Columbus Drive

Complete Streets Implementation Plan

November 2019

Michael Baker INTERNATIONAL

APPENDIX E
HSM MEMORANDUM

HSM Predictive Analysis Memo

Project: Columbus Drive Corridor Study

Subject: Review of Highway Safety Manual Predictive Analysis

Date: October 11th, 2019

To: Barkha Patel, Senior Transportation Planner, Division of City Planning, Jersey City

From: Michael Baker International, Inc.

Introduction

The City of Jersey City received a grant from the New Jersey Department of Transportation Office of Bicycle and Pedestrian Programs (NJDOT-OBPP) for Local Technical Assistance (LTA) in developing Complete Streets Improvements along Columbus Drive. This road was identified by the North Jersey Transportation Planning Authority's FY 16-17 Local Safety Program as a priority pedestrian corridor.

To address critical safety issues present on Columbus Drive and to ensure that all roadway users are accommodated, Michael Baker was tasked with developing a conceptual design for the Columbus Drive corridor that, if implemented, could improve safety and reimagine the roadway as a Complete Streets corridor. To determine if the proposed design can enhance safety along the corridor, an AASHTO Highway Safety Manual (HSM) Predictive Analysis was performed. This memorandum reviews the results of the HSM Predictive Analysis. HSM Predictive Analysis is a recognized method for assessing the safety benefit of potential improvement alternatives.

The analysis performed predicts that in the design year (2043) implementation of the proposed design could decrease the number of expected vehicle crashes by up to 40% (29.42 fewer crashes per year). Additionally, HSM analysis indicates that the proposed design could result in approximately 28% (4.97 fewer crashes per year) fewer bicycle and pedestrian crashes.

To further quantify the impact of implementing the proposed safety countermeasures, a cost benefit analysis was performed. This analysis assessed the financial savings that result from the proposed safety investment. Using the methodology described in Chapter 7: Economic Appraisal of the HSM, the total benefit of the proposed design is $56,761,529 (2018 Dollars). The project's Cost Benefit Ratio (CBR) was determined by dividing the estimated benefits by the project's estimated cost, $8,150,000. The project's CBR was calculated to be 6.96.

This memorandum explains the process through which the HSM Predictive Analysis was completed, the findings of this analysis, and an analysis of the Preliminary Preferred Alternative.

Project Background and Existing Conditions

Project Location

The study encompasses Columbus Drive from its eastern terminus to west of the Brunswick Avenue intersection (MP 0.00 to MP 1.03+0.16[1]). Columbus Drive is an Urban Minor Arterial that provides access to the Jersey City waterfront, I-78, and several north-south local roads. The primary land uses in the vicinity of this section of Columbus Drive are residential and commercial (Figure 1).

Figure 1: Aerial of Columbus Drive.

Columbus Drive has sidewalks along both sides of the roadway throughout the project area, which are in fair and good condition. Crosswalks throughout the corridor are in fair and poor condition, while bicycle lanes are present but insufficient. The Columbus Drive corridor is home to several bus stops and the Grove Street PATH Station. Due to its proximity to residential neighborhoods and the presence of public transit, the study corridor features high pedestrian and vehicle volumes.

Roadway Characteristics

Columbus Drive is relatively straight and has a consistent grade resulting in few geometry-based sight distance concerns along the corridor. The existing study corridor consists of 11 signalized intersection, and for the purposes of this analysis, 5 roadway segments. Intersections are spaced relatively evenly, with one approximately every 1/10th-mile. NJDOT Straight Line Diagrams for the study corridor are provided in Appendix A. Roadway segments and intersections are listed in Tables 1 and 2.

Table 1: Roadway Segments

Segment Number	Segment (Milepost)	AADT	Posted Speed (MPH)	Configuration
1	Eastern Terminus to Greene Street (0.00-0.14)	5,298	25	Four 12’ lanes, undivided
2	Greene Street to Marin Boulevard (0.14-0.47)	16,234	25	Four 12’ lanes, undivided
3	Marin Boulevard to Grove Street (0.47-0.56)	16,234	25	Five 12’ lanes, undivided
4	Grove Street to Midblock between Monmouth Street and Brunswick Avenue (0.56-0.98)	24,021	25	Four 12’ lanes, undivided
5	Midblock between Monmouth Street and Brunswick Avenue to Western Project Limit (0.98-1.03+0.16)	24,021	25	Six 12’ lanes, undivided

[1] Columbus Drive Mileposts increase from east to west. Mileposts for Columbus Drive restart at the Brunswick Avenue intersection (MP 1.03).

Table 2: Intersections

Intersection Number	Intersection (Milepost)	Major AADT	Minor AADT
1	Columbus Drive & Hudson Street (0.05)	4,321	2,899
2	Columbus Drive & Greene Street (0.14)	5,298	8,749
3	Columbus Drive & Washington Street (0.23)	16,234	9,074
4	Columbus Drive & Warren Street (0.32)	16,234	5,980
5	Columbus Drive & Marin Boulevard (0.47)	16,234	14,805
6	Columbus Drive & Grove Street (0.56)	24,021	6,890
7	Columbus Drive & Barrow Street (0.68)	24,021	4,706
8	Columbus Drive & Jersey Avenue (0.77)	24,021	8,650
9	Columbus Drive & Varick Street (0.85)	24,021	5,291
10	Columbus Drive & Monmouth Street (0.94)	24,021	12,233
11	Columbus Drive & Brunswick Avenue (1.03)	24,021	8,060

Crash History

A Historical Crash Analysis was conducted to summarize historical crash data. Michael Baker obtained motor vehicle crash data from the NJDOT Bureau of Safety Programs. A total of 207 crashes occurred along the study corridor during a three-year period from 2015 to 2017:

- 47 crashes resulted in 58 people injured and 1 killed.
- The Top 3 crash types represented 71% of all crashes, and the Top 5 represented 83.5%:
    1. 81 (39.1%) crashes were Same Direction (Side Swipe) Right Angle.
    2. 41 (19.8%) crashes were Same Direction (Rear End).
    3. 25 (12.1%) crashes were Struck Parked Vehicle.
    4. 20 (9.7%) crashes were Pedestrian.
    5. 15 (7.2%) crashes were Right Angle.
- 24 (11.6%)crashes were pedestrian or bicycle crashes.

Approximately 75% of crashes occurred at signalized intersections. The top three crash locations were:

1. 25 (12.1%) crashes occurred at the Columbus Drive and Marin Boulevard intersection.
2. 24 (11.6%) crashes occurred at the Columbus Drive and Grove Street intersection.
3. 19 (9.2%) crashes occurred at the Columbus Drive and Jersey Avenue intersection.

The roadway segment with the highest quantity of crashes was Segment 3, between Marin Boulevard and Grove Street (MP 0.47-0.56), with 17 crashes.

Historical crashes were also utilized in comparing alternative configurations, countermeasures, and the resultant expected crash frequencies from the Predictive Analyses of the Highway Safety Manual. Crashes were extracted from Safety Voyager from 2015-2017 and assigned to signalized intersections and segments between those intersections, as they would be analyzed in the Predictive Analysis. Private property crashes were eliminated from the analysis.

Table 3: Annual Average Crash History (2015-2017) Segments

Segment Number	Segment (Milepost)	Average Multiple Vehicle Driveway (Crashes/Year)		Average Multiple Vehicle Non-driveway (Crashes/Year)		Average Single Vehicle (Crashes/Year)	
		Fatal and Injury Only	Property Damage Only	Fatal and Injury Only	Property Damage Only	Fatal and Injury Only	Property Damage Only
1	Eastern Terminus to Greene Street (0.00-0.14)	0	0	0	0.67	0	0
2	Greene Street to Marin Boulevard (0.14-0.47)	0	0	0.33	3	0	0.33
3	Marin Boulevard to Grove Street (0.47-0.56)	0	0	0	3.67	0.33	0
4	Grove Street to Midblock between Monmouth Street and Brunswick Avenue (0.56-0.98)	0	0.67	0.33	4.33	0	0.33
5	Midblock between Monmouth Street and Brunswick Avenue to Western Project Limit (0.98-1.03+0.16)	0	0.33	0	1.33	0	0.67

Table 4: Annual Average Crash History (2015-2017) Intersections

Intersection Number	Intersection (Milepost)	Average Multiple Vehicle (Crashes/Year)		Average Single Vehicle (Crashes/Year)	
		Fatal and Injury Only	Property Damage Only	Fatal and Injury Only	Property Damage Only
1	Columbus Drive & Hudson Street (0.05)	1.00	2.67	0	0
2	Columbus Drive & Greene Street (0.14)	0.33	2.00	0	0
3	Columbus Drive & Washington Street (0.23)	0	0.67	0.67	0
4	Columbus Drive & Warren Street (0.32)	0.33	3.33	0.33	0.33
5	Columbus Drive & Marin Boulevard (0.47)	1.33	6.00	0.67	0.33
6	Columbus Drive & Grove Street (0.56)	1.00	5.33	1.67	0
7	Columbus Drive & Barrow Street (0.68)	1.00	2.67	1.33	0
8	Columbus Drive & Jersey Avenue (0.77)	0	6.33	0	0
9	Columbus Drive & Varick Street (0.85)	0.33	1.33	1.00	0
10	Columbus Drive & Monmouth Street (0.94)	1.67	3.33	0	0.33
11	Columbus Drive & Brunswick Avenue (1.03)	1.00	3.33	1.00	0

Traffic Data

Traffic data, such as Average Annual Daily Traffic (AADT) volumes, are used in the Highway Safety Analysis to help group sites with similar peer sites, addressing the likelihood that higher volume roadways have a higher crash frequency when all other variables are held constant. Major Road AADT was calculated by averaging 7-day Automated Traffic Recorders (ATR) counts both east and west of the Olden Avenue intersection. Seasonal adjustment factors from the NJDOT website were used. AADT for minor roadways were estimated by multiplying the peak hour volume of the minor street leg with the greater peak hour

volume by 13. The multiplier represents the average of the ratio of peak hour volumes to AADT for the minor street approaches at the Marin Boulevard and Jersey Avenue intersections. Historical ATR data for Jersey Avenue and Marin Boulevard was obtained from the NJDOT website.

Tables 1 and 2 summarize the traffic volume data used in the HSM analysis of the segments and intersections within project.

Pedestrian turning movement counts were also collected and used in the analysis. Daily pedestrian volumes were estimated by multiplying the number counted by a factor of 1.5. This factor was employed to produce a conservative estimate, as the volume multiplied represented the pedestrian crossing volumes during the AM and PM peak periods.

Methodology

HSM Predictive Method Overview

The HSM Predictive Analysis allows planners and engineers to compare the safety of existing and proposed facilities and the impact of safety countermeasures in a quantitative way. This analysis is used to identify site elements, segments, and intersections within a study area that have the most potential for safety improvement based on the element's crash frequency compared to peer sites with similar characteristics and traffic conditions.

The Predictive Method generates a predicted crash rate based on the Safety Performance Function[2], as determined by those site characteristics and conditions related to safety and potential for crashes. Types and severities of crashes are predicted using variables such as AADT, Roadway/Intersection class, historical crash data, geometric design, and roadway cross sectional elements. Regression-to-the-mean bias is accounted for by applying historical crash data to the predicted crash rate using the Empirical-Bayes methodology. Including the historical crash data in the analysis allows an expected crash rate to be generated, a weighted rate between the historical crash rate and the rate predicted by the Safety Performance Function.

Proposed improvements that have a known effect on crash rate are included in the analysis through Crash Modification Factors (CMFs). CMFs are factors multiplied by the expected crash rate or the Safety Performance Function (depending on the availability of historical crash data) at specific sites to estimate the expected crash rate following the implementation of those improvements.

The facility must be evaluated by individual sites –either homogeneous segments or intersections— when using the predictive method. These individual pieces or elements can be found in Tables 1 and 2. Segments are divided at points where the road geometry changes or a significant change in AADT occurred. Intersections are always an individual site, they are never combined with segments or other intersections. Dividing study corridors into individual sites allows evaluators to determine which elements of a project have the most potential for safety improvement and what the expected crash frequency of each of the proposed alternatives will be.

[2] The HSM defines Safety Performance Functions as "equations used to predict the average number of crashes per year at a location as a function of exposure and, in some cases, roadway or intersection characteristics (e.g. number of lanes, traffic control, or median type)."

Analysis Method and Approach

Columbus Drive was analyzed using the methodology designed for urban and suburban arterials. Each site was analyzed individually for proposed alternatives at specific locations, as well as together for corridor-wide improvements.

For multi-year analysis 2023 was used as the construction year, and 2043 was used as the design year. 20-year analysis also allows evaluators to see the benefit of treatments or alternatives over the useful life of most infrastructure improvements. The assumption was made that traffic growth would increase 1.17% annually between the 2018 and 2023. For post-construction years, it was assumed that the traffic growth would slow due to the fundamental change in the road's characteristics. Between 2023 and 2043 an annual growth rate of 0.71% was used. Both growth rates are based on the NJTPA's Plan 2045 Forecasts.

HSM Input Data

Each project site must first be classified as either a Two-Lane Rural Road, Multi-Lane Rural Road, or Urban and Suburban Arterial. The data for the HSM analysis was analyzed as an urban/suburban arterial site-type. The input data necessary for calculating the predicted average crash frequency for this site-type are shown in Table 5.

Table 5: HSM Input Data

Segments	Intersections
• Roadway Type/Configuration (e.g. 2-lane undivided) • Length of Segment • AADT of Segment • Presence and Type of On-Street Parking • Proportion of Curb Length with On-Street Parking • Presence and Width of Median • Presence of Lighting • Presence of Automatic Speed Enforcement • Number and Type of Major/Minor Driveways • Speed Category • Roadside Fixed Object Density • Offset to Roadside Fixed Objects • Calibration Factor	• Intersection Type (3/4 Leg, Stop/Signal Controlled) • AADT of Major Roadway • AADT of Minor Roadway • Presence of Intersection Lighting • Approaches with Left-Turn Lanes • Approaches with Right-Turn Lanes • Left-Turn Phasing Type • Approaches with Right-Turn on Red Prohibited • Presence of Red Light Cameras • Sum of all Pedestrian Crossing Volumes • Number of Bus Stops within 1,000 feet • Presence of Schools within 1,000 feet • Number of Alcohol Sales Establishments within 1,000 feet • Calibration Factor

HSM Output: Existing Conditions

A summary of the expected frequency of crashes per year under existing conditions in the base year (2018) is provided in Table 6.

