	45	135	63	72			
03:00							77	38	39	71	38	33	89	42	47	98	44	54			
04:00							121	74	47	120	63	57	115	59	56	139	76	63			
05:00							253	151	102	249	145	104	229	144	85	250	152	98			
06:00							547	319	228	565	300	265	555	316	239						
07:00							797	453	344	809	449	360	830	473	357						
08:00							800	420	380	811	432	379	803	434	369						
09:00							758	422	336	760	386	374	744	399	345						
10:00							696	377	319	687	396	291	658	359	299						
11:00							650	321	329	696	357	339	704	354	350						
12:00				698	352	346	689	349	340	683	342	341	706	359	347						
13:00				709	341	368	680	335	345	722	357	365	731	377	354						
14:00				860	402	458	842	409	433	804	378	426	792	381	411						
15:00				896	456	440	882	415	467	950	445	505	918	423	495						
16:00				895	431	464	938	459	479	892	423	469	905	445	460						
17:00				931	467	464	879	429	450	966	495	471	989	475	514						
18:00				834	419	415	910	460	450	898	455	443	971	496	475						
19:00				717	343	374	796	388	408	782	405	377	806	383	423						
20:00				672	300	372	654	310	344	681	335	346	735	364	371						
21:00				514	239	275	621	301	320	569	268	301	647	302	345						
22:00				417	183	234	508	232	276	487	227	260	580	290	290						
23:00				295	131	164	361	157	204	359	154	205	477	191	286						
Volume				8,438	4,064	4,374	13,909	7,034	6,875	14,026	7,067	6,959	14,446	7,302	7,144	1,095	556	539			
AM Peak Vol							800	453	380	811	449	379	830	473	369						
AM Peak Fct							1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
AM Peak Hr							8:00	7:00	8:00	8:00	7:00	8:00	7:00	7:00	8:00						
PM Peak Vol				931	467	464	938	460	479	966	495	505	989	496	514						
PM Peak Fct				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
PM Peak Hr				17:00	17:00	16:00	16:00	18:00	16:00	17:00	17:00	15:00	17:00	18:00	17:00						
Seasonal Fct				0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998			
Daily Fct				0.942	0.942	0.942	0.871	0.871	0.871	0.855	0.855	0.855	0.853	0.853	0.853	0.900	0.900	0.900			
Axle Fct				0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500			
Pulse Fct				2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000			

Collected NJDOT
Created 09/07/2017 2:49:28PM

ROAD AADT 12,238 **S AADT 6,168** **N AADT 6,070**

New Jersey Department of Transportation

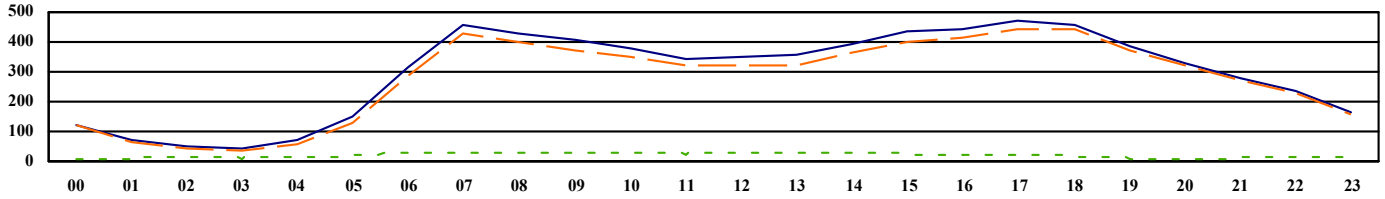
24 Hour Directional Summary, South Bound for Mar 20, 2017

110943, , Paterson-Plank Road-1.51, 09000681__, Jersey City
FC16 HUDSON County

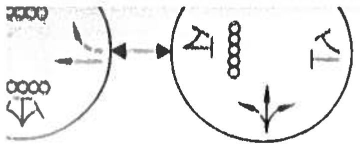
Bet Congress St and Wing Viaduct

	Total	Total	Peak	Peak
Private:	6,588.4	93.2	440.8	94.7
Single:	354.9	5.0	17.8	3.8
Combo:	15.9	0.2	0.5	0.1
Trucks:	370.8	5.2	18.3	3.9
Total:	7,068.8		465.3	

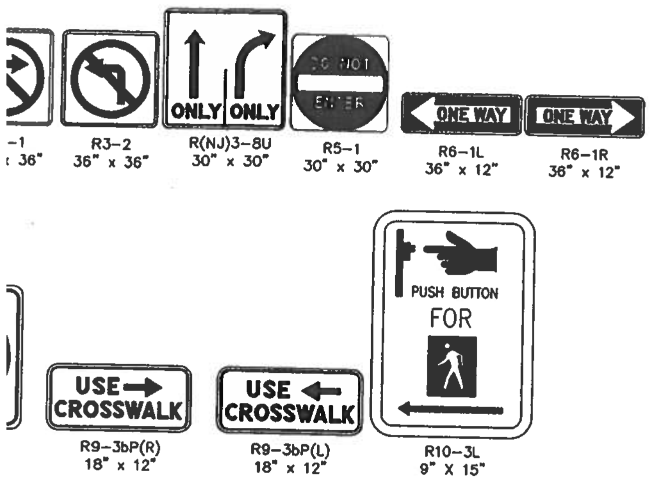
Peak Hour: 17
Axle Factor: 0.99



	VOL	MC	CAR	PU	BUS	2D	SU 3	SU 4+	ST 4-	ST 5	ST 6+	MT 5-	MT 6	MT 7+
0	122.0	0	100.0	15.5	0.3	4.0	2.0	0	0	0.3	0	0	0	0
1	68.5	0.3	53.0	8.0	0.5	4.3	2.5	0	0	0	0	0	0	0
2	47.0	0	33.0	3.8	0.8	4.5	5.0	0	0	0	0	0	0	0
3	40.5	0.3	29.5	3.5	1.3	2.0	3.5	0	0	0.5	0	0	0	0
4	68.0	0.3	45.3	6.8	3.3	4.8	7.5	0	0	0.3	0	0	0	0
5	148.0	1.8	102.8	24.0	5.3	8.8	5.0	0	0	0.5	0	0	0	0
6	311.0	3.7	232.0	48.0	4.7	13.0	6.3	1.7	0	1.7	0	0	0	0
7	457.0	2.7	365.7	53.7	6.7	19.0	5.3	2.0	1.0	0.7	0.3	0	0	0
8	427.0	4.3	340.3	53.3	5.7	16.0	4.7	2.0	0	0.7	0	0	0	0
9	401.7	3.0	312.7	56.0	6.0	17.7	4.0	1.7	0	0.7	0	0	0	0
10	376.3	3.7	285.3	57.7	5.7	14.3	6.3	2.3	0.3	0.7	0	0	0	0
11	343.0	3.0	259.7	54.0	4.3	12.0	6.0	2.3	0.7	0.7	0.3	0	0	0
12	348.5	0.8	269.0	51.8	4.5	15.5	3.5	2.0	0.5	1.0	0	0	0	0
13	351.3	1.5	265.8	52.0	7.0	16.8	3.5	3.5	0.8	0.5	0	0	0	0
14	391.5	2.3	300.8	56.8	8.5	17.5	2.5	2.3	0.3	0.8	0	0	0	0
15	433.0	2.5	342.5	54.5	13.3	15.5	2.5	1.3	0	1.0	0	0	0	0
16	437.3	4.3	349.3	56.0	8.5	16.3	2.8	0	0	0.3	0	0	0	0
17	465.3	1.3	391.3	48.3	6.3	16.8	1.0	0	0	0.5	0	0	0	0
18	456.8	1.0	398.8	40.3	6.0	9.8	1.0	0	0	0	0	0	0	0
19	379.8	0.8	330.0	37.8	3.5	7.5	0.3	0	0	0	0	0	0	0
20	327.0	0.5	288.5	27.3	3.3	6.8	0.5	0	0	0.3	0	0	0	0
21	277.5	1.0	242.3	26.8	2.3	4.3	0.8	0	0	0.3	0	0	0	0
22	232.8	0.3	202.3	21.0	0.8	4.8	3.3	0	0	0.5	0	0	0	0
23	158.3	0.8	137.0	16.0	1.5	1.0	1.8	0	0	0.3	0	0	0	0
Total	**7,068.8**	**39.6**	**5,676.4**	**872.4**	**109.5**	**252.5**	**81.4**	**21.0**	**3.5**	**11.8**	**0.7**	**0**	**0**	**0**
%	**100.0**	**0.6**	**80.3**	**12.3**	**1.5**	**3.6**	**1.2**	**0.3**	**0**	**0.2**	**0**	**0**	**0**	**0**



SIGN LEGEND



Paterson Ave

SIGN A 66" x 18"
(DOUBLE SIDED)

Harrison St

SIGN B 60" x 18"
(DOUBLE SIDED)

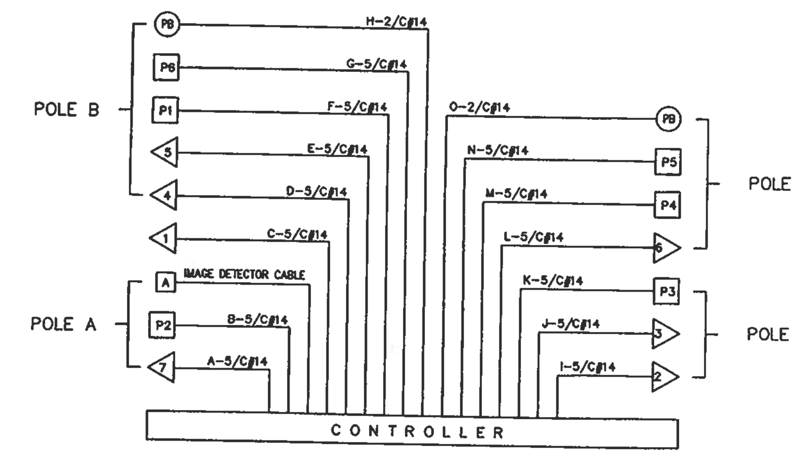
NOTES

1. STREET NAME SIGNS SHALL BE DOUBLE-SIDED WITH WHITE LEGEND ON GREEN BACKGROUND.
2. STREET NAMES: 10" UC AND 7" LC, "Ave/St" 5" UC AND 3.75" LC, LETTER D.

PAVEMENT STRIPING LEGEND

UNLESS OTHERWISE SHOWN, STRIPING SHALL BE EXTRUDED THERMOPLASTIC AND CONFORM TO THE FOLLOWING:

PAVEMENT STRIPING	DESCRIPTION	LEGEND
STOP LINE	24" WIDE SOLID WHITE	SL
SOLID LANE LINE	8" WIDE WHITE	SLL
CENTER LINE	2-4" WIDE YELLOW SEPARATED 6"	CL
CROSSWALK HATCH LINE	24" WIDE WHITE, 10' LINES 3' INTERVAL SPACING	CWHL
DASHED LANE LINE	4" WIDE SOLID WHITE, 10' LONG, 30' SPACE	DLL



BLOCK WIRING DIAGRAM

ES:

RAFFIC CONTROL DEVICES SHALL CONFORM WITH THE MANUAL ON UNIFORM C CONTROL DEVICES, LATEST EDITION (M.U.T.C.D.). SIGN SIZES SHALL RM WITH THOSE SPECIFIED IN M.U.T.C.D. UNLESS OTHERWISE SPECIFIED ON PLANS.

BRANCHES SHALL BE TRIMMED AS NECESSARY AT THE DIRECTION OF THE ER.

ATION LAYOUT SHALL BE APPROVED IN THE FIELD BY THE ENGINEER TO INSTALLATION.

UMINUM ALLOY SIGNAL STANDARDS SHALL BE A MINIMUM OF 32 INCHES FACE OF CURB TO CENTER OF STANDARD. ALL STEEL SIGNAL ARDS SHALL BE A MINIMUM OF 5' FROM FACE OF CURB TO CENTER OF ARD. ONE FACE OF THE BASE SHALL BE SET PARALLEL TO CURB FACE.

C SIGNAL HEADS 1-7 TO BE MOUNTED AT A MIN. HEIGHT OF 15'-6". RIAN SIGNAL HEADS P1 – P6 TO BE MOUNTED AT 10 FT.

ODING TO CONFORM WITH CURRENT STANDARDS IN USE BY THE COUNTY SON.

, INSULATED (COLORED GREEN) GROUND WIRE SHALL BE INSTALLED UOUS THROUGHOUT THE TRAFFIC SIGNAL SYSTEM AND SECURED TO ALL RODS, CABINETS, AND TRAFFIC SIGNAL BASES.

ACTOR SHALL COORDINATE AND OBTAIN ELECTRICAL SERVICE FOR THE ECTION.

NG LOCATIONS FOR THE IMAGE DETECTORS SHALL BE DETERMINED BY NUFACTURER'S REPRESENTATIVE TO ASSURE PROPER OPERATION.

HALL BE PAINTED YELLOW 25' FROM THE NEAREST CROSSWALK OR TO EXISTING, WHICH EVER IS GREATER.

STING SIGNING AND STRIPPING IN CONFLICT WITH PROPOSED SIGNING AND G SHALL BE REMOVED PRIOR TO PLACEMENT OF PROPOSED SIGNING AND G.

CTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR ALLATION OF SIGNS AND FOUNDATIONS.

SIGNAL TIMING CHART

WITHOUT PEDESTRIAN ACTUATION

	Vehicle Indications		Pedestrian Indications		
	1-5	6,7	P1-P4	P5,P6	Period 1
Phase 1					
Paterson Avenue R.O.W.	G	R	M	H	65 – 52
Pedestrian Clearance	G	R	FH	H	16
Change	Y	R	H	H	3*
Clearance	R	R	H	H	3
Phase 2					
Harrison Street R.O.W.	R	G	H	H	7 – 20
Change	R	Y	H	H	3
Clearance	R	R	H	H	3

PEDESTRIAN ACTUATED

	Vehicle Indications		Pedestrian Indications		
	1-5	6,7	P1-P4	P5,P6	Period 1
Phase 1					
Paterson Avenue R.O.W.	G	R	M	H	52
Pedestrian Clearance	G	R	FH	H	16
Change	Y	R	H	H	3*
Clearance	R	R	H	H	3
Phase 2					
Harrison Street R.O.W.	R	G	H	M	5
Pedestrian Clearance	R	G	H	FH	15
Change	R	Y	H	H	3
Clearance	R	R	H	H	3

Pedestrian timing only used when push button is actuated

* An offset of zero (0) seconds is measured from the beginning of Phase 1 yellow to the beginning of Phase 1 yellow at the intersection of Paterson Plank Road and Jackson Street.

	1-5	6,7	P1-P4	P5,P6	Period 1
EMERGENCY FLASH	Y	R	DARK	DARK	50-60/min.

Notes for Full Actuation
1) The controller is to maintain a 100 second background cycle.
2) Non-locking detection memory shall be used
3) Vehicle extension set at 2.0 seconds
4) Manual control is to be disconnected
5) Controller to skip phases not called
6) Controller shall rest in Phase 1 (Paterson Avenue) ROW, M
7) Pedestrian recall shall occur 7:00AM – 7:00PM, Monday through Friday.
8) The termination of EMERGENCY FLASH shall occur at the beginning of Phase 1 green
Time of day Operation
Period 1 timing shall occur all times

SHEET QUANTITIES

PAY ITEM NO.	ITEM	UNIT	QUANTITY
28	TRAFFIC MARKINGS, LINES, LONG LIFE, THERMOPLASTIC	LF	3,968
29	TRAFFIC MARKINGS, SYMBOLS, LONG LIFE, THERMOPLASTIC	SF	76
30	REMOVAL OF TRAFFIC STRIPES AND MARKINGS	LF	3,968
31	REMOVAL OF TRAFFIC MARKINGS, SYMBOLS	SF	76
32	REGULATORY AND WARNING SIGN	SF	67
33	MAST ARM SIGNS	SF	49
34	2" RIGID METALLIC CONDUIT	LF	30
35	3" RIGID METALLIC CONDUIT	LF	360
37	18" X 36" JUNCTION BOX	U	5
38	FOUNDATION, TYPE SFT	U	2
39	FOUNDATION, TYPE P	U	1
41	FOUNDATION, TYPE SFK	U	2
43	GROUND WIRE, NO. 8 AWG	LF	450
44	SERVICE WIRE, NO. 6 AWG	LF	150
45	CONTROLLER, 8 PHASE	U	1
46	TRAFFIC SIGNAL STANDARD, ALUMINUM	U	4
48	TRAFFIC SIGNAL MAST ARM, ALUMINUM	U	4
49	TRAFFIC SIGNAL CABLE, 2 CONDUCTOR #14 AWG	LF	270
50	TRAFFIC SIGNAL CABLE, 5 CONDUCTOR #14 AWG	LF	1,970
52	TRAFFIC SIGNAL HEAD	U	7
53	PEDESTRIAN SIGNAL HEAD	U	6
54	PUSH BUTTON	U	2
55	IMAGE DETECTOR	U	1
56	IMAGE DETECTOR CONTROLLER	U	1
58	TRAFFIC PAINT, CURB	LF	300

SCALE IN FEET
20' 10' 0 20' 40'

HUDSON COUNTY DRAWING NO. 3082B

COUNTY OF HUDSON

PATERSON AVENUE AND HARRISON STREET
CITY OF HOBOKEN

TRAFFIC SIGNAL ELECTRICAL PLAN

DIVISION OF ENGINEERING
595 COUNTY AVENUE
SECAUCUS, N.J. 07094

SURVEYED BY | CHECKED BY B.P.K. | PLOTTED BY | DRAWN BY J.L. | SCALE 1"=20' | DATE NOVEMBER 1, 2012

DRAWING NO. EL-16 SHEET 32 OF 67

T&M ASSOCIATES
EDWARD R. KLUMP, P.E.
NJ LIC. NO. GE37497 DATE 11/12/12

REVISIONS

EL-TP-Pater Harri.dwg Nov 09, 2012 - 9:45am

TRAFFIC SIGNAL TIMING SCHEDULE

REVISED: 09-25-00

PATERSON PLANK ROAD AT CONGRESS STREET

VEHICLE ACTUATION

Phase	1-2	3-4	5-6	P1-P2	P3-P4	TIME (Seconds)
1. Paterson Plank Rd. NB Left ROW	G<---/G	R	R	DW	DW	7
1. Clearance	Y<---	R	R	DW	DW	3
2. Paterson Plank Rd. ROW	G	G	R	DW	W	30-55
2. Pedestrian Clearance	G	G	R	DW	FDW	15
2. Change	Y	Y	R	DW	DW	3
2. Clearance	R	R	R	DW	DW	2
3. Congress Street ROW	R	R	G	DW	DW	35-10
3. Change	R	R	Y	DW	DW	3
3. Clearance	R	R	R	DW	DW	2

PEDESTRIAN ACTUATION

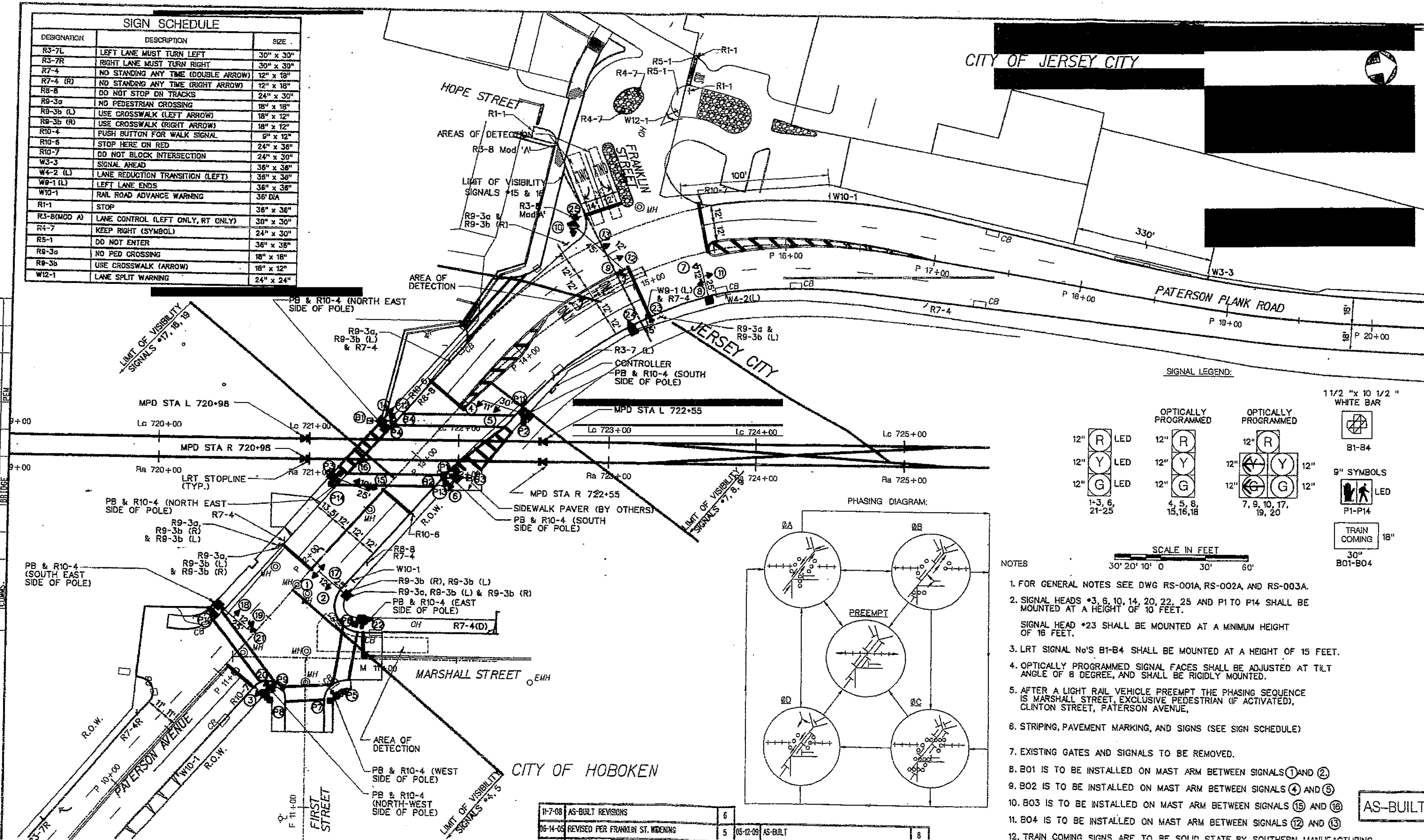
Phase	1-2	3-4	6-7	P1-P2	P3-P4	TIME (Seconds)
1. Paterson Plank Rd. NB Left ROW	G<---/G	R	R	DW	DW	7
1. Clearance	Y<---	R	R	DW	DW	3
2. Paterson Plank Rd. ROW	G	G	R	DW	W	35
2. Pedestrian Clearance	G	G	R	DW	FDW	15
2. Change	Y	Y	R	DW	DW	3
2. Clearance	R	R	R	DW	DW	2
3. Congress Street ROW	R	R	G	W	DW	20
3. Pedestrian Clearance	R	R	G	FDW	DW	10
3. Clearance	R	R	Y	DW	DW	3
3. Chance	R	R	R	DW	DW	2

NOTES

1. CONTROLLER TO BE 3 PHASE FULL ACTUATED.
2. ADVANCE DETECTOR ON PHASE 3 TO HOLD CALL FOR 3 SECONDS.
3. DETECTORS TO OPERATE IN NON-LOCKING (PRESENCE) MODE.
4. PUSH BUTTONS TO CALL PHASE 3.

SIGN SCHEDULE

DESIGNATION	DESCRIPTION	SIZE
R3-7L	LEFT LANE MUST TURN LEFT	30" x 30"
R3-7R	RIGHT LANE MUST TURN RIGHT	30" x 30"
R7-4	NO STANDING ANY TIME (DOUBLE ARROW)	12" x 18"
R7-4 (R)	NO STANDING ANY TIME (RIGHT ARROW)	12" x 18"
R8-8	DO NOT STOP ON TRACKS	24" x 30"
R9-3a	NO PEDESTRIAN CROSSING	18" x 18"
R9-3b (L)	USE CROSSWALK (LEFT ARROW)	18" x 12"
R9-3b (R)	USE CROSSWALK (RIGHT ARROW)	18" x 12"
R10-4	PUSH BUTTON FOR WALK SIGNAL	9" x 12"
R10-6	STOP HERE ON RED	24" x 36"
R10-7	DO NOT BLOCK INTERSECTION	24" x 30"
W3-3	SIGNAL AHEAD	36" x 36"
W4-2 (L)	LANE REDUCTION TRANSITION (LEFT)	36" x 36"
W9-1 (L)	LEFT LANE ENDS	36" x 36"
W10-1	RAIL ROAD ADVANCE WARNING	36" DIA
R1-1	STOP	36" x 36"
R3-8(MOD A)	LANE CONTROL (LEFT ONLY, RT ONLY)	30" x 30"
R4-7	KEEP RIGHT (SYMBOL)	24" x 30"
R5-1	DO NOT ENTER	36" x 36"
R9-3a	NO PED CROSSING	18" x 18"
R9-3b	USE CROSSWALK (ARROW)	18" x 12"
W12-1	LANE SPLIT WARNING	24" x 24"



NOTES

1. FOR GENERAL NOTES SEE DWG RS-001A, RS-002A, AND RS-003A.
2. SIGNAL HEADS #3, 6, 10, 14, 20, 22, 25 AND P1 TO P14 SHALL BE MOUNTED AT A HEIGHT OF 10 FEET.

   SIGNAL HEAD #23 SHALL BE MOUNTED AT A MINIMUM HEIGHT OF 16 FEET.
3. LRT SIGNAL No'S B1-B4 SHALL BE MOUNTED AT A HEIGHT OF 15 FEET.
4. OPTICALLY PROGRAMMED SIGNAL FACES SHALL BE ADJUSTED AT TILT ANGLE OF 8 DEGREE, AND SHALL BE RIGIDLY MOUNTED.
5. AFTER A LIGHT RAIL VEHICLE PREEMPT THE PHASING SEQUENCE IS MARSHALL STREET, EXCLUSIVE PEDESTRIAN (IF ACTIVATED), CLINTON STREET, PATERSON AVENUE.
6. STRIPING, PAVEMENT MARKING, AND SIGNS (SEE SIGN SCHEDULE)
7. EXISTING GATES AND SIGNALS TO BE REMOVED.
8. B01 IS TO BE INSTALLED ON MAST ARM BETWEEN SIGNALS (1) AND (2).
9. B02 IS TO BE INSTALLED ON MAST ARM BETWEEN SIGNALS (4) AND (5)
10. B03 IS TO BE INSTALLED ON MAST ARM BETWEEN SIGNALS (15) AND (16)
11. B04 IS TO BE INSTALLED ON MAST ARM BETWEEN SIGNALS (12) AND (13)
12. TRAIN COMING SIGNS ARE TO BE SOLID STATE BY SOUTHERN MANUFACTURING 501 HERNDON AVE. ORLANDO, FL. 32803 TEL.: 407-894-8851.

AS-BUILT

DATE	REVISIONS	No.
02-06-09	ISSUE CONSTRUCTION: ADDED TRAIN COMING SIGN	7
05-12-09	AS-BUILT	8
11-7-08	AS-BUILT REVISIONS	6
06-14-05	REVISED PER FRANKLIN ST. WIDENING	5
10-31-05	AS-BUILT INCORP. SIG-04-011 & NJDOT COMMENTS	4
11-26-03	REVISED PER NJDOT COMMENTS	3
09-11-03	REVISION	2
11-21-02	REVISED NOTE #2	1
09-18-02	FOR CONSTRUCTION	0

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

DESIGNED: C. BROOY
DRAWN: Y. MEHDIZADEH
CHECKED: S. JAMES
APPROVED: R. BONCICH

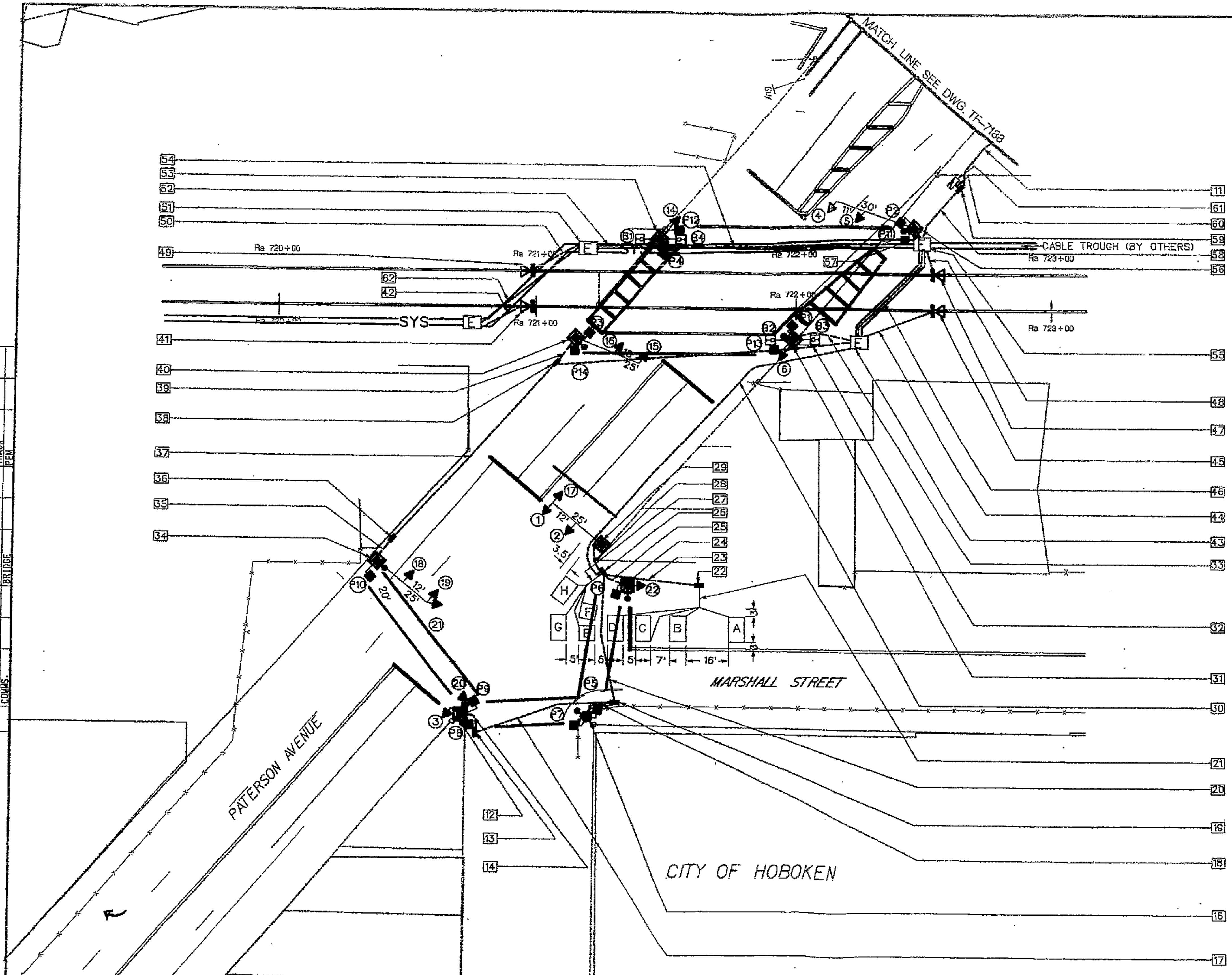
CHOKSHI VASANT
PROFESSIONAL ENGINEER
N.J. LIC. No. GE35630

DATE:

HUDSON - BERGEN LIGHT RAIL TRANSIT SYSTEM

PATERSON AVENUE / PATERSON PLANK ROAD AND LRT CROSSING TRAFFIC SIGNAL PLAN

SCALE: 1"=30'-0"
FILE NAME: N1TF7186_R8.DGN
DRAWING No.: TF-7186
REV: 8
DATE: 12 MAY 2009
CONTRACT No. 96CT001
ISSUE: AS-BUILT
SHEET No. ___ OF ___



NOTES:

1. FOR BLOCK WIRING DIAGRAM AND LOOP SCHEDULE SEE DWG. TF-7189.
2. FOR ELECTRICAL NOTES SEE DWG. TF-7190.
3. FOR TRAIN COMING SIGNS SEE TF-7186 REV:8.