Table 6: Expected Annual Crashes in the Existing Condition (2018)

Site Number	Site (Milepost)	Expected Vehicle Crashes (per year)	Expected Pedestrian & Bike Crashes (per year)
Segments			
1	Eastern Terminus to Greene Street (0.00-0.14)	0.53	0.02
2	Greene Street to Marin Boulevard (0.14-0.47)	4.66	0.20
3	Marin Boulevard to Grove Street (0.47-0.56)	2.14	0.04
4	Grove Street to Midblock between Monmouth Street and Brunswick Avenue (0.56-0.98)	7.08	0.37
5	Midblock between Monmouth Street and Brunswick Avenue to Western Project Limit (0.98-1.03+0.16)	2.38	0.07
Intersections			
1	Columbus Drive & Hudson Street (0.05)	1.07	0.87
2	Columbus Drive & Greene Street (0.14)	1.54	1.20
3	Columbus Drive & Washington Street (0.23)	2.11	1.71
4	Columbus Drive & Warren Street (0.32)	3.86	1.57
5	Columbus Drive & Marin Boulevard (0.47)	5.89	2.13
6	Columbus Drive & Grove Street (0.56)	6.22	2.32
7	Columbus Drive & Barrow Street (0.68)	4.51	0.97
8	Columbus Drive & Jersey Avenue (0.77)	6.54	1.61
9	Columbus Drive & Varick Street (0.85)	3.19	0.56
10	Columbus Drive & Monmouth Street (0.94)	5.61	0.75
11	Columbus Drive & Brunswick Avenue (1.03)	5.15	0.77
Total		62.49	15.17

Proposed Design Analysis

Summary of Design

The proposed design calls for the installation of several traffic calming measures along the Columbus Drive corridor. The primary features of the proposed design include:

- Removal of a travel lane in each direction
- Installation of protected bike lanes
- Reduced lane widths from 12’ to 10’
- Installation of raised medians
- Installation of bump outs at crosswalks
- Increasing the length of all-red clearance intervals
- Replacement of existing signal heads with LED signal heads
- Installation of wet-reflective pavement markings
- Implement a Barnes Dance (all-ped phase)

For more information on the proposed design, see the Implementation Plan.

Crash Modification Factors

To model the proposed design in HSM, the features listed previously were encoded into the Part C Predictive Method using Crash Modification Factors (CMFs). CMFs represent the percent reduction (or increase) in the number of expected crashes at a given location as a result of a specific countermeasure. The CMFs used in this study were applied to the output of the HSM Part C Predictive Method. Table 7 lists the CMFs used during the analysis.

Table 7: Crash Modification Factors

#	Countermeasure	Crash Type	Crash Severity	CMF Original	CMF Adjusted
1	10% reduction in mean speed	All	A, B, C	0.85	**0.85**
2	Improve visibility of signal heads	All	All	0.93	**0.9**
	Replace incandescent traffic signal bulbs with Light Emitting Diodes (LEDs)	Rear end	All	0.827	
3	Increase all red clearance interval	All	All	0.798	**0.798**
4	Install a raised median	All	A, B, C	0.78	**0.78**
5	Install cycle tracks, bike lanes, or on-street cycling	Vehicle/bicycle	A, B, C	0.26	**0.26**
6	Installation of bicycle lanes at signalized intersection	Vehicle/bicycle	All	0.80	**0.8**
7	Prohibit on-street parking	All	K, A, B, C	0.780	**0.78**
8	Implement barnes dance	Vehicle/pedestrian	All	0.490	**0.49**
9	Upgrade existing markings to wet-reflective pavement markings	All	K, A, B, C	0.881	**0.881**
10	Reduce lane width from 12 ft to 10 ft	All	All	1.280	**1.28**

Table 8 lists the CMFs applied at each portion of the project corridor.

Table 8: CMFs by Location

Site Number	Site (Milepost)	CMFs Applied (Vehicle Crashes)	CMFs Applied (Ped & Bike Crashes)
Segments			
1	Eastern Terminus to Greene Street (0.00-0.14)	1, 4, 9, 10	1, 5
2	Greene Street to Marin Boulevard (0.14-0.47)	1, 4, 9, 10	1, 5
3	Marin Boulevard to Grove Street (0.47-0.56)	1, 4, 7, 9, 10	1, 5
4	Grove Street to Midblock between Monmouth Street and Brunswick Avenue (0.56-0.98)	1, 4, 9, 10	1, 5
5	Midblock between Monmouth Street and Brunswick Avenue to Western Project Limit (0.98-1.03+0.16)	1, 4, 9, 10	1, 5
Intersections			
1	Columbus Drive & Hudson Street (0.05)	1, 2, 3	1, 6
2	Columbus Drive & Greene Street (0.14)	1, 2, 3	1, 6
3	Columbus Drive & Washington Street (0.23)	1, 2, 3	1, 6
4	Columbus Drive & Warren Street (0.32)	1, 2, 3	1, 6
5	Columbus Drive & Marin Boulevard (0.47)	1, 2, 3	1, 6
6	Columbus Drive & Grove Street (0.56)	1, 2, 3	1, 6, 8
7	Columbus Drive & Barrow Street (0.68)	1, 2, 3	1, 6
8	Columbus Drive & Jersey Avenue (0.77)	1, 2, 3	1, 6
9	Columbus Drive & Varick Street (0.85)	1, 2, 3	1, 6
10	Columbus Drive & Monmouth Street (0.94)	1, 2, 3	1, 6
11	Columbus Drive & Brunswick Avenue (1.03)	1, 2, 3	1, 6

HSM Output: Proposed Design

A summary of the expected frequency of crashes per year under existing conditions in the base year (2018) is provided in Table 9.

Table 9: Expected Crashes in the Proposed Design (2018)

Site Number	Site (Milepost)	Expected Vehicle Crashes (per year)	Expected Pedestrian & Bike Crashes (per year)
Segments			
1	Eastern Terminus to Greene Street (0.00-0.14)	0.44	0.02
2	Greene Street to Marin Boulevard (0.14-0.47)	3.84	0.28
3	Marin Boulevard to Grove Street (0.47-0.56)	1.26	0.04
4	Grove Street to Midblock between Monmouth Street and Brunswick Avenue (0.56-0.98)	5.70	0.53
5	Midblock between Monmouth Street and Brunswick Avenue to Western Project Limit (0.98-1.03+0.16)	2.12	0.08
Intersections			
1	Columbus Drive & Hudson Street (0.05)	0.62	0.68
2	Columbus Drive & Greene Street (0.14)	0.82	0.98
3	Columbus Drive & Washington Street (0.23)	1.22	1.33
4	Columbus Drive & Warren Street (0.32)	2.08	1.27
5	Columbus Drive & Marin Boulevard (0.47)	3.69	1.74
6	Columbus Drive & Grove Street (0.56)	3.64	0.95
7	Columbus Drive & Barrow Street (0.68)	2.58	0.78
8	Columbus Drive & Jersey Avenue (0.77)	3.63	1.35
9	Columbus Drive & Varick Street (0.85)	1.84	0.45
10	Columbus Drive & Monmouth Street (0.94)	3.25	0.60
11	Columbus Drive & Brunswick Avenue (1.03)	2.93	0.57
Total		**39.65**	**11.68**

To determine the reduction of crashes over the lifespan of the proposed design, an HSM analysis was performed on the No Build condition and the proposed design in the construction (2023) and design years (2043). Changes to the HSM input are included in Appendix B. The results of the HSM analysis can be seen in Tables 10 and 11.

Table 10: Expected Crashes in the No Build Condition & Proposed Design (Construction Year - 2023)

Site Number	Site (Milepost)	No Build Condition		Proposed Design	
		Expected Vehicle Crashes (per year)	Expected Pedestrian & Bike Crashes (per year)	Expected Vehicle Crashes (per year)	Expected Pedestrian & Bike Crashes (per year)
Segments					
1	Eastern Terminus to Greene Street (0.00-0.14)	0.57	0.02	0.47	0.02
2	Greene Street to Marin Boulevard (0.14-0.47)	4.75	0.22	3.91	0.30
3	Marin Boulevard to Grove Street (0.47-0.56)	2.25	0.04	1.34	0.05
4	Grove Street to Midblock between Monmouth Street and Brunswick Avenue (0.56-0.98)	7.18	0.40	5.76	0.58
5	Midblock between Monmouth Street and Brunswick Avenue to Western Project Limit (0.98-1.03+0.16)	2.53	0.08	2.18	0.09
Intersections					
1	Columbus Drive & Hudson Street (0.05)	1.35	0.89	0.79	0.70
2	Columbus Drive & Greene Street (0.14)	1.62	1.23	0.87	1.00
3	Columbus Drive & Washington Street (0.23)	2.18	1.75	1.26	1.37
4	Columbus Drive & Warren Street (0.32)	3.99	1.61	2.17	1.31
5	Columbus Drive & Marin Boulevard (0.47)	6.09	2.18	3.81	1.78
6	Columbus Drive & Grove Street (0.56)	6.39	2.38	3.75	0.98
7	Columbus Drive & Barrow Street (0.68)	4.63	1.00	2.66	0.80
8	Columbus Drive & Jersey Avenue (0.77)	6.70	1.65	3.73	1.38
9	Columbus Drive & Varick Street (0.85)	3.28	0.58	1.89	0.46
10	Columbus Drive & Monmouth Street (0.94)	5.75	0.78	3.34	0.62
11	Columbus Drive & Brunswick Avenue (1.03)	5.29	0.79	3.02	0.59
Total		**64.56**	**15.60**	**40.93**	**12.03**

HSM analysis predicts that in the construction year (2023) implementation of the proposed design will result in approximately 37% (23.63 fewer crashes per year) expected vehicle crashes. Additionally, HSM analysis indicates that the proposed design will result in approximately 23% (3.57 fewer crashes per year) fewer bicycle and pedestrian crashes.

Table 11: Expected Crashes in the No Build Condition & Proposed Design (Design Year - 2043)

Site Number	Site (Milepost)	No Build Condition		Proposed Design	
		Expected Vehicle Crashes (per year)	Expected Pedestrian & Bike Crashes (per year)	Expected Vehicle Crashes (per year)	Expected Pedestrian & Bike Crashes (per year)
Segments					
1	Eastern Terminus to Greene Street (0.00-0.14)	0.75	0.02	0.55	0.03
2	Greene Street to Marin Boulevard (0.14-0.47)	5.19	0.31	4.13	0.38
3	Marin Boulevard to Grove Street (0.47-0.56)	2.81	0.05	1.58	0.06
4	Grove Street to Midblock between Monmouth Street and Brunswick Avenue (0.56-0.98)	7.57	0.57	5.94	0.73
5	Midblock between Monmouth Street and Brunswick Avenue to Western Project Limit (0.98-1.03+0.16)	3.42	0.12	2.36	0.11
Intersections					
1	Columbus Drive & Hudson Street (0.05)	1.80	1.01	0.94	0.74
2	Columbus Drive & Greene Street (0.14)	2.08	1.39	1.01	1.06
3	Columbus Drive & Washington Street (0.23)	2.54	1.98	1.39	1.46
4	Columbus Drive & Warren Street (0.32)	4.62	1.83	2.40	1.39
5	Columbus Drive & Marin Boulevard (0.47)	7.06	2.47	4.16	1.89
6	Columbus Drive & Grove Street (0.56)	7.20	2.70	4.05	1.05
7	Columbus Drive & Barrow Street (0.68)	5.23	1.15	2.88	0.86
8	Columbus Drive & Jersey Avenue (0.77)	7.42	1.89	4.01	1.48
9	Columbus Drive & Varick Street (0.85)	3.71	0.68	2.05	0.50
10	Columbus Drive & Monmouth Street (0.94)	6.39	0.91	3.58	0.67
11	Columbus Drive & Brunswick Avenue (1.03)	5.91	0.92	3.25	0.64
Total		**73.70**	**18.01**	**44.28**	**13.04**

HSM analysis predicts that in the design year (2043) implementation of the proposed design will decrease the number of expected vehicle crashes by approximately 40% (29.42 fewer crashes per year). Additionally, HSM analysis indicates that the proposed design will result in approximately 28% (4.97 fewer crashes per year) fewer bicycle and pedestrian crashes.

HSM Output: Cost Benefit Analysis

To further quantify the impact of implementing the proposed design, a cost benefit analysis was performed. The cost benefit analysis followed the methodology laid out in the HSM Chapter 7: Economic Appraisal.

The following inputs used in the cost benefit analysis were provided by the HSM or the NJTPA:

- Cost of a Fatal or Injury (FI) crash = $158,200 (2001 US Dollars)
- Cost of a Property Damage Only (PDO) crash = $7,400 (2001 US Dollars)
- Annual Traffic Growth (pre-construction) = 1.17%

- Annual Traffic Growth (post-construction) = 0.71%[3]

The following additional inputs used in the cost benefit analysis were assumed:

- Baseline Data Year = 2018
- Construction Year = 2023
- Service Life = 20 Years
- Discount Rate = 4%
- Inflation Rate = 2%
- Estimated Project Cost = $8,150,000

Using the given and assumed values, the value of expected crashes was determined. The following steps were taken to calculate the benefits of the proposed design:

1. Expected crashes were grown through linear interpolation between the years analyzed (2018, 2023, 2043).
2. The change in the expected number of crashes was calculated (Equation 1).

$$\Delta N_{Expected} = N_{Expected\ Before\ Implementation} - N_{Expected\ After\ Implementation} \quad \text{(Eq. 1)}$$

3. The societal cost of an expected FI crash was grown for each year using the assumed inflation rate (Equation 2).

$$Crash\ Cost_{FI,Year\ n} = Crash\ Cost_{FI,2001} \times (1 + Inflation\ Rate)^{(Year\ n - 2001)} \quad \text{(Eq. 2)}$$

4. The societal cost of an expected PDO crash was grown for each year using the assumed inflation rate (Equation 3).

$$Crash\ Cost_{PDO,Year\ n} = Crash\ Cost_{PDO,2001} \times (1 + Inflation\ Rate)^{(Year\ n - 2001)} \quad \text{(Eq. 3)}$$

5. The $\Delta N_{Expected,FI}$ and $\Delta N_{Expected,PDO}$ are multiplied by the societal costs of an FI and PDO crash, respectively, to determine the total crash cost savings (Equation 4 and Equation 5).

$$Crash\ Cost\ Savings_{FI,Year\ n} = \Delta N_{Expected,FI,Year\ n} \times Crash\ Cost_{FI,Year\ n} \quad \text{(Eq. 4)}$$

$$Crash\ Cost\ Savings_{PDO,Year\ n} = \Delta N_{Expected,PDO,Year\ n} \times Crash\ Cost_{PDO,Year\ n} \quad \text{(Eq. 5)}$$

6. The combined crash cost savings for each year are calculated by summing the crash cost savings for FI and PDO crashes.
7. The combined crash cost savings for each year are converted to present value using the assumed discount rate (Equation 6).

$$Combined\ Crash\ Cost_{Present\ Value} = \frac{Combined\ Crash\ Cost_{Year\ n}}{(1 + Discount\ Rate)^{Year\ of\ Service\ Life}} \quad \text{(Eq. 6)}$$

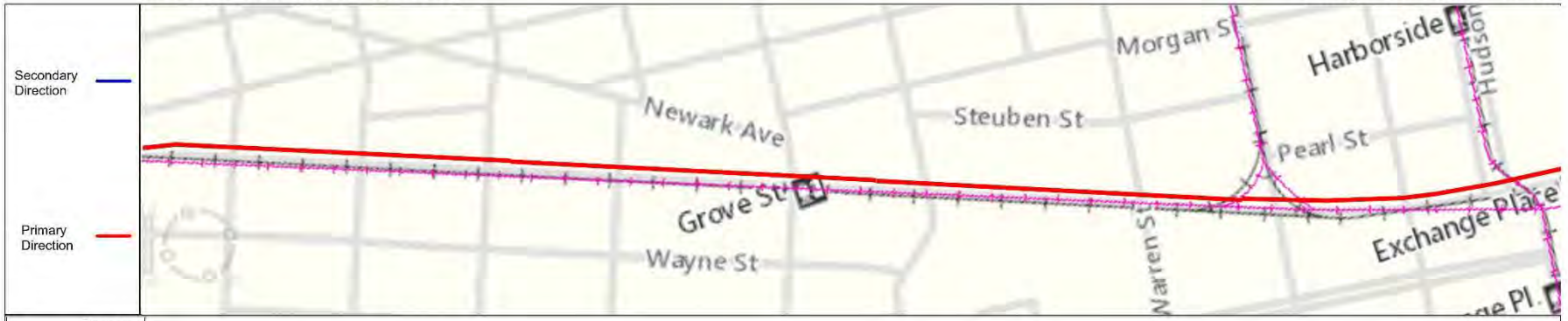
8. The total crash cost savings are calculated by summing the present value of the combined crash cost savings for each year of the proposed design's service life.