SCALE IN FEET
20' 10' 0 20' 40'

AS-BUILT

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

DATE	REVISIONS	No.
05-12-09	AS-BUILT	3
02-06-09	ISSUE CONSTRUCTION: ADDED TRAIN COMING SIGNS	2
10-31-05	AS-BUILT INCORP. SIG-04-011	1
09-18-02	FOR CONSRUCTION	0

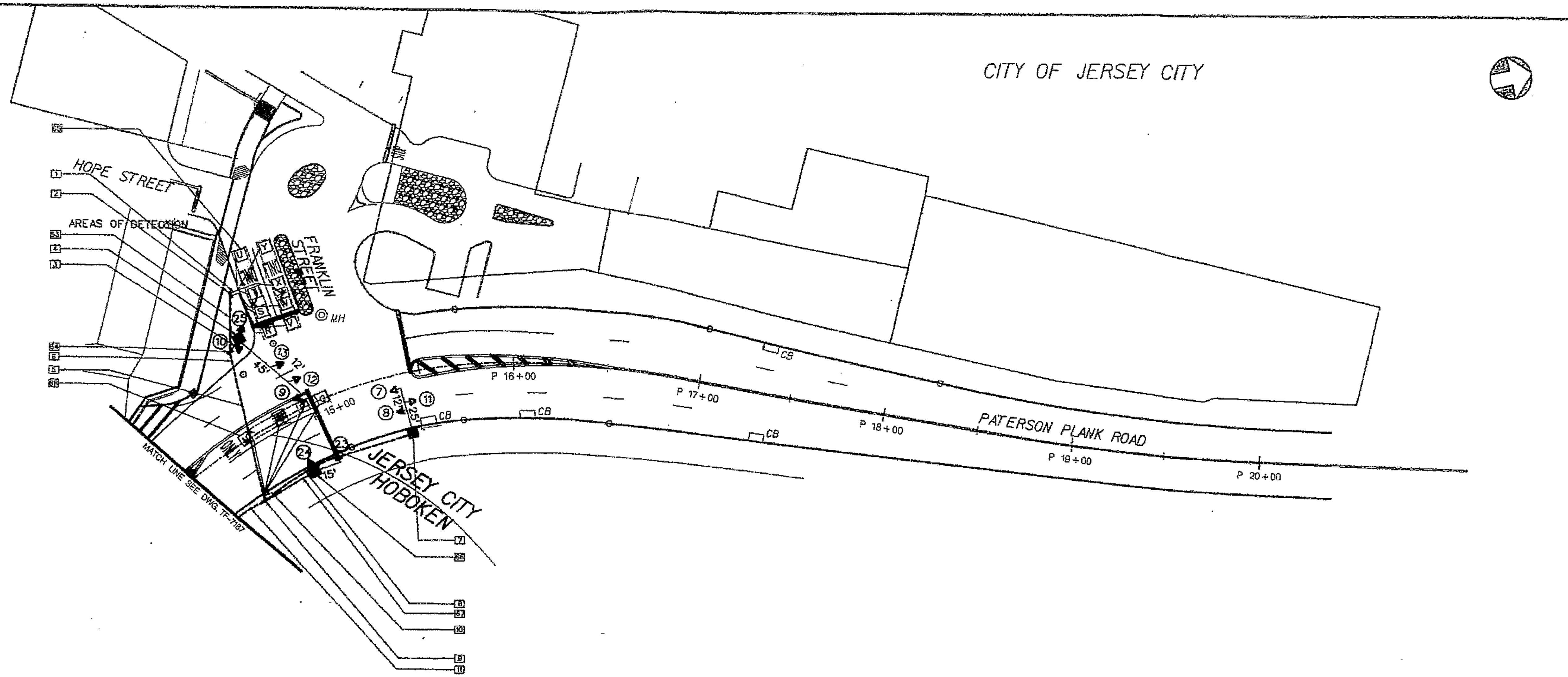
DESIGNED: C. BRODY
DRAWN: Y. MEHDIZADEH
CHECKED: S. JAMES
APPROVED: R. BONCICH

CHOKSHI VASANT
PROFESSIONAL ENGINEER
N.J. LIC. No. GE35630
DATE:

HUDSON – BERGEN
LIGHT RAIL TRANSIT
SYSTEM

PATERSON AVENUE /
PATERSON PLANK ROAD /
AND LRT CROSSING
ELECTRICAL PLANS
SHEET 1 OF 4

SCALE: 1"=20'-0"
FILE NAME: NTTF7187_RS.DGN
DRAWING No.: TF-7187
REV: 3
DATE: 12 MAY 2009
CONTRACT No. 96C1001
[redacted]
ISSUE
AS-BUILT
SHEET No.
— OF —



NOTES:

1. FOR BLOCK WIRING DIAGRAM AND LOOP SCHEDULE SEE DWG. TF-7189.
2. FOR ELECTRICAL NOTES SEE DWG. TF-7190.
3. 804 IS TO BE INSTALLED ON MAST ARM BETWEEN SIGNALS (12) AND (13).

SCALE IN FEET
30' 20' 10' 0 30' 60'

AS-BUILT

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

DATE	REVISIONS	No.
05/12/09	AS-BUILT	3
02/06/09	ISSUE CONSTRUCTION: ADDED TRAIN COMING SIGNS	2
10-31-05	AS-BUILT	1
09-18-02	FOR CONSTRUCTION	0

DESIGNED: C. BRODY
DRAWN: Y. MEHRZADEH
CHECKED: S. JAMES
APPROVED: R. BONCICH

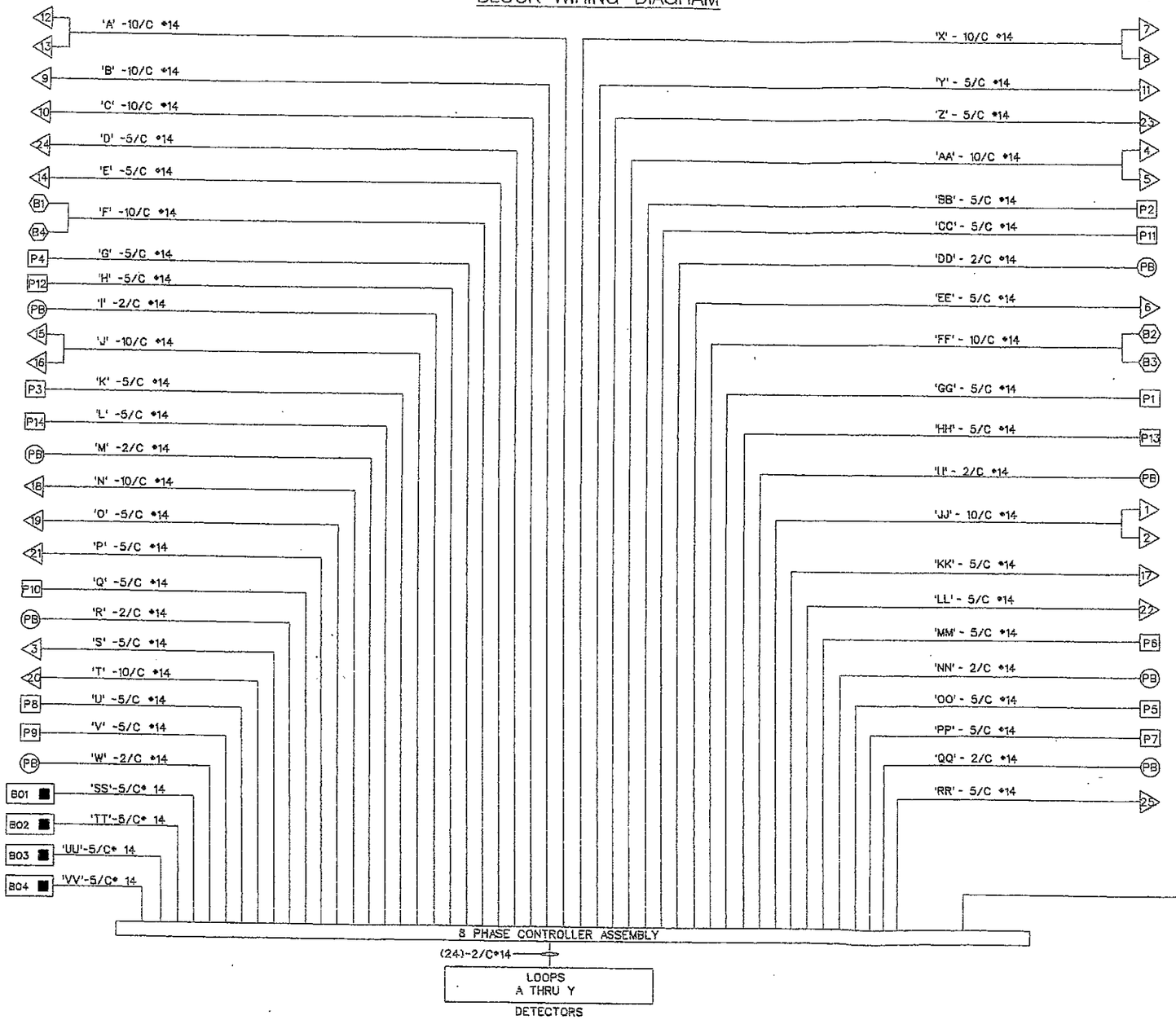
CHOKSHI VASANT
PROFESSIONAL ENGINEER
N.J. LIC. No. GE35830
DATE:

HUDSON - BERGEN
LIGHT RAIL TRANSIT
SYSTEM

PATERSON AVENUE /
PATERSON PLANK ROAD
AND LRT CROSSING
ELECTRICAL PLANS
SHEET 2 OF 4

SCALE: 1"=30'-0"
FILE NAME: N1TF7188_R3.DGN
DRAWING No.: TF-7188
REV: 3
DATE: 12 MAY 2009
CONTRACT No. 96CT001
ISSUE: AS-BUILT
SHEET No. ___ OF ___

BLOCK WIRING DIAGRAM



LOOP DETECTOR SCHEDULE

SENSOR No.	SENSOR CHANNEL	LOOP	MODE	SIZE	TYPE	No. OF TURNS	MICRO HENRIES
1	1	A	PRESENCE	6'x10'		*	
1	2	B	PRESENCE	6'x10'			
1	3	C	PRESENCE	6'x10'			
1	4	D	PRESENCE	6'x10'			
2	1	E	PRESENCE	6'x6'			
2	2	F	PRESENCE	6'x6'			
2	3	G	PRESENCE	6'x10'			
2	4	H	PRESENCE	6'x10'			
3	1	N	PRESENCE	6'x6'			
3	2	O	PRESENCE	6'x6'			
3	3	P	PRESENCE	6'x6'			
3	4	Q	PRESENCE	6'x6'			
4	1	R	PRESENCE	6'x8'			
4	2	S	PRESENCE	6'x8'			
4	3	T	PRESENCE	6'x8'			
4	4	U	PRESENCE	6'x8'			
5	1	V	PRESENCE	6'x6'			
5	2	W	PRESENCE	6'x6'			
5	3	X	PRESENCE	6'x6'			
5	4	Y	PRESENCE	6'x6'			

* NUMBER OF TURNS TO BE DETERMINED IN THE FIELD

REV	DISCIPLINE	RVW. BY	DATE
	CIVIL		
	STRUCTURAL		
	ARCHITECTURAL		
	COMMS		

DISCIPLINE	RVW. BY	DATE
ELECTRICAL		
SIGNAL		
CATENARY		
BRIDGE		

DISCIPLINE	RVW. BY	DATE
CONSTRUCTION		
O&M		
TRACK		
PEM		

AS-BUILT

NJTRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

No.	DATE	REVISIONS
3	05/12/09	AS-BUILT
2	12/05/08	ISSUE CONSTRUCTION: ADDED TRAIN COMING SIGNS
1	10-31-05	AS-BUILT
0	09-18-02	FOR CONSTRUCTION

DESIGNED: C. BRODY
DRAWN: Y. MEHRZADEH
CHECKED: S. JAMES
APPROVED: R. BONCICH

CHOKSHI VASANT
PROFESSIONAL ENGINEER
N.J. LIC. No. GE35638
DATE:

HUDSON – BERGEN
LIGHT RAIL TRANSIT
SYSTEM

PATERSON AVENUE /
PATERSON PLANK ROAD
AND LRT CROSSING
ELECTRICAL PLANS
SHEET 3 OF 4

SCALE: AS-SHOWN
FILE NAME: NTTF7189_R3.DGN
DRAWING No.: TF--7189
REV: 3
DATE: 12 MAY 2009
CONTRACT No. 96CT001
ISSUE: AS-BUILT
SHEET No. ___ OF ___

ELECTRICAL NOTES

1. CONSTRUCT: 2-1 1/2 " RMC, TYPE CUG
INSTALL: CABLES: 8-2/C *14

2. CONSTRUCT: 17"x30" JUNCTION BOX

3. CONSTRUCT: 3" RNMC, TYPE CUG
INSTALL: CABLES: A-10/C, B-10/C, C-10/C, RR-5/C, VV-5/C

4. CONSTRUCT: STF, STA P 14+73 LT50.5'
(MUST PROVIDE 10' MINIMUM CLEARANCE
FROM CENTER OF SIGNAL FOUNDATION
TO FACE OF NEW CURB.)
INSTALL: TSS, TYPE S
TSA, TYPE 45S-1-1-0P
TSA, TYPE MM-1(2)
TSA, TYPE C-1-0P
TSA, TYPE C-1
BO-4

5. CONSTRUCT: 3" RMC, TYPE CUR
INSTALL: CABLES: A-10/C, B-10/C, C-10/C, RR-5/C, VV-5/C
8-2/C *14

6. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: A-10/C, B-10/C, C-10/C,
RR-5/C, VV-5/C, 8-2/C *14

7. CONSTRUCT: SFKM, STA P 15+38 RT32.5'
INSTALL: TSS, TYPE K
TSA, TYPE 25MK-1-0P
TSA, TYPE 15MK-1
TSA, TYPE MM-1-0P
TSA TYPE MM-1

8. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: X-10/C, Y-5/C

9. CONSTRUCT: 18"x36" JUNCTION BOX

10. CONSTRUCT: 1 1/2 " RMC TYPE CUG
INSTALL: CABLES: 4-2/C *14

11. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: A-10/C, B-10/C, C-10/C, D-5/C,
X-10/C, Y-5/C, Z-5/C, 9-2/C *14
RR-5/C, VV-5/C, 3-2/C*14

12. CONSTRUCT: SFT STA P 11+09 RT 33'
INSTALL: TSS, TYPE T,
TSA, TYPE C-1
TSA, TYPE C-1-0P
(2) PSA, TYPE W-1,
PB & R10-4 (NORTH WEST SIDE OF POLE)

13. CONSTRUCT: 18"x36" JUNCTION BOX

14. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: S-5/C, T-10/C, U-5/C,
V-5/C W-2/C

15. NOT IN USED

16. CONSTRUCT: SPF STA M 10+70 RT 26'
INSTALL: TSS, TYPE P-10
(2) PSA, TYPE W-1
PB & R10-4 (SOUTH WEST SIDE OF POLE)

17. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: S-5/C, T-10/C, U-5/C,
V-5/C, W-2/C

18. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: OO-5/C, PP-5/C, QQ-2/C

19. CONSTRUCT: 18"x36" JUNCTION BOX

20. CONSTRUCT: 3"RMC, TYPE CUR
INSTALL: CABLES: S-5/C, T-10/C, U-5/C,
V-5/C, W-2/C, OO-5/C, PP-5/C, QQ-2/C

21. CONSTRUCT: 1 1/2 " RMC, TYPE CUR
INSTALL: CABLES: 4-2/C *14

22. CONSTRUCT: 17x30" JUNCTION BOX

23. CONSTRUCT: 1 1/2 " RMC, TYPE CUG
INSTALL: CABLES: 4-2/C *14

24. CONSTRUCT: SFT STA M 10+86.5 LT 27'
INSTALL: TSS, TYPE T
TSS, TYPE C-1
PSA, TYPE W-1
PB & R10-4 (SOUTH EAST SIDE OF POLE)

25. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: LL-5/C, MM-5/C, NN-2/C

26. CONSTRUCT: 18"x36" JUNCTION BOX

27. CONSTRUCT: 1 1/2 " RMC, TYPE CUG
INSTALL: CABLES: 4-2/C *14

28. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: JJ-10/C, KK-5/C, SS-5/C

29. CONSTRUCT: SFK STA P 11+97 RT 30'
INSTALL: TSS, TYPE K
TSA, TYPE 25MK-1-1-0P
TSA, TYPE MM-1
BO-1

30. CONSTRUCT: 2-3" RMC, TYPE CUG
INSTALL: CABLES: S-5/C, T-10/C, U-5/C, V-5/C
W-2/C, JJ-10/C, KK-5/C,
LL-5/C, MM-5/C, NN-2/C,
OO-5/C, PP-5/C, QQ-2/C, SS-5/C, 8-2/C *14

31. CONSTRUCT: SFT, STA P 13+06 RT 31'.
INSTALL: TSS, TYPE T
(2) TSA, TYPE LRT SA
TSA, TYPE C-1,
PB & R10-4 (SOUTH SIDE OF POLE)

32. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: J-10/C, K-5/C, L-5/C, M-2/C,
N-10/C, O-5/C, P-5/C, Q-5/C, R-2/C, UU-5/C

33. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: EE-5/C, FF-10/C, GG-5/C,
HH-5/C, II-2/C

34. CONSTRUCT: SFK STA P 11+34 LT 31'
INSTALL: TSS, TYPE K
TSA, TYPE 25 MK-1-1-0P
TSA, TYPE MM-1-0P
PSA, TYPE W-1
PB & 10+4 (NORTH EAST SIDE OF POLE)

35. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: N-10/C, O-5/C, P-5/C, Q-5/C, R-2/C

36. CONSTRUCT: 18"x36" JUNCTION BOX

37. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: N-10/C, O-5/C, P-5/C, Q-5/C, R-2/C

38. CONSTRUCT: 18"x36" JUNCTION BOX

39. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: J-10/C, K-5/C, L-5/C, M-2/C, UU-5/C

40. CONSTRUCT: SFK STA P 12+52 LT 32'
INSTALL: TSS, TYPE K,
TSA, TYPE 25 MK-1-0P
TSA, TYPE MM-1-0P
(2) PSA, TYPE W-1
PB & R10-4 (NORTH EAST SIDE OF POLE)
BO-3

41. MPD STA R 720+98

42. 2" PVC
2/C *14

43. ELECTRICAL MANHOLE

44. 3" PVC
2/C *14

45. MPD STA R 722+55

46. 6" PVC
INSTALL: CABLES: J-10/C, K-5/C, L-5/C, M-2/C,
N-10/C, O-5/C, P-5/C, Q-5/C,
R-2/C, S-5/C, T-10/C, U-5/C,
V-5/C, W-2/C, EE-5/C, FF-10/C,
GG-5/C, HH-5/C, II-2/C, JJ-10/C,
KK-5/C, MM-5/C, NN-2/C,OO-5/C,
PP-5./C, QQ-2/C, SS-5/C, UU-5/C, 9-2/C *14

47. MPD STA L 722+55

48. 2" PVC
2/C *14

49. MPD STA L 720+98

50. 2" PVC
2/C *14

51. ELECTRICAL MANHOLE

52. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: E-5/C, F-10/C, G-5/C, H-5/C, I-2/C

53. CONSTRUCT: SFT, STA P 13+02, LT 36.5'
INSTALL: TSS, TYPE T
(2) TSA, TYPE LRT SA
TSA, TYPE C-1
(2) PSA, TYPE W-1
PB & R10-4 (NORTH EAST SIDE OF POLE)

54. 6" PVC
INSTALL: CABLES: E-5/C, F-10/C, G-5/C,
H-5/C, I-2/C, (2-2/C *14)

55. ELECTRICAL MANHOLE

56. CONSTRUCT: STF, STA P 13+73 RT 38'
INSTALL: TSS, TYPE S
TSS, TYPE 30S-1-0P
TSA, TYPE MM-1-0P
(2) PSA, TYPE W-1
PB & R10-4 (SOUTH SIDE OF POLE)
BO-2

57. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: CABLES: AA-10C, BB-5/C, CC-5/C, DD-2/C, TT-10/C

58. CONSTRUCT: 6-4" RMC, TYPE CUG
INSTALL: CABLES: E-5/C, F-10/C, G-5/C,
H-5/C, I-2/C, J-10/C, K-5/C,
L-5/C, M-2/C, N-10/C, O-5/C,
P-5/C, Q-5/C, R-2/C, S-5/C,
T-10/C, U-5/C, V-5/C, W-2/C,
AA-10/C, BB-5/C, CC-5/C, DD-2/C,
EE-5/C, FF-10/C, GG-5/C, HH-5/C,
II-2/C, JJ-10/C, KK-5/C, LL-5/C,
MM-5/C, NN-2/C, OO-5/C, PP-5/C,
QQ-2/C, 9-2/C *14 (4-2/C *14)
RR-5/C, 3-2/C *14, SS-5/C, TT-5/C, UU-5/C

59. CONSTRUCT: 18"x36" JUNCTION BOX

60. CONSTRUCT: 6-4" RMC, TYPE CUG
INSTALL: CABLES: A-10/C, B-10/C, C-10/C,
D-5/C, E-5/C, F-10/C, G-5/C,
H-5/C, I-2/C, J-10/C, K-5/C,
L-5/C, M-2/C, N-10/C, O-5/C,
P-5/C, Q-5/C, R-2/C, S-5/C,
T-10/C, U-5/C, V-5/C, W-2/C,
X--10/C, Y-5/C, Z--5/C, AA-10/C,
BB-5/C, CC-5/C, DD-2/C, EE-5/C,
FF-10/C, GG-5/C, HH-5/C, II-2/C,
JJ-10/C, KK-5/C, LL-5/C, MM-5/C,
NN-2/C, OO-5/C, PP-5/C, QQ-2/C,
SS-5/C, TT-5/C, UU-5/C, VV-5/C
17-2/C *14 (4-2/C *14)

61. CONSTRUCT: P-MC STA P 14+00 RT 36'
INSTALL: CONTROLLER ASSEMBLY, 8 PHASE
METER CABINET,
MPD ASSEMBLY
NAZTEK MODEL, 981 NEMA TS2.
(DOOR FACE TO SIDEWALK)

62. 6" PVC
2/C*14

63. CONSTRUCT: 1-1/2" RMC, TYPE CUG
INSTALL: 8-2/C*14

64. CONSTRUCT: 18"X36" JUNCTION BOX

65. CONSTRUCT: LOOP DETECTORS R-Y

66. CONSTRUCT: SFT, STA 14+90 RT 36.0'
(MUST PROVIDE 32" MINIMUM
CLEARANCE FROM CENTER OF SIGNAL
FOUNDATION TO FACE OF EXISTING
CURB)
INSTALL: TSS, TYPE T
TSA, TYPE 15M-1
TSA, TYPE C-1

67. CONSTRUCT: 3" RMC, TYPE CUG
INSTALL: D-5/C, Z-5/C

68. CONSTRUCT: LOOP DETECTORS N-Q

AS-BUILT

REV	DISCIPLINE	RVW. BY	DATE	DISCIPLINE	RVW. BY	DATE	DISCIPLINE	RVW. BY	DATE
	CIVIL			ELECTRICAL			CONSTRUCTION		
	STRUCTURAL			SIGNAL			O&M		
	ARCHITECTURAL			CATENARY			TRACK		
	COMMS.			BRIDGE			PEM		

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

DATE	REVISIONS	No.
05/12/09	AS-BUILT	4
02/06/09	ISSUE CONSTRUCTION: ADDED TRAIN COMING SIGNS	3
10-31-05	AS-BUILT: INCORP.DCN ST-04-001, FCN C-70056	2
09-11-03	REVISION	1
09-18-02	FOR CONSTRUCTION	0

DESIGNED: C. BRODY
DRAWN: Y. MEHRZADEH
CHECKED: S. JAMES
APPROVED: R. BONCICH

CHOKSHI VASANT
PROFESSIONAL ENGINEER
N.J. LIC. No. GE35630
DATE:

HUDSON - BERGEN
LIGHT RAIL TRANSIT
SYSTEM

PATERSON AVENUE /
PATERSON PLANK ROAD
AND LRT CROSSING
CONSTRUCTION NOTES
SHEET 4 OF 4

SCALE: AS-SHOWN
FILE NAME: N1TF7190_R4.DGN
DRAWING No.: TF-7190
REV: 4
DATE: 12 MAY 2009
CONTRACT No. 96CT001
ISSUE AS-BUILT
SHEET No. — OF —

PATERSON AVENUE AND LRT CROSSING
CITY OF HOBOKEN
HUDSON COUNTY, NEW JERSEY

TIMING SCHEDULE
(REFERENCE TO DRAWING NUMBER TF-7186)

with ped actuation

PHASE		Paterson Ave. WB				Paterson Ave. EB					Marshall St.				Hope St.	Track	LRT	Timing
		1-3	4-6	7,9,10	8	11-13	14-16	17,19,20	18	P5,P6	21,22	P7,P8	P9,P10	P11-P14	23,24	P1-P4	B1 -B4	Secs.
A	Paterson Ave. ROW	G	G	G	G	G	G	G	G	W	R	DW	DW	DW	R	W	--	69-29
	Pedestrian Clearance	G	G	G	G	G	G	G	G	FDW	R	DW	DW	DW	R	W	--	4
	Outer change	Y	G	G	G	Y	G	G	G	FDW	R	DW	DW	DW	R	W	--	3
	Outer clearance	R	G	G	G	R	G	G	G	DW	R	DW	DW	DW	R	W	--	2
	Track	R	G[2]	<G/G	G	R	G	<G/G	G	DW	R	DW	DW	DW	R	W	--	5
	Track change	R	G[2]	<G/G	G	R	Y	<G/G	G	DW	R	DW	DW	DW	R	W	--	3
	Track clearance	R	G[3]	<G/G	G	R	R	<G/G	G	DW	R	DW	DW	DW	R	W	--	2
	Change	R	G[3]	<G/G[4]	G[2]	R	R	Y	Y	DW	R	DW	DW	DW	R	W	--	3
	Clearance	R	G[3]	<G/G[3]	G[3]	R	R	R	R	DW	R	DW	DW	DW	R	W	--	2
B	Marshall St. ROW	R	G	<G/G	G	R	R	R	R	DW	G	W	W	DW	R	W	--	5
	Pedestrian Clearance	R	G	<G/G	G	R	R	R	R	DW	G	W	FDW[1]	DW	R	W	--	6
	Pedestrian Clearance	R	G	<G/G	G	R	R	R	R	DW	G	FDW[1]	FDW[1]	DW	R	W	--	2
	Change	R	G	<G/G	G	R	R	R	R	DW	Y	FDW[1]	FDW[1]	DW	R	W	--	3
	Clearance	R	G	<G/G	G	R	R	R	R	DW	R	DW[1]	DW[1]	DW	R	W	--	2
	Track	R	G	<G/G	G	R	R	R	R	DW	R	DW[1]	DW[1]	DW	R	W	--	5
	Track Change	R	Y	<G/G	G	R	R	R	R	DW	R	DW[1]	DW[1]	DW	R	W	--	3
	Track Clearance	R	R	<G/G	G	R	R	R	R	DW	R	DW[1]	DW[1]	DW	R	W	--	2
	Change	R	R	Y[5]	Y[6]	R	R	R	R	DW	R	DW[1]	DW[1]	DW	R	W	--	3
	Clearance	R	R	R[6]	R[6]	R	R	R	R	DW	R	DW[1]	DW[1]	DW	R	W	--	2
C	Exclusive Pedestrians	R	R	R	R	R	R	R	R	W	R	W	W	W	R	W	--	5
	Pedestrian Clearance	R	R	R	R	R	R	R	R	W	R	W	W	FDW	R	W	--	4
	Pedestrian Clearance	R	R	R	R	R	R	R	R	W	R	W	FDW	FDW	R	W	--	4
	Pedestrian Clearance	R	R	R	R	R	R	R	R	FDW[7]	R	W	FDW	FDW	R	W	--	2
	Pedestrian Clearance	R	R	R	R	R	R	R	R	FDW[7]	R	FDW	FDW	FDW	R	W	--	5
	Clearance	R	R	R	R	R	R	R	R	DW[7]	R	DW	DW	DW	R	W	--	2
D	Hope St.. ROW	R	R	R	R	R	G	<G/G	G	DW	R	DW	DW	DW	G	W	--	7
	Change	R	R	R	R	R	G	<Y/G	G	DW	R	DW	DW	DW	Y	W	--	3
	Clearance	R	R	R	R	R	G	G	G	DW	R	DW	DW	DW	R	W	--	2

1 Signals shall display "WALK" if ΦC is next.
2 Signals shall display "Y" if ΦC or ΦD is next.
3 Signals shall display "R" if ΦC or ΦD is next.
4 Signals shall display "<Y/Y" if ΦC or ΦD is next.
5 Signals shall display "<Y/Y" if ΦA is next.
6 Signals shall display "G" if ΦA is next.
7 Signals shall display "WALK" if ΦA is next.

PATERSON AVENUE AND LRT CROSSING
CITY OF HOBOKEN
HUDSON COUNTY, NEW JERSEY

TIMING SCHEDULE
(REFERENCE TO DRAWING NUMBER TF-7186)

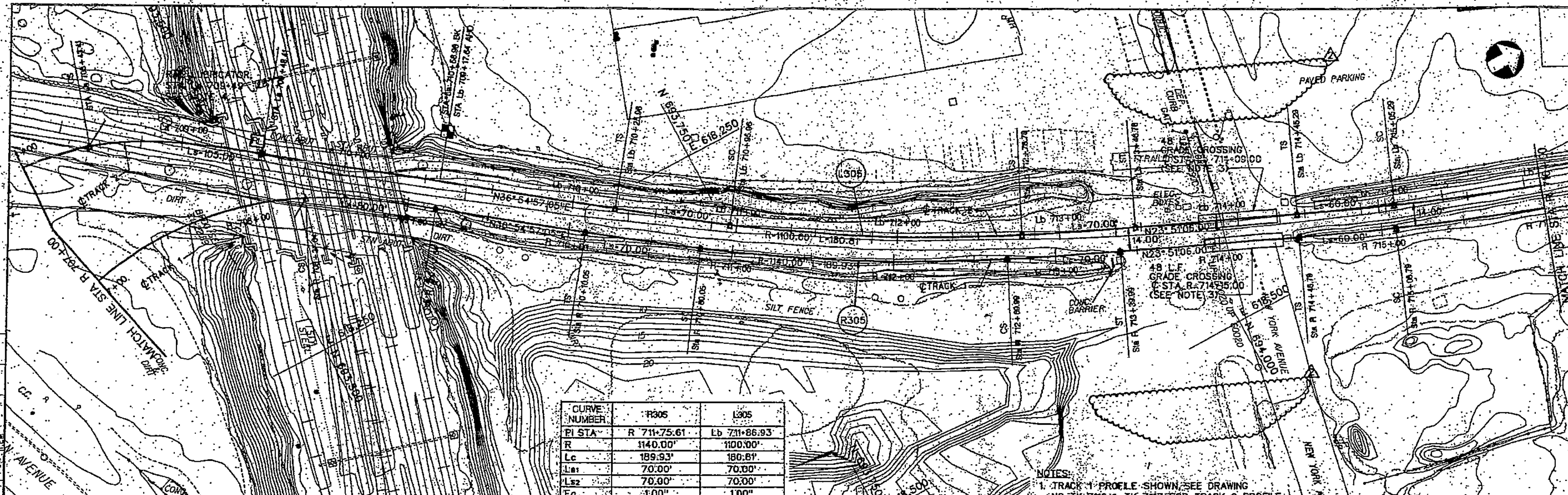
w/o ped actuation																		
		Paterson Ave. WB				Paterson Ave. EB					Marshall St.				Hope St.	Track	LRT	Timing
PHASE		1-3	4-6	7,9,10	8	11-13	14-16	17,19,20	18	P5,P6	21,22	P7,P8	P9,P10	P11-P14	23,24	P1-P4	B1 -B4	Secs.
A	Paterson Ave. ROW	G	G	G	G	G	G	G	G	W	R	DW	DW	DW	R	W	--	69-54
	Pedestrian Clearance	G	G	G	G	G	G	G	G	FDW	R	DW	DW	DW	R	W	--	4
	Outer change	Y	G	G	G	Y	G	G	G	FDW	R	DW	DW	DW	R	W	--	3
	Outer clearance	R	G	G	G	R	G	G	G	DW	R	DW	DW	DW	R	W	--	2
	Track	R	G[2]	<G/G	G	R	G	<G/G	G	DW	R	DW	DW	DW	R	W	--	5
	Track change	R	G[2]	<G/G	G	R	Y	<G/G	G	DW	R	DW	DW	DW	R	W	--	3
	Track clearance	R	G[3]	<G/G	G	R	R	<G/G	G	DW	R	DW	DW	DW	R	W	--	2
	Change	R	G[3]	<G/G[4]	G[2]	R	R	Y	Y	DW	R	DW	DW	DW	R	W	--	3
	Clearance	R	G[3]	<G/G[3]	G[3]	R	R	R	R	DW	R	DW	DW	DW	R	W	--	2
B	Marshall St. ROW	R	G	<G/G	G	R	R	R	R	DW	G	DW	DW	DW	R	W	--	7-10
	Change	R	G	<G/G	G	R	R	R	R	DW	Y	DW	DW	DW	R	W	--	3
	Clearance	R	G	<G/G	G	R	R	R	R	DW	R	DW	DW	DW	R	W	--	2
	Track	R	G	<G/G	G	R	R	R	R	DW	R	DW	DW	DW	R	W	--	5
	Track Change	R	Y	<G/G	G	R	R	R	R	DW	R	DW	DW	DW	R	W	--	3
	Track Clearance	R	R	<G/G	G	R	R	R	R	DW	R	DW	DW	DW	R	W	--	2
	Change	R	R	Y[5]	Y[6]	R	R	R	R	DW	R	DW	DW	DW	R	W	--	3
	Clearance	R	R	R[6]	R[6]	R	R	R	R	DW	R	DW	DW	DW	R	W	--	2
D	Hope St. ROW	R	R	R	R	R	G	<G/G	G	DW	R	DW	DW	DW	G	W	--	7
	Change	R	R	R	R	R	G	<Y/G	G	DW	R	DW	DW	DW	Y	W	--	3
	Clearance	R	R	R	R	R	G	G	G	DW	R	DW	DW	DW	R	W	--	2

1 Signals shall display "WALK" if ΦC is next.
2 Signals shall display "Y" if ΦC or ΦD is next.
3 Signals shall display "R" if ΦC or ΦD is next.
4 Signals shall display "<Y/Y" if ΦC or ΦD is next.
5 Signals shall display "<Y/Y" if ΦA is next.
6 Signals shall display "G" if ΦA is next.
7 Signals shall display "WALK" if ΦA is next.

PATERSON AVENUE AND LRT CROSSING
CITY OF HOBOKEN
HUDSON COUNTY, NEW JERSEY

TIMING SCHEDULE
(REFERENCE TO DRAWING NUMBER TF-7186)

		Paterson Ave. WB				Paterson Ave. EB					Marshall St.				Hope St.	Track	LRT	Timing
		1-3	4-6	7,9,10	8	11-13	14-16	17,19,20	18	P5,P6	21,22	P7,P8	P9,P10	P11-P14	23,24	P1-P4	B1 -B4	Secs.
ΦA to Preempt	Paterson Ave. ROW	G	G	G	G	G	G	G	G	W	R	DW	DW	DW	R	W	--	--
	Pedestrian Clearance	G	G	G	G	G	G	G	G	FDW	R	DW	DW	DW	R	W	--	4
	Outer change	Y	G	G	G	Y	G	G	G	FDW	R	DW	DW	DW	R	W	--	3
	Outer clearance	R	G	G	G	R	G	G	G	DW	R	DW	DW	DW	R	W	--	2
	Track	R	G	<G/G	G	R	G	<G/G	G	DW	R	DW	DW	DW	R	FDW	--	5
	Track change	R	Y	<G/G	G	R	Y	<G/G	G	DW	R	DW	DW	DW	R	FDW	--	3
	Track clearance	R	R	<G/G	G	R	R	<G/G	G	DW	R	DW	DW	DW	R	FDW	--	2
	Inner Change	R	R	Y	Y	R	R	Y	Y	DW	R	DW	DW	DW	R	DW	--	3
	Inner Clearance	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	--	2
	Preemption hold	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	|	Hold
	LRT Change	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	/	5
	LRT Clear	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	--	2-14
	Return to Normal Φ A	G	G	G	G	G	G	G	G	W	R	DW	DW	DW	R	W	--	--
ΦB to Preempt																		
	Marshall St. ROW	R	G	<G/G	G	R	R	R	R	DW	G	W	W	DW	R	W	--	--
	Pedestrian Clearance	R	G	<G/G	G	R	R	R	R	DW	G	W	FDW	DW	R	W	--	6
	Pedestrian Clearance	R	G	<G/G	G	R	R	R	R	DW	G	FDW	FDW	DW	R	W	--	2
	Change	R	G	<G/G	G	R	R	R	R	DW	Y	FDW	FDW	DW	R	W	--	3
	Clearance	R	G	<G/G	G	R	R	R	R	DW	R	DW	DW	DW	R	W	--	2
	Track	R	G	<G/G	G	R	R	<G/G	G	DW	R	DW	DW	DW	R	FDW	--	5
	Track Change	R	Y	<G/G	G	R	R	Y	Y	DW	R	DW	DW	DW	R	FDW	--	3
	Track Clearance	R	R	<G/G	G	R	R	R	R	DW	R	DW	DW	DW	R	FDW	--	2
	Inner Change	R	R	Y	Y	R	R	R	R	DW	R	DW	DW	DW	R	DW	--	3
	Inner Clearance	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	--	2
	Preemption hold	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	|	Hold
	LRT Change	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	/	5
	LRT Clear	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	--	2-14
	Return to Normal Φ A	G	G	G	G	G	G	G	G	W	R	DW	DW	DW	R	W	--	--
ΦC to Preempt																		
	Exclusive Pedestrians	R	R	R	R	R	R	R	R	W	R	W	W	W	R	W	--	--
	Pedestrian Clearance	R	R	R	R	R	R	R	R	FDW	R	FDW	FDW	FDW	R	FDW	--	15
	Clearance	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	--	2
	Preemption hold	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	|	Hold
	LRT Change	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	/	5
	LRT Clear	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	--	2-14
	Return to Normal Φ A	G	G	G	G	G	G	G	G	W	R	DW	DW	DW	R	W	--	--
ΦD to Preempt																		
	Hope St. ROW	R	R	R	R	R	G	<G/G	G	DW	R	DW	DW	DW	G	W	--	--
	Pedestrian Clearance	R	R	R	R	R	G	<G/G	G	DW	R	DW	DW	DW	Y	W	--	3
	Clearance	R	R	R	R	R	G	<G/G	G	DW	R	DW	DW	DW	R	W	--	2
	Track	R	R	<G/G	G	R	G	<G/G	G	DW	R	DW	DW	DW	R	FDW	--	5
	Track change	R	R	Y	Y	R	Y	<G/G	G	DW	R	DW	DW	DW	R	FDW	--	3
	Track clearance	R	R	R	R	R	R	<G/G	G	DW	R	DW	DW	DW	R	FDW	--	2
	Inner Change	R	R	R	R	R	R	Y	Y	DW	R	DW	DW	DW	R	DW	--	3
	Inner Clearance	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	--	2
	Preemption hold	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	|	Hold
	LRT Change	R	R	R	R	R	R	R	R	DW	R	DW	DW	DW	R	DW	/	5
	LRT Clear	R	R	R	R	R	R	3 R of 3	R	DW	R	DW	DW	DW	R	DW	--	2-14
	Return to Normal Φ A	G	G	G	G	G	G	G	G	W	R	DW	DW	DW	R	W	--	--

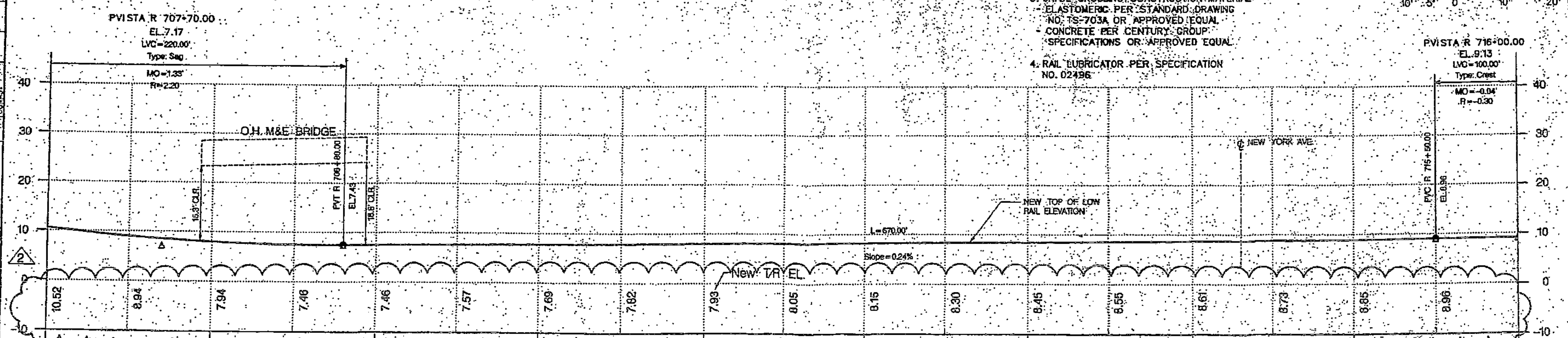


CURVE NUMBER	R305	L305
PI STA	R 711+75.61	Lb 711+86.93
R	1140.00'	1100.00'
Lc	189.93'	180.81'
Ls1	70.00'	70.00'
Ls2	70.00'	70.00'
Ea	1.00"	1.00"
Eu	1.17"	1.25"
V	25 MPH	25 MPH

PLAN

NOTES:

1. TRACK 1 PROFILE SHOWN, SEE DRAWING (NO. TK-7116 & TK-7117 FOR TRACK 2 PROFILE.)
2. FOR TRACK 2 TO EXISTING FREIGHT CONNECTION PLAN AND PROFILE, SEE DRAWING NO. TK-7124.
3. GRADE CROSSING CONSTRUCTION MATERIAL:
   - ELASTOMERIC PER STANDARD DRAWING NO. TS-703A OR APPROVED EQUAL
   - CONCRETE PER CENTURY GROUP SPECIFICATIONS OR APPROVED EQUAL
4. RAIL LUBRICATOR PER SPECIFICATION NO. 02496



PROFILE

R 707+00 R 708+00 R 709+00 R 710+00 R 711+00 R 712+00 R 713+00 R 714+00 R 715+00

AS-BUILT

REV	DISCIPLINE	RVW. BY	DATE	DISCIPLINE	RVW. BY	DATE	DISCIPLINE	RVW. BY	DATE
	CIVIL			ELECTRICAL			CONSTRUCTION		
	STRUCTURAL			SIGNAL			O&M		
	ARCHITECTURAL			CATENARY			TRACK		
	COMMS.			BRIDGE			PROJ.		

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

DATE	REVISIONS	No.
12/30/04	AS BUILT	2
6/10/02	ADDED RAIL LUBRICATOR	1
1/25/02	ISSUE FOR CONSTRUCTION	0

DESIGNED: R. HINK
DRAWN: S. HEARING
CHECKED: R. HINK
APPROVED: S. JAMES

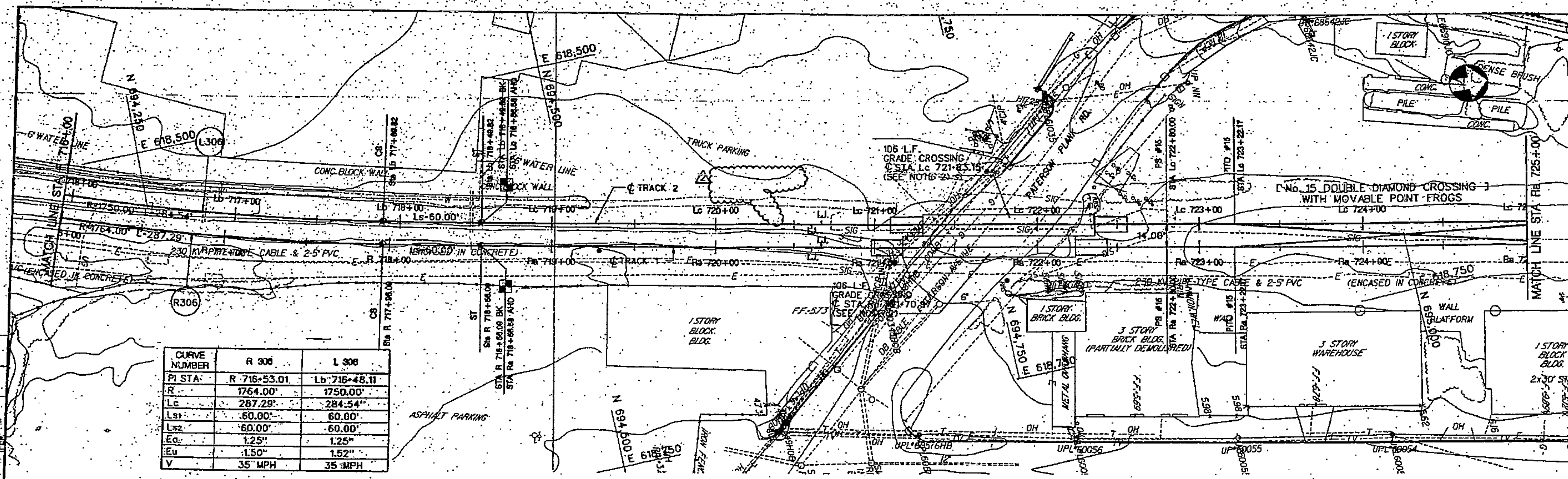
PAUL F. WAGNER, JR.
PROFESSIONAL ENGINEER
N.J. LIC. No. 36565
DATE:

HUDSON - BERGEN LIGHT RAIL TRANSIT SYSTEM

SECTION N-15
LRT TRACK ALIGNMENT PLAN AND PROFILE
STA R 707+00 TO STA R 716+00

SCALE: AS SHOWN
FILE NAME: N1TK7103.DGN
DRAWING No.: TK-7103
REV: 2
DATE: DEC. 30, 2004
CONTRACT No.: 96CT001
ISSUE: AS BUILT
SHEET No.: 4 of 53

(322)



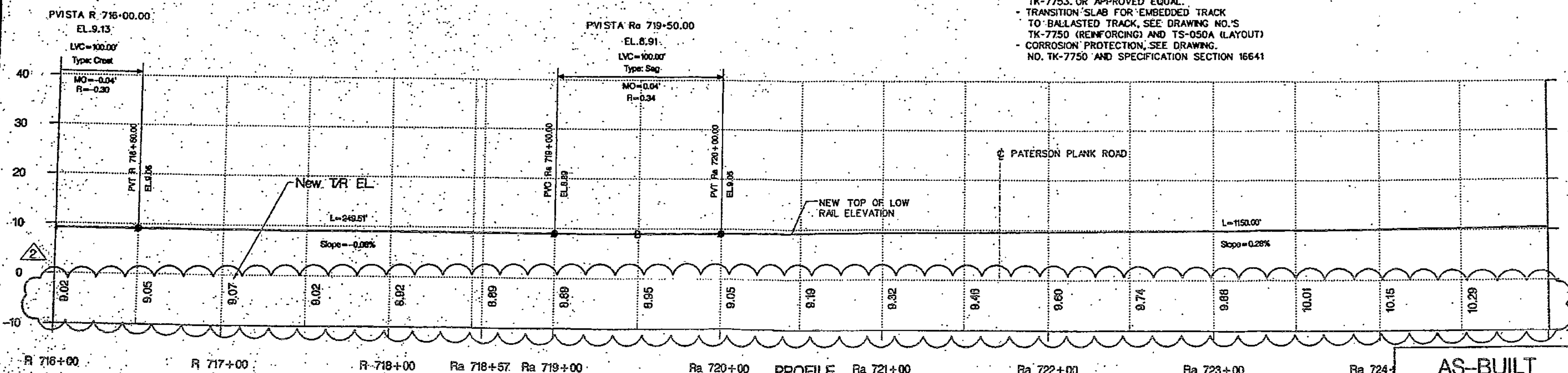
CURVE NUMBER	R 306	L 306
PI STA	R 716+53.01	Lb 716+48.11
R	1764.00'	1750.00'
Lc	287.29'	284.54'
Ls1	60.00'	60.00'
Ls2	60.00'	60.00'
Ea	1.25"	1.25"
Eu	1.50"	1.52"
V	35 MPH	35 MPH

NOTES:

1. TRACK 1 PROFILE SHOWN, SEE DRAWING NO. TK-7117 FOR TRACK 2 PROFILE.
2. GRADE CROSSING CONSTRUCTION MATERIAL:
   - EMBEDDED TRACK CONCRETE GRADE CROSSING, SEE DRAWING NO.'S TK-7750 THRU TK-7753. OR APPROVED EQUAL.
   - TRANSITION SLAB FOR EMBEDDED TRACK TO BALLASTED TRACK, SEE DRAWING NO.'S TK-7750 (REINFORCING) AND TS-050A (LAYOUT)
   - CORROSION PROTECTION, SEE DRAWING. NO. TK-7750 AND SPECIFICATION SECTION 16641

SCALE IN FEET — HORIZ: 30' 20' 10' 0 30' 60'

SCALE IN FEET — VERT: 10' 5' 0 10' 20'



AS-BUILT

REV	DISCIPLINE	RVW. BY	DATE	DISCIPLINE	RVW. BY	DATE	DISCIPLINE	RVW. BY	DATE
	CIVIL			ELECTRICAL			CONSTRUCTION		
	STRUCTURAL			SIGNAL			O&M		
	ARCHITECTURAL			CATENARY			TRACK		
	COMMS			BRIDGE			PEM		

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

DATE	REVISIONS	No.
12/30/04	AS BUILT	2
6/10/02	CHANGE IN GRADE CROSSING	1
3/13/02	ISSUE FOR CONSTRUCTION	0

DESIGNED: R. HINK
DRAWN: S. HEARING
CHECKED: R. HINK
APPROVED: S. JAMES

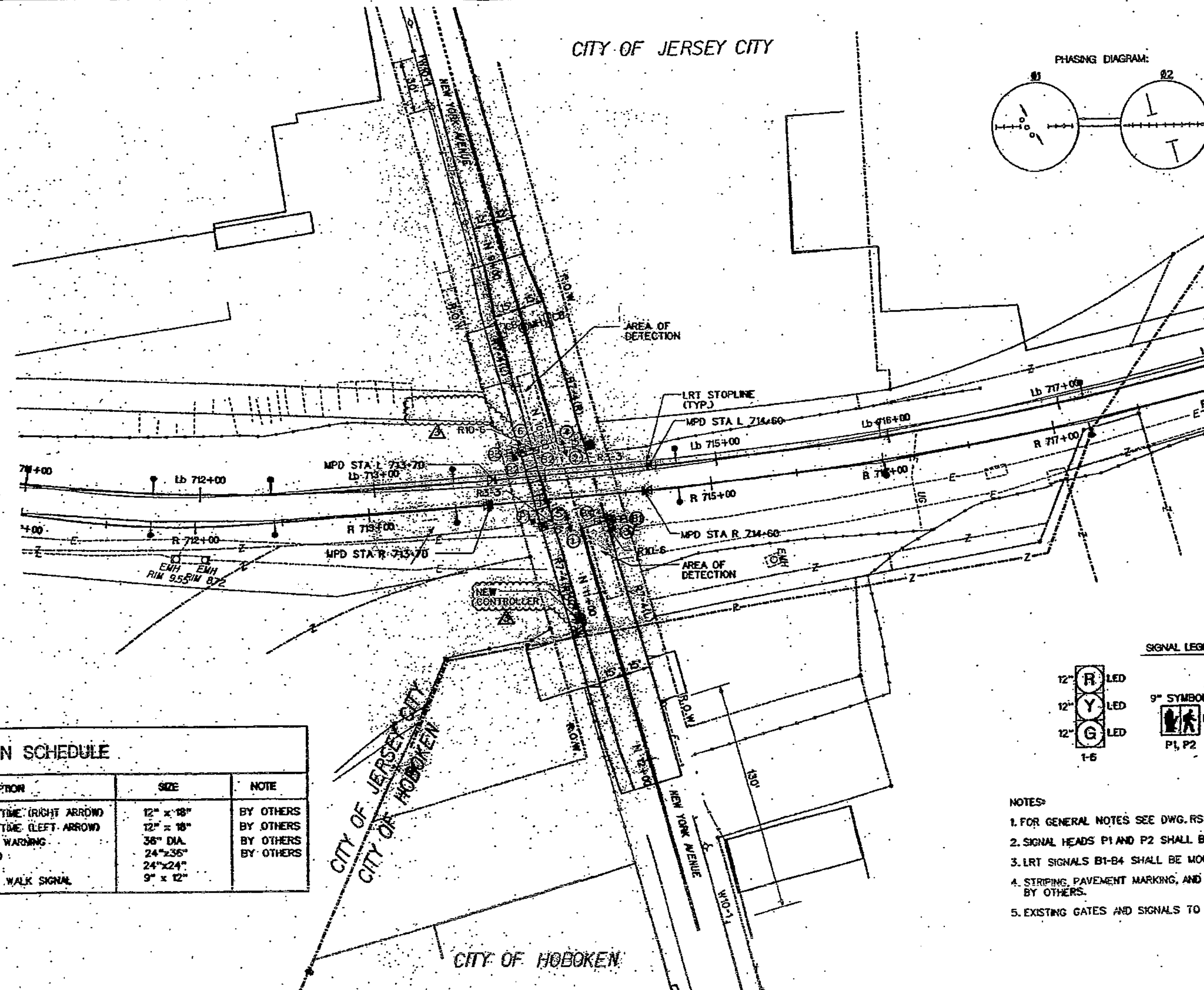
PAUL F. WAGNER, JR.
PROFESSIONAL ENGINEER
N.J. LIC. No. 35868
DATE:

HUDSON - BERGEN LIGHT RAIL TRANSIT SYSTEM

SECTION N-15
LRT TRACK ALIGNMENT PLAN AND PROFILE
STA R 716+00 TO STA Ra 725+00

SCALE: AS SHOWN
FILE NAME: N15TK7104.DGN
DRAWING No.: TK-7104
REV: 2
DATE: DEC. 30, 2004
CONTRACT No. 96CT001
ISSUE: AS BUILT
SHEET No. 5 OF 53

323



SIGN SCHEDULE

DESIGNATION	DESCRIPTION	SIZE	NOTE
R7-4 (R)	NO STANDING ANY TIME (RIGHT ARROW)	12" x 18"	BY OTHERS
R7-4 (L)	NO STANDING ANY TIME (LEFT ARROW)	12" x 18"	BY OTHERS
W10-1	RAILROAD ADVANCE WARNING	36" DIA.	BY OTHERS
R10-6	STOP HERE ON RED	24"x36"	BY OTHERS
R3-3 (s)	NO TURNS	24"x24"	
R10-4	PUSH BOTTON FOR WALK SIGNAL	9" x 12"	

NOTES:

1. FOR GENERAL NOTES SEE DWG. RS-001A, RS-002A, AND RS-003A.
2. SIGNAL HEADS P1 AND P2 SHALL BE MOUNTED AT A HIGHT OF 10 FEET.
3. LRT SIGNALS B1-B4 SHALL BE MOUNTED AT A HEIGHT OF 15 FEET.
4. STRIPING, PAVEMENT MARKING, AND SIGNS (SEE SIGN SCHEDULE) BY OTHERS.
5. EXISTING GATES AND SIGNALS TO BE REMOVED.

SCALE IN FEET
30' 20' 10' 0 30' 60'

AS-BUILT

DISCIPLINE	RVW. BY	DATE	DISCIPLINE	RVW. BY	DATE	DISCIPLINE	RVW. BY	DATE
STRUCTURAL			ELECTRICAL			CONSTRUCTION		
ARCHITECTURAL			SIGNAL			O&M		
COMMS.			CATENARY			TRACK		
			BRIDGE			PEM		

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORP.

DATE	REVISIONS	No.
10-31-05	AS-BUILT INCORP. FCN-C-70046	3
11-26-03	REVISED PER HUDOT COMMENTS	2
09-11-03	REVISION	1
09-18-02	FOR CONSTRUCTION	0

DESIGNED: M. SZILVAGYI
DRAWN: N. SPEKTOR
CHECKED: W. EVSKY
APPROVED: K. SHIELDS

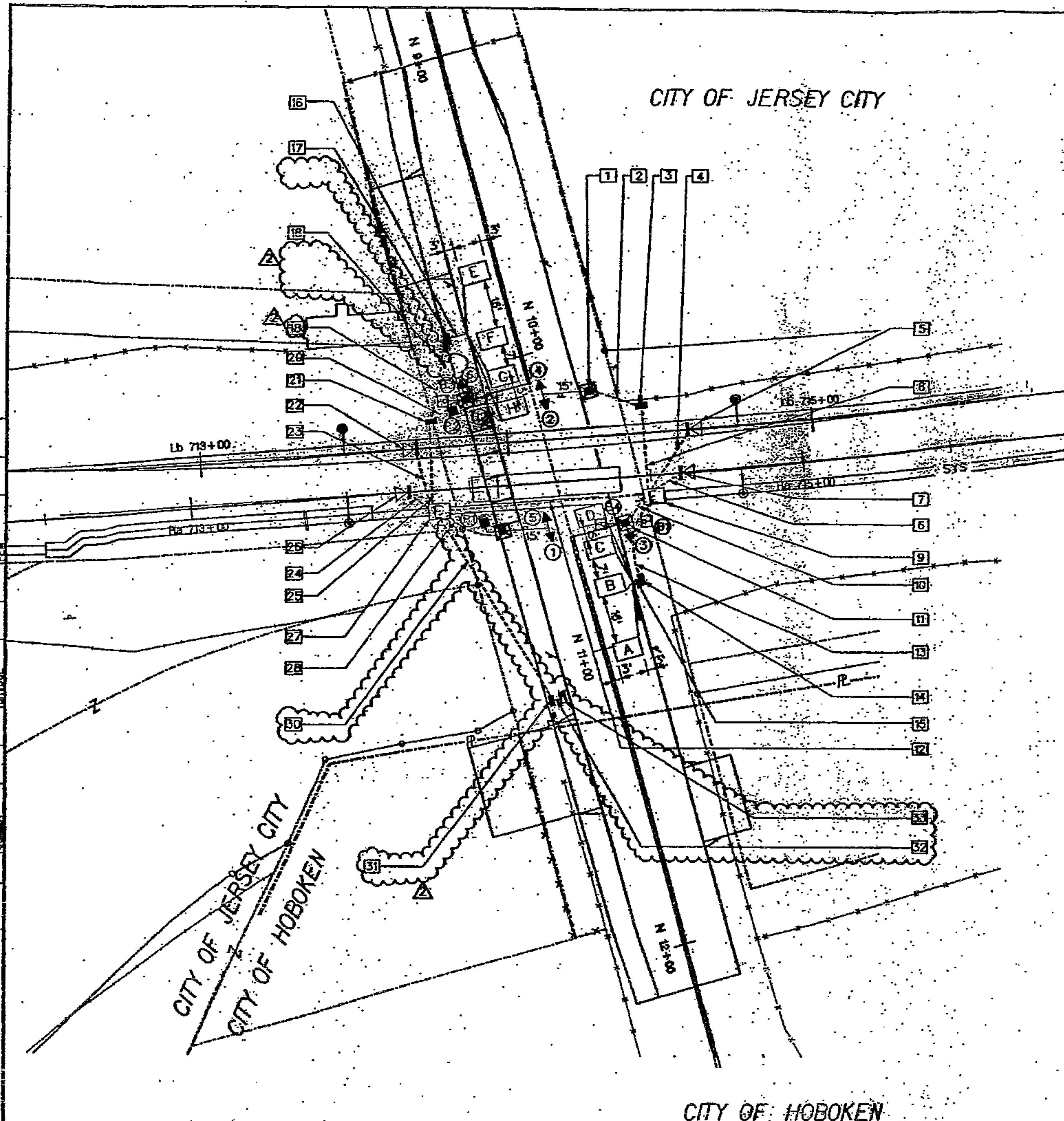
KENETH C. SHIELDS
PROFESSIONAL ENGINEER
N.J. LIC. No. 41520
DATE:

HUDSON - BERGEN LIGHT RAIL TRANSIT SYSTEM

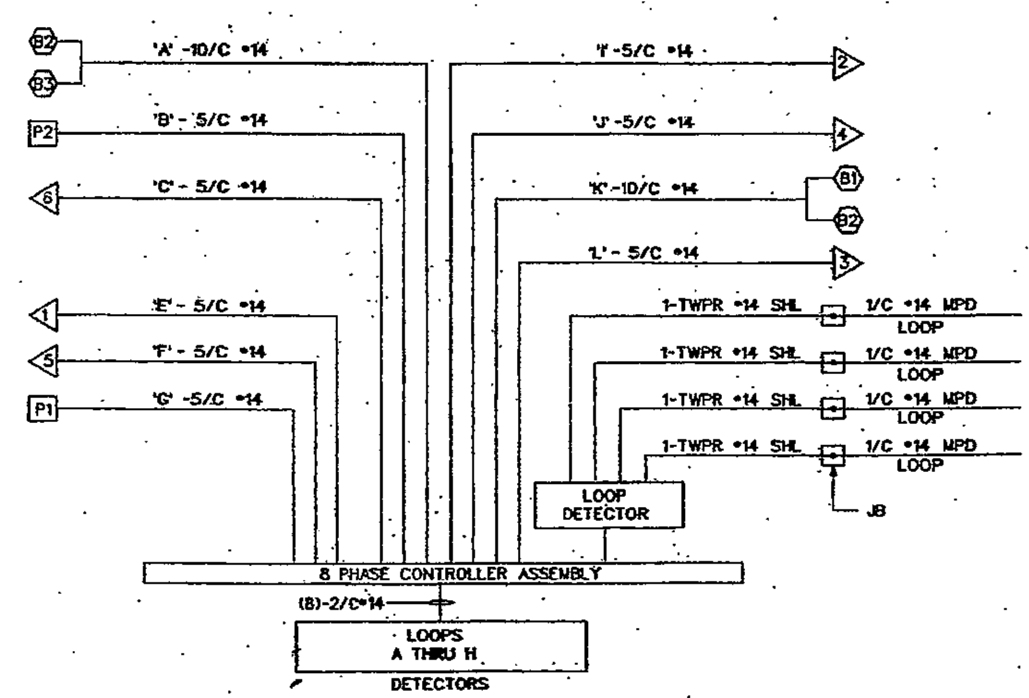
NEW YORK AVENUE AND LRT CROSSING TRAFFIC SIGNAL PLAN

SCALE: 1"=30'
FILE NAME: NTTF7183.DGN
DRAWING No.: TF-7183
REV: 3
DATE: 31 OCTOBER, 2005
CONTRACT No.: 96CT001
ISSUE: AS-BUILT
SHEET No.: 68 OF 88

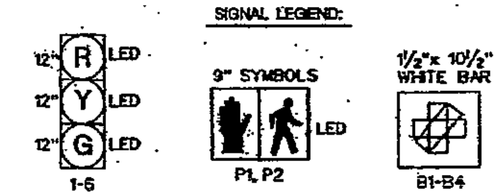
(481)



BLOCK WIRING DIAGRAM



SIGNAL LEGEND:



NOTES:

1. FOR GENERAL NOTES SEE DWG. RS-001A, RS-002A, AND RS-003A.
2. SIGNAL HEADS P1 AND P2 SHALL BE MOUNTED AT A HIGHT OF 10 FEET.
3. LRT SIGNALS B1-B4 SHALL BE MOUNTED AT A HEIGHT OF 15 FEET.
4. FOR ELECTRICAL NOTES SEE DWG TF-7185.

AS-BUILT

SCALE IN FEET

20' 10' 0 20' 40'

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORP.

DATE	REVISIONS	NO.
10-31-05	AS-BUILT, INCORP. FCN C-70046	2
09-11-03	REVISION	1
09-18-02	FOR CONSTRUCTION	0

DESIGNED: M. SZILVAGYI
DRAWN: N. SPEKTOR
CHECKED: W. EPSKY
APPROVED: K. SHIELDS

KENNETH C. SHIELDS
PROFESSIONAL ENGINEER
N.J. LIC. No. 41520

DATE

HUDSON - BERGEN
LIGHT RAIL TRANSIT
SYSTEM

NEW YORK AVENUE
AND LRT CROSSING
ELECTRICAL PLANS
SHEET 1 OF 2

SCALE: 1"=20'-0"
FILE NAME: NTF7184.DGN
DRAWING No.: TF-7184
REV: 2
DATE: 31 OCTOBER, 2005

CONTRACT No. 99CT001
ISSUE AS-BUILT
SHEET No. 69 of 82

CONSTRUCTION NOTES

1. CONSTRUCT: SFT STA N 10+17 LT 18'
   INSTALL: TSS, TYPE T
   TSA, TYPE 15M-2
   R3-3(S) (MAST ARM MOUNTED)

2. CONSTRUCT: 3" RMC, TYPE CUG
   INSTALL: CABLES: I-5/C*14, J-5/C*14

3. (DOT) JUNCTION BOX (BY OTHERS)

4. 2" PVC
   CABLES: 2/C*14 (BY OTHERS)

5. MPD STA L714+60 (BY OTHERS)

6. 2" PVC
   CABLES: 2/C*14 (BY OTHERS)

7. MPD STA R714+60 (BY OTHERS)

8. 4-3" RMC, (BY OTHERS)
   INSTALL: CABLES: I-5/C, J-5/C

9. ELECTRIC MANHOLE (BY OTHERS)

10. CONSTRUCT: 3" RMC, TYPE CUG
    INSTALL: CABLES: K-10/C, L-5/C

11. CONSTRUCT: SFT, STA N 10+62 LT18'
    INSTALL: TSS, TYPE T,
    (2) TSA TYPE LRT SA,
    TSA, TYPE C-1

12. 6" PVC (BY OTHERS)
    INSTALL: CABLES: I-5/C, J-5/C, K-10/C,
    L-5/C, 4-2/C*14
    (2-2/C *14 BY OTHERS)

13. CONSTRUCT: 1½" RMC, TYPE CUG
    INSTALL: CABLES: 4-2/C*14

14. CONSTRUCT: 17"x30" JUNCTION BOX

15. CONSTRUCT: 1½" RMC, TYPE CUG
    INSTALL: CABLES: 4-2/C*14

16. CONSTRUCT: 1½" RMC, TYPE CUG
    INSTALL: CABLES: 4-2/C*14

17. CONSTRUCT: 17"x30" JUNCTION BOX

18. CONSTRUCT: 1½" RMC, TYPE CUG
    INSTALL: CABLES: 4-2/C*14

19. CONSTRUCT: SFT, STA N 10+08 RT 22'
    INSTALL: TSS, TYPE T,
    (2) TSA TYPE LRT SA
    TSA, TYPE C-1,
    PSA, TYPE W-1

20. CONSTRUCT: 3" RMC, TYPE CUG
    INSTALL: CABLES: A-10/C, B-5/C, C-5/C,

21. JUNCTION BOX (BY OTHERS)

22. MPD STA L 713+70 (BY OTHERS)

23. 2" PVC
    CABLES: 2/C*14 (BY OTHERS)

24. 2" PVC
    CABLES: 2/C*14 (BY OTHERS)

25. 6-4" RMC (BY OTHERS)
    INSTALL: CABLES: 4-2/C*14
    A-10/C, B-5/C,
    C-5/C, D-2/C

26. MPD STA R 713+70 (BY OTHERS)

27. ELECTRIC MANHOLE (BY OTHERS)

28. CONSTRUCT: 3" RMC, TYPE CUG
    INSTALL: CABLES: E-5/C, F-5/C, G-5/C, H-2/C

29. CONSTRUCT: SFT STA N 10+54 RT 22'
    INSTALL: TSS, TYPE T
    TSA, TYPE 15M-2
    PSA, TYPE W-1
    R3-3(S) (MAST ARM MOUNTED)

30. CONSTRUCT: 6-4" RMC
    INSTALL: CABLES: A-10/C, B-5/C, C-5/C,
    E-5/C, F-5/C, G-5/C,
    I-5/C, J-5/C,
    K-10/C, L-5/C, 4-2/C*14
    (4-2/C *14 BY OTHERS)

31. CONSTRUCT: 18"x36" JUNCTION BOX

32. CONSTRUCT: 6-4" RMC
    INSTALL: CABLES: A-10/C, B-5/C, C-5/C,
    E-5/C, F-5/C, G-5/C,
    I-5/C, J-5/C, K-10/C,
    L-5/C, 8-2/C*14
    (8-2/C *14 BY OTHERS)

33. CONSTRUCT: P-MC STA N 9+90
    2SY. CONCRETE PAD
    INSTALL: CONTROLLER ASSEMBLY, 8 PHASE,
    METER CABINET
    MPD ASSEMBLY
    NAZTEK MODEL 981 NEMA TS2
    (DOOR FACE TO SIDEWALK)

LOOP DETECTOR SCHEDULE

SENSOR No.	SENSOR CHANNEL	LOOP	MODE	SIZE	TYPE	No. OF TURNS	MICRO HENRIES
1	1	A	PRESENCE	6'x9'		x	
1	2	B	PRESENCE	6'x9'			
1	3	C	PRESENCE	6'x9'			
1	4	D	PRESENCE	6'x9'			
2	1	E	PRESENCE	6'x9'		x	
2	2	F	PRESENCE	6'x9'			
2	3	G	PRESENCE	6'x9'			
2	4	H	PRESENCE	6'x9'			

x NUMBER OF TURNS TO BE DETERMINED IN THE FIELD

NOTE:
SEE DWG. NO.TF-7184 FOR ELECTRICAL PLAN.