[3] The reasoning behind using different growth rates is detailed in the Methodology and Approach Section of this memorandum.

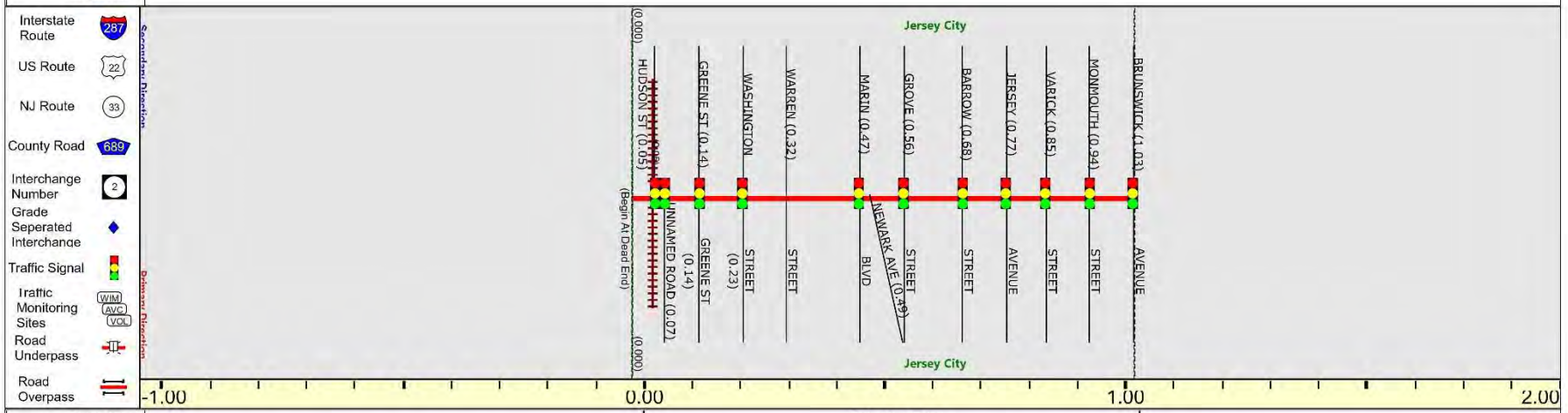
Using the methodology described above, the total crash cost savings was determined to be $56,761,529 (2018 US Dollars). The work described above can be seen in Appendix C. Dividing the expected benefits by the project's estimated cost, $8,150,000, the project's Cost Benefit Ratio (CBR) can be determined. Performing this calculation revealed a CBR of 6.96. This positive CBR value indicates that the proposed project will have positive benefit to society.

Appendix A

COLUMBUS DR (East to West) **Mileposts: 0.000 - 2.000**



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



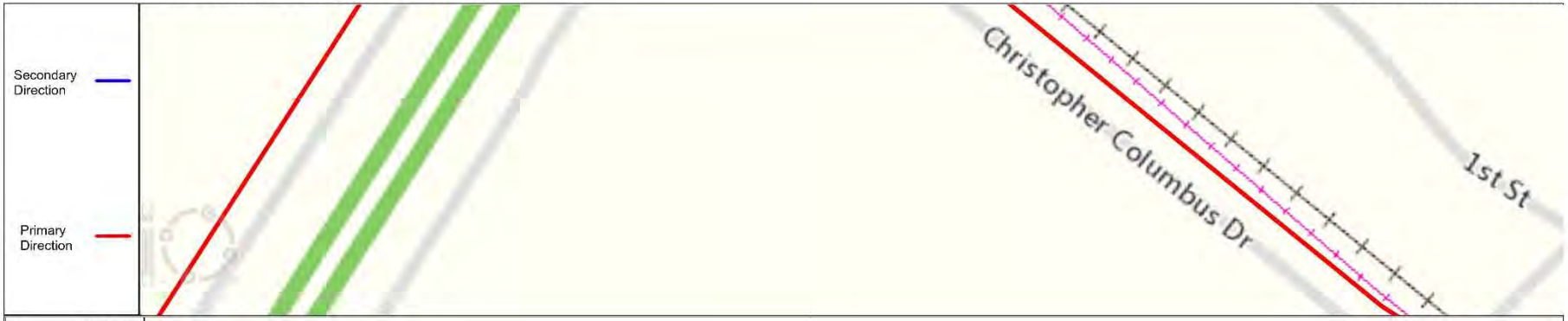
Street Name	Columbus Drive		
Jurisdiction	Municipal		
Functional Class	Urban Minor Arterial		
Federal Aid - NHS Sy	STP		
Control Section			
Speed Limit	Not Posted		
Number of Lanes	2	4	6
Med. Type	None		
Med. Width	0		
Pavement	36	48	
Shoulder	0		
Traffic Volume			
Traffic Sta. ID			
Structure No.			
Enlarged Views	(Begin Columbus Dr MP=0)		(End Columbus Dr MP=1.037)

Page Created: May 2019

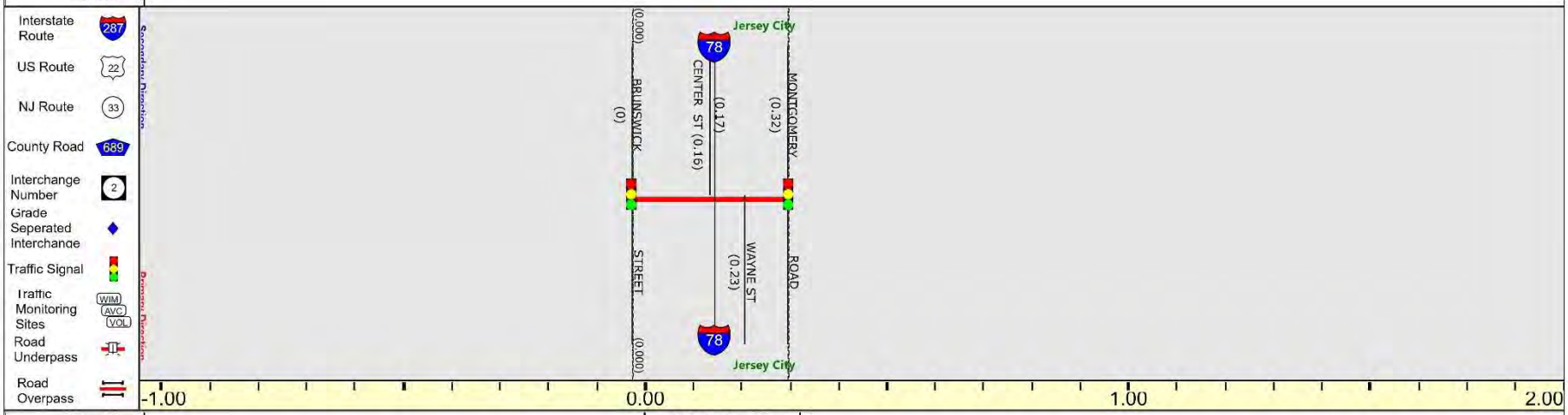
SRI = 09061559__ Date Last Inventoried: September 2011

C COLUMBUS DR (East to West)

Mileposts: 0.000 - 2.000



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



Street Name	C Columbus Drive
Jurisdiction	Municipal
Functional Class	Urban Minor Arterial
Federal Aid - NHS Sy	STP
Control Section	
Speed Limit	35
Number of Lanes	4
Med. Type	None
Med. Width	0
Pavement	48
Shoulder	0
Traffic Volume	
Traffic Sta. ID	
Structure No.	
Enlarged Views	

(Begin C COLUMBUS DR MP=0.00)

(End C COLUMBUS DR MP=0.32)

Page Created: May 2019

SRI = 09061616__

Date Last Inventoried: May 2006

Appendix B

Existing Condition Volumes (2023)

Intersection Number	Intersection (Milepost)	Major AADT	Minor AADT
1	Columbus Drive & Hudson Street (0.05)	5,615	3,073
2	Columbus Drive & Greene Street (0.14)	5,615	9,273
3	Columbus Drive & Washington Street (0.23)	17,302	8,295
4	Columbus Drive & Warren Street (0.32)	17,302	6,338
5	Columbus Drive & Marin Boulevard (0.47)	17,302	15,692
6	Columbus Drive & Grove Street (0.56)	25,459	7,303
7	Columbus Drive & Barrow Street (0.68)	25,459	4,988
8	Columbus Drive & Jersey Avenue (0.77)	25,459	9,168
9	Columbus Drive & Varick Street (0.85)	25,459	5,608
10	Columbus Drive & Monmouth Street (0.94)	25,459	12,966
11	Columbus Drive & Brunswick Avenue (1.03)	25,459	8,543

Existing Condition Volumes (2043)

Intersection Number	Intersection (Milepost)	Major AADT	Minor AADT
1	Columbus Drive & Hudson Street (0.05)	7,510	4,110
2	Columbus Drive & Greene Street (0.14)	7,510	12,403
3	Columbus Drive & Washington Street (0.23)	23,141	11,094
4	Columbus Drive & Warren Street (0.32)	23,141	8,477
5	Columbus Drive & Marin Boulevard (0.47)	23,141	20,988
6	Columbus Drive & Grove Street (0.56)	34,052	9,767
7	Columbus Drive & Barrow Street (0.68)	34,052	6,671
8	Columbus Drive & Jersey Avenue (0.77)	34,052	12,262
9	Columbus Drive & Varick Street (0.85)	34,052	7,501
10	Columbus Drive & Monmouth Street (0.94)	34,052	17,341
11	Columbus Drive & Brunswick Avenue (1.03)	34,052	11,426

Proposed Design Volumes (2043)

Intersection Number	Intersection (Milepost)	Major AADT	Minor AADT
1	Columbus Drive & Hudson Street (0.05)	6,702	3,540
2	Columbus Drive & Greene Street (0.14)	6,702	10,682
3	Columbus Drive & Washington Street (0.23)	20,649	9,555
4	Columbus Drive & Warren Street (0.32)	20,649	7,301
5	Columbus Drive & Marin Boulevard (0.47)	20,649	18,077
6	Columbus Drive & Grove Street (0.56)	30,385	8,413
7	Columbus Drive & Barrow Street (0.68)	30,385	5,746
8	Columbus Drive & Jersey Avenue (0.77)	30,385	10,562
9	Columbus Drive & Varick Street (0.85)	30,385	6,460
10	Columbus Drive & Monmouth Street (0.94)	30,385	14,936
11	Columbus Drive & Brunswick Avenue (1.03)	30,385	9,841

Appendix C

Michael Baker INTERNATIONAL

HSM Analysis: Cost Benefit Analysis

Project	Columbus Drive Corridor Study
Location	Columbus Drive, Jersey City, NJ
Date of Analysis	10/2/2019

Economic Appraisal Data					
Baseline Data Year	2018		$ 8,150,000	Project Cost (2018 Dollars)	(Estimated)
Construction Year	2023		$ 56,761,529	Total Crash Benefit (2018)	
Service Life	20		6.964604786	Benefit/Cost Ratio	
Annual Traffic Growth (Prior to Construction)	1.17%				
Annual Traffic Growth (Post Construction)	0.71%				
Fatal/Injury Cost (2001 Dollars)	$ 158,200	Given			
PDO Cost (2001 Dollars)	$ 7,400	Given			
Fatal/Injury Cost (2018 Dollars)	$ 221,518	Calculated Using: $FI_{2018} = FI_{2001} \times (1 + \text{Inflation Rate})^{(2018-2001)}$			
PDO Cost (2018 Dollars)	$ 10,866	$PDO_{2018} = PDO_{2001} \times (1 + \text{Inflation Rate})^{(2018-2001)}$			
Discount Rate	4%	Assumed			
Inflation Rate	2%	Assumed			