AS-BUILT

REV	DISCIPLINE	RVW. BY	DATE	DISCIPLINE	RVW. BY	DATE	DISCIPLINE	RVW. BY	DATE
	CIVIL			ELECTRICAL			CONSTRUCTION		
	STRUCTURAL			SIGNAL			O&M		
	ARCHITECTURAL			CATENARY			TRACK		
	COMMS.			BRIDGE			PEM		

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORP.

DATE	REVISIONS	No.
10-31-05	AS-BUILT INCORP. FCN C-70046	2
09-11-03	REVISION	1
03-19-02	FOR CONSTRUCTION	0

DESIGNED: N. SZILVAGYI
DRAWN: N. SPECTOR
CHECKED: W. ERSKY
APPROVED: K. SHIELDS

KENNETH C. SHIELDS
PROFESSIONAL ENGINEER
N.J. LIC. No. 4520
DATE: ______

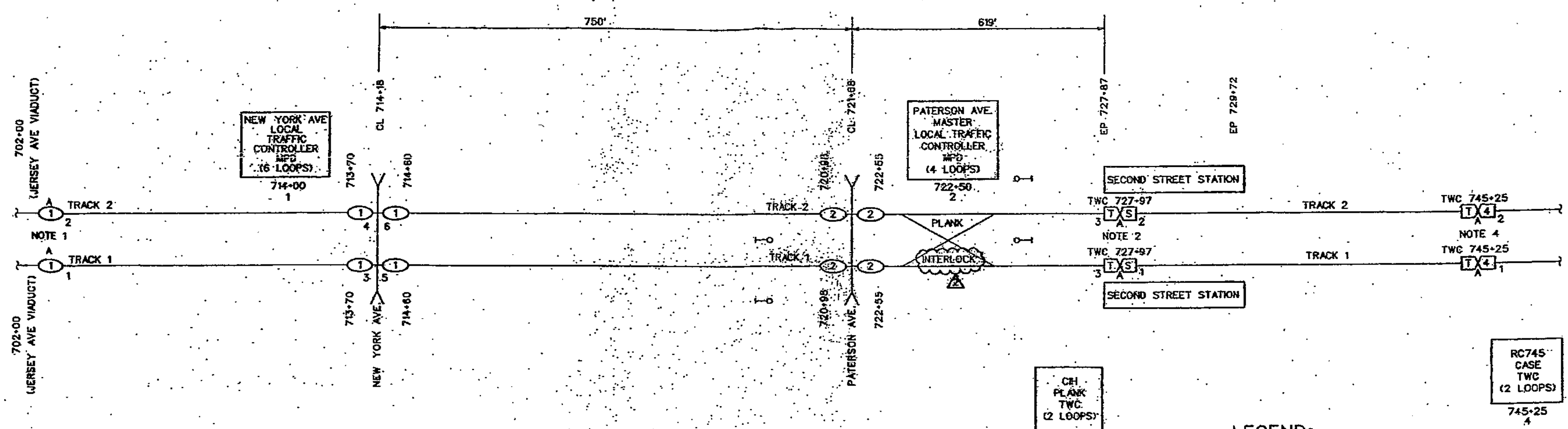
HUDSON - BERGEN LIGHT RAIL TRANSIT SYSTEM

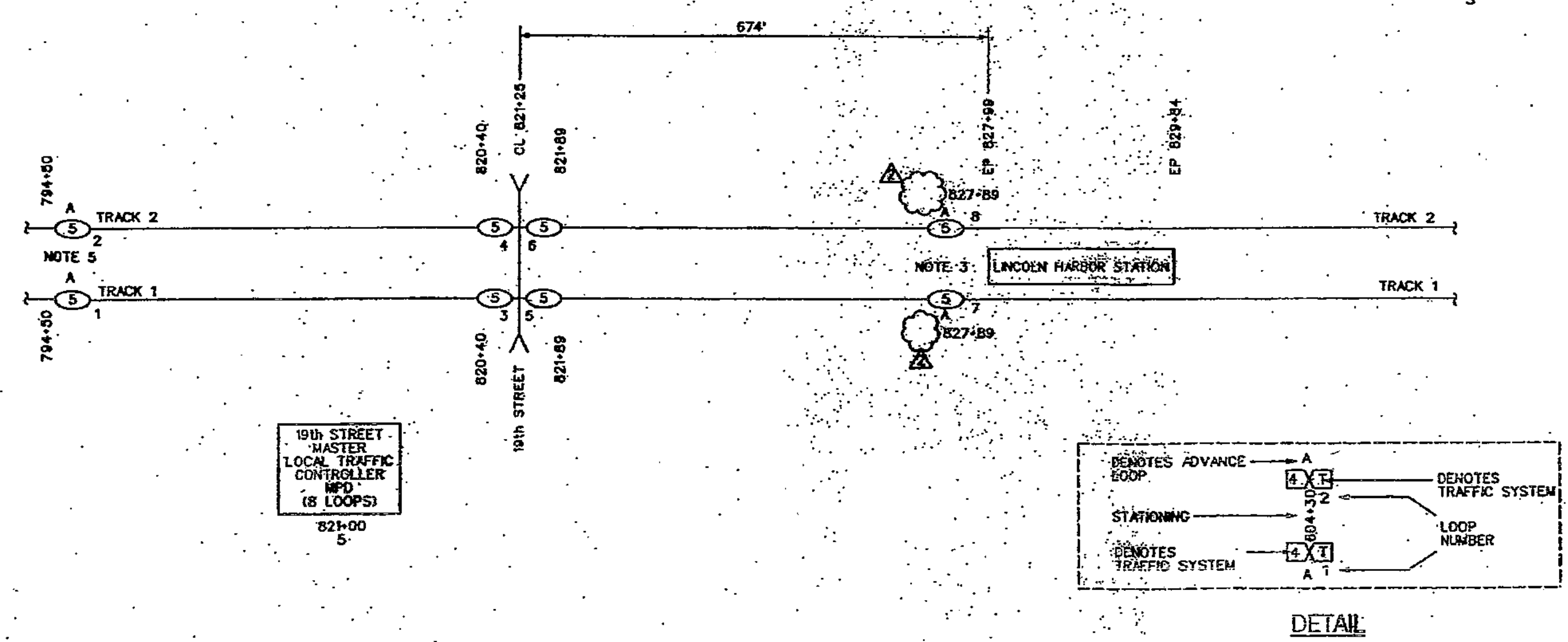
NEW YORK AVENUE AND LRT CROSSING
ELECTRICAL PLAN
SHEET 2 OF 2

SCALE: AS-SHOWN
FILE NAME: NITF7185.DGN
DRAWING No.: TF-7185
REV: 2
DATE: 31 OCTOBER, 2005
CONTRACT No. 96CT001
ISSUE AS-BUILT
SHEET No. 64 OF 89

D:\INFRA\HUDBERG\C7001\MOS-2\N15-N25\TRAFFIC SIGNALS\AS-BUILT 10/8/04

(483)





LEGEND:

- TWC LOOP
- METAL PRESENCE DETECTOR LOOP
- TWC LOOP FOR TRAFFIC ONLY. (6-NUMBER ASSOCIATED SYSTEM WITH TRAFFIC CONTROLLER SYSTEM)
- TWC LOOP FOR TRAFFIC AND SIGNALS.
- CL - CENTER LINE
- EP - END OF PLATFORM
- CIH - CENTRAL INSTRUMENT HOUSE
- RC - RAILROAD CASE
- A - ADVANCE INDICATION AND DIRECTION.
- HOLDING SIGNAL
- TWC - TRAIN TO WAYSIDE COMMUNICATION.
- MPD - METAL PRESENCE DETECTOR.

NOTES:

1. NORTHBOUND ADVANCE AND DIRECTION FOR NEW YORK AVE AND PATERSON AVE.
2. SOUTH BOUND ADVANCE DETECTOR FOR PATERSON. AVE. AND NEW YORK AVE.
3. SOUTH BOUND ADVANCE DETECTOR FOR 19th STREET.
4. SOUTH BOUND ADVANCE DETECTOR FOR SKIP STOP OPERATION.
5. NORTHBOUND ADVANCE DETECTOR FOR 19th STREET.

AS-BUILT

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

DATE	REVISION	REV
10/31/05	AS-BUILT	2
01/10/03	TITLE BLOCK REVISED	1
9/28/02	ISSUED FOR CONSTRUCTION	0

DESIGNED: W. EPSKY
DRAWN: N. SPEKTOR
CHECKED: W. EPSKY
APPROVED: S. JAMES

KENNETH C. SHIELDS PROFESSIONAL ENGINEER N.J. LIC. No. 41528

HUDSON - BERGEN LIGHT RAIL TRANSIT SYSTEM

TRAFFIC SYSTEM
MPD AND TWC BLOCK DIAGRAM

SCALE: NTS
FILE NAME: TR7001.DGN
DRAWING No.: TR-7001 REV: 2
DATE: 31 OCTOBER, 2005
CONTRACT No.: 96CT001
ISSUE: AS-BUILT
SHEET No. 75 of 83

(448)

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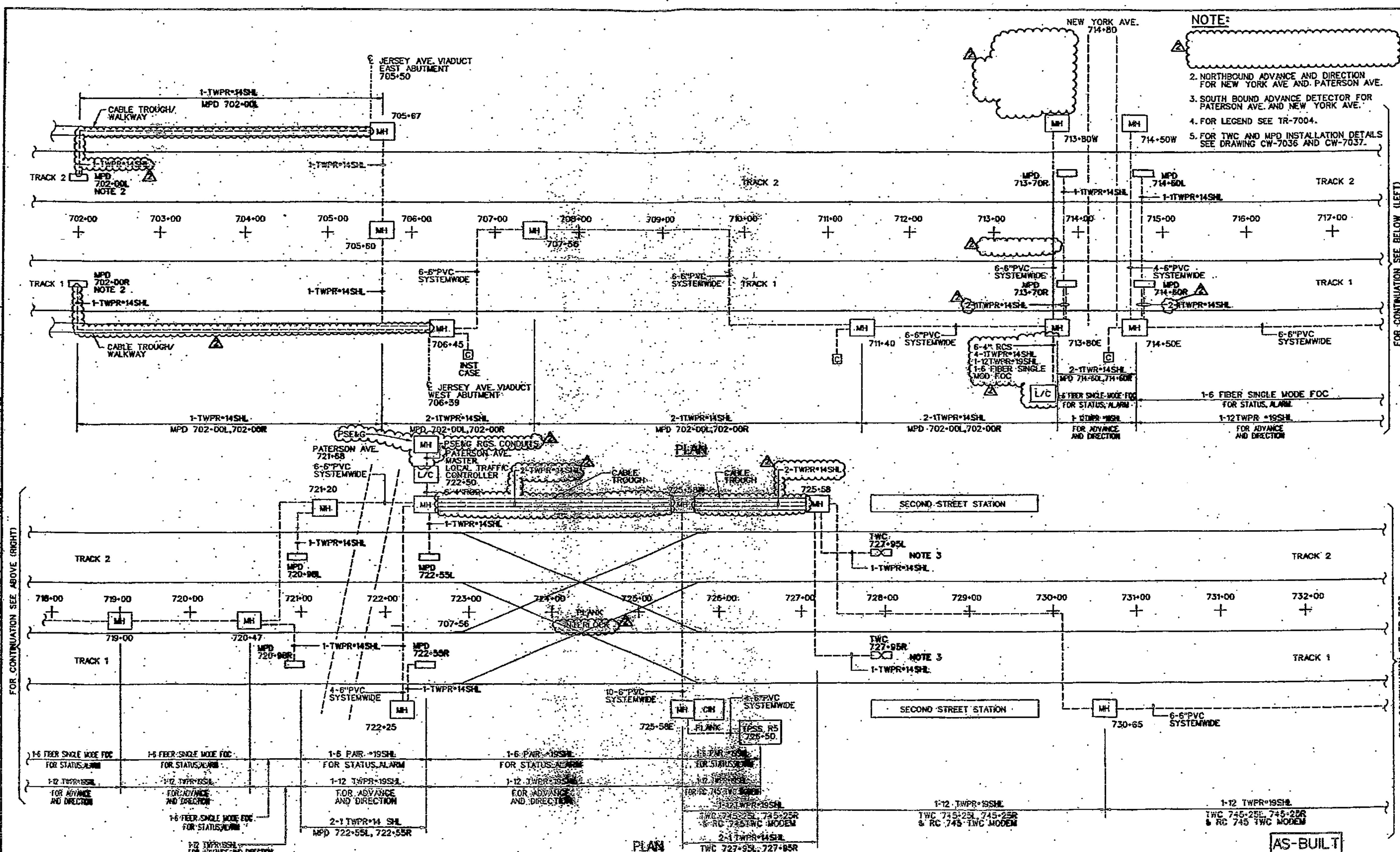

REV	DISCIPLINE	RVW.BY	DATE	DISCIPLINE	RVW.BY	DATE	DISCIPLINE	RVW.BY	DATE
	CIVIL			ELECTRICAL			CONSTRUCTION		
	STRUCTURAL			SIGNAL			O&M		
	ARCHITECTURAL			CATENARY			TRACK		
	COMMS			BRIDGE			PEM		

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

DATE	REVISIONS	No.
10/31/05	AS-BUILT: INCORP. DCN SG-03-005	2
01/10/03	TITLE BLOCK REVISED	1
9/12/02	ISSUED FOR CONSTRUCTION	0

DESIGNED: W. EPSKY
DRAWN: N. SPEKTOR
CHECKED: W. EPSKY
APPROVED: S. JAMES

KENNETH C. SHIELDS PROFESSIONAL ENGINEER N.J. LIC. No. 41520

DATE:

HUDSON - BERGEN LIGHT RAIL TRANSIT SYSTEM

TRAFFIC SYSTEM
RAIL FUNCTIONS
CABLE PLAN
STA 702+00 THRU STA 732+60

SCALE: NTS
FILE NAME: TR7002.DGN
DRAWING No.: TR-7002
REV: 2
DATE: 31 OCTOBER, 2005
CONTRACT No.: 96CT001
ISSUE: AS-BUILT
SHEET No. 76 OF 88

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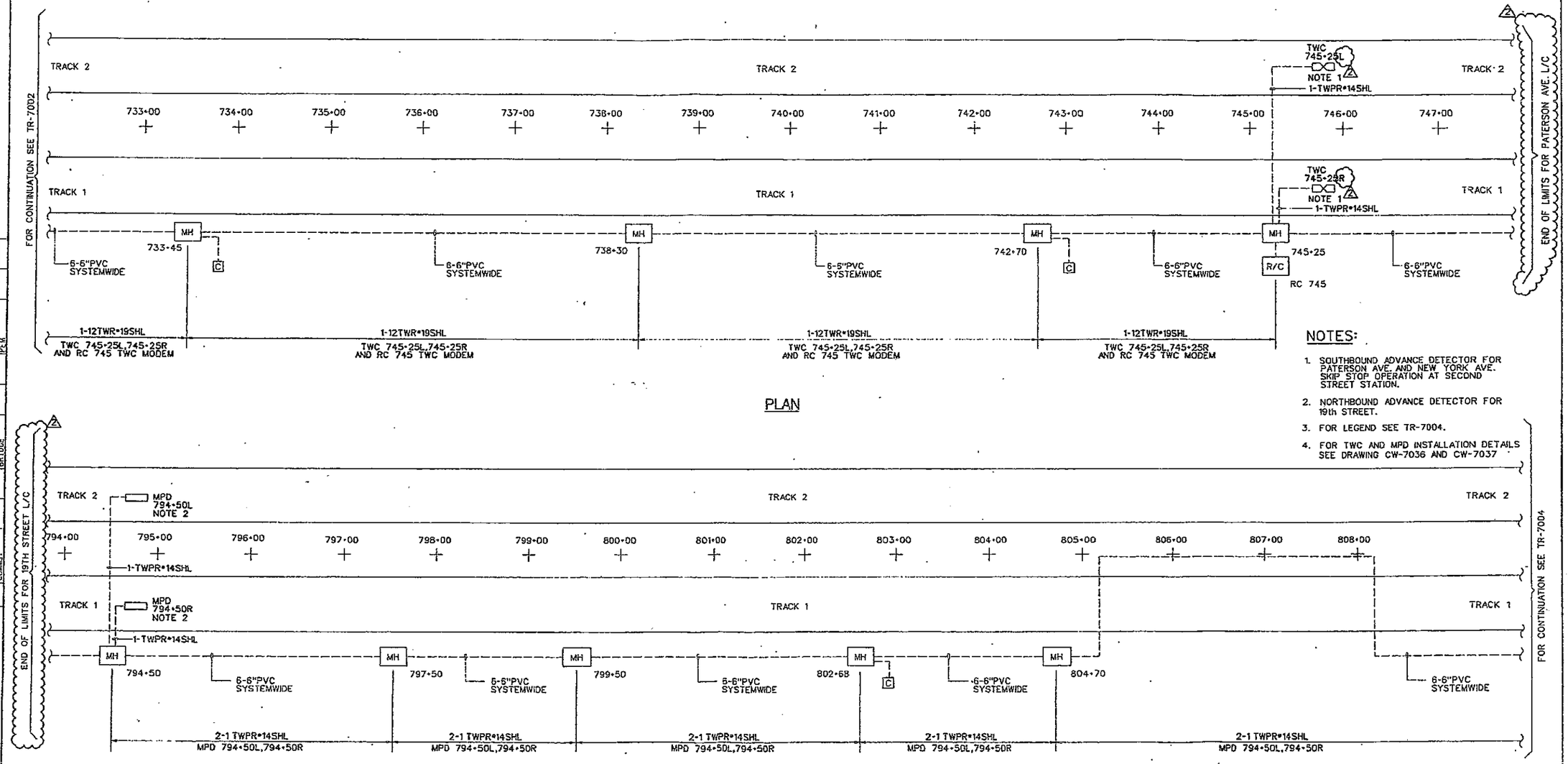

PLAN

NOTES:

1. SOUTHBOUND ADVANCE DETECTOR FOR PATERSON AVE. AND NEW YORK AVE. SKIP STOP OPERATION AT SECOND STREET STATION.
2. NORTHBOUND ADVANCE DETECTOR FOR 19th STREET.
3. FOR LEGEND SEE TR-7004.
4. FOR TWC AND MPD INSTALLATION DETAILS SEE DRAWING CW-7036 AND CW-7037

PLAN

AS-BUILT

REV	DISCIPLINE	INIT.	DATE
	CIVIL		
	STRUCTURAL		
	ARCHITECTURAL		
	COMMS.		
	ELECTRICAL		
	SIGNAL		
	CATENARY		
	BRIDGE		

DISCIPLINE	INIT.	DATE
CONSTRUCTION		
LOAN		
TRACK		
PSEG		

NJTRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

No.	REVISIONS	DATE
2	AS-BUILT	10/31/05
1	TITLE BLOCK REVISED	01/10/03
0	ISSUED FOR CONSTRUCTION	9/12/02

DESIGNED: W. EPSKY
DRAWN: N. SPEKTOR AS
CHECKED: W. EPSKY
APPROVED: S. JAMES

KENNETH C. SHIELDS
PROFESSIONAL ENGINEER
N.J. LIC. No. 41520
DATE:

HUDSON – BERGEN LIGHT RAIL TRANSIT SYSTEM

TRAFFIC SYSTEM
RAIL FUNCTIONS
CABLE PLAN
STA 733+00 THRU STA 747+00 AND
STA 794+00 THRU STA 808+00

SCALE: NTS
FILE NAME: TR7003.DGN
DRAWING No.: TR-7003
REV: 2
DATE: 31 OCTOBER, 2005

CONTRACT No. 96CT001
ISSUE AS-BUILT
SHEET No. 77 OF 82

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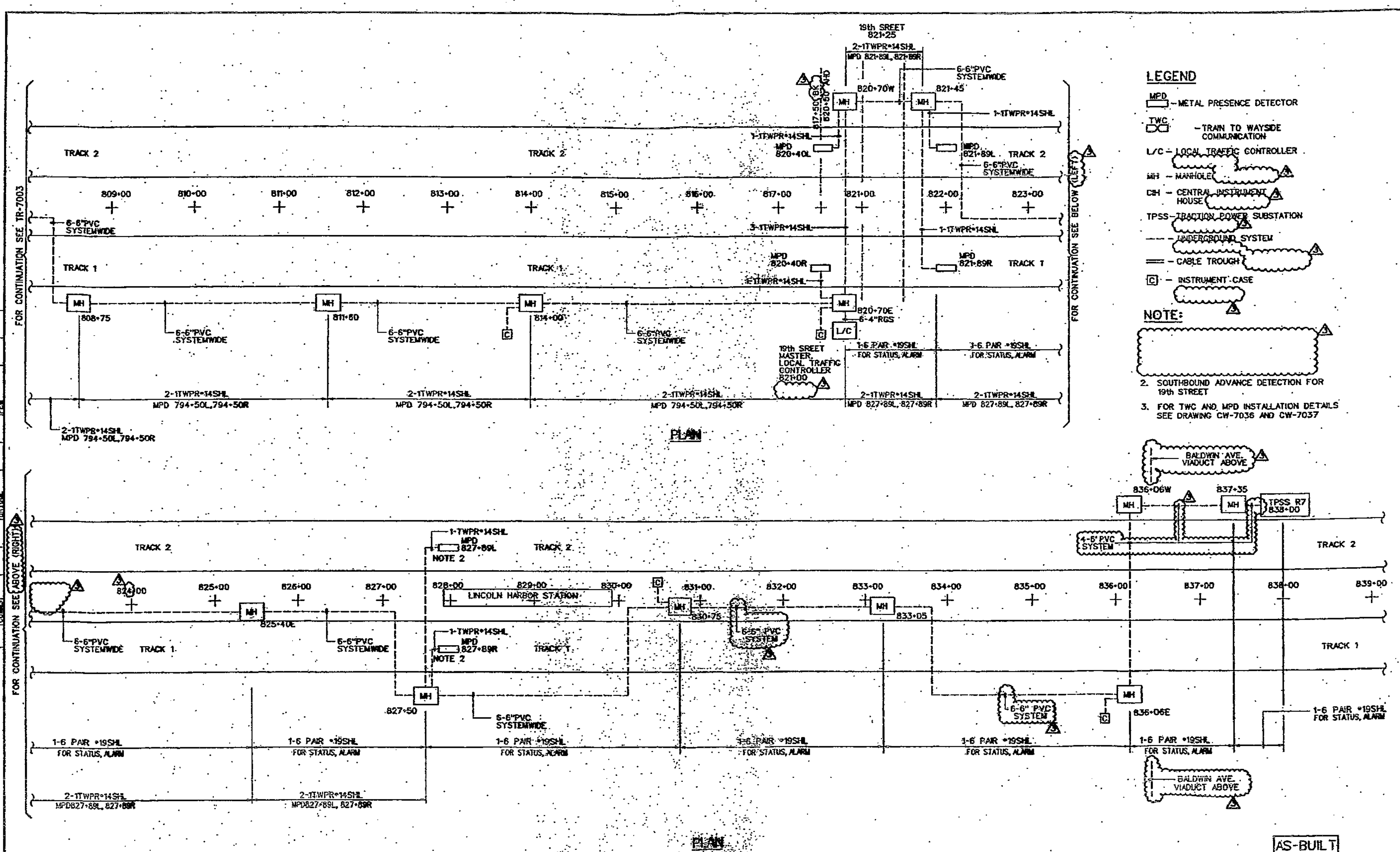

07/6/05	AS-BUILT	3
01/10/03	TITLE BLOCK REVISED	2
10/8/02	DELETED 1-12 TWPR +19 SHL CABLE	1
9/12/02	ISSUED FOR CONSTRUCTION	0
DATE	REVISIONS	

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

DESIGNED: W. EFSKY
DRAWN: R. SPEKTOR
CHECKED: W. EFSKY
APPROVED: S. JAMES

KENNETH C. SHIELDS
PROFESSIONAL ENGINEER
N.J. LIC. No. 41520

HUDSON - BERGEN LIGHT RAIL TRANSIT SYSTEM

TRAFFIC SYSTEM
RAIL FUNCTIONS
CABLE PLAN
STA 809+00 THRU STA 839+00

SCALE: NTS
FILE NAME: TR7004.DGN
DRAWING No.: TR-7004
REV: 3
DATE: 31 OCTOBER, 2005
CONTRACT No. 96CT001
ISSUE: AS-BUILT
SHEET No. 18 OF 39

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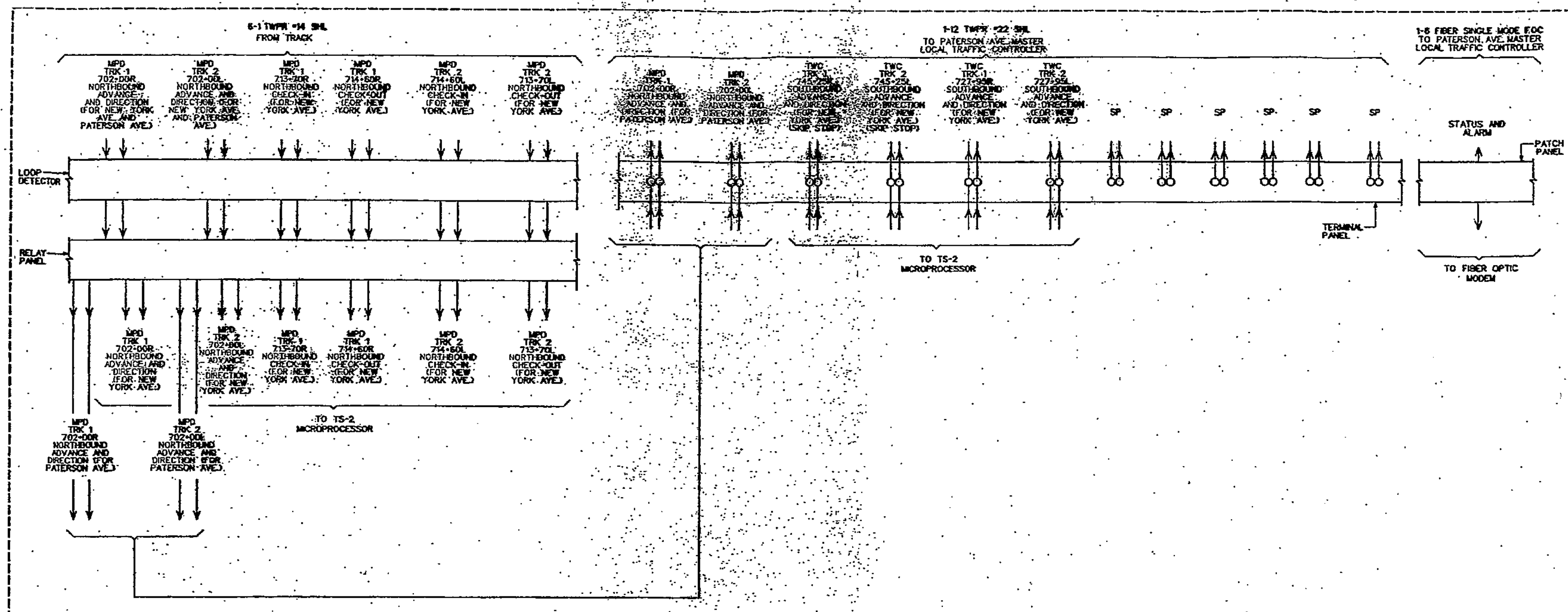

NEW YORK AVE LOCAL TRAFFIC CONTROLLER RAIL FUNCTIONS WIRING BLOCK DIAGRAM

NOTES

1. FOR ROAD FUNCTION TERMINATIONS REFER TO REFERENCE DRAWINGS.

REFERENCE DRAWINGS

NEW YORK AVE/LRT CROSSING TRAFFIC SIGNALS AND PAVEMENT MARKINGS

AS-BUILT

NJ TRANSIT	TWENTY FIRST CENTURY RAIL CORPORATION WASHINGTON INFRASTRUCTURE CORPORATION	

DATE	REVISIONS	No.
10/31/05	AS-BUILT	2
01/10/03	TITLE BLOCK REVISED	1
9/28/02	ISSUE FOR CONSTRUCTION	0

DESIGNED: W. EPSKY
DRAWN: N. SPEKTOR
CHECKED: W. EPSKY
APPROVED: S. JAMES

KENNETH C. SHIELDS
PROFESSIONAL ENGINEER
N.J. LIC. No. 41520
DATE:

HUDSON – BERGEN LIGHT RAIL TRANSIT SYSTEM

TRAFFIC SYSTEM
NEW YORK AVE
LOCAL TRAFFIC CONTROLLER
RAIL FUNCTIONS
WIRING BLOCK DIAGRAM
SHEET 1

SCALE: NTS
FILE NAME: TR7005.DGN
DRAWING No.: TR7005 REV: 2
DATE: 31 OCTOBER, 2005
CONTRACT No.: 98CT001
ISSUE: AS-BUILT
SHEET No.: 79 OF 93

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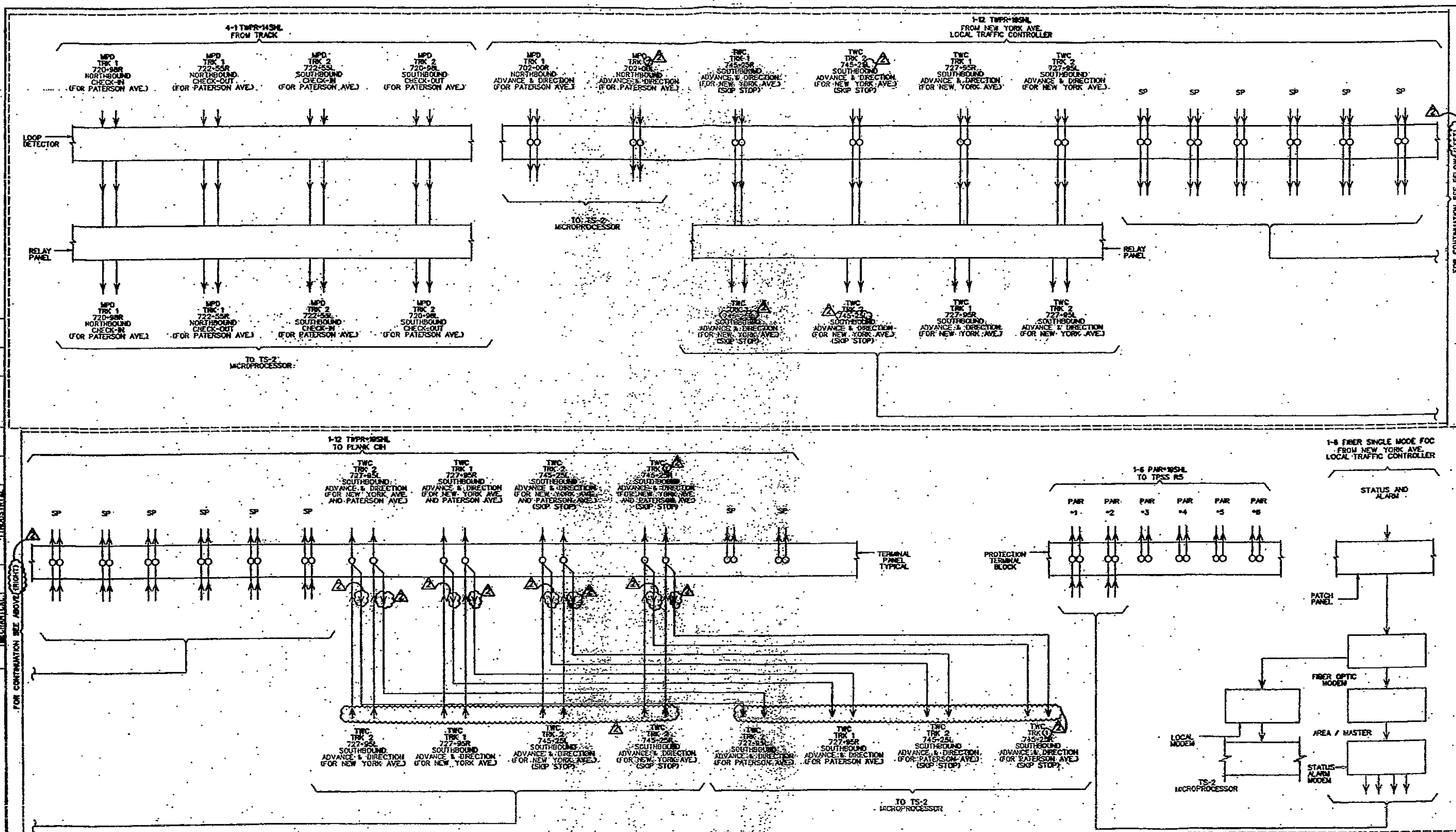
502



PATERSON AVE.
AREA MASTER
LOCAL TRAFFIC CONTROLLER
RAIL FUNCTIONS WIRING BLOCK DIAGRAM

NOTES:

1. FOR-ROAD FUNCTION TERMINATORS REFER TO REFERENCE DRAWINGS

REFERENCE DRAWINGS

PATERSON AVE. / LRT CROSSING TRAFFIC SIGNALS AND PAVEMENT MARKINGS

AS-BUILT

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE SERVICES INC.