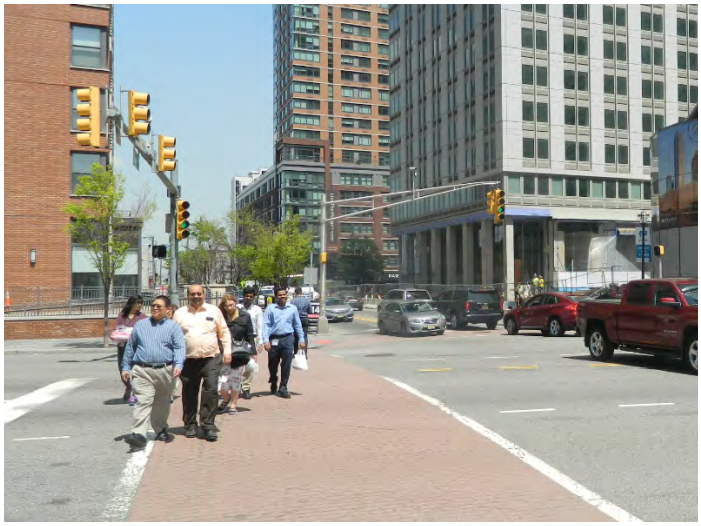
Expected Average Crash Frequency along Corridor										Crash Related Costs							
Year	Without Countermeasures $N_{Expected\ Before}$			With Countermeasures $N_{Expected\ After}$			$\Delta N_{Expected}$			FI Crash Cost	FI Crash Cost Savings	PDO Crash Cost	PDO Crash Cost Savings	Combined Crash Cost Savings	Years in Service Life	(P/F,i,y)	Present Value
	Total	F/I	PDO	Total	F/I	PDO	Total	F/I	PDO								
2018	77.7	35.3	42.4	51.5	23.9	27.6	26.2	11.4	14.8	-	-	-	-	-	0		
2019	78.2	35.5	42.7	51.8	24.1	27.7	26.4	11.4	15.0	-	-	-	-	-	0		
2020	78.7	35.7	43.0	52.1	24.3	27.8	26.6	11.5	15.1	-	-	-	-	-	0		
2021	79.2	36.0	43.2	52.4	24.4	28.0	26.8	11.5	15.3	-	-	-	-	-	0		
2022	79.7	36.2	43.5	52.7	24.6	28.1	27.0	11.6	15.4	-	-	-	-	-	0		
2023	80.2	36.4	43.8	53	24.8	28.2	27.2	11.6	15.6	-	-	-	-	-	0		
2024	80.8	36.7	44.1	53.2	24.9	28.3	27.6	11.8	15.8	$ 249,465	$ 2,937,456	$ 11,669	$ 184,196	$ 3,121,652	1	0.962	$ 3,001,588
2025	81.4	37.0	44.4	53.4	25.0	28.4	27.9	12.0	16.0	$ 254,455	$ 3,040,735	$ 11,902	$ 190,082	$ 3,230,816	2	0.925	$ 2,987,071
2026	81.9	37.2	44.7	53.6	25.1	28.5	28.3	12.1	16.2	$ 259,544	$ 3,146,969	$ 12,140	$ 196,130	$ 3,343,099	3	0.889	$ 2,972,003
2027	82.5	37.5	45.0	53.9	25.2	28.6	28.6	12.3	16.3	$ 264,735	$ 3,256,237	$ 12,383	$ 202,343	$ 3,458,580	4	0.855	$ 2,956,409
2028	83.1	37.8	45.3	54.1	25.3	28.8	29.0	12.5	16.5	$ 270,029	$ 3,368,617	$ 12,631	$ 208,727	$ 3,577,344	5	0.822	$ 2,940,316
2029	83.7	38.1	45.6	54.3	25.4	28.9	29.4	12.7	16.7	$ 275,430	$ 3,484,190	$ 12,884	$ 215,285	$ 3,699,474	6	0.790	$ 2,923,748
2030	84.2	38.4	45.9	54.5	25.5	29.0	29.7	12.8	16.9	$ 280,939	$ 3,603,038	$ 13,141	$ 222,021	$ 3,825,059	7	0.760	$ 2,906,731
2031	84.8	38.6	46.2	54.7	25.6	29.1	30.1	13.0	17.1	$ 286,557	$ 3,725,246	$ 13,404	$ 228,942	$ 3,954,188	8	0.731	$ 2,889,286
2032	85.4	38.9	46.5	54.9	25.7	29.2	30.4	13.2	17.3	$ 292,289	$ 3,850,902	$ 13,672	$ 236,050	$ 4,086,951	9	0.703	$ 2,871,438
2033	86.0	39.2	46.8	55.2	25.9	29.3	30.8	13.4	17.5	$ 298,134	$ 3,980,093	$ 13,946	$ 243,351	$ 4,223,444	10	0.676	$ 2,853,207
2034	86.5	39.5	47.0	55.4	26.0	29.4	31.2	13.5	17.6	$ 304,097	$ 4,112,912	$ 14,225	$ 250,849	$ 4,363,761	11	0.650	$ 2,834,616
2035	87.1	39.8	47.3	55.6	26.1	29.5	31.5	13.7	17.8	$ 310,179	$ 4,249,452	$ 14,509	$ 258,550	$ 4,508,002	12	0.625	$ 2,815,685
2036	87.7	40.0	47.6	55.8	26.2	29.6	31.9	13.9	18.0	$ 316,383	$ 4,389,808	$ 14,799	$ 266,459	$ 4,656,267	13	0.601	$ 2,796,433
2037	88.3	40.3	47.9	56.0	26.3	29.7	32.2	14.1	18.2	$ 322,710	$ 4,534,078	$ 15,095	$ 274,581	$ 4,808,659	14	0.577	$ 2,776,881
2038	88.8	40.6	48.2	56.2	26.4	29.9	32.6	14.2	18.4	$ 329,164	$ 4,682,363	$ 15,397	$ 282,921	$ 4,965,284	15	0.555	$ 2,757,046
2039	89.4	40.9	48.5	56.4	26.5	30.0	33.0	14.4	18.6	$ 335,748	$ 4,834,766	$ 15,705	$ 291,485	$ 5,126,251	16	0.534	$ 2,736,948
2040	90.0	41.2	48.8	56.7	26.6	30.1	33.3	14.6	18.7	$ 342,463	$ 4,991,393	$ 16,019	$ 300,278	$ 5,291,671	17	0.513	$ 2,716,602
2041	90.6	41.4	49.1	56.9	26.7	30.2	33.7	14.8	18.9	$ 349,312	$ 5,152,350	$ 16,339	$ 309,307	$ 5,461,657	18	0.494	$ 2,696,027
2042	91.1	41.7	49.4	57.1	26.8	30.3	34.0	14.9	19.1	$ 356,298	$ 5,317,749	$ 16,666	$ 318,576	$ 5,636,325	19	0.475	$ 2,675,239
2043	91.7	42	49.7	57.3	26.9	30.4	34.4	15.1	19.3	$ 363,424	$ 5,487,704	$ 17,000	$ 328,092	$ 5,815,796	20	0.456	$ 2,654,253
															Total Crash Cost Savings		**$ 56,761,529**

APPENDIX F
OUTREACH MATERIALS

COLUMBUS DRIVE CORRIDOR STUDY

ABOUT THE STUDY

Jersey City is conducting a study of Christopher Columbus Drive to create a safer environment for all roadway users, including those who walk, bike, use transit, and those with disabilities. The North Jersey Transportation Planning Authority's FY 16-17 Local Safety Program identified the area as a priority pedestrian corridor due to the increase in pedestrian and bicycle crashes. This study will evaluate pedestrian and bicycle safety deficiencies, as well as develop Complete Streets Concepts to address them.



STUDY APPROACH

This study will include the collection of traffic volume data, crash report review, an inventory of the existing roadway conditions, and an evaluation of existing related plans and studies that could affect the project area. Additionally, feedback from local officials, residents, business owners, schools and other affected parties will be collected. This feedback is vital for selecting and prioritizing improvements for the corridor. Outreach and feedback will also be received through public meetings, surveys, the project website and other internet-based media.

Final recommendations will be prioritized into short-term and long-term improvements. This plan will be used to guide bicycle, pedestrian and public transit facility investments and provide support for Complete Streets and VisionZero Initiatives.

Scan Me to Get Involved!

HOW CAN YOU HELP?

Your input is integral in driving this study. It will assist the project team in exploring potential roadway changes that would help Columbus Drive meet Complete Street Guidelines and advance the City's VisionZero initiative to eliminate traffic fatalities and severe injuries.

Please visit our website for further information, to participate in our online crowdsourcing map, or to submit a comment to the project team.

Visit The Project Website:
https://columbusdrivestudy.com/

THE CITY OF JERSEY CITY
COLUMBUS DRIVE CORRIDOR STUDY
LOCAL TECHNICAL ASSISTANCE

Steering Committee Meeting #1

Wednesday, June 20, 2018, 6:00 PM to 7:30 PM
Jersey City Division of Planning
30 Montgomery Street, Suite 1400, Jersey City

MEETING SUMMARY

I. Welcome and Introductions *(Jersey City/Michael Baker International)*

See attached sign-in sheet for attendance.

II. Introduction to the Study

a. Jersey City Traffic Safety *(Jersey City)*

The City has adopted a Vision Zero target to eliminate all traffic fatalities and severe injuries on City roadways by 2026, including pedestrian and bicycle fatalities involving a motor vehicle. Jersey City has many other initiatives and plans/studies that overlap with the goals and considerations of this study, especially regarding pedestrian and bicycle safety. These initiatives include Vision Zero, Complete Streets, Safe Routes to School Walk/Bike Audits, and NJTPA Local Safety Program resources and funding. Existing and ongoing plans/studies that relate to this study include the Pedestrian Enhancement Plan, School Travel Plan, Bicycle Master Plan, Grand Street Study (focused on bikability), Montgomery Street Redesign, and others.

b. Purpose and Background *(Jersey City)*

This project is a product of the NJDOT Local Technical Assistance. The goal of the study is to develop concepts to improve safety for all users, especially active modes. The final Complete Streets-focused plan and implementation matrix will provide a road map to resources and funding, as well as prioritize the recommended improvements based on potential to improve safety and timeline to implementation.

c. Steering Committee Role *(MBI)*

The Steering Committee is made up of stakeholders and representatives from local, county and state organizations involved in transportation safety and active transportation. Their knowledge of the study area and technical expertise will be used to identify deficiencies in the current facilities, as well as opportunities for new or improved active transportation facilities along the corridor (Meeting #1). Analysis and recommended improvements will be vetted through the Steering Committee to ensure the most effective improvements are prioritized (Meeting #2).

III. Project Scope

a. Data Collection

Existing data and resources, such as traffic volumes, crash reports, police department feedback, master plans, related GIS data, Safe Routes to School data, ordinances, signal timing and phasing, and transit routing, were collected from through the project team. Michael Baker is also collecting and inventorying local destinations, roadway attributes and data for Highway Safety

Manual Analysis, pedestrian and bicyclist behaviors, turning movement counts, updated traffic volumes, and facility conditions.

b. Existing Conditions Analysis

Utilizing the collected data Michael Baker will complete an assessment of the corridor's sidewalks, intersections, bicycle and pedestrian crashes, and bicycle compatibility. A summary of each of these assessments and mapping will be provided and used to help guide the selection of safety improvements and recommendations.

c. Develop Recommendations

As the data analysis will help drive decision-making in a quantitative manner, input from the public and the steering committee will be collected for qualitative comparison and to confirm the findings of the analyses, as well as identify any concerns not brought forward through the data. Recommendations will be developed based on all the factors and placed within an implementation matrix. The matrix will provide benefit-cost, barriers, timeframe, and other characteristics to help compare the improvements and prioritize those that can return the most benefit in an efficient manner.

d. Implementation Plan

The Implementation Plan will summarize the process and analyses, including the implementation matrix. The plan will also identify the responsible stakeholders or organizations, as well as potential funding sources and application requirements.

IV. Steering Committee Input

a. Community Needs

The Steering Committee provided needs for the area such as loading zones, passenger drop-off locations, access to and from PATH Stations and Light Rail, wider sidewalks, adequate turning radii for the buses and emergency vehicles, and prioritized Citi Bike access near Grove Street.

b. Safety Concerns

The Committee echoed previous concerns about pedestrians currently crossing between intersections, as well as double-parking, narrow bike lanes in door zones, buses not bus pullouts, speeding throughout the corridor, Light Rail crossings at Hudson Str., crossing Marin Blvd., congestion at Jersey Ave. and Barrow St., and students walking near the schools and along Varick St.

c. Opportunities for Improvement

Improvement recommendations and ideas were also collected from the Steering Committee, including parking protected bike lanes, pedestrian islands, bus islands, bumpouts, midblock crosswalks, signage, closing portions of the street to traffic, and an all pedestrian phase at the Grove Street signal. The steering committee suggested reaching out and soliciting input from local businesses such as the dog daycare and gyms.

V. Community Outreach Strategy

a. Schedule

A second Steering Committee Meeting will be held in Fall 2018 following public outreach and data analysis. A public meeting is being planned now to promote the study and collect feedback through the survey, which is active through July 20th. Demonstration projects will follow the recommendation prioritization of recommendations and the second Steering Committee meeting.

Updates to the website, crowdsourcing, and community events where supplemental outreach could be conducted will be ongoing efforts.

Potential events for additional outreach include the Farmer's Market at Exchange Place, Groove on Grove, and the All About Downtown Street Fair.

b. Preliminary Survey Results

After a week of making the survey live, promoting it on the Jersey City's website, and handing out flyers at the Grove Street Famer's Market, the survey already has 208 submissions. In the preliminary results, almost 89% of respondents chose that it was "very important" to improve safety for all roadway users and eliminate roadway deaths and serious injuries. Over 68% reported walking or biking as their primary mode along the corridor, nearly 68% reported them or someone close to them being in a near-miss on Columbus Drive, and of those who claimed to visit businesses on the corridor, over 87% selected walking or biking as their primary mode to the business.

c. Temporary Demonstration Projects

Two demonstration projects will be conducted following the development of potential improvements. The demonstration projects will help educate the public on the benefits of safety countermeasures and provide another opportunity to solicit feedback from the community, especially regarding safety improvements.

VI. Next Steps

The Committee's feedback will be summarized and used to help determine the most effective treatments and improvements for Columbus Drive. The project team will share analysis and other reports with the Committee as they become available. A public meeting will be planned and the second Steering Committee Meeting will be held in Fall 2018.