DATE	REVISIONS	No.
10/31/05	AS-BUILT	2
01/10/03	TITLE BLOCK REVISED	1
9/28/02	ISSUED FOR CONSTRUCTION	0

DESIGNED: W. EPSKY
DRAWN: N. SPEKTOR
CHECKED: W. EPSKY
APPROVED: S. JAMES

KENNETH C. SHIELDS PROFESSIONAL ENGINEER N.J. LIC. No. 41520
DATE:

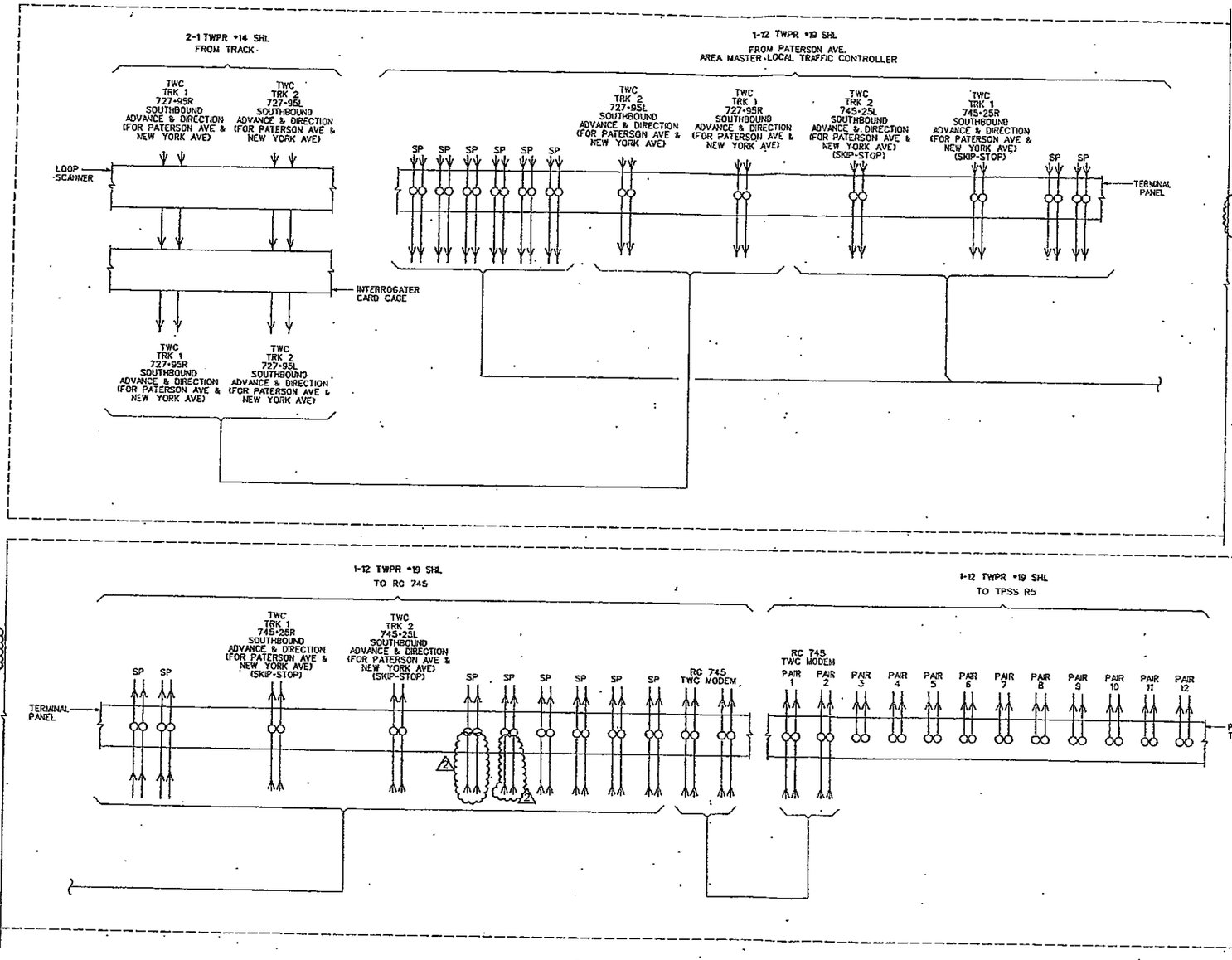
HUDSON - BERGEN LIGHT RAIL TRANSIT SYSTEM

TRAFFIC SYSTEM
PATERSON AVE.
AREA MASTER
LOCAL TRAFFIC CONTROLLER
RAIL FUNCTIONS
WIRING BLOCK DIAGRAM
SHEET 2

SCALE: NTS
FILE NAME: TR7006.DGN
DRAWING No.: TR-7006
REV: 2
DATE: 31 OCTOBER, 2005
CONTRACT No.: 96CT001
ISSUE: AS-BUILT
SHEET No. 49 OF 83

Q:/INFRA/HUDBERG/96CT001/MOS-2PR/N15-N25/TRAFFIC SIGNAL AND TRAFFIC SYSTEM/AS-BUILT

(503)



PLANK CIH
RAIL FUNCTIONS WIRING BLOCK DIAGRAM

REV	DISCIPLINE	INIT.	BY	DATE
	CIVIL			
	STRUCTURAL			
	ARCHITECTURAL			
	COMMS.			

DISCIPLINE	INIT.	BY	DATE
ELECTRICAL			
SIGNAL			
CATENARY			
BRIDGE			

DISCIPLINE	INIT.	BY	DATE
CONSTRUCTION			
LOAM			
TRACK			
PSM			

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

NO.	DATE	REVISIONS
2	10/31/05	AS-BUILT
1	01/10/03	TITLE BLOCK REVISED
0	9/28/02	ISSUED FOR CONSTRUCTION

DESIGNED: W. EPSKY
DRAWN: N. SPEKTOR NS
CHECKED: W. EPSKY
APPROVED: S. JAMES

KENNETH C. SHIELDS
PROFESSIONAL ENGINEER
N.J. LIC. No. 41520
DATE:

HUDSON – BERGEN
LIGHT RAIL TRANSIT
SYSTEM

TRAFFIC SYSTEM
PLANK CIH
RAIL FUNCTIONS
WIRING BLOCK DIAGRAM
SHEET 3

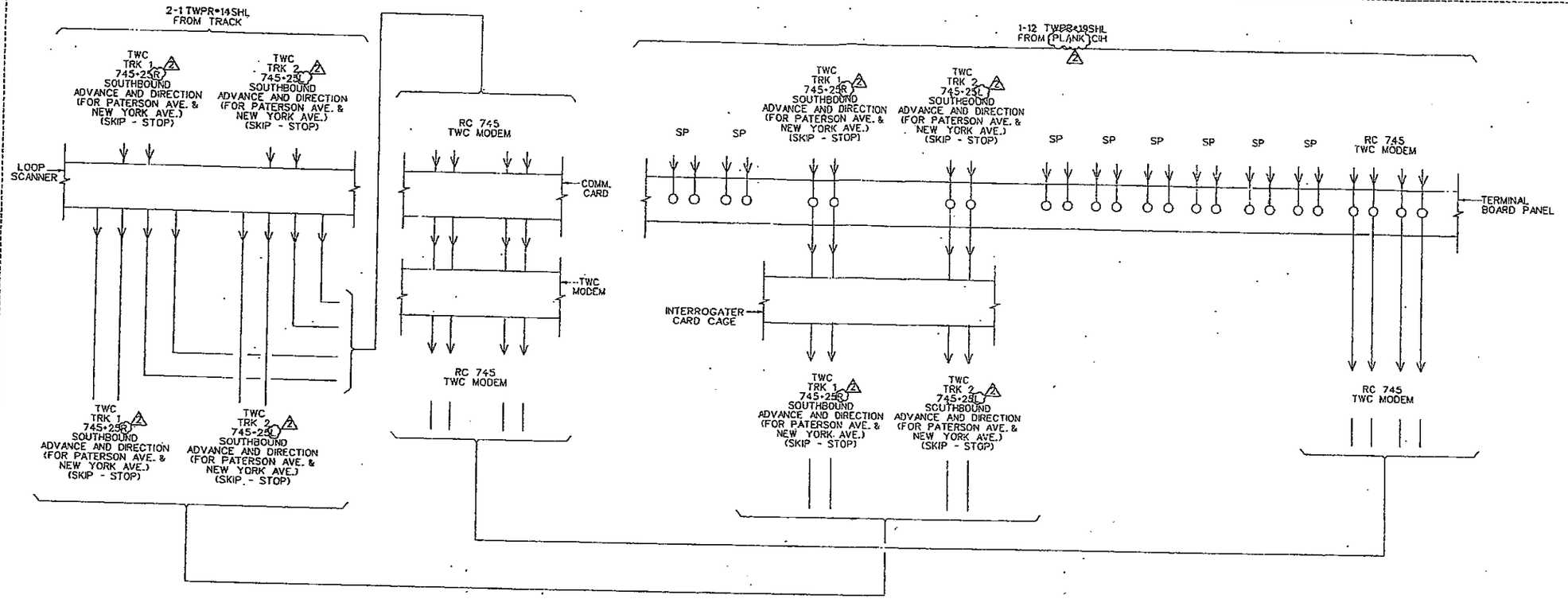
AS-BUILT

SCALE: NTS
FILE NAME: TR7007.DGN
DRAWING No.: TR7007
REV: 2
DATE: 31 OCTOBER, 2005

CONTRACT No. 96CT001
ISSUE AS-BUILT
SHEET No. 81 OF 83

504

O:/INFRA/HUDBERG/96CT001/MOS-2PR/N15-N25/TRAFFIC SYGNAL AND TRAFFIC SYSTEM/AS-BUILT



REV	DISCIPLINE	INIT.	BY	DATE
	CIVIL			
	STRUCTURAL			
	ARCHITECTURAL			
	COMMS.			
	ELECTRICAL			
	SIGNAL			
	CATENARY			
	BRIDGE			

DISCIPLINE	INIT.	BY	DATE
CONSTRUCTION			
DAM			
TRACK			
OPEN			

RC CASE 745
RAIL FUNCTIONS
WIRING BLOCK DIAGRAM

NOTES:

1. FOR ADDITION TERMINATIONS REFER TO REFERENCE DRAWINGS

REFERENCE DRAWINGS

RC CASE 745
SIGNALS CIRCUIT DRAWINGS

AS-BUILT

NJ TRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

DATE	REVISIONS	No.
03/31/05	AS-BUILT	2
01/10/03	TITLE BLOCK REVISED	1
9/28/02	ISSUED FOR CONSTRUCTION	0

DESIGNED: W. EPSKY
DRAWN: N. SPEKTOR
CHECKED: W. EPSKY
APPROVED: S. JAMES

KENNETH C. SHIELDS
PROFESSIONAL ENGINEER
N.J. LIC. No. 41520
DATE:

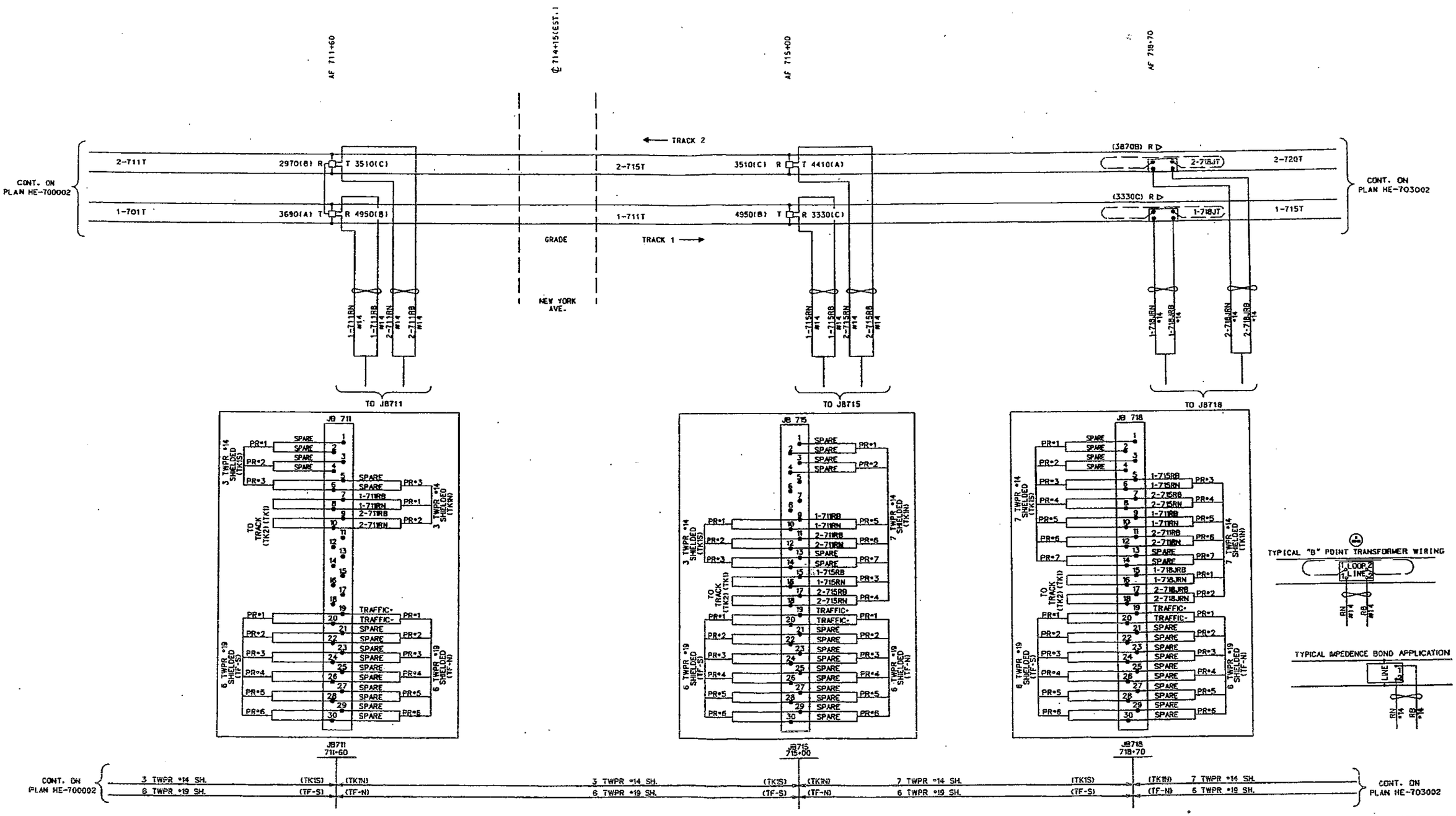
HUDSON – BERGEN
LIGHT RAIL TRANSIT
SYSTEM

TRAFFIC SYSTEM
RC CASE 745
RAIL FUNCTIONS
WIRING BLOCK DIAGRAM
SHEET 4

SCALE: NTS	CONTRACT No. 96CT001
FILE NAME: TR7008.DGN	ISSUE AS-BUILT
DRAWING No.: TR-7008 REV: 2	SHEET No. 82 OF 88
DATE: 31 OCTOBER, 2005	

Q:/INFRA/HUDBERG/96CT001/MDS-2PR/N15-N25/TRAFFIC SYGNAL AND TRAFFIC SYSTEM/AS-BUILT

505



NJTRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

Harmon Industries, Inc.
Grain Valley, Mo. 64029

DATE	REVISIONS	BY
02/01/04	AS PLACED IN SERVICE	

DESIGNED: HRS
DRAWN: RLS
CHECKED: MAT
APPROVED:

PROFESSIONAL ENGINEER
N.J. LIC. No. GE42755
4/17/06
DONALD G. BAKER

HUDSON - BERGEN LIGHT RAIL TRANSIT SYSTEM

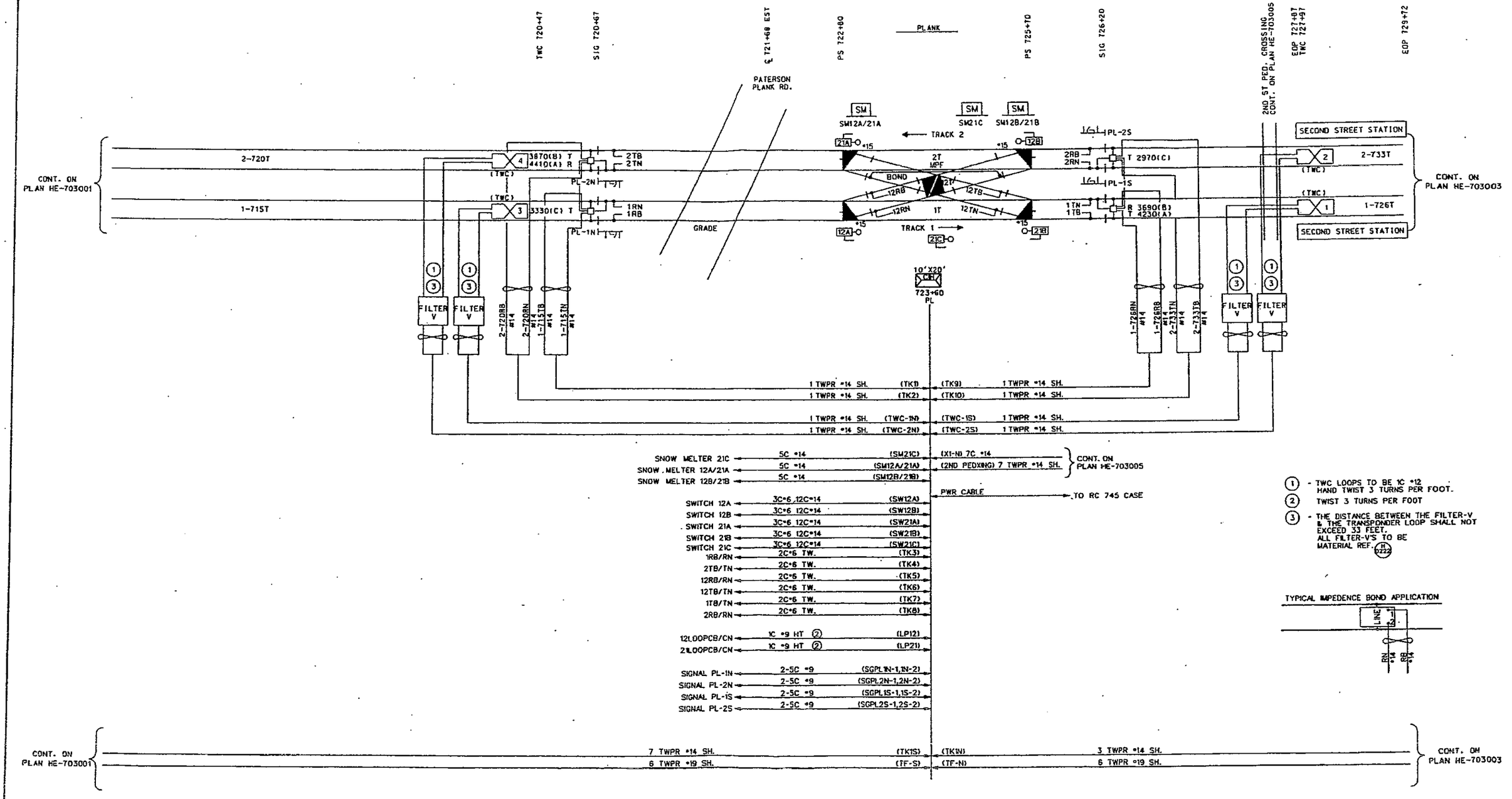
PLANK

CABLE & TRACK CIRCUITS

(1559)

SCALE: N.T.S.
FILE NAME: HE-703001
DRAWING No.: REV:
DATED: 04-12-02

CONTRACT No. 96CT001
ISSUE CONST.
SHEET No. 1 OF —



① - TWC LOOPS TO BE 1C #12 HAND TWIST 3 TURNS PER FOOT.
② TWIST 3 TURNS PER FOOT
③ - THE DISTANCE BETWEEN THE FILTER-V & THE TRANSPONDER LOOP SHALL NOT EXCEED 53 FEET. ALL FILTER-V'S TO BE MATERIAL REF. (H 6222)

TYPICAL IMPEDENCE BOND APPLICATION

NJTRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

Harmon Industries, Inc.
Grain Valley, Mo. 64029

DATE	REVISIONS	No.
07/12/04	ADDED 2ND ST. PED. CROSSING AFIS	1
02/01/06	AS PLACED IN SERVICE	

DESIGNED: HRS
DRAWN: DBK
CHECKED: MAT
APPROVED:

PROFESSIONAL ENGINEER
N.J. LIC. No. GE42755
4/17/06
DONALD G. BAKER

HUDSON – BERGEN LIGHT RAIL TRANSIT SYSTEM

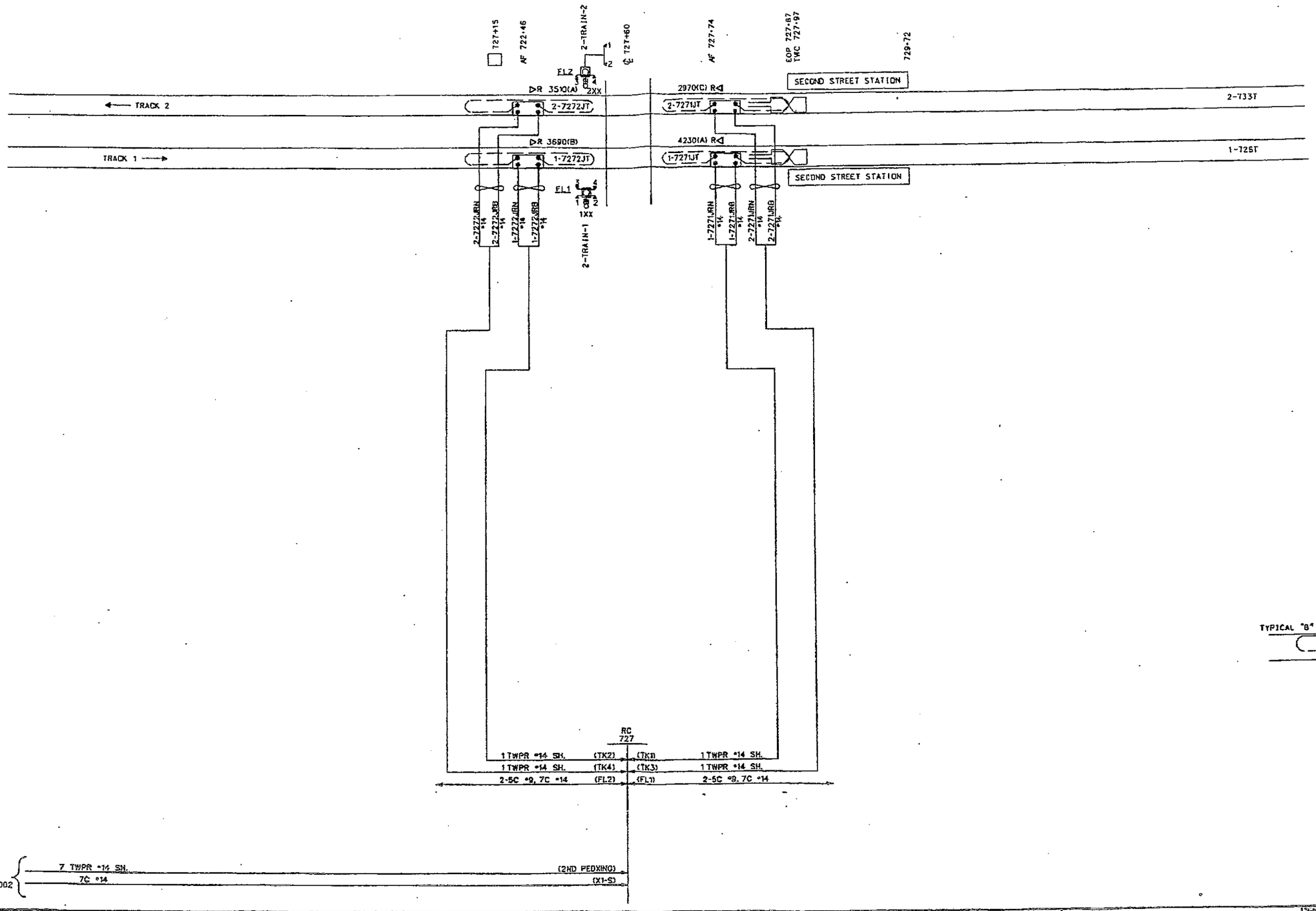
PLANK

CABLE & TRACK CIRCUITS

(156)

SCALE: N.T.S.
FILE NAME: HE-703002
DRAWING No.: REV:
DATE: 04-12-02

CONTRACT No. 96CT001
ISSUE CONST.
SHEET No. 2 OF ___



NJTRANSIT

TWENTY FIRST CENTURY RAIL CORPORATION
WASHINGTON INFRASTRUCTURE CORPORATION

Harmon Industries, Inc.
Grain Valley, Mo. 64029

DATE	REVISIONS	NO.
07/12/04	ADDED 2ND ST. PED. CROSSING APIS	1

DESIGNED: HRS
DRAWN: BRD
CHECKED: ROT
APPROVED:

PROFESSIONAL ENGINEER
N.J. LIC. No. GE42755
D. K. Baker 5/3/06
DONALD G. BAKER

HUDSON – BERGEN LIGHT RAIL TRANSIT SYSTEM

PLANK
2ND ST. PEDESTRIAN CROSSING
CABLE & TRACK CIRCUITS
(159)

SCALE: N.T.S.
FILE NAME: HE-703005
DRAWING NO.: REV.:
DATE: 04-12-02

CONTRACT No 96CT001
ISSUE CONST.
SHEET No. 5 OF —

Revised
3-24-15

SIGNAL TIMING SCHEDULE

PATERSON PLANK ROAD & PALISADES AVENUE

JERSEY CITY AND UNION CITY

REVISION DATE : SEPT. 10, 1998

110 seconds

WITHOUT PEDESTRIAN ACTUATION

PHASE	1,2	3,4	5-8	9-12	13-16	TIME MAX I	TIME MAX II
						38	47
1 Paterson Plank Road WB	G	R	R	DW	DW	~~38~~	~~42~~
1 CHANGE	Y	R	R	DW	DW	3	3
1 CLEARANCE	R	R	R	DW	DW	1	1
						19	11
2 Paterson Plank Road EB	R	G	R	W	DW	~~14~~	~~6~~
2 PED. CLEARANCE	R	G	R	FDW	DW	8	8
2 CHANGE	R	Y	R	DW	DW	3	3
2 CLEARANCE	R	R	R	DW	DW	1	1
3 PALISADES AVENUE .	R	R	G	DW	W	25	24
3 PED. CLEARANCE	R	R	G	DW	FDW	8	8
3 CHANGE	R	R	Y	DW	DW	3	3
3 CLEARANCE	R	R	R	DW	DW	1	1

EMERGENCY FLASHING	Y	Y	R	DARK	DARK

NOTES :

1 Memory circuit and Manual circuit to be discontinued.

2 Max. I timing is to be in effect from Monday to Friday 7:00 am to ~~3:00~~ 2:30 pm ~~Monday to Thrusday 7:00 pm to 3:00 am and Friday 3:00 pm to~~ ALL OTHER TIMES

3 Max. II timing is to be in effect from Monday to Thrusday 7:00 pm to 3:00 am and Friday 3:00 pm to Monday 7:00 am (or at other times).

4 Offset is measured from the beginning of YELLOW for phase 4 (Paterson Plank Rd. EB) at the intersection of Paterson Plank Road and South Wing Viaduct to the beginning of YELLOW for phase 1 (WB Paterson Plank) at the intersection of Paterson Plank Road / Palisade Ave. Offset is set at 60 seconds for MAX I and 40 seconds for MAX II

Revised 3-24-15

SIGNAL TIMING SCHEDULE

PATERSON PLANK ROAD & SOUTH WING VIADUCT

JERSEY CITY AND UNION CITY

REVISION DATE June 27, 2000

WITHOUT PEDESTRIAN ACTUATION

PHASE	1-2	3	4-6	7-8	9-10	P1,P2	P3-P6	TIME MAX I	TIME MAX II
1A Doric Towers	R	R	R	R	G	DW	DW	6	6
1A CHANGE	R	R	R	R	Y	DW	DW	3	3
1A CLEARANCE	R	R	R	R	R	DW	DW	1	1
1B Paterson Plank Road NB LEAD	G <-G	G	R	R	R	DW	DW	7	7
1B CHANGE	G <-G	G	R	R	R	DW	DW	3	3
2 Paterson Plank Road NB / VIADUCT	G	G	G	R	R	DW	DW	18	36
2 CHANGE	Y	Y	Y	R	R	DW	DW	3	3
2 CLEARANCE	R	R	R	R	R	DW	DW	1	1
3 Paterson Plank Road EB	R	R	R	G	R	DW	DW	64	40
3 CHANGE	R	R	R	Y	R	DW	DW	3	3
3 CLEARANCE	R	R	R	R	R	DW	DW	1	1

WITH PEDESTRIAN ACTUATION

PHASE	1-2	3	4-6	7-8	9-10	P1-P2	P3-P6	TIME MAX I	TIME MAX II
1A Doric Towers	R	R	R	R	G	DW	DW	6	6
1A CHANGE	R	R	R	R	Y	DW	DW	3	3
1A CLEARANCE	R	R	R	R	R	DW	DW	1	1
1B Paterson Plank Road NB LEAD	G <-G	G	R	R	R	DW	DW	7	7
1B CHANGE	G <-G	G	R	R	R	DW	DW	3	3
2 Paterson Plank Road NB / VIADUCT	G	G	G	R	R	DW	DW	18	36
2 CHANGE	Y	Y	Y	R	R	DW	DW	3	3
2 CLEARANCE	R	R	R	R	R	DW	DW	1	1
3 Paterson Plank Road EB	R	R	R	G	R	DW	DW	50	32
3 CHANGE	R	R	R	Y	R	DW	DW	3	3
3 CLEARANCE	R	R	R	R	R	DW	DW	1	1
4 Paterson Plank Road	R	R	R	R	R	W	W	5	5
4 PEDESTRIAN CLEARANCE	R	R	R	R	R	FDW	FDW	9	9

EMERGENCY FLASH	Y	Y	Y	R	R	DARK	DARK

NOTES :

1 Memory circuit and Manual circuit to be discontinued

2 Max. I timing is to be in effect from Monday to Friday 7:00 am to 3:00 pm

3 Max. II timing is to be in effect from Monday to Thrusday 7:00 pm to 3:00 am and Friday 3:00 pm to Monday 7:00 am (or at other times).

4 Offset is measured from the beginning of YELLOW for phase 3 (Paterson Plank Rd. EB) at the intersection of Paterson Plank Road and South Wing Viaduct to the beginning of YELLOW for phase 1 (WB Paterson Plank) at the intersection of Paterson Plank Road / Palisade Ave. Offset is set at 60 seconds for MAX I and 40 seconds for MAX II

5 Phase 1A shall occur only when actuated by a vehicle from the Doric Towers. Phase 1B shall be in effect at all other times.