Meeting Sign In

Michael Baker INTERNATIONAL

Project: The City of Jersey City Columbus Drive Corridor Study
Steering Committee Meeting #1
Place/Room: Jersey City Division of Planning - 30 Montgomery Street, Suite 1400, Jersey City

Date: 6/20/2018
Time: 6:00 PM

	PRINT NAME	ORGANIZATION	PHONE	EMAIL
1.	Cory Hopwood	Michael Baker International	(937)207-6728	cory.hopwood@mbakerintl.com
2.	Chris Langston	Planning Board Chair	(201)780-1542	chrisLangston@comcast.net
3.	Scott Schnee	JCPD Traffic Safety	201-547-5402	sschnee@njjcps.org
4.	Josefina Palacios	Hudson TMA	201-324-6222	josie@hudsontma.org
5.	STEVEN WONG	MICHAEL BAKER INTL	609-807-9556	SWONG@MBAKERINTL.COM
6.	KARA HRABCSAK	Safe Streets JC	917-747-0633	KARA@SafeStreetsJC.org
7.	Andrew Macurdy	Historic Paulus Hook Assn	609-471-0339	andrew@paulushook.org
8.	Sutapa Bandyopadhyay	NJTPA	973-639-8428	sband@njtpa.org
9.	Andrew Vischio	JC Traffic	201-547-4419	AVischio@jcnj.org
10.	JENNIFER CATO	JC TRAFFIC	201-547-4530	JCATO@JCNJ.ORG
11.	PATRICK CONLON	Bike JC	347-331-3982	patrick@bikejc.org
12.	Annisia Cialone	City Planning	201-547-5010	acialone@jcnj.org
13.	Leda Diaz	Safe streets	917 402 1152	ledavldz@gmail.com
14.	Elizabeth Cain	Exchange Place Alliance	201-918-4200	elizabeth@exchangeplacealliance.com
15.				
16.				
17.				
18.				
19.				
20.				
21.				

THE CITY OF JERSEY CITY
COLUMBUS DRIVE CORRIDOR STUDY
LOCAL TECHNICAL ASSISTANCE

Steering Committee Meeting #1

Wednesday, June 20, 2018

WELCOME AND INTRODUCTIONS

PROJECT TEAM

- Jersey City – Planning and Engineering
- NJDOT – Office of Bicycle & Pedestrian Programs
- Michael Baker International

OVERVIEW

- Introduction to the Study
- Project Scope
- Steering Committee Input
- Community Outreach Strategy
- Next Steps

INTRODUCTION TO THE STUDY

JERSEY CITY TRAFFIC SAFETY INITIATIVES

- Vision Zero
- Complete Streets
- Safe Routes to School
- NJTPA Local Safety Program
- NJDOT Local Technical Assistance

(Proposed Newark Avenue Pedestrian Mall, Jersey City Traffic Safety)

JERSEY CITY TRAFFIC SAFETY PLANS AND STUDIES

7

- Pedestrian Enhancement Plan
- School Travel Plan
- Bicycle Master Plan
- Grand Street Study
- Montgomery Street Redesign
- Road Safety Audits

(Montgomery Street Concept)

PURPOSE AND BACKGROUND

8

1. Evaluate pedestrian and bicycle safety issues
2. Develop Complete Streets Concepts for Columbus Drive
3. Improve safety for all roadway users

PROJECT STEERING COMMITTEE ROLE

9

- Identify deficiencies and opportunities for active transportation facilities
- Provide technical knowledge and expertise on the study area
- Provide feedback on potential improvements

PROJECT STEERING COMMITTEE ROLE

10

Steering Committee Meeting #1

Present scope and goals of the project. Identify stakeholder roles and responsibilities. Document existing resources, safety concerns, and community needs. Brainstorm improvements.

Steering Committee Meeting #2

Present existing conditions analysis. Share potential improvement concepts. Document opportunities, deficiencies, and constraints for active transportation facilities.

PROJECT STEERING COMMITTEE ROLE

11

Steering Committee Meeting #1

Present scope and goals of the project. Identify stakeholder roles and responsibilities. Document existing resources, safety concerns, and community needs. Brainstorm improvements.

Steering Committee Meeting #2

Present existing conditions analysis. Share potential improvement concepts. Document opportunities, deficiencies, and constraints for active transportation facilities.

PROJECT SCOPE

DATA COLLECTION – EXISTING RESOURCES

13

- Traffic Volumes
- Crash Reports
- Police Department Input
- Master Plans
- Existing GIS Data
- Safe Routes to School Data
- Existing Ordinances
- Signal Timing and Phasing
- Transit Routes

DATA COLLECTION – FIELD INVENTORY AND COUNTS

14

- Trip Generator Map
- Roadway Attribute Data
- Data for Highway Safety Manual Analysis
- Pedestrian and Bicycle Activity
- Turning Movement Counts
- Traffic Counts
- Sidewalk Condition

EXISTING CONDITIONS ANALYSIS

15

1. Sidewalk Inventory and Assessment
2. Bicycle Compatibility Assessment
3. Intersection Assessment
4. Bicycle and Pedestrian Crash Review

DEVELOP RECOMMENDATIONS

16

- Identify Recommended Improvements
- Quantitative Safety Analysis
- Sidewalk Priority Map
- Bicycle Compatibility Matrix and Map
- Develop Concept-Level Sketch
- Implementation Matrix

STEERING COMMITTEE INPUT

STEERING COMMITTEE INPUT

18

1. Community Needs
2. Safety Concerns
3. Opportunities for Improvement

COMMUNITY NEEDS 19

Considerations:

- Transit Access
- Student Safety
- Additional Infrastructure
- Improved Infrastructure
- Destinations of Interest
- Parking and Loading/Unloading Zones
- Policy
- Education
- Enforcement

SAFETY CONCERNS 20

Examples:

- Midblock Crossing
- Bus Stop Locations
- Bicycles on Sidewalks
- Narrow Bike Lanes or Sidewalks
- Driveways
- Infrastructure Deficiencies
- Double Parking
- Parking in Crosswalks

STEERING COMMITTEE INPUT 21

1. Identify and mark desired destinations/routes related to community needs
2. Identify and mark specific locations with safety concerns
3. Identify and mark opportunities to improve safety for all roadway users

COMMUNITY OUTREACH STRATEGY

COMMUNITY OUTREACH STRATEGY 23

FUTURE OUTREACH ACTIVITIES:

- Committee Meeting #2 (September)
- Public Meetings
- Demonstration Projects (October)

ONGOING:

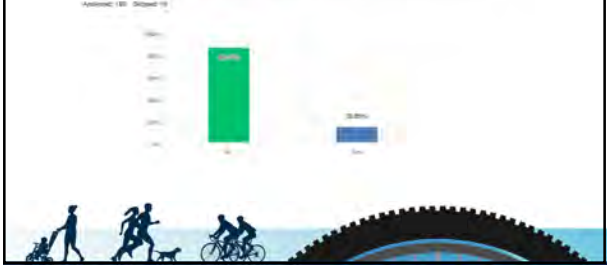
- Website Updates
- Crowdsourcing Map
- Community Events
- Public Outreach Survey (until 7/20)

PUBLIC OUTREACH SURVEY 24

Q2: What is your primary mode of transportation when you travel on Columbus Drive?

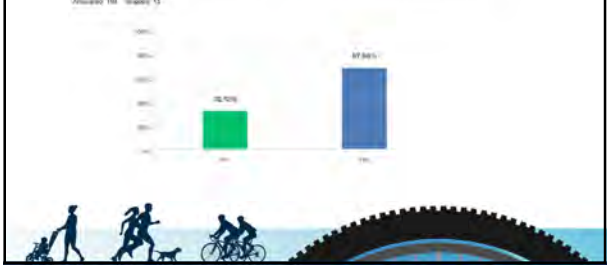
PUBLIC OUTREACH SURVEY 25

Q7: Have you or someone close to you ever been involved in a crash on Columbus Drive?



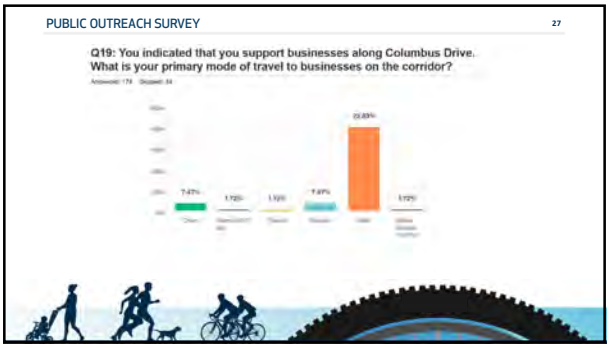
PUBLIC OUTREACH SURVEY 26

Q8: Have you or someone close to you ever experienced a near miss on Columbus Drive?



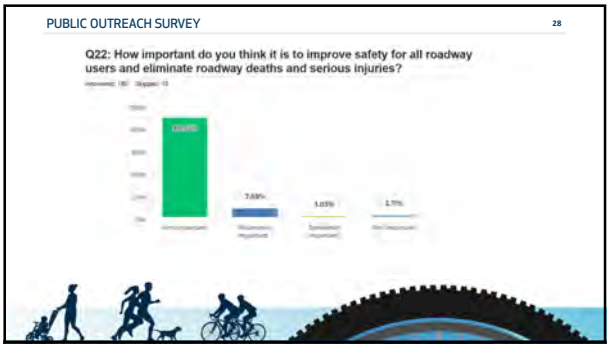
PUBLIC OUTREACH SURVEY 27

Q19: You indicated that you support businesses along Columbus Drive. What is your primary mode of travel to businesses on the corridor?



PUBLIC OUTREACH SURVEY 28

Q22: How important do you think it is to improve safety for all roadway users and eliminate roadway deaths and serious injuries?



TEMPORARY DEMONSTRATION PROJECTS 29

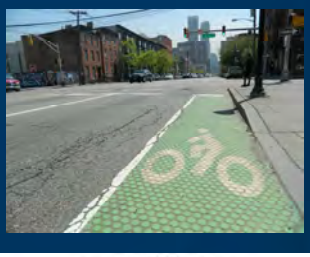
(www.smartgrowthamerica.com)

(www.downtownexpress.com)

NEXT STEPS

QUESTIONS?

Contact:
Barkha Patel
Project Manager
bpatel@jcnj.org
(201) 547-5010



Meeting Sign In

Michael Baker INTERNATIONAL

Project: The City of Jersey City Columbus Drive Corridor Study
Steering Committee Meeting #1
Place/Room: Jersey City Division of Planning - 30 Montgomery Street, Suite 1400, Jersey City

Date: 6/20/2018
Time: 6:00 PM

	PRINT NAME	ORGANIZATION	PHONE	EMAIL
1.	Cory Hopwood	Michael Baker International	(937)207-6728	cory.hopwood@mbakerintl.com
2.	Chris Langston	Planning Board Chair	(201)780-1542	chrisLangston@comcast.net
3.	Scott Schnee	JCPD Traffic Safety	201-547-5402	sschnee@njjcps.org
4.	Josefina Palacios	Hudson TMA	201-324-6222	josie@hudsontma.org
5.	STEVEN WONG	MICHAEL BAKER INTL	609-807-9556	SWONG@MBAKERINTL.COM
6.	KaraHrabosky	Safe Streets JC	917-747-0633	Kara@SafeStreetsJC.org
7.	Andrew Macurdy	Historic Paulus Hook Ass	609-471-0339	andrew@paulushook.org
8.	Sutapa Bandyopadhyay	NJTPA	973-639-8428	sband@njtpa.org
9.	Andrew Vischio	JC Traffic	201-547-4419	AVischio@jcnj.org
10.	JENNIFER CATO	JC TRAFFIC	201-547-4530	JCATO@JCNJ.ORG
11.	PATRICK CONLON	Bike JC	347-331-3982	patrick@bikejc.org
12.	Annisia Cialone	City Planning	201-547-5010	acialone@jcnj.org
13.	Leder Duin	Safe streets	917 402 1152	ledavidde@gmail.com
14.	Elizabeth Cain	Exchange Place Alliance	201-918-4200	elizbeth@exchangeplacealliance.com
15.				
16.				
17.				
18.				
19.				
20.				
21.				

THE CITY OF JERSEY CITY
COLUMBUS DRIVE CORRIDOR STUDY
LOCAL TECHNICAL ASSISTANCE

Steering Committee Meeting #1

Wednesday, June 20, 2018, 6:00 PM to 7:30 PM
Jersey City Division of Planning
30 Montgomery Street, Suite 1400, Jersey City

AGENDA:

I. **Welcome and Introductions** *(Jersey City/ Michael Baker International)*

II. **Introduction to the Study**
   a. Jersey City Traffic Safety *(Jersey City)*
   b. Purpose and Background *(Jersey City)*
   c. Steering Committee Role *(MBI)*

III. **Project Scope**
   a. Data Collection
   b. Existing Conditions Analysis
   c. Develop Recommendations
   d. Implementation Plan

IV. **Steering Committee Input**
   a. Community Needs
   b. Safety Concerns
   c. Opportunities for Improvement

V. **Community Outreach Strategy**
   a. Schedule
   b. Preliminary Survey Results
   c. Temporary Demonstration Projects

VI. **Next Steps**

COLUMBUS DRIVE CORRIDOR STUDY: PROJECT AREA

BRUNSWICK ST
GROVE ST
MARIN BLVD
NEWARK AVE
MONTGOMERY ST
MONMOUTH ST
JERSEY AVE
BARROW ST
WARREN ST
WASHINGTON ST
GREENE ST
HUDSON ST
GRAND ST

Legend

- Light Rail
- Columbus Drive
- Citi Bike Stations
- Bus Stops
- Schools
- Path Stations
- Ferry Stop
- Parking
- Parks

0 0.05 0.1 0.2 0.3 0.4 Miles

N

Columbus Drive Conceptual Redesign Survey Analysis

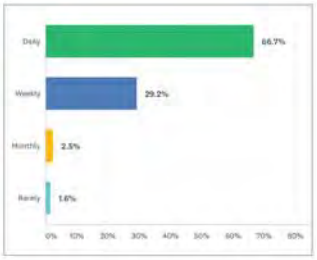
Overview

The public survey was launched in late May and remained open until July 20, 2018. A total of **315** people responded to the survey. The vast majroity of respondents (**98%**) are Jersey City residents and **87%** of respondents live within walking distance of Columbus Drive. This survey provides window into local travel modes, perceptions and experiences, and is one of several outreach tools that inform the planning process.

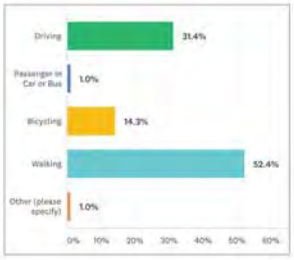


Key Findings

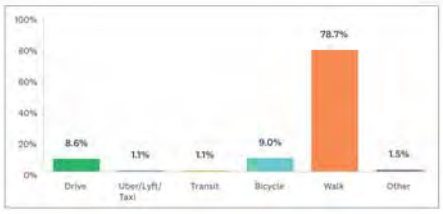
- **Frequency of Travel:** Two-thirds of respondents (**68%**) travel on Columbus Drive on a **daily** basis, and an additional **29%** use the corridor **weekly**.
- **Mode of Transport:** Over half of respondents (**52%**) cited **walking** as their primary mode of travel on Columbus Drive. Many respondents also **drive** (**31%**) and **bicycle** (**14%**).
- **School Age Children & Travel: 16%** of respondents have school age children who travel on Columbus Drive to get to school. The majority (**58%**) of those children **walk** to school. Among those who do not walk or bike to school, distance was the biggest factor (**61%**), along with a lack of safe bike routes (**33%**).
- **VisionZero Awareness:** The majority of respondents (**78%**) are aware of Jersey City's VisionZero policy, and **90%** of respondents feel that it is **very important** to improve roadway safety for all users.



How often do you travel on Columbus Drive?



What is your primary mode of transportation when you travel on Columbus Drive?



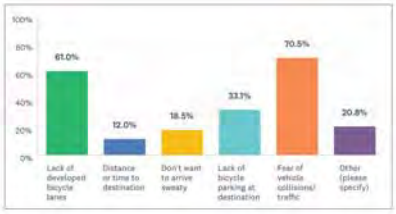
You indicated that you support businesses along Columbus Drive. What is your primary mode of travel to businesses on the corridor?

Walking Trends

- **Walking** is a primary mode for: shopping (**66%**), dining out (**83%**), social engagements (**70%**), and recreation (**64%**)
- **61%** visit Columbus Drive businesses at least once a week, and **79% walk** to these destinations
- **25%** of all respondents **walk to school or work** on a **daily** basis
- **58%** of children under 18 **walk to school**

Bicycling Trends

- **Bicycling** is most common for recreation and exercise (**27%**)
- **11%** of all respondents **bike to school or work** on a **daily** basis
- **9% bike to stores or businesses** on Columbus Drive
- **71%** indicated they would be more likely to **walk or bike to businesses** on Columbus Drive if traffic-calming measures were implemented
- **11%** would not bike on Columbus Drive under any circumstances



What prevents you from riding a bicycle more, other than weather? (Check all that apply)

"Other" includes:
- Lack of convenient access to a bicycle
- Poor driving behaviors
- Poor road conditions
- Lack of secure bicycle storage at home

***23** near misses reported at Columbus & Jersey*

***20** near misses reported at Columbus & Grove*

***18** near misses reported at Columbus & Marin*

Safety Concerns

- **19%** of respondents indicated that they or someone close to them have been involved in a **crash** on Columbus Drive
- **67%** reported a **near miss**
- **52%** of **crashes** reported involved a pedestrian hit by a car
- **71%** of respondents cited vehicle traffic or fear of a collision with a vehicle as preventing them from riding a bicycle more frequently
- **61%** cited a lack of developed bike lanes as a barrier to cycling

Improvements

- **68%** believe **continuous bike lanes** would improve safety for all roadway users
- **67%** would like to see **high-visibility crosswalks**
- **65%** would like to see **traffic-calming measures**
- **59%** would like to see **consistent roadway configuration**
- **54%** would like to see **longer pedestrian crossing signals**



Above images from: New Jersey Complete Streets Guide 2017

Michael Baker INTERNATIONAL

SGB SUSAN G. BLICKSTEIN AICP PP
PLANNING + POLICY + RESEARCH

Columbus Drive
Conceptual Redesign Survey

DRAFT 7/31/18

Michael Baker INTERNATIONAL

SGB SUSAN G. BLICKSTEIN AICP PP

Columbus Drive Conceptual Redesign – Public Survey Key Findings

Overview

The public survey was launched in late May and remained open until July 20, 2018. A total of 315 people responded to the survey. Ninety-eight percent of respondents are Jersey City residents and 87% of respondents live within walking distance of Columbus Drive, indicating that the survey effectively reached its targeted audience.

Summary of Findings:

- **Frequency of Travel:** Two-thirds of respondents (68%) travel on Columbus Drive on a daily basis, and an additional 29% use the corridor weekly.
- **Mode of Transport:** Over half of respondents (52%) cited walking as their primary mode of travel on Columbus Drive. Many respondents also drive (31%) and bicycle (14%).
- **School Age Children & Travel:** Sixteen percent of respondents have school age children who travel on Columbus Drive to get to school. The majority (58%) of those children walk to school. Among those who do not walk or bike to school, distance was the biggest factor (61%), along with a lack of safe bike routes (33%).

Summary of Findings:

- **Perceived Safety of Columbus Drive:** When asked to rate the safety of Columbus Drive for various roadway users (1-10 scale, with 1 being very unsafe and 10 being very safe), respondents gave the following average answers: motorists (3.2); cyclists (1.7); pedestrians (1.9); wheelchair users (1.6); transit users (2.8).
- **Crashes:** Nineteen percent of respondents indicated that they or someone close to them have been involved in a crash on Columbus Drive. Two-thirds (67%) of respondents indicated that they or someone close to them have been involved in a near miss on Columbus Drive.
- **VisionZero Awareness:** The majority of respondents (78%) are aware of Jersey City's VisionZero policy, and 90% of respondents feel that it is *very important* to improve roadway safety for all users.

1

Columbus Drive Conceptual Redesign – Public Survey Key Findings

Summary of Findings:

- **Car Ownership & Use:** Most respondents (76%) own a car. Among those, 42% use their car on a daily basis, and 50% use their car on a weekly basis.
- **Demographics:** Forty-three percent of respondents are between ages 25 and 34; 36% are between ages 35 and 44; and 17% are between 45 and 59. Nearly all respondents (98%) are Jersey City residents, and 87% live within walking distance of the study area. One-third of respondents work in Jersey City.

Walking & Bicycling Trends:

- **Walking/Bicycling Trip Purpose:** Walking is a common mode of travel for local shopping (66%), dining out (83%), social engagements (70%), and recreation (64%).
- Bicycling is most common for recreation and exercise (27%).
- For purposes of commuting to work or school, 25% of respondents walk and 11% bicycle.

Walking & Bicycling Trends:

- **Biking & Walking to Local Businesses:** Sixty-one percent of respondents visit stores/businesses on Columbus Drive at least once a week, and the vast majority (79%) walk to these destinations. Nine percent of respondents bicycle to stores on Columbus Drive.
- **Barriers to Bicycling:** A majority of respondents (71%) cited vehicle traffic or fear of a collision with a vehicle as preventing them from riding a bicycle more frequently. Many respondents also cited a lack of developed bicycle lanes (61%) and lack of secure bicycle parking at their destinations (33%) as barriers to cycling. In comments, respondents noted a lack of convenient access to a bicycle, poor driving behaviors, poor road conditions and lack of secure bicycle parking where they live as additional barriers.

2

Columbus Drive Conceptual Redesign – Public Survey Key Findings

Safety Improvements:

- **Safety Improvements for All Roadway Users:** Two-thirds (68%) of respondents believe continuous bike lanes would improve safety for all Columbus Drive roadway users. Many respondents also feel that more visible crosswalks (67%), traffic-calming measures such as curb extensions or speed bumps (65%), consistent roadway configuration (59%), and longer pedestrian traffic signals (54%) would improve roadway safety. In comments, respondents mentioned greater policing of speeding and double-parked cars (12%) and protected/raised bike lanes (6%).

Safety Improvements:

- **Biking & Walking Improvements**: Most respondents (71%) indicated they would be more likely to walk or bike to businesses on Columbus Drive if traffic-calming measures were implemented.
- More than half of respondents would also like to see high visibility crosswalks (68%), continuous bike lanes (62%), more consistent roadway design (57%), and longer pedestrian crossing signals (53%). In comments, respondents mentioned protected bike lanes, wider sidewalks, and better policing of speeding and double-parked cars.
- Eleven percent of respondents indicated they would not bike on Columbus Drive under any circumstances.

3

Survey Analysis

DRAFT 7/31/18

Michael Baker INTERNATIONAL

SGB SUSAN G. BLICKSTEIN AICP PP

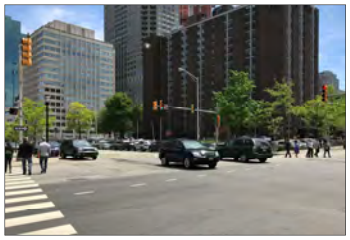
Columbus Drive Conceptual Redesign – Survey Overview

- Open late May through mid-July
- 315 responses
- Vast majority live (98%) in Jersey City
- 87% live within walking distance of Columbus Drive
- One-third of respondents work in Jersey City
- Diverse response with respect to age
- Survey is one of several outreach tools that inform the planning process.
- The survey provides window into local travel modes, perceptions and experiences.

5

Columbus Drive Conceptual Redesign – Key Findings

- **Frequency of Travel:** Two-thirds of respondents (68%) travel on Columbus Drive on a daily basis, and an additional 29% use the corridor weekly.
- **Mode of Transport:** Over half of respondents (52%) cited walking as their primary mode of travel on Columbus Drive. Many respondents also drive (31%) and bicycle (14%).



6

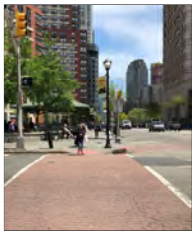
Columbus Drive Conceptual Redesign – Key Findings

- **School Age Children & Travel:** Sixteen percent of respondents have school age children who travel on Columbus Drive to get to school. The majority (58%) of those children walk to school. Among those who do not walk or bike to school, distance was the biggest factor (61%), along with a lack of safe bike routes (33%).
- **VisionZero Awareness:** The majority of respondents (78%) are aware of Jersey City's VisionZero policy, and 90% of respondents feel that it is *very important* to improve roadway safety for all users.

7

Columbus Drive Conceptual Redesign – Key Walking Trends

- **Walking** is a primary mode for: shopping (66%), dining out (83%), social engagements (70%), and recreation (64%)
- **61%** visit Columbus Drive businesses at least once a week, and **79%** walk to these destinations
- **25%** of all respondents walk to **school or work** on a daily basis
- **58%** of children under 18 walk to **school**



8

Columbus Drive Conceptual Redesign – Key Bicycling Trends

- **Bicycling** is most common for recreation and exercise (27%)
- **11%** of all respondents bike to **school or work** on a daily basis
- **9%** bike to stores or businesses on Columbus Drive
- **71%** indicated they would be more likely to **walk or bike** to businesses on Columbus Drive if traffic-calming measures were implemented
- **11%** would not bike on Columbus Drive under any circumstances

9

Columbus Drive Conceptual Redesign – Safety Concerns

- **19%** of respondents indicated that they or someone close to them have been involved in a crash on Columbus Drive
- **67%** reported a near miss
- **52%** of crashes reported involved a pedestrian hit by a car
- **71%** of respondents cited vehicle traffic or fear of a collision with a vehicle as preventing them from riding a bicycle more frequently
- **61%** cited a lack of developed bike lanes as a barrier to cycling

***23** near misses reported at Columbus & Jersey*

***20** near misses reported at Columbus & Grove*

***18** near misses reported at Columbus & Marin*

10

Columbus Drive Conceptual Redesign – Improvements

- **68%** believe continuous bike lanes would improve safety for all roadway users
- **67%** would like to see high-visibility crosswalks
- **65%** would like to see traffic-calming measures
- **59%** would like to see consistent roadway configuration
- **54%** would like to see longer pedestrian crossing signals

Above images from: New Jersey Complete Streets Guide 2017

11

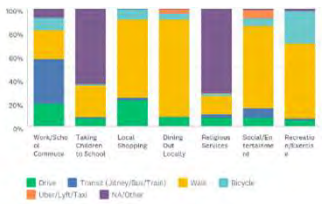
How often do you travel on Columbus Drive?

- **96%** of respondents use Columbus Drive on at least a weekly basis
- **Two-thirds** of respondents use the route daily

What is your primary mode of transportation when you travel on Columbus Drive?

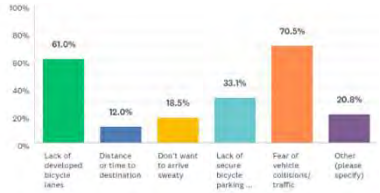
- **Over half** of respondents primarily walk when traveling on Columbus Drive
- **Nearly one-third** primarily drive

What is your primary mode of transportation for the following types of trips?



- Walking is a common mode of transport for, dining out (**83%**), socializing (**70%**), shopping (**66%**) and recreation (**64%**)
- Bicycling is a common mode of transport for recreation and exercise (**27%**)
- Transit is commonly used for commuting to work or school (**38%**)

What prevents you from riding your bicycle more, other than weather? Check all that apply:



- **"Other" includes:** lack of convenient access to a bicycle, poor driving behaviors, poor road conditions, and lack of secure bicycle storage at home

Indicate how safe you feel Columbus Drive is for the following roadway users (scale 1-10):

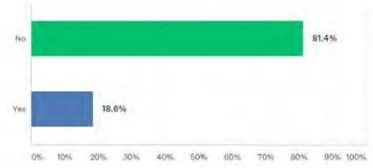
	VERY UNSAFE	MODERATELY UNSAFE	NEUTRAL	MODERATELY SAFE	VERY SAFE	TOTAL	WEIGHTED AVERAGE
Motorists	7.09% 21	27.70% 82	21.62% 64	29.05% 86	14.53% 43	296	3.16
Cyclists	50.34% 149	38.51% 114	5.07% 15	4.39% 13	1.69% 5	296	1.69
Pedestrians	44.26% 131	33.45% 99	8.45% 25	11.49% 34	2.36% 7	296	1.94
Wheelchair Users	62.84% 186	19.93% 59	11.82% 35	4.39% 13	1.01% 3	296	1.61
Transit Users	12.84% 38	26.35% 78	37.84% 112	15.54% 46	7.43% 22	296	2.78

Which of the following improvements could most benefit the safety of Columbus Drive roadway users? Check all that apply:

ANSWER CHOICES	RESPONSES	
Continuous bike lanes	67.9%	201
Crosswalks that are more easily seen by motorists	66.9%	198
Measures to slow traffic, such as curb extensions or speed bumps	64.9%	192
Consistent roadway configuration with one thru lane in each direction and turning lanes/pockets	58.8%	174
More time on traffic signals to cross the road as a pedestrian	53.7%	159
Other (please specify)	32.1%	95
Secure bicycle parking	25.7%	76
Total Respondents: 296		

- **"Other" includes:** greater policing of speeding and double-parked cars, protected/raised bike lanes, and reconfigured traffic signals

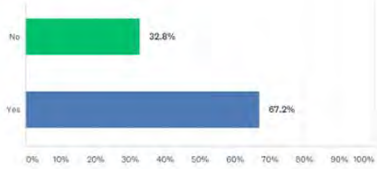
Have you or someone close to you ever been involved in a crash on Columbus Drive?