Day call - 201-726-9373

Carlos Gonzalez - 732-644-2461

PPLANK_DORIC_06-27-00

APPENDIX D

VEHICULAR CRASH DIAGRAMS

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
6	07:48	FRI	02-12-16	0	WET	RAIN	DAY
7	13:16	MON	02-22-16	1	DRY	CLEAR	DAY
8	03:50	SAT	03-12-16	0	DRY	CLEAR	DARK
12	07:35	WED	04-27-16	0	DRY	CLEAR	DAY
19	07:59	MON	06-06-16	0	DRY	CLEAR	DAY
20	19:26	THU	06-09-16	0	DRY	CLEAR	DAY
29	13:15	SAT	08-27-16	0	DRY	CLEAR	DAY
30	16:15	FRI	09-02-16	0	DRY	CLEAR	DAY
34	19:28	THU	09-15-16	0	DRY	CLEAR	DARK
35	19:41	THU	09-22-16	0	DRY	CLEAR	DARK
36	08:02	WED	09-28-16	0	DRY	CLEAR	DAY
40	07:21	MON	10-17-16	0	DRY	CLEAR	DAY
41	16:01	TUE	10-18-16	0	DRY	CLEAR	DAY
51	18:09	SAT	11-26-16	0	DRY	CLEAR	DARK
71	12:44	WED	05-10-17	0	DRY	CLEAR	DAY
74	15:18	FRI	06-02-17	0	DRY	CLEAR	DAY
75	11:19	THU	06-22-17	1	DRY	CLEAR	DAY
80	00:05	FRI	07-28-17	0	DRY	CLEAR	DARK
81	21:46	WED	08-02-17	0	DRY	CLEAR	DARK
82	11:38	MON	08-07-17	0	WET	RAIN	DAY

COLLISION DIAGRAM DATA (cont.)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
89	12:09	TUE	10-10-17	0	DRY	CLEAR	DAY
92	01:33	SUN	10-22-17	6	DRY	CLEAR	DARK
95	19:25	SUN	12-31-17	0	DRY	CLEAR	DARK
101	19:17	FRI	03-16-18	1	DRY	CLEAR	DARK
109	19:53	WED	03-28-18	0	DRY	CLEAR	DAY
113	18:11	WED	03-28-18	0	DRY	CLEAR	DAY
120	16:00	SUN	06-03-18	0	DRY	CLEAR	DAY
126	17:25	TUE	07-24-18	0	DRY	CLEAR	DAY
127	04:09	SAT	07-28-18	0	DRY	CLEAR	DARK
128	02:55	SAT	07-28-18	0	DRY	OVERCAST	DARK
131	14:02	WED	09-12-18	0	DRY	CLEAR	DAY
132	17:11	WED	09-12-18	0	WET	RAIN	DAY
133	17:22	TUE	09-25-18	0	WET	RAIN	DAY
139	16:36	SUN	12-02-18	0	WET	RAIN	DARK
140	13:55	TUE	12-04-18	0	DRY	CLEAR	DAY
144	20:03	MON	12-31-18	0	WET	RAIN	DARK
145	23:58	FRI	11-11-16	0	DRY	CLEAR	DARK
148	22:04	THU	11-16-17	0	DRY	CLEAR	DARK
149	10:47	THU	12-14-17	1	WET	CLEAR	DAY
150	16:32	WED	04-18-18	0	DRY	CLEAR	DAY

PATERSON AVE

HARRISON ST

1ST ST

MARSHALL ST

MATCH LINE A
SEE SHEET NO. 2 OF 6

1/6

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	35
INJURIES	5
FATALITIES*	0
TOTAL NO. OF CRASHES	40

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

- 2016 CRASHES
- 2017 CRASHES
- 2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY

2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
2	07:13	THU	01-07-16	0	DRY	CLEAR	DAY
14	09:52	SAT	05-07-16	1	WET	RAIN	DAY
15	15:51	WED	05-11-16	2	DRY	CLEAR	DAY
47	14:54	SUN	10-30-16	0	DRY	CLEAR	DAY
49	18:52	THU	11-17-16	0	DRY	CLEAR	DAY
50	09:06	FRI	11-18-16	0	DRY	CLEAR	DAY
60	20:45	SAT	01-14-17	0	WET	SNOW	DARK
62	09:24	THU	02-09-17	0	SNOWY	SNOW	DAY
67	19:42	SAT	04-15-17	0	DRY	CLEAR	DARK
87	23:32	SAT	09-23-17	0	DRY	CLEAR	DARK
91	07:29	TUE	10-17-17	0	DRY	CLEAR	DAY
97	15:32	FRI	11-17-17	0	DRY	CLEAR	DAY
103	16:15	MON	02-05-18	0	DRY	CLEAR	DAY
104	23:24	SAT	02-24-18	0	WET	RAIN	DARK
105	09:17	MON	02-26-18	0	DRY	CLEAR	DAY
110	14:54	SAT	03-17-18	0	DRY	CLEAR	DAY
111	10:17	WED	03-21-18	0	SNOWY	SNOW	DAY
118	15:21	TUE	05-01-18	0	DRY	CLEAR	DAY
123	13:20	FRI	06-15-18	0	DRY	CLEAR	DAY
141	20:20	WED	12-19-18	0	DRY	CLEAR	DARK

MOUNTAIN RD

HOPE ST

PATERSON PLANK RD

MATCH LINE A
SEE SHEET NO. 1 OF 6

MATCH LINE B
SEE SHEET NO. 3 OF 6

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	18
INJURIES	2
FATALITIES*	0
TOTAL NO. OF CRASHES	20

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

- 2016 CRASHES
- 2017 CRASHES
- 2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY

2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

MATCH LINE B
SEE SHEET NO. 2 OF 6

MATCH LINE C
SEE SHEET NO. 4 OF 6

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

- 2016 CRASHES
- 2017 CRASHES
- 2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

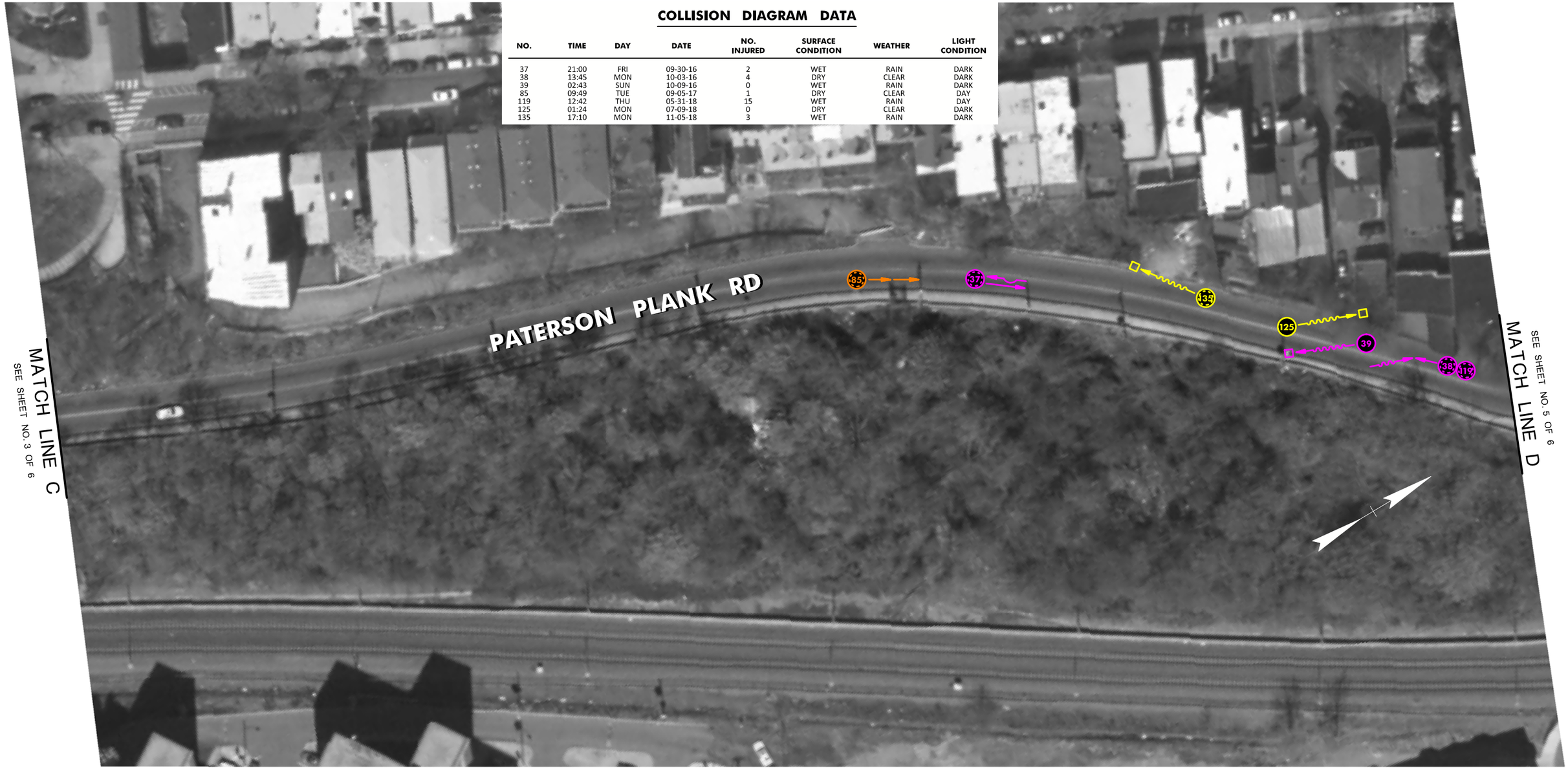
PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY
2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
37	21:00	FRI	09-30-16	2	WET	RAIN	DARK
38	13:45	MON	10-03-16	4	DRY	CLEAR	DARK
39	02:43	SUN	10-09-16	0	WET	RAIN	DARK
85	09:49	TUE	09-05-17	1	DRY	CLEAR	DAY
119	12:42	THU	05-31-18	15	WET	RAIN	DAY
125	01:24	MON	07-09-18	0	DRY	CLEAR	DARK
135	17:10	MON	11-05-18	3	WET	RAIN	DARK



4/6

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	2
INJURIES	5
FATALITIES*	0
TOTAL NO. OF CRASHES	7

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

- 2016 CRASHES
- 2017 CRASHES
- 2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY

2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
5	08:26	MON	02-01-16	0	WET	CLEAR	DAY
9	14:07	THU	03-31-16	0	DRY	CLEAR	DAY
10	15:31	SUN	04-10-16	0	DRY	CLEAR	DAY
11	00:23	SUN	04-24-16	0	DRY	CLEAR	DARK
16	18:58	FRI	05-13-16	0	WET	CLEAR	DUSK
21	16:04	FRI	07-01-16	1	WET	RAIN	DAY
25	21:18	TUE	08-02-16	0	DRY	CLEAR	DARK
27	20:47	SUN	08-14-16	0	DRY	CLEAR	DAY
28	15:38	FRI	08-19-16	0	DRY	CLEAR	DAY
31	16:52	TUE	09-13-16	1	DRY	CLEAR	DAY
33	15:40	THU	09-15-16	0	DRY	CLEAR	DAY
42	09:23	WED	10-19-16	0	WET	RAIN	DAY
43	16:47	MON	10-24-16	0	DRY	CLEAR	DAY
44	23:09	TUE	10-25-16	0	DRY	CLEAR	DARK
45	11:25	TUE	10-25-16	0	DRY	CLEAR	DAY
52	14:09	WED	11-30-16	0	WET	RAIN	DAY
59	15:10	TUE	01-03-17	1	WET	RAIN	DAY
63	16:21	FRI	02-10-17	0	DRY	CLEAR	DAY
64	10:59	MON	03-13-17	1	MUD/DIRT/GRAVEL	CLEAR	DAY
66	17:09	TUE	04-04-17	0	WET	RAIN	DAY
72	20:46	WED	05-17-17	0	DRY	CLEAR	DARK
83	13:36	TUE	08-22-17	3	DRY	CLEAR	DAY
96	02:08	THU	11-16-17	4 (1*)	DRY	CLEAR	DARK
100	17:05	TUE	12-26-17	0	DRY	CLEAR	DARK
106	13:35	TUE	02-27-18	0	DRY	CLEAR	DAY
107	23:09	MON	03-05-18	1	DRY	CLEAR	DARK
108	17:57	TUE	03-06-18	0	DRY	CLEAR	DAY
115	08:09	MON	04-23-18	0	DRY	CLEAR	DAY
117	00:04	SUN	04-29-18	1	WET	RAIN	DARK
122	08:51	SUN	06-10-18	0	DRY	CLEAR	DARK
124	00:14	SAT	06-16-18	0	DRY	CLEAR	DARK
129	19:31	TUE	07-31-18	0	DRY	CLEAR	DAY
130	16:14	TUE	08-14-18	0	DRY	CLEAR	DAY
134	01:20	SUN	10-28-18	0	WET	RAIN	DARK
136	10:59	TUE	11-13-18	0	WET	RAIN	DAY
137	10:28	WED	11-14-18	0	DRY	CLEAR	DAY
138	14:12	TUE	11-20-18	0	DRY	CLEAR	DAY
142	10:06	FRI	12-21-18	2	WET	RAIN	DAY

SEE SHEET NO. 4 OF 6
MATCH LINE D

SEE SHEET NO. 6 OF 6
MATCH LINE E

PATERSON PLANK RD

CONGRESS ST

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	29
INJURIES	8
FATALITIES*	1
TOTAL NO. OF CRASHES	38

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

- 2016 CRASHES
- 2017 CRASHES
- 2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY
2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

5/6

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
23	21:33	FRI	07-15-16	0	DRY	CLEAR	DARK
26	12:40	TUE	08-02-16	0	DRY	CLEAR	DAY
32	08:31	WED	09-14-16	0	DRY	CLEAR	DAY
61	12:00	SUN	02-05-17	0	DRY	CLEAR	DAY
73	15:42	WED	05-31-17	0	DRY	CLEAR	DAY
94	08:20	TUE	11-14-17	0	DRY	CLEAR	DAY
114	23:58	SUN	04-01-18	0	DRY	CLEAR	DARK
121	02:04	MON	06-04-18	1	WET	RAIN	DARK
147	21:16	SAT	02-25-17	0	WET	RAIN	DARK

MATCH LINE E

SEE SHEET NO. 5 OF 6

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	8
INJURIES	1
FATALITIES*	0
TOTAL NO. OF CRASHES	9

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

- 2016 CRASHES
- 2017 CRASHES
- 2018 CRASHES

6/6

NEW JERSEY DEPARTMENT OF TRANSPORTATION

PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY

2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

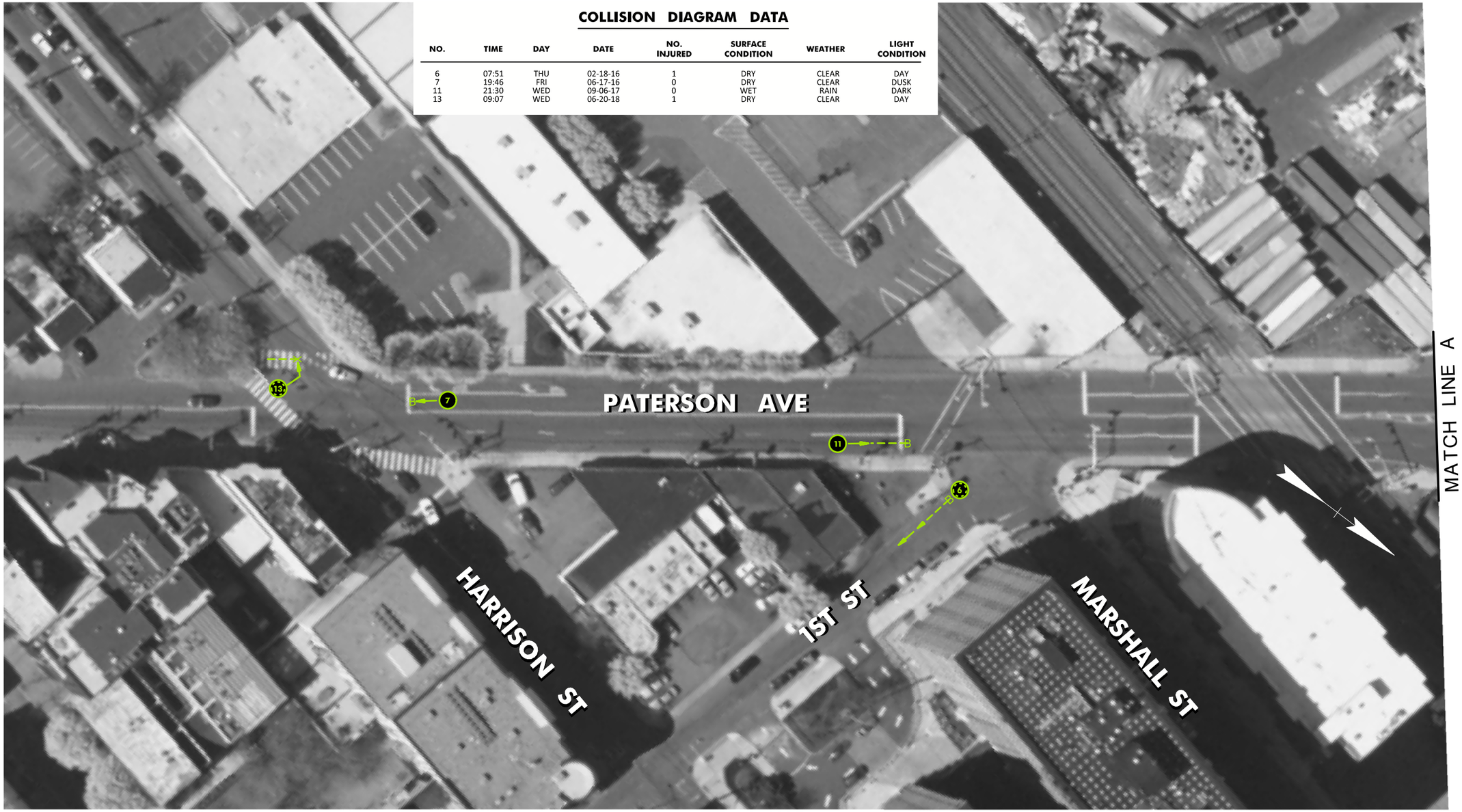
NOT TO SCALE

APPENDIX E

PEDESTRIAN CRASH DIAGRAMS

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
6	07:51	THU	02-18-16	1	DRY	CLEAR	DAY
7	19:46	FRI	06-17-16	0	DRY	CLEAR	DUSK
11	21:30	WED	09-06-17	0	WET	RAIN	DARK
13	09:07	WED	06-20-18	1	DRY	CLEAR	DAY



1/6

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	2
INJURIES	2
FATALITIES	0
TOTAL NO. OF CRASHES	4

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

PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
3	09:30	MON	06-30-14	1	DRY	CLEAR	DAY
4	08:37	TUE	09-09-14	1	DRY	CLEAR	DAY
5	12:55	SUN	10-04-15	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

PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY
2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

2/6

SEE SHEET NO. 2 OF 6
MATCH LINE B

MATCH LINE C
SEE SHEET NO. 4 OF 6

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

PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY
2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

MATCH LINE C
SEE SHEET NO. 3 OF 6

MATCH LINE D
SEE SHEET NO. 5 OF 6

4
6

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

PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY
2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
1	15:18	FRI	02-28-14	1	DRY	CLEAR	DAY
2	11:42	SAT	03-29-14	1	WET	RAIN	DAWN
12	08:18	WED	10-25-17	0	DRY	CLEAR	DAY
14	15:07	WED	07-11-18	1	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	1
INJURIES	3
FATALITIES	0
TOTAL NO. OF CRASHES	4

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

PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY
2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

5/6

MATCH LINE E

SEE SHEET NO. 5 OF 6

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
10	10:07	SUN	07-16-17	1	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	0
INJURIES	1
FATALITIES	0
TOTAL NO. OF CRASHES	1

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

PATERSON PLANK RD (CR 681)
FROM HARRISON ST TO S. WING VIADUCT
HOBOKEN, JERSEY, AND UNION CITIES,
HUDSON COUNTY
2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

APPENDIX F

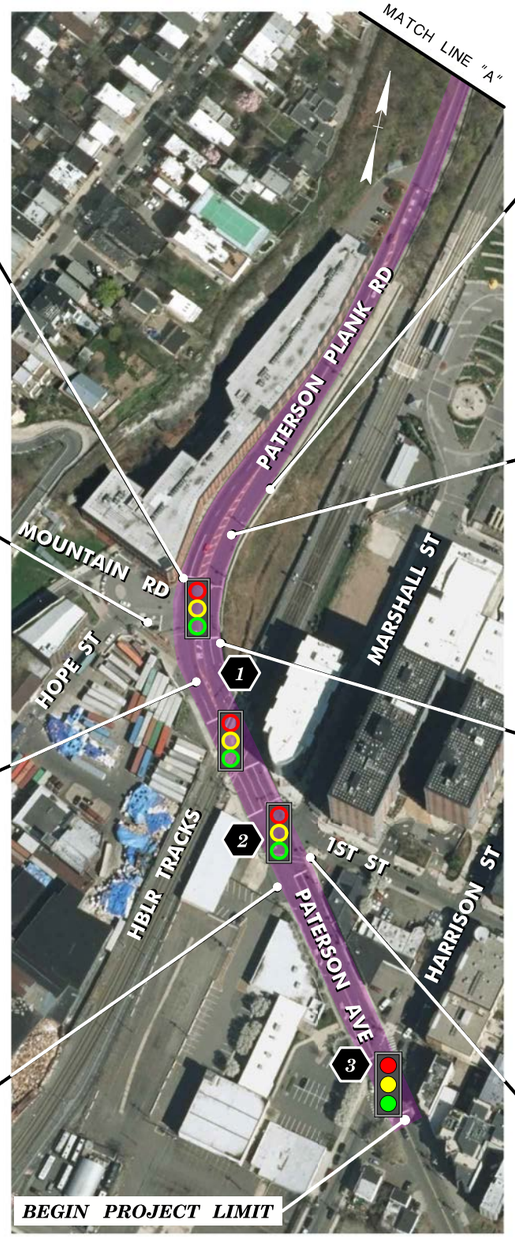
SITE PHOTOGRAPHS

Optically programmed signal heads may not be aligned to oncoming traffic

Vehicles parked in turn lane

Pavement and markings in poor condition

Curb ramps not ADA compliant
Inlet in ramp travelway

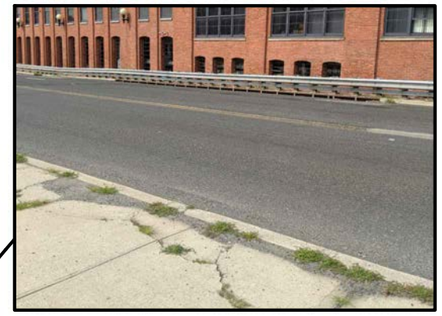


LEGEND

PROJECT CORRIDOR

SIGNALIZED INTERSECTIONS

HUDSON NJ TRANSIT



Damaged sidewalk

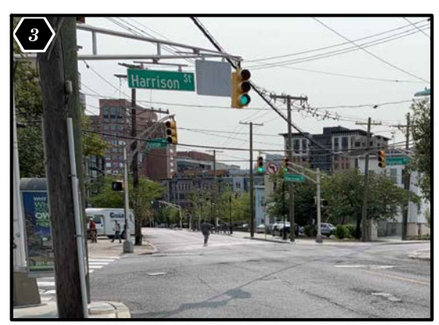
Wide pavement section with worn striping

Narrow sidewalk with tripping hazard

Pedestrian signal head not countdown
Limited room to travel between obstacles

Overgrown vegetation restricts use of full sidewalk width

Objects in sidewalk create obstacles with little passing room



Faded/missing crosswalk striping

NJDOT HSIP – ROAD SAFETY AUDIT
PATERSON PLANK ROAD (CR 681)

HOBOKEN, JERSEY CITY AND UNION CITY
HUDSON COUNTY

PROJECT SITE PHOTOGRAPHS

GPI Engineering Design Planning Construction Management

N.T.S.

Varing sidewalk materials and conditions

Access to Bowers St permitted for pedestrians; no marked crossing

Driveways back into roadway
Buildings and walls limit visibility

Non-compliant curb ramps and worn striping

No street name signs and 8-in signal heads

Wide intersection with high truck traffic and queuing from adjacent intersection

Damaged guide rail and defaced signs
Limited sight distance along roadway

Pedestrians/bicyclists cross outside of marked areas to access station

Defaced signs and overall sign clutter at some locations

LEGEND

PROJECT CORRIDOR

SIGNALIZED INTERSECTIONS

HUDSON NJ TRANSIT

NJDOT HSIP – ROAD SAFETY AUDIT
PATERSON PLANK ROAD (CR 681)

HOBOKEN, JERSEY CITY AND UNION CITY
HUDSON COUNTY

PROJECT SITE PHOTOGRAPHS

GPI Engineering Design Planning Construction Management

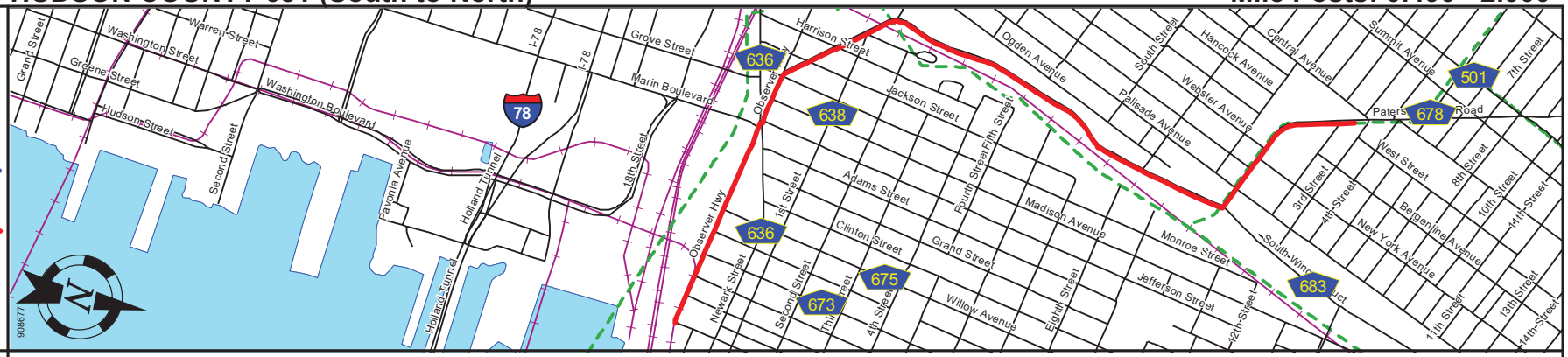
N.T.S.

APPENDIX G

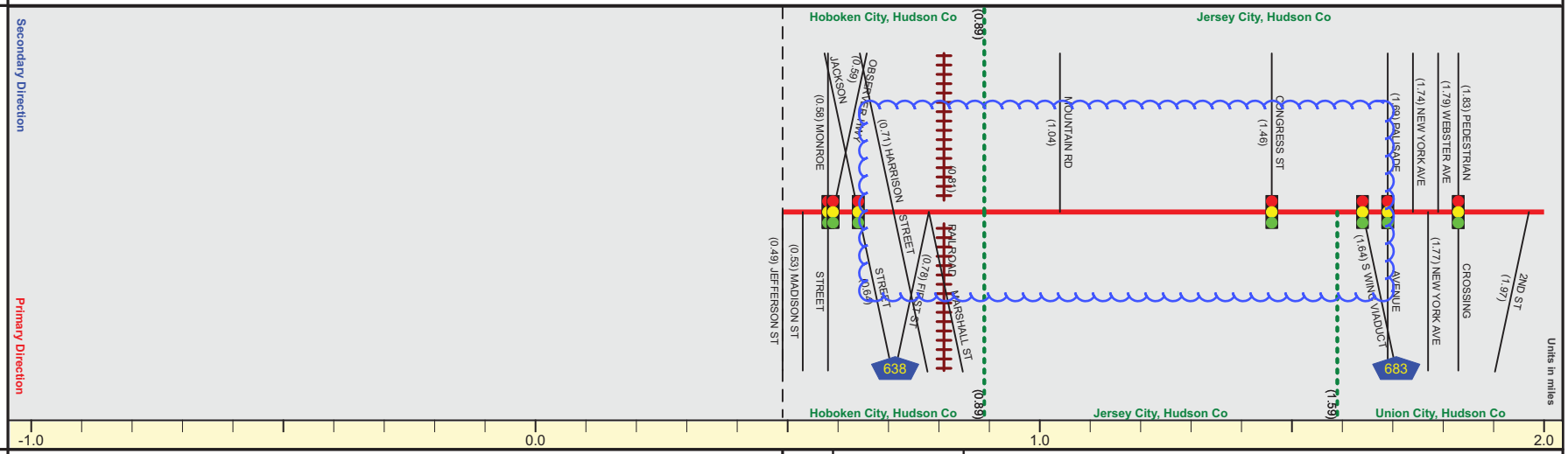
STRAIGHT LINE DIAGRAMS

HUDSON COUNTY 681 (South to North)

Mile Posts: 0.490 - 2.000



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



Street Name		Observer Hwy / Paterson Avenue	Paterson Plank Road
Jurisdiction		County	
Functional Class		Urban Minor Arterial	
Federal Aid - NHS Sy		STP	
Control Section			
Speed Limit		25	
Number of Lanes		2 / 4	2
Med. Type		None	
Med. Width		0	
Pavement		32 / 38	26
Shoulder		0	
Traffic Volume			12,238 (2017)
Traffic Sta. ID			110943
Structure No.			
Enlarged Views			

Begin Hudson County 681 MP=0.49

Page Created: March, 2019

SRI = 09000681__

Date last inventoried: October 2011

APPENDIX H

PRE-AUDIT PRESENTATION

ROAD SAFETY AUDIT

PATERSON PLANK ROAD (CR 681)
HARRISON STREET TO S WING VIADUCT

HOBOKEN, JERSEY CITY AND UNION CITY,
HUDSON COUNTY

SEPTEMBER 15 & 16, 2020

AUDIT TEAM

NJDOT

NJTPA

Hudson County

Jersey City

Hoboken

Union City

FUNDED BY FEDERAL HIGHWAY ADMINISTRATION AND NJDOT

PRESENTED BY GREENMAN-PEDERSEN, INC., NJDOT CONSULTANT

Today's Schedule

1
- Welcome and Introductions
- Roll Call

2
- Safety Program Overview
- RSA Process

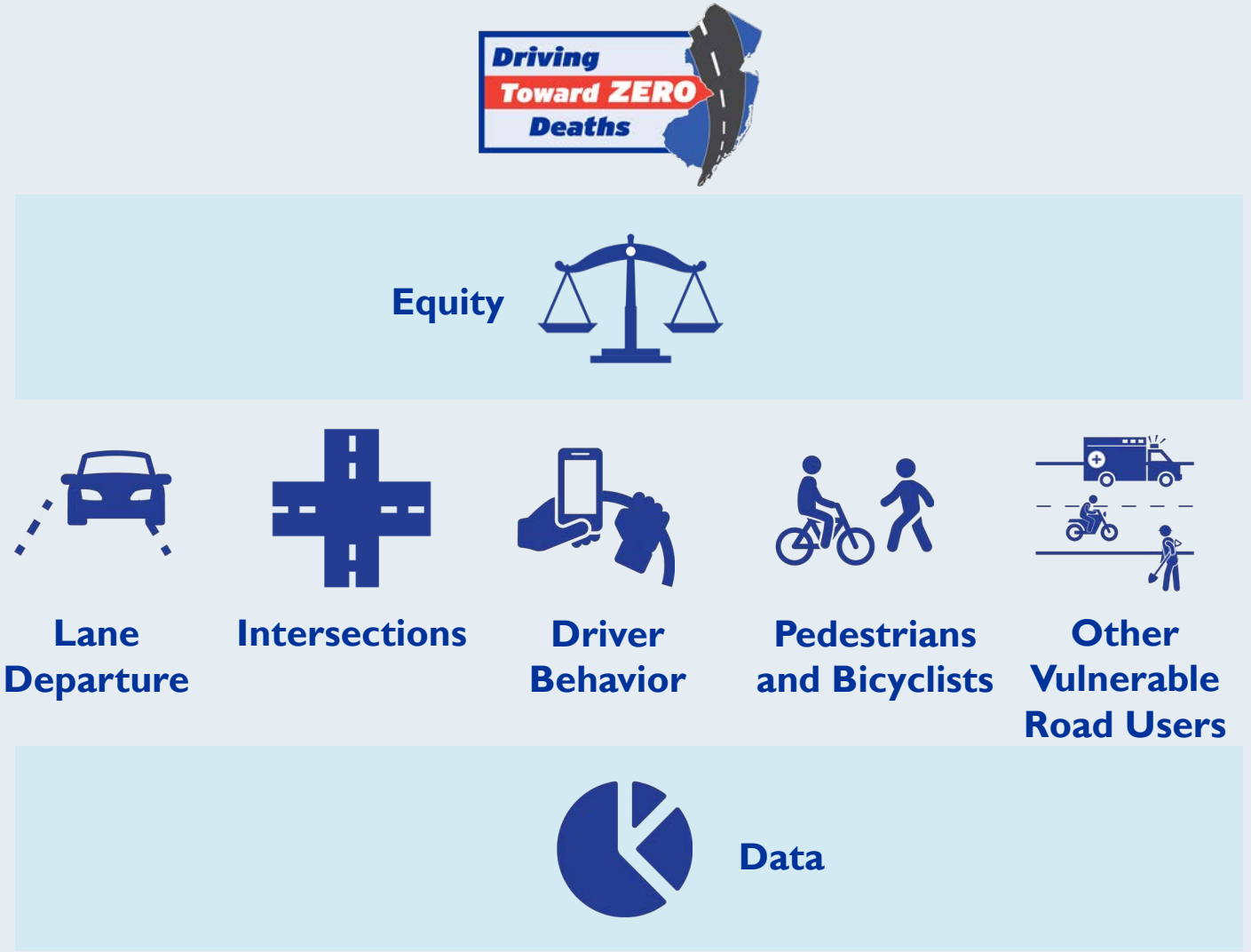
3
- FHWA Proven Safety Countermeasures
- Additional Considerations

4
- Existing Conditions
- Crash Data

5
- Field Visit Rules
- Next Steps

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

- 7 Emphasis Areas (NJ 2020 Strategic Highway Safety Plan)
- Pedestrian Safety and Intersection Focus State
- 7 sub-programs including Local Safety Program
- Core Federal Aid Program, NJ receives about $57M



Driver Behavior: Drowsy and Distracted Driving, Aggressive Driving, Impaired Driving, Unlicensed Driving, and Unbelted Drivers and Occupants
Other Vulnerable Road Users: Mature Drivers, Younger Drivers, Motorcyclists, Work Zone Workers and Other Road Workers.