Crash type breakdown:

- Pedestrian hit by car (**52%**)
- Car hit by car (**20%**)
- Bicycle hit by car (**14%**)
- Car hit by bus/truck (**10%**)
- Other (**8%**)
- Pedestrian hit by bicycle (**2%**)

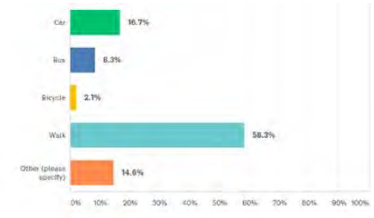
Have you or someone close to you ever experienced a near miss on Columbus Drive?



Common causes of near misses:

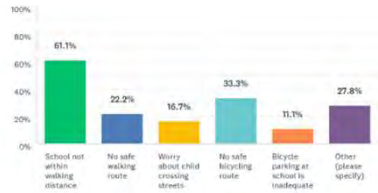
- Vehicles not yielding to pedestrians (**35%**)
- Vehicles speeding/running red light (**35%**)
- Double parking (**9%**)
- Vehicles in bike lanes (**5%**)
- Vehicles not yielding to cyclists (**4%**)
- Cyclists not yielding to pedestrians (**3%**)

What is your child's primary mode of transportation to/from school?



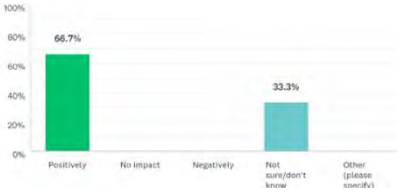
- **16%** of respondents have children under age 18 living in their home who use Columbus Drive to get to school

You indicated that your school-age children don't walk or bike to school. Tell us why (check all that apply):



- **"Other" includes:** young age of children, time restrictions, and those who have some children who walk and some who drive

Based on what you know today, how would adding bicycle infrastructure (like bicycle lanes and bicycle parking) on Columbus Drive affect your business?

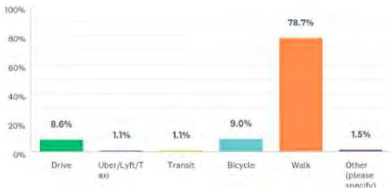


- **3** respondents own or operate a business on Columbus Drive

How often do you visit stores or businesses along Columbus Drive?

- **61%** of respondents visit business on Columbus Drive at least once per week

You indicated that you support businesses along Columbus Drive. What is your primary mode of travel to businesses on the corridor?

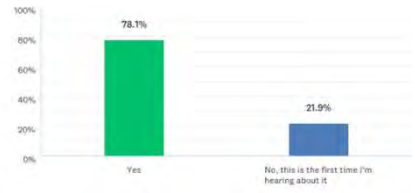


Would you be more likely to walk or bicycle (and/or feel safer walking or bicycling) to stores/businesses in the vicinity of Columbus Drive if any of the following improvements were made? Please check all that apply:

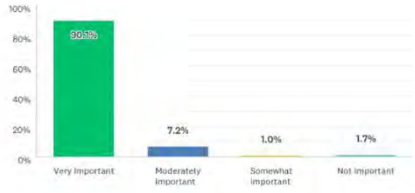
ANSWER CHOICES	RESPONSES	
Traffic calming measures, such as curb extensions, to slow traffic	70.5%	206
High visibility crosswalks	68.2%	199
Continuous bike lanes	62.0%	181
More consistent roadway design/lane configurations throughout the corridor	57.2%	167
More time on traffic signals to cross the road as a pedestrian	52.7%	154
Secure bicycle parking	31.5%	92
Other (please specify)	20.2%	59
I would not bike in this area under any circumstance	11.0%	32
I would not walk within this area under any circumstance	1.0%	3
Total Respondents: 292		

- **"Other" includes:** protected bike lanes, greater enforcement of speeding and double-parked cars, increased police presence in general, wider sidewalks, and a median/pedestrian refuge in the middle of the road

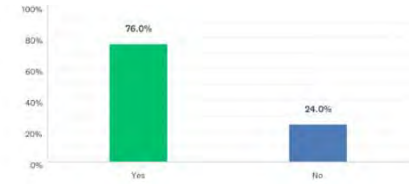
Are you aware of Survey City's Vision Zero initiative, which seeks to eliminate all traffic fatalities and severe injuries while encouraging safe, healthy, and equitable mobility for all?



How important do you think it is to improve safety for all roadway users and eliminate roadway deaths and serious injuries?

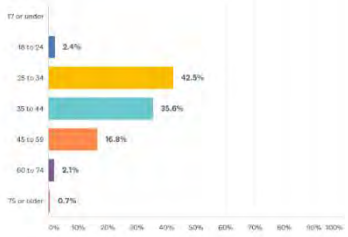


Does your household own a car?

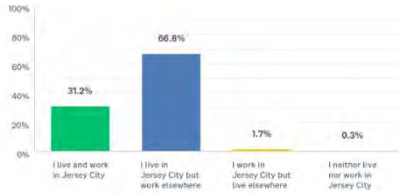


You indicated that your household owns at least one car. How often do you use your car?

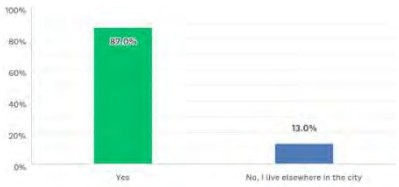
What is your age?



Do you live or work in Jersey City?



You indicated that you live in Jersey City. Do you live within walking distance of Columbus Drive?



Jersey City Public Meeting

2 MEETINGS / 1 NIGHT

COLUMBUS DRIVE
CORRIDOR STUDY

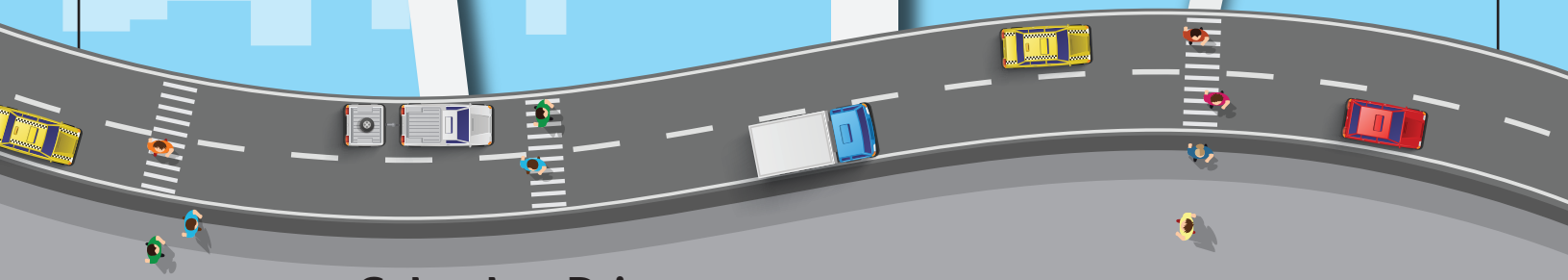
&

MONTGOMERY STREET
SAFETY IMPROVEMENT PROJECT

6PM

SEPT. 25

FERRIS HIGH SCHOOL
35 COLGATE STREET



Columbus Drive has been identified as a priority pedestrian corridor due to an increase in pedestrian and bicycle crashes. This study evaluates pedestrian and bicycle safety deficiencies and develops "Complete Streets" concepts with the goal of improving safety.

Montgomery Street is a busy thoroughfare for cars, bikes, pedestrians, and buses. We are in the final stages of redesigning a portion of Montgomery Street to more safely and efficiently accommodate all road users.

The City is looking for public feedback on how to redesign Columbus Drive & Montgomery street to make them safer and more efficient for all road users.

For more info, visit: www.jerseycitynj.gov/TrafficSafety

CITY OF JERSEY CITY

JERSEY CITY

NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

What would you like to see more of on Columbus Drive?

- Pedestrian Beacon

- Curb Extensions

- Pedestrian Refuge

- Raised Crosswalks

- Increased Crossing Time

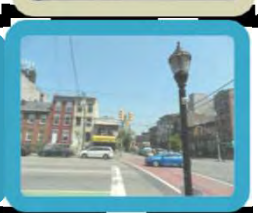
- Raised Bike Lanes

- Bike Parking

- Radar Feedback Signs

- Public Seating

- Pedestrian Lighting



- Protected Bike Lanes

- Two-Way Cycle Tracks

What would you like to see more of on Columbus Drive?

Trash Cans

Bike Signals

Street Trees

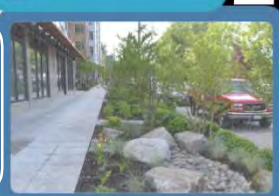
Wayfinding

Parklets

Public Restrooms

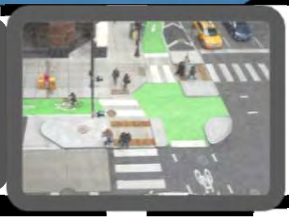
Pedestrian Scramble

Stormwater Management



Bus Bays

Protected Intersections for Bikes



Bike Boxes

Pedestrian Lighting

Vacant Buildings or empty lots

Pedestrian Lighting

Vacant Buildings or empty lots

NEW JERSEY Safe Routes to School

RUTGERS Edward J. Bloustein School of Planning and Public Policy

THE CITY OF JERSEY CITY
COLUMBUS DRIVE CORRIDOR STUDY
LOCAL TECHNICAL ASSISTANCE

Steering Committee Meeting #2

Tuesday, December 11th, 2018, 6:00 PM to 8:00 PM
Jersey City Division of Planning
Administration Conference Room, 280 Grove Street, Jersey City

MEETING SUMMARY

I. Welcome and Introductions *(Jersey City/Michael Baker International)*

See attached sign-in sheet for attendance.

The Columbus Drive Corridor Study was created through the NJDOT Local Technical Assistance Program to address safety concerns on Columbus Drive between Montgomery Street and Hudson Street in Jersey City. The purpose and background are to evaluate pedestrian and bicycle safety issues and improve safety for all roadway users through the development of Complete Streets Concepts for the corridor, while prioritizing active transportation modes such as walking, biking, and public transit.

Michael Baker International presented the current project status to the Steering Committee – which is comprised of stakeholders and representatives from local, county and state organizations.

Steering Committee No. 1 served to collect Committee knowledge of the study area and technical expertise to identify deficiencies in the current facilities, and opportunities for new or improved active transportation facilities along the corridor. The purpose of Meeting No. 2 was to review the analysis methods and recommended & prioritize corridor improvements.

II. Summary of Presentation:

1. Project Background and Review

a. Jersey City Traffic Safety *(Jersey City)*

The City has adopted a Vision Zero target to eliminate all traffic fatalities and severe injuries on City roadways by 2026. Jersey City has many other initiatives and plans/studies that overlap with the goals and considerations of this study, especially regarding pedestrian and bicycle safety. These initiatives include Vision Zero, Complete Streets, Safe Routes to School Walk/Bike Audits, and NJTPA Local Safety Program resources and funding. Existing and ongoing plans/studies that relate to this study include the Pedestrian Enhancement Plan, School Travel Plan, Bicycle Master Plan, Grand Street Study (focused on bikability), Montgomery Street Redesign, and others.

2. Existing Conditions Analysis

a. Data Collection

Existing data and resources, such as traffic volumes, crash reports, police department feedback, master plans, related GIS data, Safe Routes to School data, ordinances, signal timing and phasing, and transit routing, were collected by the project team. Michael Baker is also collecting and inventorying local destinations, roadway attributes and data for Highway Safety Manual

Analysis, pedestrian and bicyclist behaviors, turning movement counts, updated traffic volumes, and facility conditions.

b. Sidewalk Inventory and Analysis

The inventory and analysis performed by Michael Baker revealed that sidewalks along Columbus Drive are in "Fair" and "Good" condition. From the western project limit to the Columbus Drive and Grove Street intersection sidewalks are in "Fair" condition. East the Grove Street intersection sidewalks are in "Good" condition, except between Greene and Hudson Street, where the sidewalks are in "Fair" condition. Classification of sidewalk conditions was based on visual assessment and measurements made during Michael Baker's field inventory.

c. Bicycle Compatibility Map

The Bicycle Compatibility Map revealed that conditions for biking along Columbus Drive vary over the length corridor. Between Brunswick Street and Grove Street existing bicycle facilities were rated as "Most Suitable" according to the Bicycle Compatibility Rating Criteria. All other areas along Columbus Drive were rated as "Least Suitable", except for a stretch of westbound Columbus Drive between Washington Street and Warren Street which was rated as "Moderately Suitable".

Following the meeting, Michael Baker will revise the Bicycle Compatibility Map to reflect rider stress levels caused by the speed, volume, and proximity of adjacent vehicles, and other hazards encountered along the project corridor.

d. Public Survey Results

Michael Baker presented the results of the online survey. The survey of 315 respondents revealed that most respondents would like high-visibility crosswalks, traffic-calming measures, a consistent roadway configuration, and longer pedestrian crossing signals implemented on the Columbus Drive corridor.

e. HSM Analysis

A Highway Safety Manual model of the existing conditions of the Columbus Drive corridor was created. This "base model" of the existing conditions will be modified reflect countermeasure recommendations made to determine the impact of implementing safety countermeasures along the corridor. The output of the HSM analysis for each alternative will provide Michael Baker and Jersey City Planning with data supporting the recommended set of countermeasures.

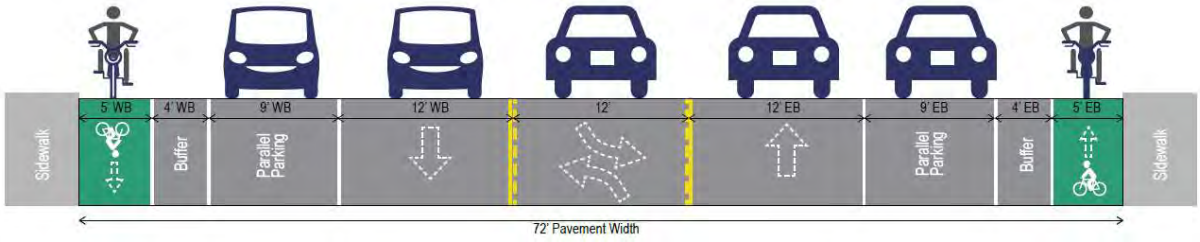
3. Potential Improvement Concepts

a. Road Diet Concept (Three Lanes)

A road diet concept was developed for the Columbus Drive corridor to reduce crashes, reduce congestion from left turning vehicles, and to provide space for improved bike lanes and buffer areas. The road diet was presented to introduce a center Two Way Left Turn Lane (TWLTL) and reduce the number of lanes in each direction from two to one. Additionally, the road diet would realign existing bicycle lanes to the outside of the pavement, placing an on-street parking lane and a 3' buffer between the bike lane and active travel lanes. This cross-section was presented between the Brunswick and Grove Street intersections.