HSIP/LOCAL SAFETY PROGRAM

MAIN GOAL: Reduce fatalities, serious injuries (K+A) and total injuries on all of NJ's public roads

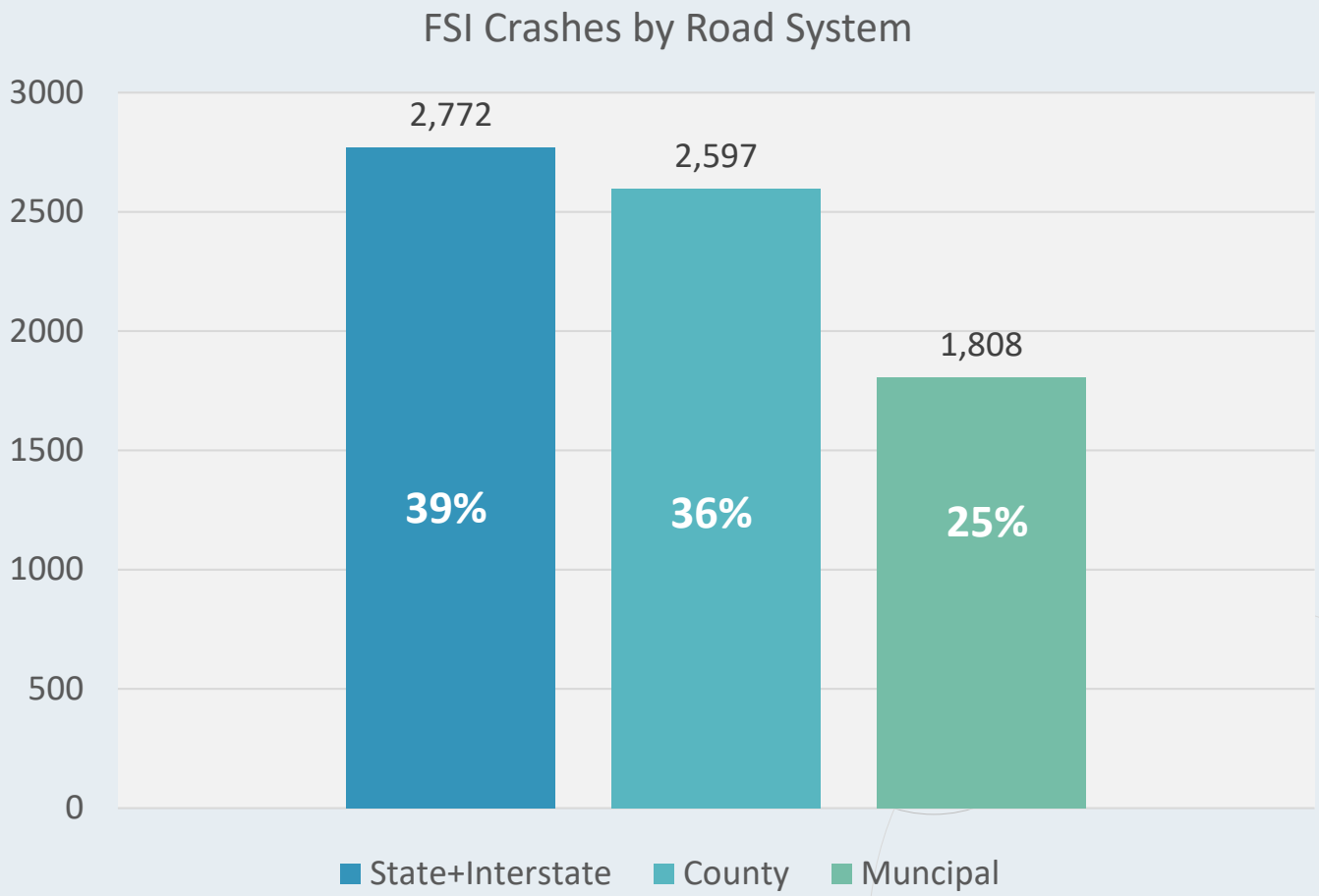
Program Goals

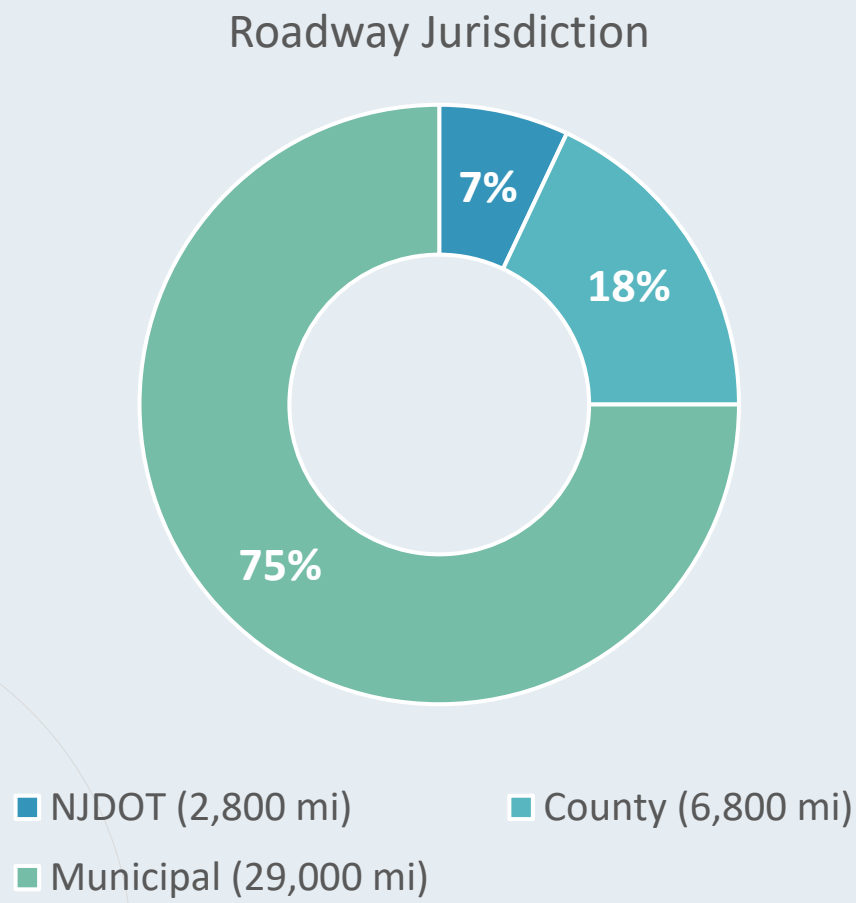
- Toward Zero Deaths on all public roads
- Performance-based goals consistent with SHSP
- Data-driven, strategic approach to improving highway safety

Local Safety Program (LSP)

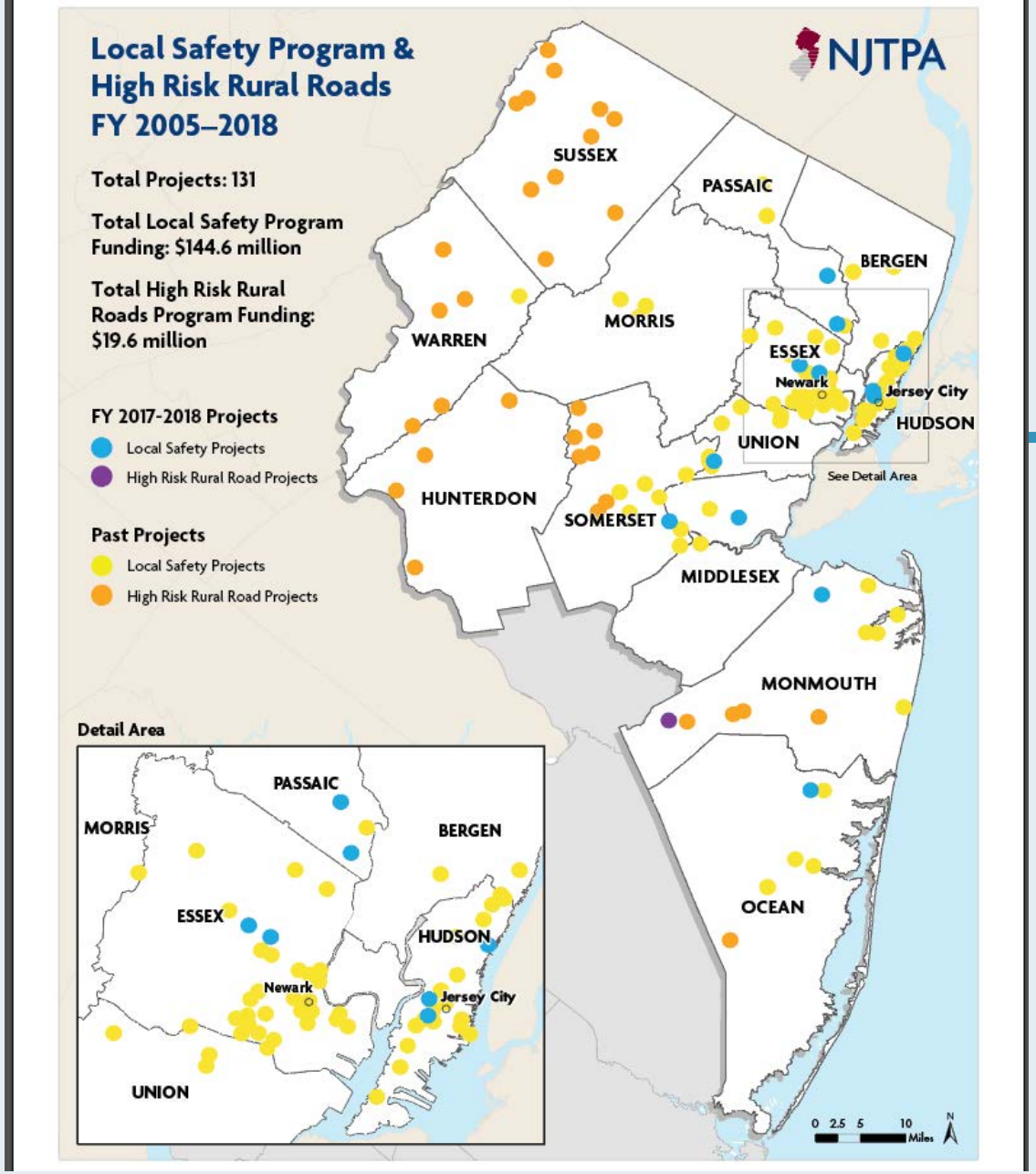
- NJDOT support
  - Dedication of HSIP funds
  - Technical assistance
  - Screening lists for MPOs
  - **Road Safety Audits**
- MPOs support
  - Local Road Safety
  - High Risk Rural Roads
  - CD/PE/FD Assistance Program

FATAL & SERIOUS INJURIES BY ROADWAY SYSTEM (2014-2018)





https://www.nj.gov/transportation/refdata/accident/crash_summary_reports.shtm



FEDERAL TRANSPORTATION FUNDING

- **Local Safety and High Risk Rural Roads Programs**
  - $145+ million in funding 2005-18 on County / Local Roadways
  - Relatively quick-fix safety improvements
- **HSIP funds –** emphasizes 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 officials and stakeholders with opportunities to comment and ask questions

RSA PURPOSE

Formal safety performance examination by an independent, multidisciplinary audit team that identifies safety improvement opportunities for all road users.

Benefits

- Pro-actively address safety; reduce crashes
- Identify low-cost/high-value improvements
- 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 meant to replace

- Design quality control
- Standard compliance
- Traffic or safety impact studies
- Safety conscious planning
- Road safety inventory programs
- Traffic safety modeling efforts

RSA PROCESS

Responsibilities:

Steps 1-2 & 7-8: Design Team/Road Owner

Steps 3-6: RSA Team

FHWA PROVEN SAFETY COUNTERMEASURES

- 20 countermeasures
- Research proven strategies for intersections, roadway departures, or pedestrian/ bicyclist facilities
- Several crosscutting strategies address multiple safety focus areas

FHWA PROVEN SAFETY COUNTERMEASURES

- Clockwise from top:
  - Roundabout, Chesterfield Township, Burlington County
  - Backplates with Retroreflective Borders, Statewide
  - Road diet, Maplewood Township, Essex County
  - Pedestrian Hybrid Beacon (HAWK), Ocean City, Cape May County

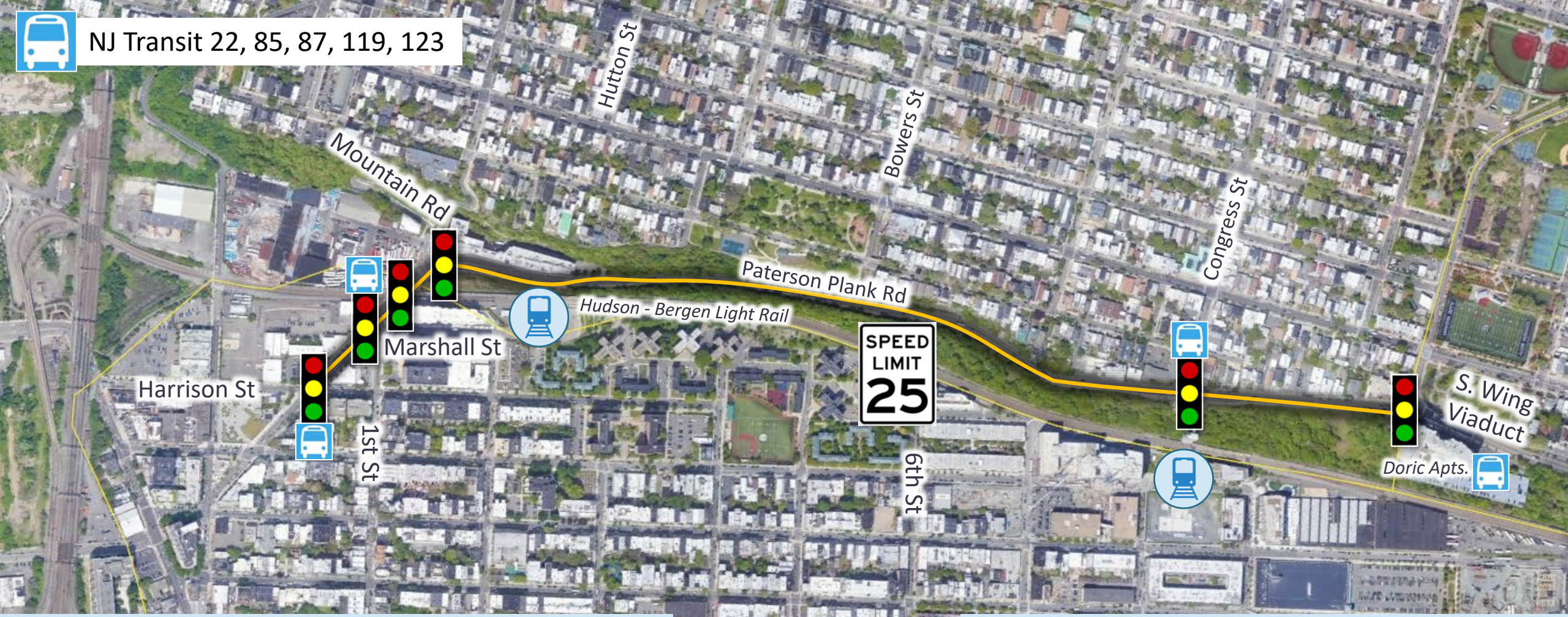
ADDITIONAL CONSIDERATIONS

Curb Extensions

Hoboken City, Hudson County

Enhanced signing / pedestrian crossings

Bellevue City, WA



- Urban Minor Arterial
- Undivided
- No parking except near Harrison St and Congress St

- Sidewalk both sides Harrison St to Mountain Rd and Congress St to S. Wing Viaduct
- Various crosswalk styles

PROJECT AREA

NETWORK SCREENING

NJTPA County Ranking – 2012-2016 Data

Top 100 Corridors

Route	Regional	Pedestrian
CR 681	#8: MP 1.27-2.27	#8: MP 1.04-2.04

Top 100 Intersections

Location	All Crashes	Pedestrian
Congress St (MP 1.46)	#59	-

CRASH DATA

2014-2018 Pedestrian/Bicyclist

- 12 crashes (3 Ped/9 Bike)
- Minor Injuries

2016-2018 Vehicular

- 114 crashes
- Primarily property damage only

Overrepresentations

Vehicular

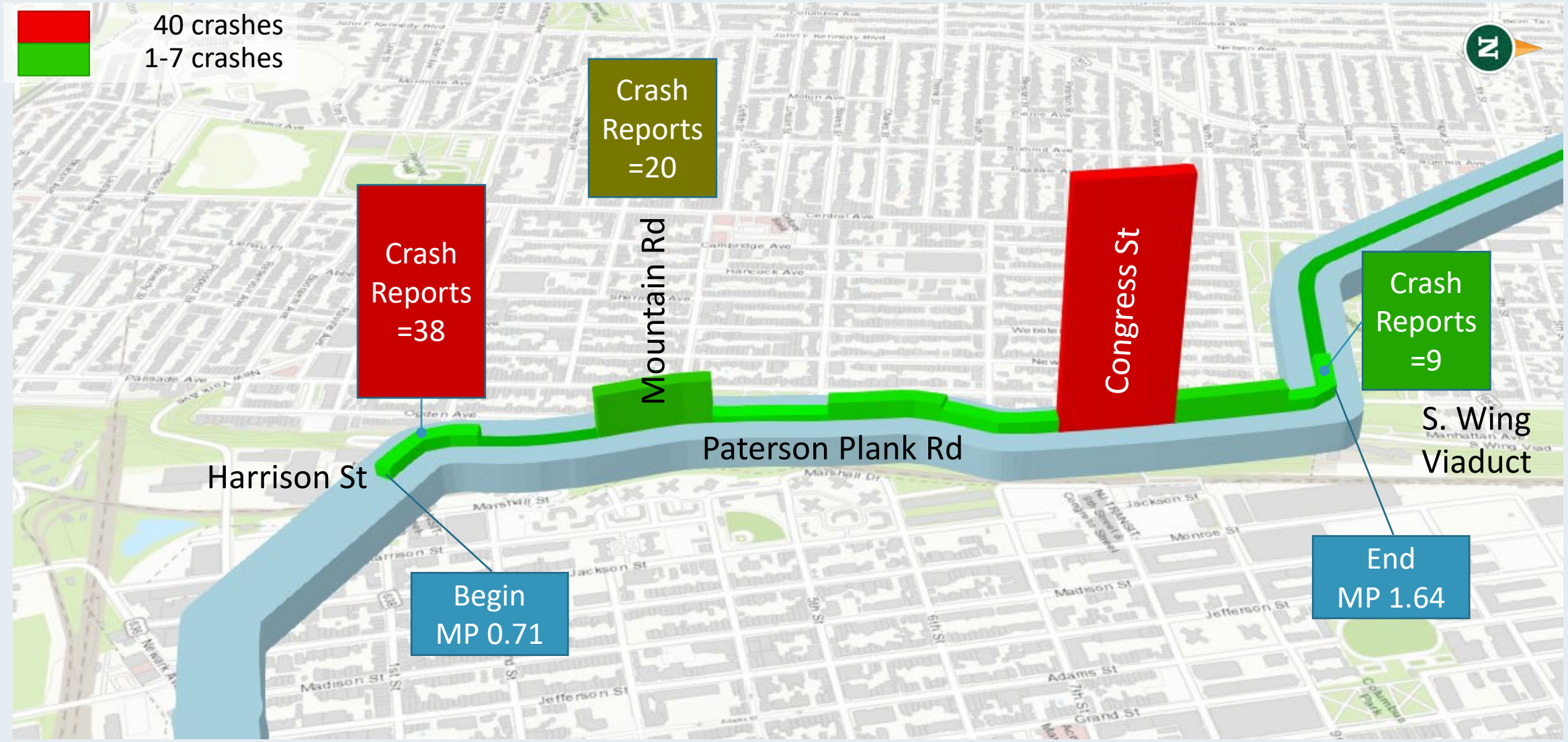
- Rear End
- Sideswipe
- Head On
- Fixed Object
- At Signalized Intersection
- Wet Surface
- Night

Ped/Bike

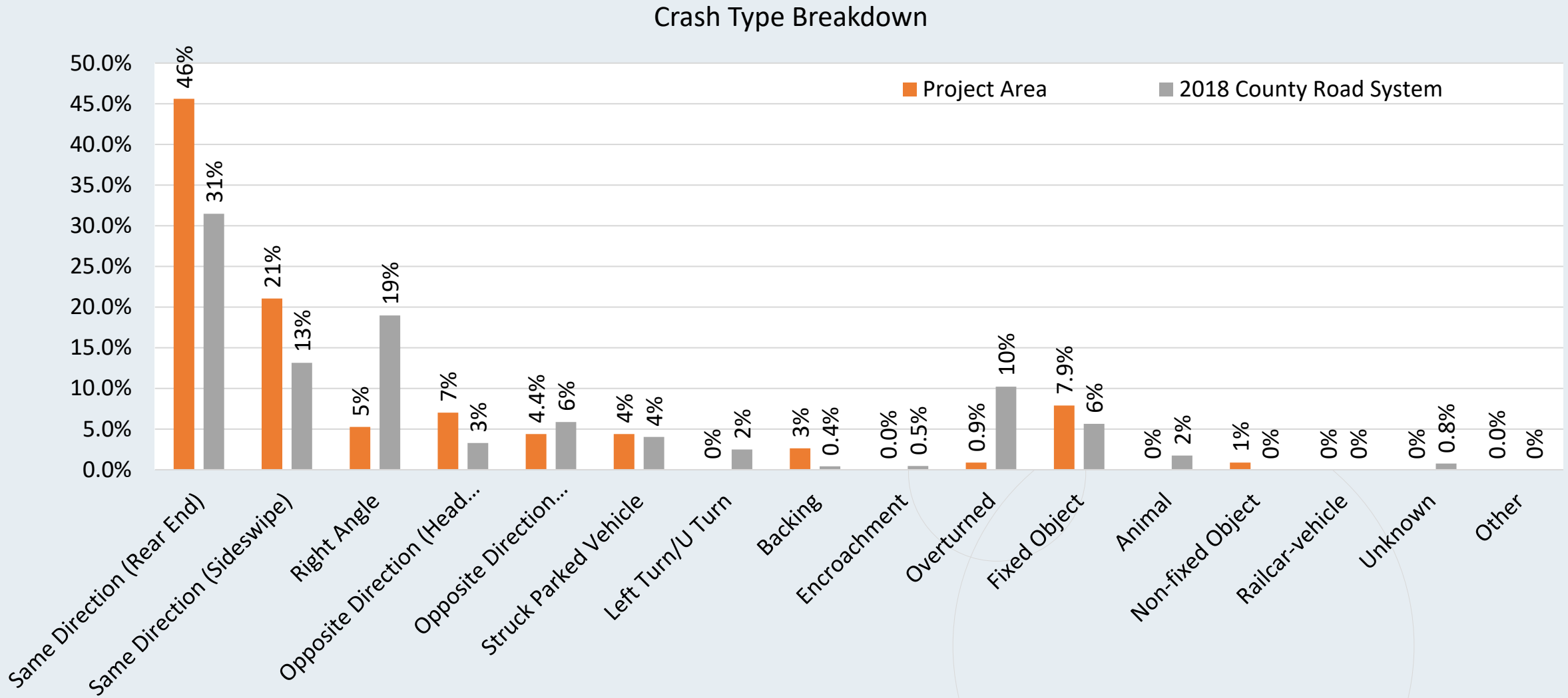
- Injury
- At Signalized Intersection
- Dry Surface
- Dawn/Dusk
- Day

CRASHES: LOCATION IN RSA

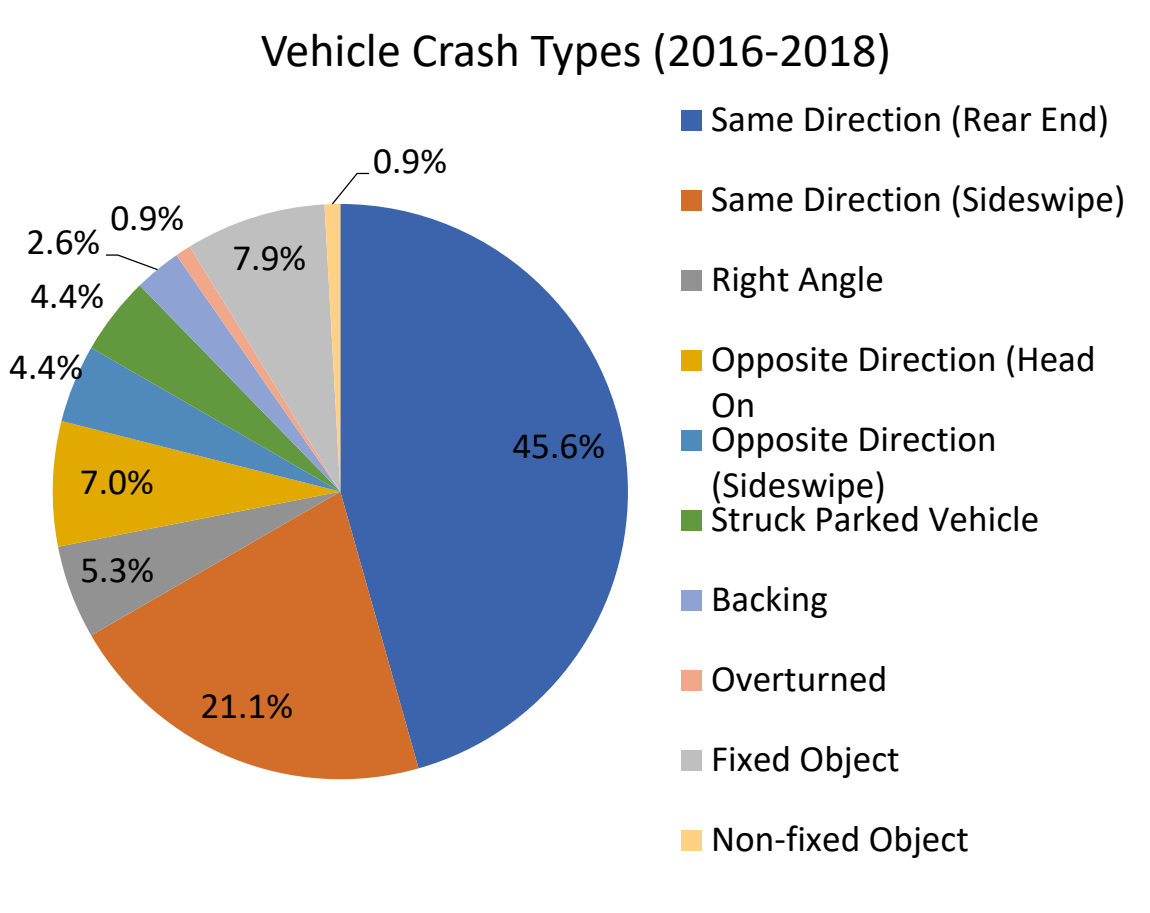
Histogram View by 0.1 Mile
Geocoded Crashes Only (2016-2018)
Differences with Police Crash Reports Noted

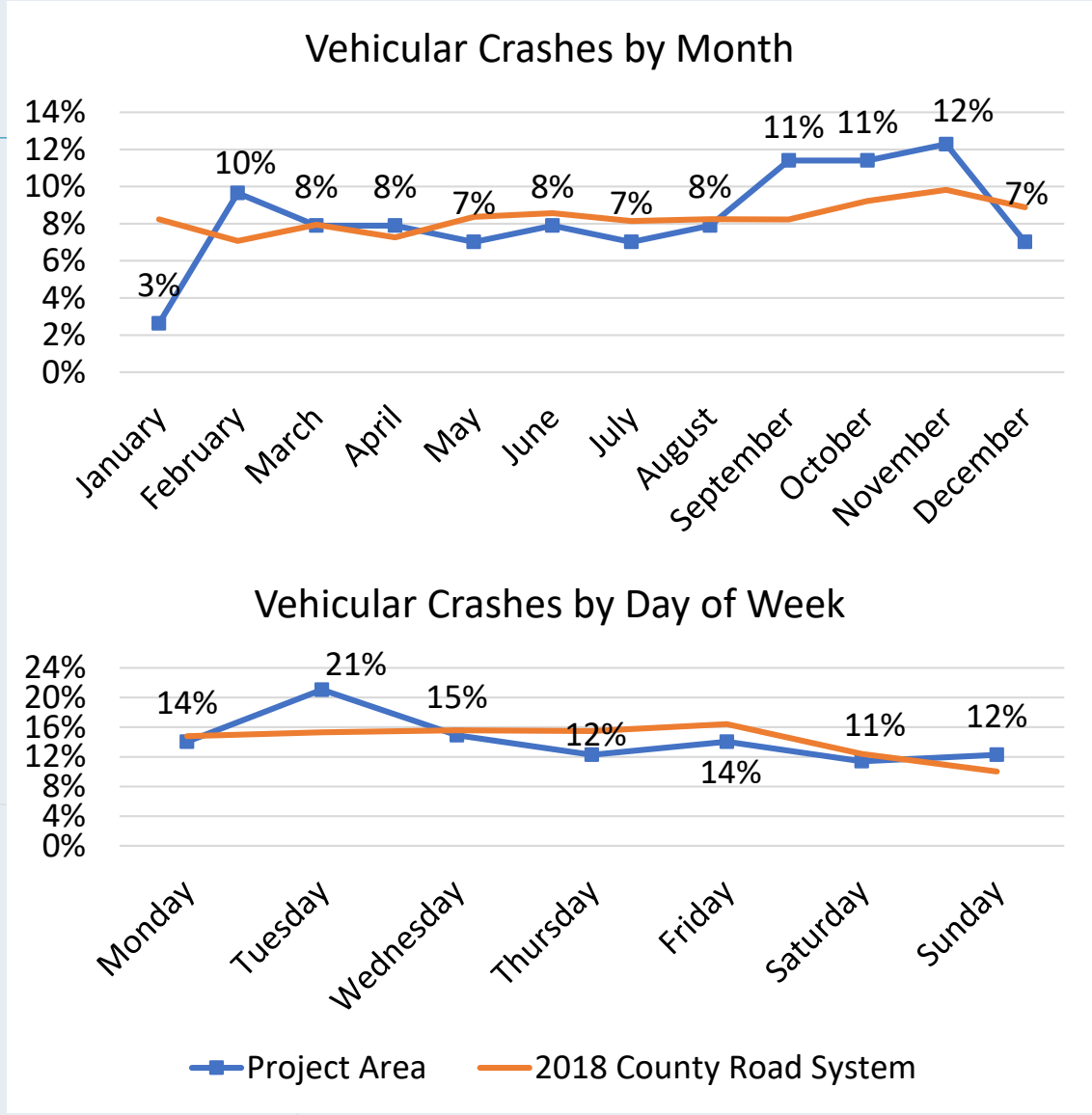


CRASHES: RSA AREA v. COUNTY ROAD SYSTEM

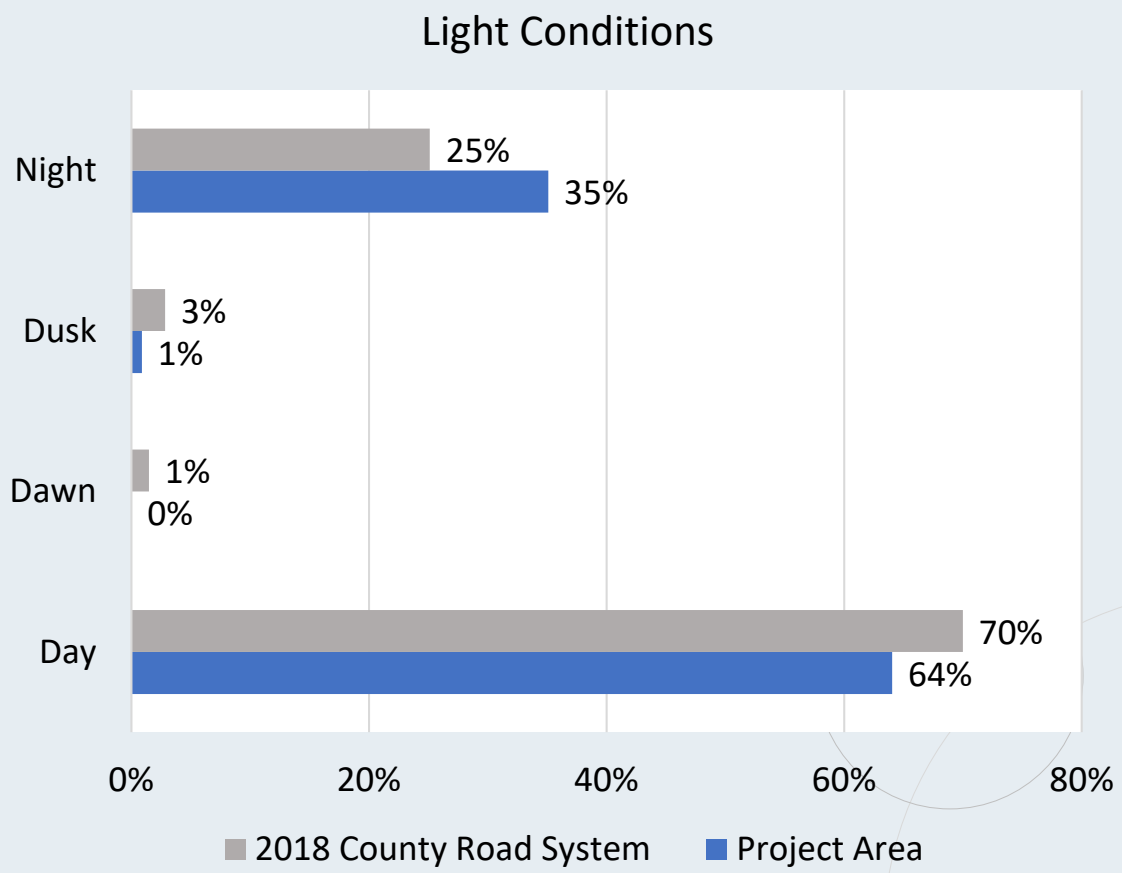


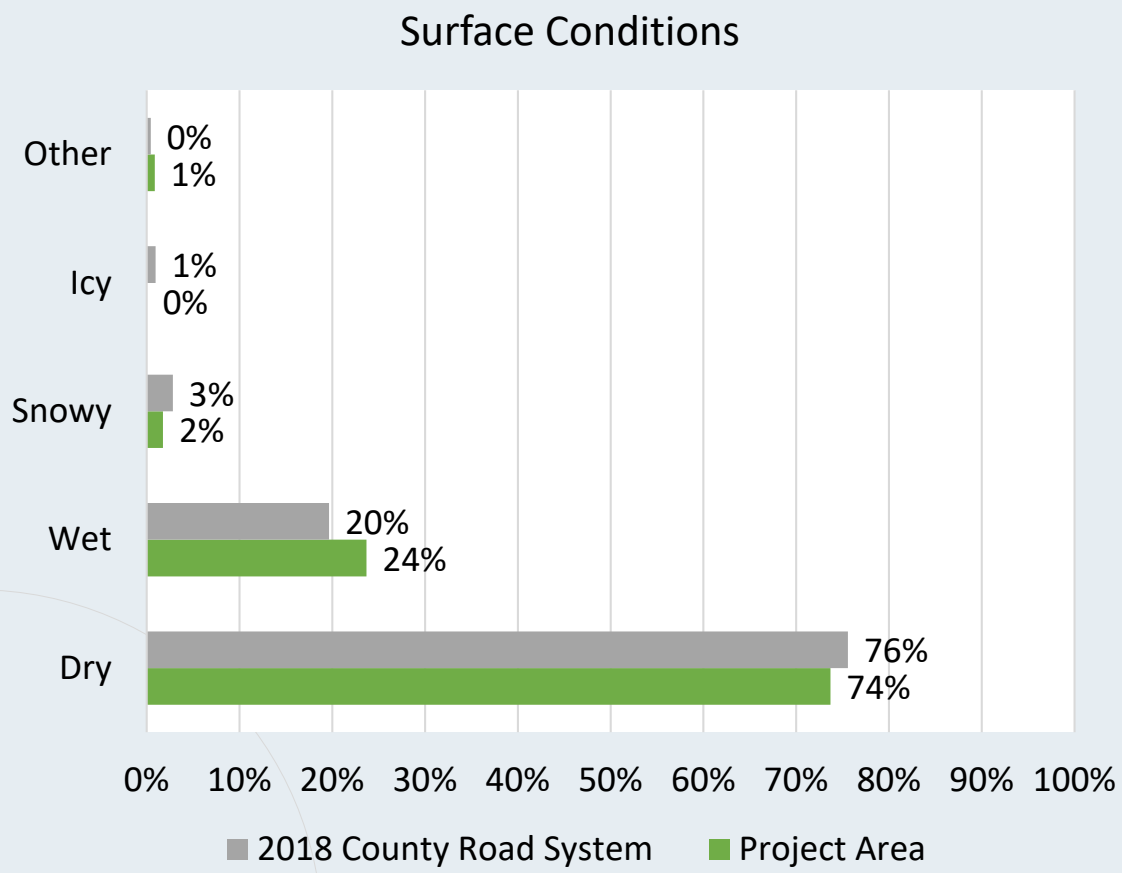
CRASHES: TYPE & TIMES





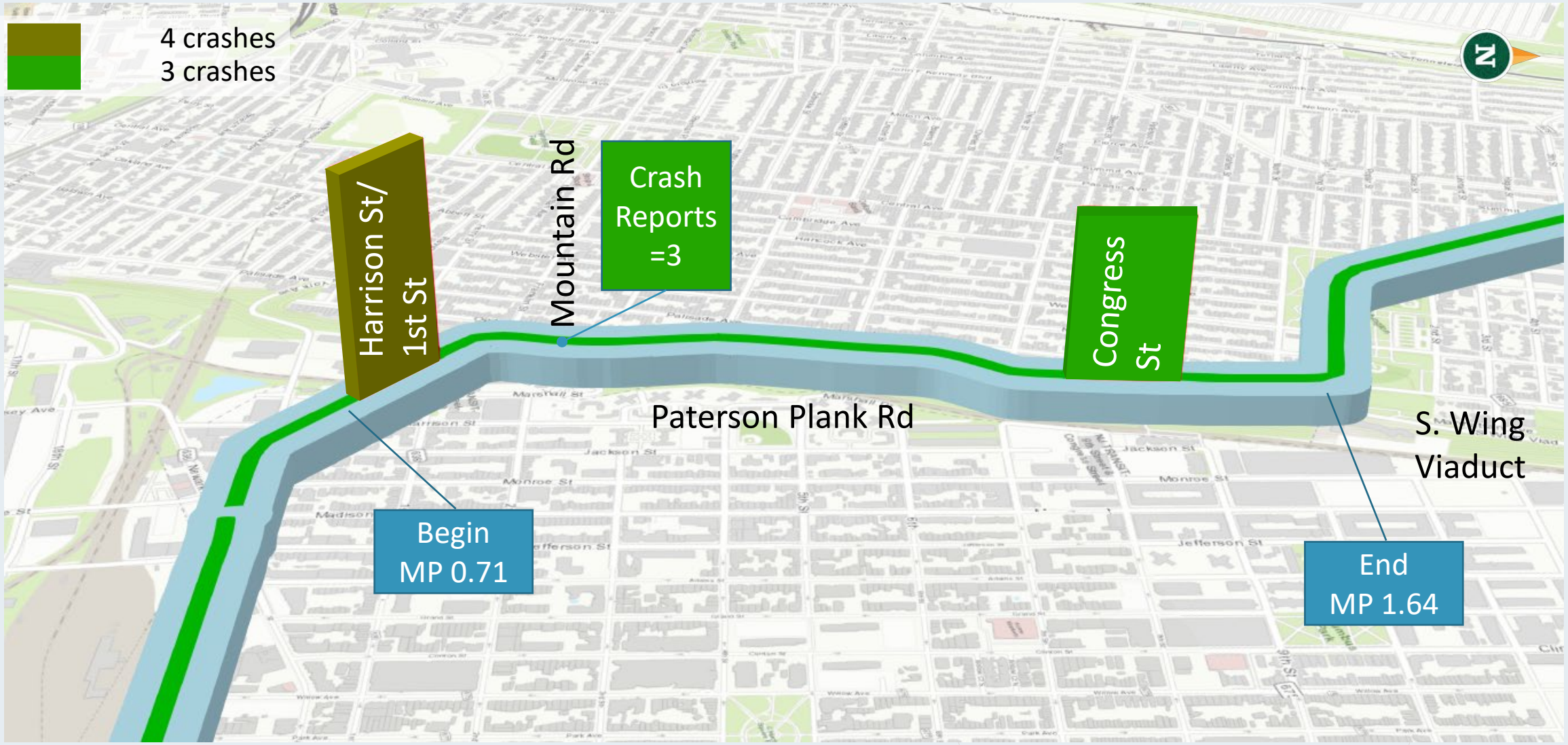
CRASHES: LIGHT & SURFACE CONDITIONS



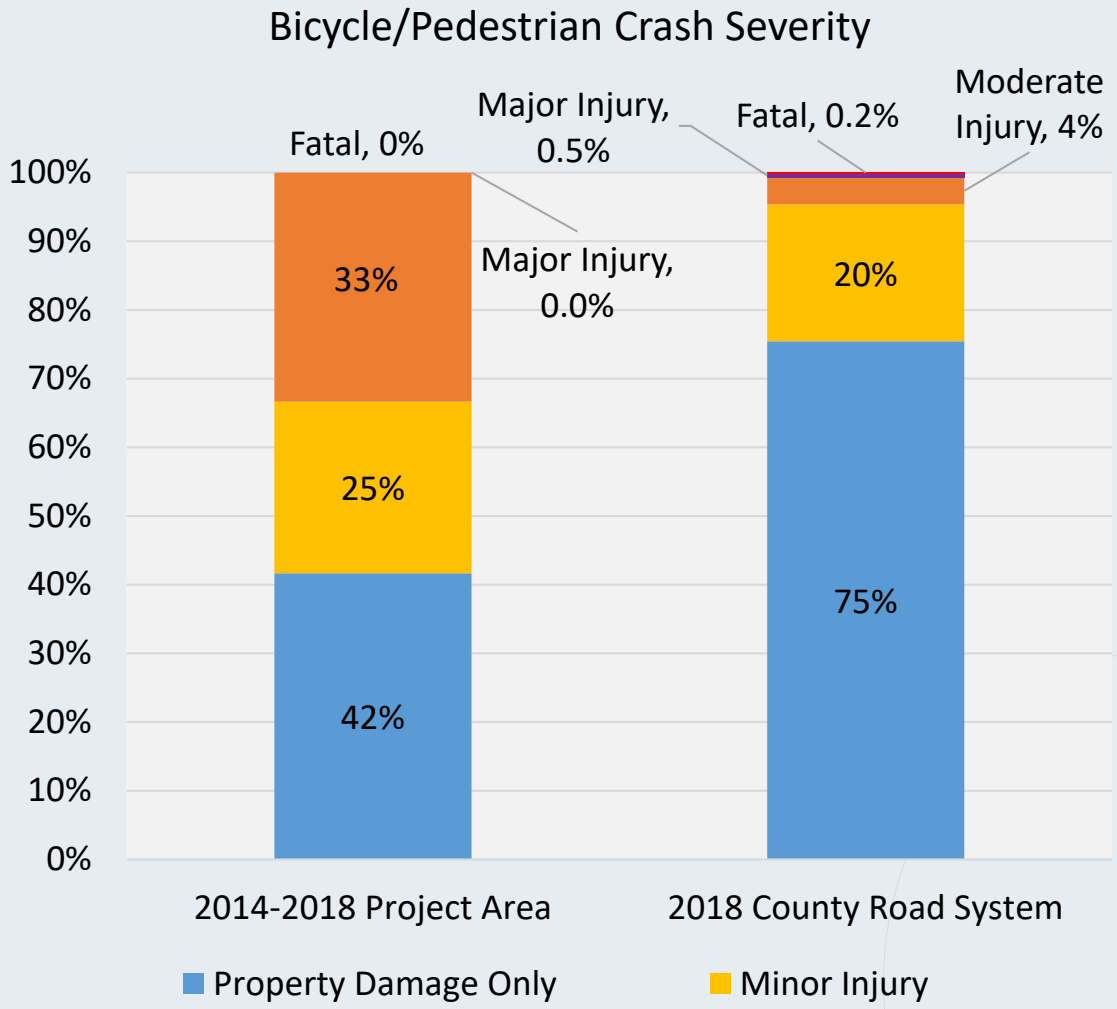


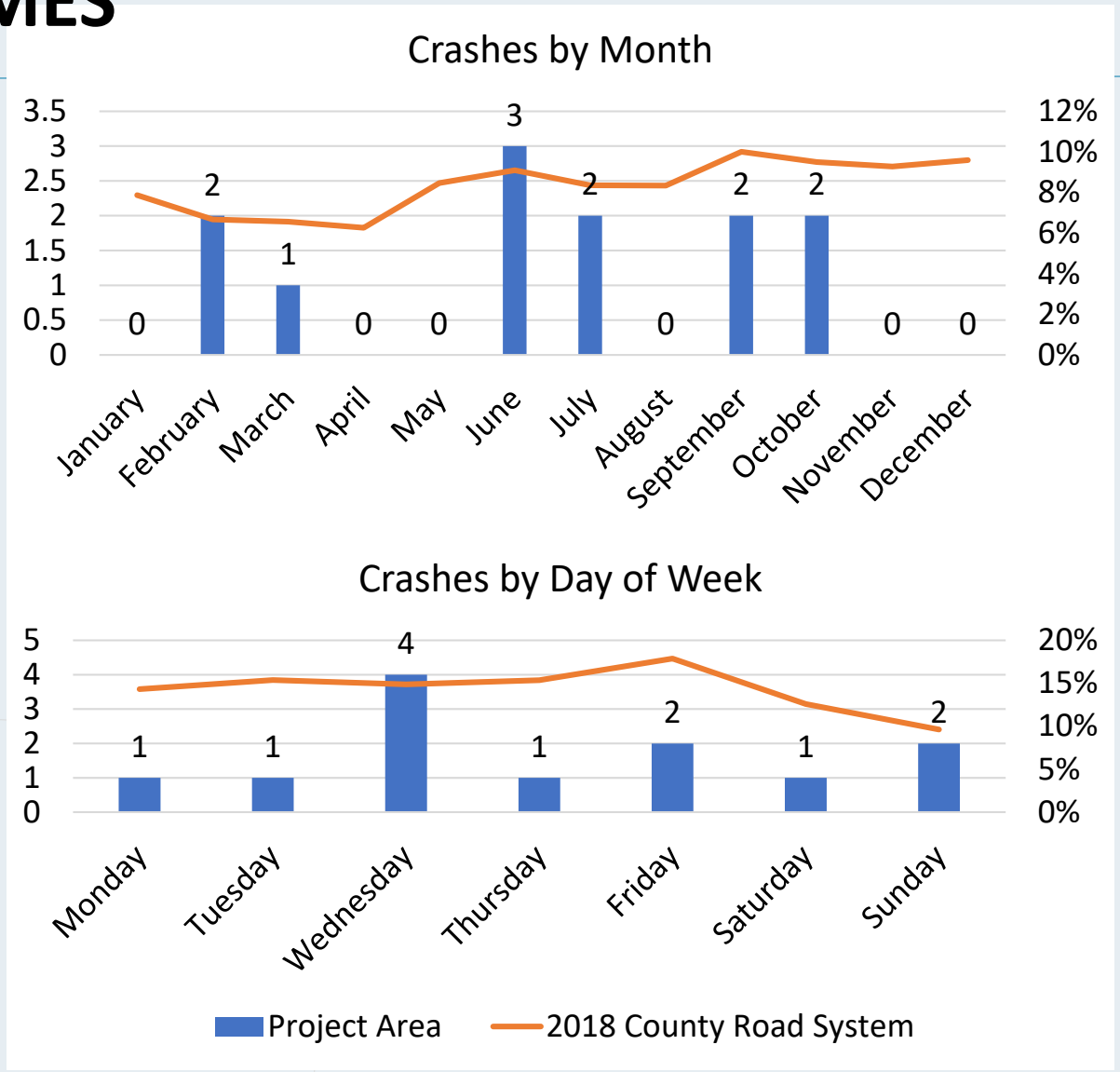
PED/BIKE CRASHES: LOCATION IN RSA

Histogram View by 0.1 Mile
Geocoded Crashes Only (2014-2018)
Differences with Police Crash Reports Noted

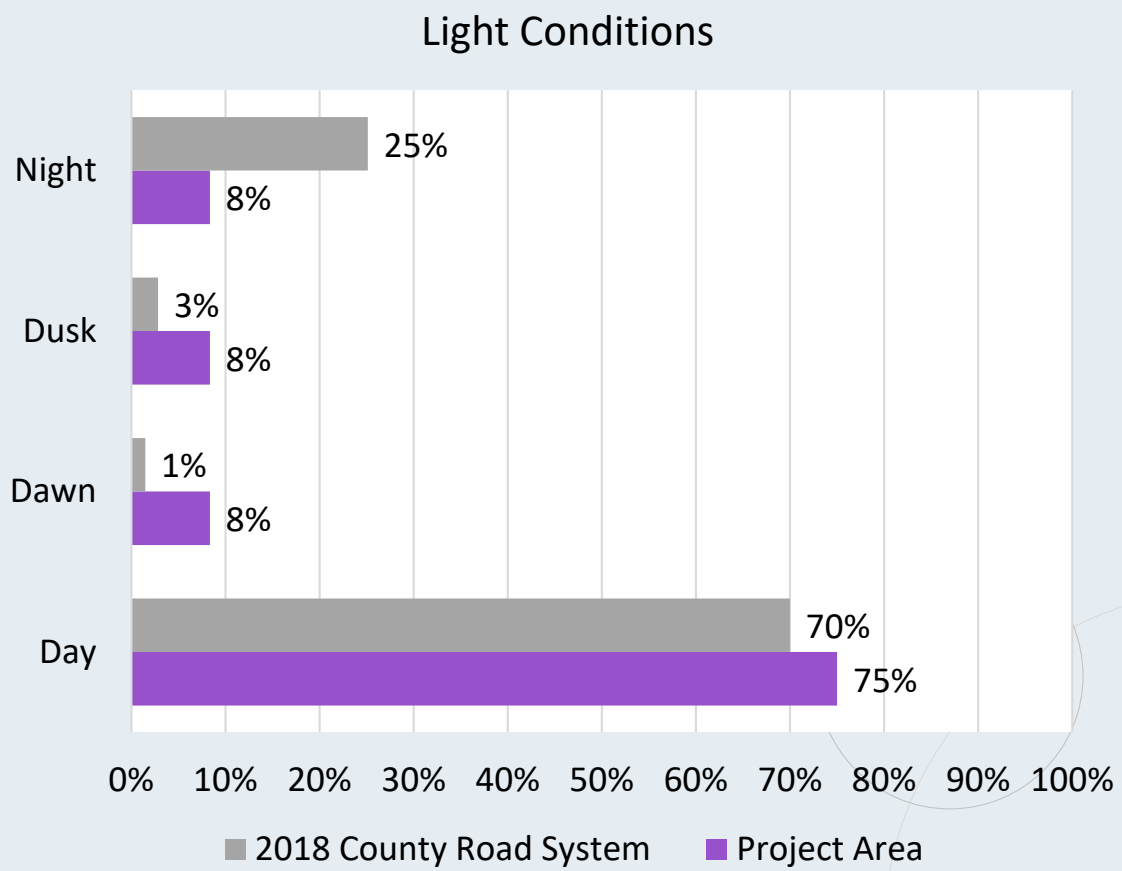


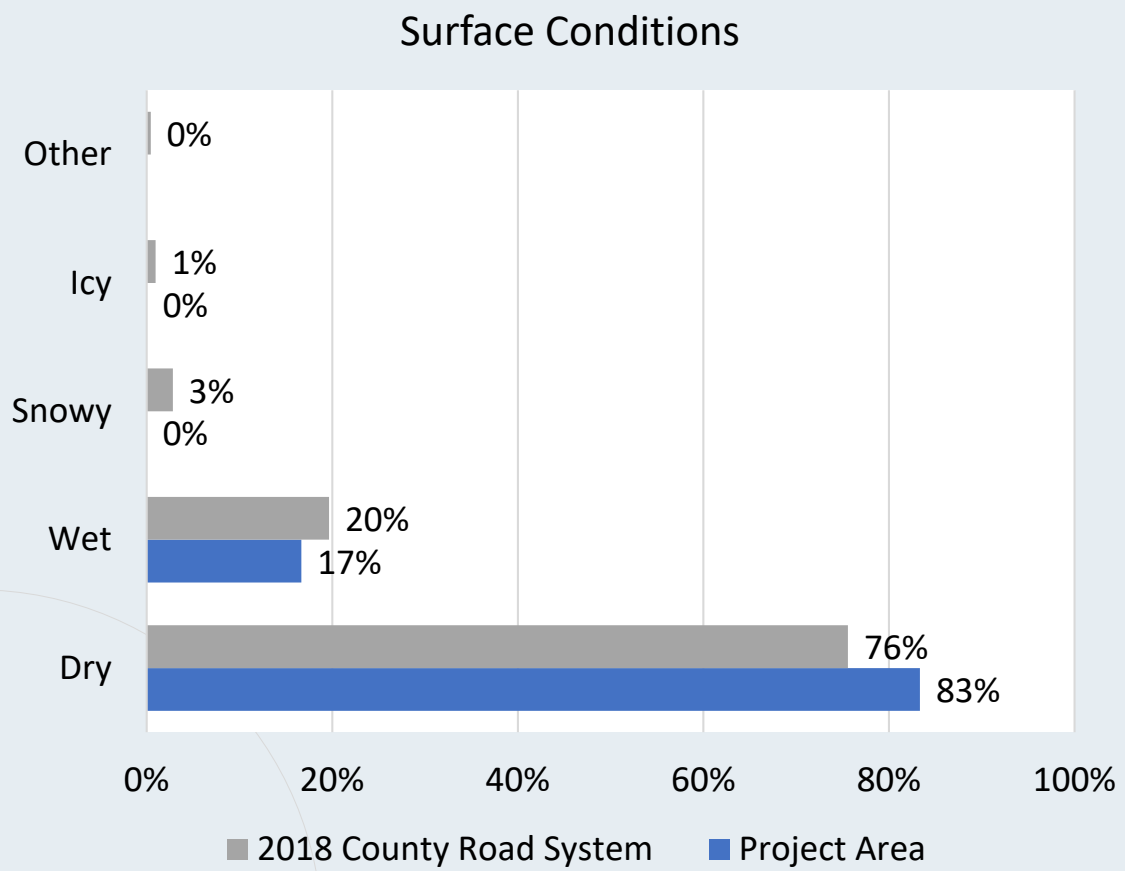
PED/BIKE CRASHES: SEVERITY & TIMES





PED/BIKE CRASHES: LIGHT & SURFACE CONDITIONS





TOMORROW'S SCHEDULE/RULES

Field Visit: Meet at Doric Apartments at 10AM (rain or shine)

Purpose

- ✓ Verify Identified Issues
- ✓ Observe Operations
- ✓ Note Other Safety Concerns
- ✓ Document Findings

Rules

- ✓ ***If you do not feel well, please stay home!***
- ✓ Dress appropriately for safety and weather
- ✓ Groups will travel in staggered pairs/threes
- ✓ Face masks/coverings and safety vests **must** be worn
- ✓ No materials provided at the site

ROAD SAFETY AUDIT

Discussion during Field Visit

Observations

- What elements of the road may present a safety concern?
- To what extent, to which road users, and under what circumstances?
- What corridor safety issues did you observe?
- What localized safety issues did you observe?

Recommendations

- What opportunities exist to eliminate or mitigate identified safety concerns?
- What improvements would you make?
- Are any of the FHWA countermeasures beneficial?

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: 6-8 weeks

THANK YOU

http://www.gpiprojects.com/HSIP/Hudson

APPENDIX I

NJDOT DIAGNOSTIC TEAM MEETING DOCUMENTS

State of New Jersey

DEPARTMENT OF TRANSPORTATION
P.O. Box 600
Trenton, New Jersey 08625-0600

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

DIANE GUTIERREZ-SCACCETTI
Commissioner

February 22, 2019

IN THE MATTER OF REVIEW OF THE TRAFFIC CONTROL DEVICES, SURFACE FEATURES, TRAIN PREEMPTION & RAILROAD WARNING DEVICES OF THE HIGHWAY-RAIL AT-GRADE CROSSING OF PATERSON AVENUE WITH NJ TRANSIT'S HUDSON BERGEN LIGHT RAIL LOCATED IN THE CITY OF HOBOKEN, COUNTY OF HUDSON

INITIATION OF PROCEEDINGS

Paterson Ave (CR 681)
Docket No. DOT 19-2019CM

Thai Luu
Diagnostic Team Leader
Structural & Railroad Engineering Services
New Jersey Department of Transportation
P.O. Box 600
Trenton, New Jersey 08625-0600

Joe Tassiello
General Manager
Department of Operations and Maintenance
NJ Transit
One Penn Plaza East
Newark, New Jersey 07105

Kem Anyika
Superintendent - HBLR
20 Caven Point Ave
Jersey City, New Jersey 07305

Todd Hirt
Supervising Engineer
Structural & Railroad Engineering Services
New Jersey Department of Transportation
P.O. Box 600
Trenton, New Jersey 08625-0600

Patrick Harrison
Senior Chief Engineer
21st Century Rail / HBLR
20 Caven Point Road
Jersey City, New Jersey 07305

Kimberli Craft
City Engineer
Hoboken City Hall
94 Washington Street
Hoboken, New Jersey 07030

Jose Sieira
Hudson County Engineering Office
830 Bergen Avenue, Fl 6B
Jersey City, New Jersey 07306

Jose Cunha
City Engineer
Division of Engineering, Traffic & Transportation
13-15 Linden Avenue East, Jersey City
Jersey City, New Jersey 07305

Todd Kropilak
Multimodal Services
New Jersey Department of Transportation
P.O. Box 600
Trenton, New Jersey 08625-0600

Corey Wolkenberg
Chief of Staff to Assembly Majority Whip Raj Mukherji (D-33)
433 Palisade Ave
Jersey City, New Jersey 073074

Brian Crimins
Fire Chief - Hoboken
Hoboken City Hall
94 Washington Street
Hoboken, New Jersey 07030

Kenneth F. Ferrante
Chief of Police
Hoboken PD
106 Hudson Street
Hoboken, New Jersey 07030

To the above Addressees:

The Commissioner of the New Jersey Department of Transportation (NJDOT) hereby initiates the captioned matter on his own motion and has FOUND and DETERMINED that:

1. The track is owned by NJ Transit. It is maintained and operated by 21st Century Rail Corporation.

2. The subject rail crossing consists of two (2) tracks.

3. The light rail line is the Hudson Bergen Light Rail(HBLR) and is electrified by overhead catenary lines.

4. For the purpose of this meeting, the tracks are considered to be running north/south while Paterson Ave is considered to be running east/west. Quadrants mentioned are relative to the highway-rail crossing.

5. The railroad crossing surface consists of concrete panels and asphalt. The crossing surface is considered to be in good condition.

6. Paterson Avenue intersects at-grade with NJ Transit's HBLR at an acute angle. This at-grade crossing is controlled by highway traffic signals. Paterson Avenue at this crossing is under the jurisdiction of the County of Hudson and is designated County Route 681.

7. At the crossing, Paterson Ave is approximately sixty-five feet (65') wide. The width of the roadway varies east or west of the crossing. East of the crossing, Paterson Ave is four (4) lanes wide: two lanes in each direction. West of the crossing, Paterson Ave is five (5) lanes wide: three lanes westbound (two through lanes and a dedicated left turn lane) and two lanes eastbound. There are sidewalks on both sides of Paterson Ave.

8. Mountain Road is a municipal roadway that T-intersects Paterson Avenue approximately one hundred twenty feet (120') west of the crossing. Mountain Road is two-way with a median in proximity to this intersection. This roadway is under the jurisdiction of Jersey City. This intersection is controlled by highway traffic signals.

9. Marshall Street and 1st Street are municipal roadways that intersect Paterson Avenue approximately one hundred forty feet (140') east of the crossing. Both roadways are under the jurisdiction of City of Hoboken. This intersection is controlled by highway traffic signals. Marshall Street is a two-lane, two way roadway. 1st Street is a one-lane, one way roadway going eastbound.

10. There are crosswalks adjacent east and west of the crossing.

11. The traffic signals at the intersections of: 1) Mountain St & Paterson Ave, 2)Paterson Ave & the HBLR, and 3) Paterson Ave, Marshall St & 1st St all work in conjunction with each other and contains railroad preemption.

12. The City of Hoboken and Jersey City are requesting an evaluation of traffic signal operations and roadway/intersection operations due to heavy roadway congestion on approach to the crossing.

13. The prudent motorist may be better served with revisions to the operations of the highway traffic signal system at these three intersections and roadway & pedestrian infrastructure.

The parties on notice herein are advised that proposals concerning highway-rail at-grade crossings require prior approval by the Commissioner of Transportation as provided through the Diagnostic Team Process carried out by the Department's Structural & Railroad Engineering Services Unit.

Accordingly, a Diagnostic Team Meeting will be convened to review engineering-technical proposals relating to the captioned locations and to formulate RECOMMENDATIONS that will be submitted to the Commissioner of Transportation for use in rendering decisions.

The Diagnostic Team will be comprised of those noticed herein and/or their authorized representative who attend the meeting indicated on the attached sheet.

The members of the Diagnostic Team should be prepared to discuss their individual disciplines that influence the grade crossings (e.g., rail operations, motor vehicle and pedestrian traffic, area development, etc.).

During this meeting, you will be walking on uneven surfaces and possibly in proximity to moving trains and vehicles. To ensure your safety, please wear a reflective vest and suitable shoes.

A record of the Diagnostic Team Meeting with RECOMMENDATIONS will be distributed to those noticed herein and members of the Diagnostic Team for comment. The RECOMMENDATIONS will be published for comment by the public.

Should objections to the RECOMMENDATIONS be advanced, the matter may be referred to the Department's Exception Review Committee for determination of further action.

NOW, THEREFORE, the Commissioner will proceed to resolve this matter.

DEPARTMENT OF TRANSPORTATION

Dated:

2/22/19

Approved By:

Todd Hirt
Supervising Engineer
Structural & Railroad Engineering Services
1035 Parkway Ave, P.O. Box 600
Trenton, New Jersey 08625

Attachment

ATTACHMENT

TO

INITIATION OF PROCEEDINGS

Paterson Avenue
Docket No. DOT 19-2019CM

The Diagnostic Team Meeting for this matter will be held on:

Tuesday, March 5th, 2019 @ 10:30AM

The meeting site will be on-site at the **Highway-Light Rail Crossing of Paterson Avenue & NJ Transit's HBLR in the City of Hoboken, Hudson County.**

Should you have any questions regarding this matter or the review procedure, please contact Thai Luu, Diagnostic Team Leader at Tel: (609) 530-2374, Email: Thai.Luu@dot.nj.gov.

State of New Jersey
DEPARTMENT OF TRANSPORTATION
P.O. Box 600
Trenton, New Jersey 08625-0600

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

DIANE GUTIERREZ-SCACETTI
Commissioner

May 8, 2019

IN THE MATTER OF REVIEW OF THE TRAFFIC CONTROL DEVICES, SURFACE FEATURES, TRAIN PREEMPTION & RAILROAD WARNING DEVICES OF THE HIGHWAY-LRT AT-GRADE CROSSING OF PATERSON AVENUE WITH NJ TRANSIT'S HUDSON BERGEN LIGHT RAIL LOCATED IN THE CITY OF HOBOKEN, COUNTY OF HUDSON

ORDER

Paterson Avenue (CR 681)
Docket No. DOT 17-2019CM

Thai Luu
Diagnostic Team Leader
Structural & Railroad Engineering Services
New Jersey Department of Transportation
P.O. Box 600
Trenton, New Jersey 08625-0600

Todd Hirt
Supervising Engineer
Structural & Railroad Engineering Services
New Jersey Department of Transportation
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Kem Anyika
Superintendent - HBLR
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Jose Sieira
Hudson County Engineering Office
830 Bergen Avenue, Fl 6B
Jersey City, New Jersey 07306

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Brian Crimins
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Sean Kushnir
Assistant General Manager
NJ Transit - HBLR
One Penn Plaza East
Newark, New Jersey 07105

Steven Vecerina
HBLR
20 Caven Point Road
Jersey City, New Jersey 07305

Jennifer Cato
Traffic Engineer
Division of Engineering, Traffic & Transportation
13-15 Linden Ave E
Jersey City, NJ 07305

Jose Cunha
City Engineer
Division of Engineering, Traffic & Transportation
13-15 Linden Avenue East, Jersey City
Jersey City, New Jersey 07305

Claire Wolfe
Chief of Staff to Assembly Majority Whip Raj Mukherji (D-33)
433 Palisade Ave
Jersey City, New Jersey 073074

Kenneth F. Ferrante
Chief of Police
Hoboken PD
106 Hudson Street
Hoboken, New Jersey 07030

Tom Malavasi
Hudson County Engineering Office
830 Bergen Avenue, Fl 6B
Jersey City, New Jersey 07306

Phil Maccioli
Pres/CCO
HBLR - 21st Century Rail
20 Caven Point Road
Jersey City, New Jersey 07305

Paul Russo
Supervising Engineer
Division of Engineering, Traffic & Transportation
13-15 Linden Ave E
Jersey City, NJ 07305

To the above Addressees:

Transmitted herewith is the Commissioner's **ORDER** for the above captioned project.

Questions should be directed to this office and brought to the attention of the Diagnostic Team Leader, Thai Luu at (609)963-2477 or via e-mail at Thai.Luu@dot.nj.gov.

Sincerely,

Todd Hirt
Supervising Engineer
Structural & Railroad Engineering Services
1035 Parkway Ave, P.O. Box 600
Trenton, New Jersey 08625

Attachment

State of New Jersey
DEPARTMENT OF TRANSPORTATION
P.O. Box 600
Trenton, New Jersey 08625-0600

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

DIANE GUTIERREZ-SCACCETTI
Commissioner

May 8, 2019

IN THE MATTER OF REVIEW OF THE TRAFFIC CONTROL DEVICES, SURFACE FEATURES, TRAIN PREEMPTION & RAILROAD WARNING DEVICES OF THE HIGHWAY-LRT AT-GRADE CROSSING OF PATERSON AVENUE WITH NJ TRANSIT'S HUDSON BERGEN LIGHT RAIL LOCATED IN THE CITY OF HOBOKEN, COUNTY OF HUDSON	**ORDER** **Paterson Avenue (CR 681)** **Docket No. DOT 17-2019CM**

BY THE COMMISSIONER:

The Commissioner of the New Jersey Department of Transportation (NJDOT) initiated a review of the above captioned highway-LRT at-grade crossing on her own motion to determine if revisions to the highway traffic signal train preemption sequence and roadway configurations would better serve the motoring & pedestrian public.

After notice, the Diagnostic Team Meeting was held on Tuesday, March 5, 2019 at the Paterson Avenue highway-LRT at-grade crossing located in City of Hoboken, County of Hudson.

All interested parties were advised of the recommendations proposed for consideration by the Commissioner. Legal notice of the matter and proposals were published.

During the comment period, two comments were made for clarification to Memorandum of Record Diagnostic Team Findings. The Diagnostic Team Findings are amended as follow:

5. Light Rail operation consists of **507 trips daily** at a rated speed of **25 MPH**. **There is currently no speed restriction at this crossing.** This is passenger service only.

11. Marshall Street and 1st Street intersect Paterson Avenue approximately one hundred forty feet (140') east of the crossing. **Marshall St is under the jurisdiction of City of Hoboken and 1st**

Street is under the jurisdiction of the County of Hudson. This intersection is controlled by highway traffic signals. Marshall Street is a two-lane, two way roadway. 1st Street is a one-lane, one way roadway going eastbound.

None of the parties of interest or noticed public filed any objection to the recommendations in the matter.

The tracks are owned by NJ Transit and operated/maintained by 21st Century Rail Corporation.

For the purposes of this ORDER, the light rail tracks are considered to run in a north/south direction and Paterson Ave runs in an east/west direction. Quadrants mentioned are relative to the highway-LRT intersection.

A. The Commissioner of Transportation, based upon review of the record, **HEREBY ACCEPTS and ADOPTS** the recommendations of the Diagnostic Team and in consonance with N.J.S.A. 48:2-1, 48:2-13, 48:2-29, 48:12-58, 48:12-152, 39:4-183.1 and 39:4-191.1, **HEREBY ORDERS** NJ Transit at the above captioned crossing to:

1. Reconfigure the operation of the subject crossing's traffic signal system railroad preemption exit phase. If sequential railroad preemptions occur, the operation shall be changed to share priority of the preemption exit phase right-of-way as opposed to reverting to Marshall St and Mountain Rd.

2. Test and ensure proper operation of the actuated pedestrian signals for this crossing.

3. Evaluate the operations of the actuated pedestrian signals to ensure efficient use of all phases under normal operation and railroad preemption operation.

4. Provide NJDOT's Railroad Engineering Services with the revised signal timing charts.

B. The Commissioner **Directs** the County of Hudson to:

1. Maintain the railroad advance warning signs, railroad pavement markings and stop bars on approach to this crossing for Paterson Ave.

C. The Commissioner **Further Directs** the City of Hoboken to:

1. Maintain the railroad advance warning sign on Marshall Street.

D. INCLUSIVE:

1. Appropriate traffic control devices should be established before work begin for trains and vehicles affected by this work at this crossing.

2. All devices controlling roadway vehicles shall be installed in accordance with the latest edition of the MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

3. All work to be done on Railroad right-of-way by an entity other than the Railroad will require communication with the Railroad and may require the appropriate permits, insurance, flagmen, etc.

4. All work associated with this matter shall be subject to final acceptance by NJDOT's Structural and Railroad Engineering Services Unit.

5. The work described above should be completed within two (2) years upon the issuance of this ORDER signed by the Commissioner.

NEW JERSEY
DEPARTMENT OF TRANSPORTATION

Recommended by: _____
Snehal Patel, P.E.
STATE TRANSPORTATION ENGINEER

Approved by: _____
Snehal Patel, P.E.
Assistant Commissioner
Capital Program Management

ATTESTED/WITNESS/AFFIX SEAL:

_____ **Date:** 5/15/19
Anika James
Secretary, New Jersey Department of Transportation

APPENDIX J

ROAD OWNER RESPONSE

COUNTY OF HUDSON
DEPARTMENT OF ROADS AND PUBLIC PROPERTY
OFFICE OF THE COUNTY ENGINEER
BERGEN SQUARE CENTER
830 BERGEN AVENUE, FLOOR. #6B
JERSEY CITY, NEW JERSEY 07306
TELEPHONE: (201) 369-4340
FAX: (201) 369-4346

THOMAS MALAVASI, PE, PP, CME, CPWM
COUNTY ENGINEER

THOMAS A. DeGISE
COUNTY EXECUTIVE

JOSEPH F. GLEMBOCKI, PE
ASSISTANT COUNTY ENGINEER

DENISE C. D'ALESSANDRO
DIRECTOR

ROBERT A YANNAZZO, AIA
CHIEF ARCHITECT

November 6, 2020

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
Paterson Plank Road between Harrison Street and S. Wing Viaduct in the City of Hoboken, City of Union City and City of Jersey City
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 Paterson Plank Road between Harrison Street and S. Wing Viaduct 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 October 2020 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) and sidewalk widening at some locations
- Corridor-wide signal upgrades
- Corridor-wide upgrade of all striping and signage
- Inspect and evaluate drainage facilities for proper drainage
- Investigate whether a Jersey barrier is feasible to separate traffic along Paterson Plank Road
- Implementation of High Friction Surface Treatment along the existing curves

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
Byron Nicholas, Supervising Transportation Planner