Alternative # 1: Between Brunswick Street and Grove Street

Buffered Bicycle Lanes with Center Left Turn Lane



Road Diet Concept: Columbus Drive From Brunswick to Grove Street

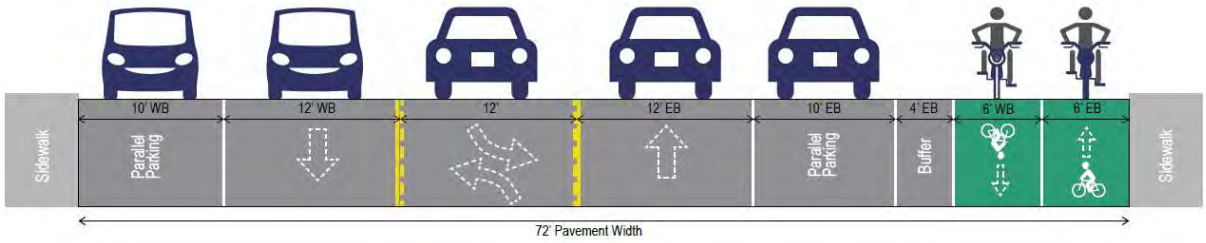
Other options are under consideration. Alternatives to the TWLTL are to provide a narrow center curb median to restrict mid-block left turns; instead provide wider bike buffers and bike lanes. We are reviewing literature to determine impact to level of service (LOS) and crash frequency and severity associated with restriction of left turns. Drawbacks are that midblock left turning vehicles must go around the block for driveway or lot access on the far side of the roadway. Driveway counts will be reviewed to determine the level of impact anticipated through the introduction of a curbed median.

b. Road Diet Concept with Two-way Cycle Track

The road diet concept with a two-way cycle track is the same as the three-lane road diet concept, but with both bike lanes located along the side of Columbus Drive. The two-way cycle track could be placed on either streetside of Columbus Drive – debate over possible public outreach to determine the preferred location is under way. Similar to the three-lane road diet concept, this concept was developed to reduce crashes, the prevalence of speeding vehicles, and provide more room for bicyclists.

Alternative # 2: Between Brunswick Street and Grove Street

Two-Way Cycle Track with Center Left Turn Lane

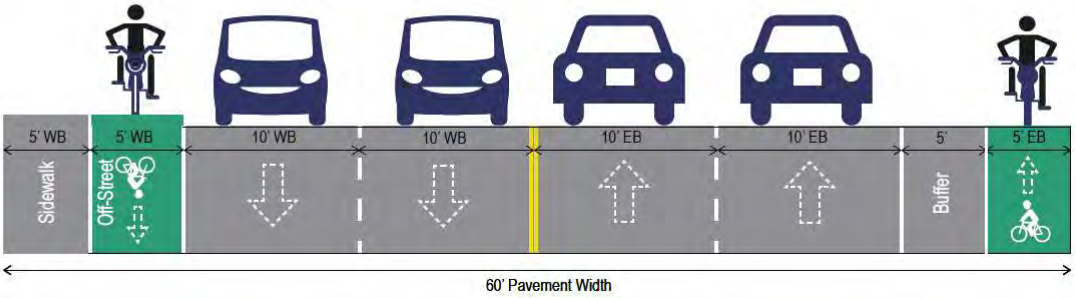


c. Road Diet Concept (Four Lanes)

A four-lane road diet concept was developed for the section of Columbus Drive between I-78 and the Brunswick Street intersection in order to reduce crashes, reduce the prevalence of speeding vehicles, and provide a sidewalk on either side of the road. The road diet reduces Columbus Drive from three lanes in each direction to two. It adds a sidewalk on the north side of the roadway, a bicycle lane in each direction, and a 5' buffer between the bike lanes and active travel lanes. Alternative investigations to provide a two-way cycle track on either side of the road are ongoing.

Alternative 1: Between I-78 and Brunswick Street

5' Sidewalk and Off Street Bike Lane on North Side of Columbus Drive.
Buffered Bike Lane on South Side of Columbus Drive.

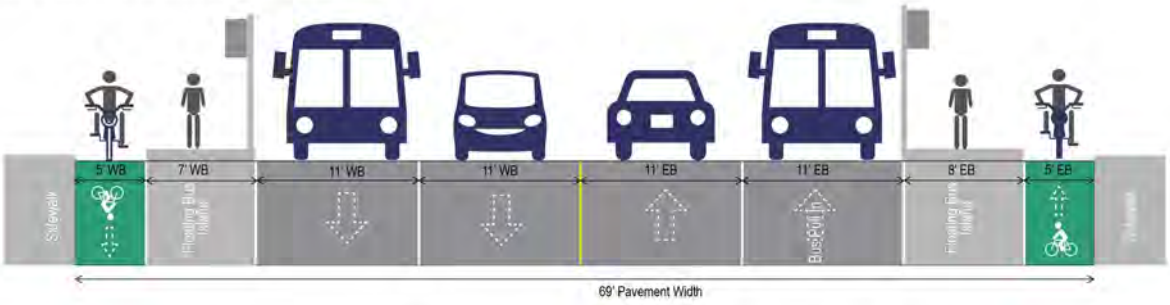


d. Road Diet Concept (Between Grove Street and Marin Boulevard)

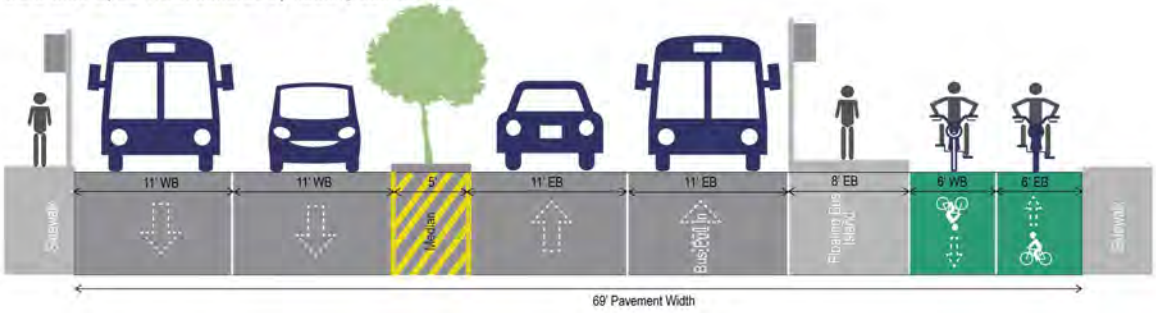
A road diet concept was developed for Columbus Drive between the Grove Street and Marin Boulevard intersections. This concept removes the Bus-Only left turn lane, reduces the number of travel lanes in each direction to one, adds a bicycle lane in each direction, and adds a floating bus island along eastbound and westbound Columbus Drive.

Pick-up and drop-off areas for ride-sharing vehicles such as Uber, Lyft, etc. are a priority along the corridor. Investigation into providing a loading and unloading zone for these vehicles is underway, where the streetside on Columbus Drive between Barrow St. and Marin Blvd. are the primary focus.

Alternative 1: Between Grove Street and Marin Blvd. Curb-side bike lanes buffered by floating bus islands.



Alternative 2: Between Grove Street and Marin Blvd.
Curb-Side Cycle Track buffered by floating bus islands.



e. Roundabout at the Marin Boulevard Intersection

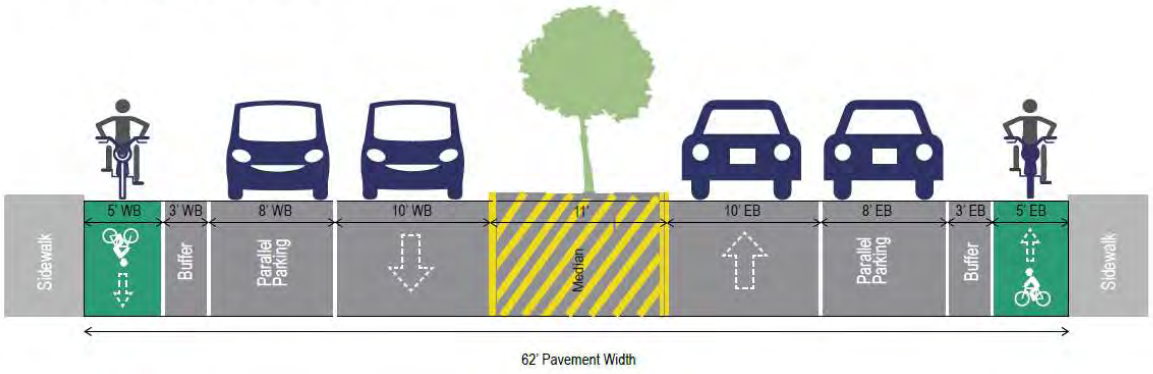
A conceptual design of a roundabout was developed for the Marin Boulevard intersection. The introduction of a roundabout would require the removal of the existing traffic signal located at the intersection. It would also require the bus stop located along eastbound Columbus Drive to relocated to the mid-block floating bus island. Roundabouts serve as traffic calming devices, encourages lower operating speeds, reduces conflict points, and reduces the occurrence of *severe* crashes by up to 78% (FHWA). The roundabout also allows U-turns on Columbus, and thereby reduces traffic on Marin Blvd. and other side streets for vehicles entering and exiting downtown Jersey City for short trips to the Grove Street Path Station, such a ride-hailing services.

f. Road Diet Concept (Between Marin Boulevard and Hudson Street)

A road diet concept was developed for the segment of Columbus Drive between the Marin Boulevard and Hudson Street intersections. The goal of this concept was to reduce crashes, reduce the prevalence of speeding vehicles, and provide room for bicycle lanes and a bike buffer. The road diet would reduce the number of lanes in each direction from two to one. It would also allow room for a raised 11'-wide median, maintain 8'-wide parking lanes in each direction, and introduce a 5'-wide bicycle lane in each direction separated from the parking lane by a 3' buffer. Alternatively, the cross-section could be redeveloped to accommodate a two-way cycle path on either side of Columbus Drive.

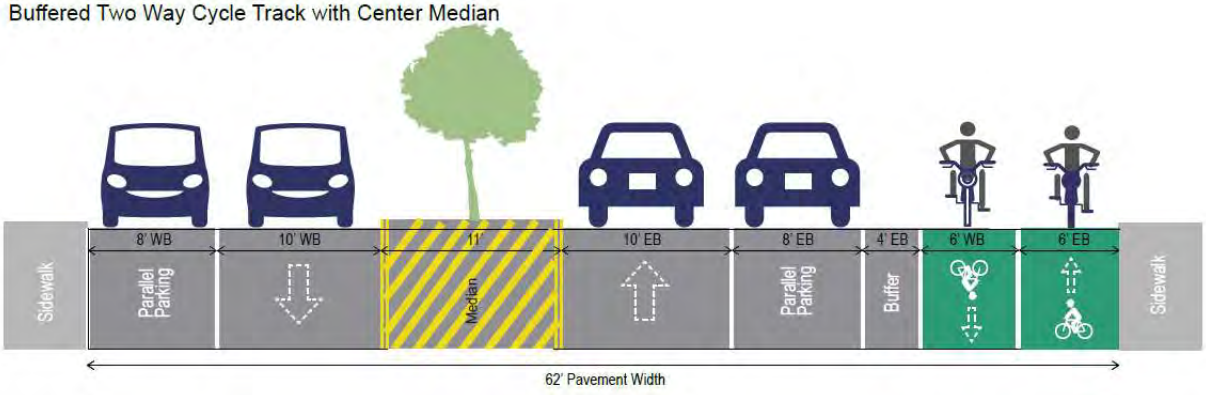
Alternative # 1: Between Marin Boulevard and Hudson Street

Buffered Bicycle Lanes with Center Median



Alternative # 2: Between Marin Boulevard and Hudson Street

Buffered Two Way Cycle Track with Center Median



g. Intersection Treatments

Three intersection treatments were proposed by Michael Baker. The first treatment, bike boxes, provides a designated space between the vehicle stop bar and the intersection for bicyclists. This painted box would allow bicyclists establish their presence in the intersection by inserting themselves in front of vehicles while the signal is red for their approach.

The second treatment, Protected Intersection for Bikes, would improve bicycle safety by painting bicycle lanes across the intersection and installing concrete buffers requiring wider vehicle turning movements.

The third treatment, pedestrian scramble, would introduce a new phase into the signal timing, stopping all traffic, and allowing pedestrians to cross the intersection in any direction.

III. Steering Committee Input

a. Jersey City Planning; Traffic & Transportation

Jersey City Traffic expressed the following concerns, wishes, and advice regarding the information presented:

- Bicycle Facility and the Sidewalk Inventory should have a set criterion for rating existing facilities.
- The Bike Facility Assessment doesn't reflect the experience of bicyclists riding on Columbus Drive.
    - Specifically, bicycle facilities on Columbus Drive between the Brunswick Street and Grove Street intersections should *not* be considered "Most Suitable".
    - The criteria for assessing the quality of bicycle facilities should be more rigorous.
- Expressed concern for bicycle safety in the proposed roundabout at the Marin Boulevard intersection. Suggested striping the bicycle lanes through the intersection.
    - Stated that the bicycle crash history at the Marin Boulevard intersection should be examined.
- The conceptual intersection treatments were intriguing, but a more thorough examination of which treatment is best for each intersection is needed.
- A traffic study of Marin Boulevard is currently being conducted by another engineering firm (Greenman-Pedersen, Inc.). The results of this study may influence the feasibility of any recommendations made for the Marin Boulevard intersection.
- Expressed concern that the roundabout proposed at the Marin Boulevard intersection may not handle the volume of pedestrians present at the intersection. MBI to investigate.
- Expressed concern that queued vehicles from the northbound approach of the Morgan Street & Marin Boulevard intersection (the intersection immediately north of the proposed roundabout) may back up to the roundabout. This could negatively impact the level of service of the proposed roundabout.
- Stated that recommendations should be shown in tables or bulleted list. Allow Jersey City Traffic to pick and choose recommendations.
    - Identify where treatments can be implemented. For instance, if a roundabout *can't* be implemented at certain intersections due to geometric constraints, those intersections should be identified.
- The report should identify the existing conditions and explain criteria for assessing improvements and recommendations.

- Stated that discussions of countermeasures should be linked to data. Data can be from various sources, i.e. HSM analysis and traffic count / pedestrian count data.

b. NJTPA

- Bike boxes shown in the rollout need to be adjusted to improve bike access to the intersection. Current depiction would impede bicyclist access to the intersection.
    - Wanted a more specific design for the southwest corner of the Grove Street intersection.

c. **Powerhouse Arts District Neighborhood Association**

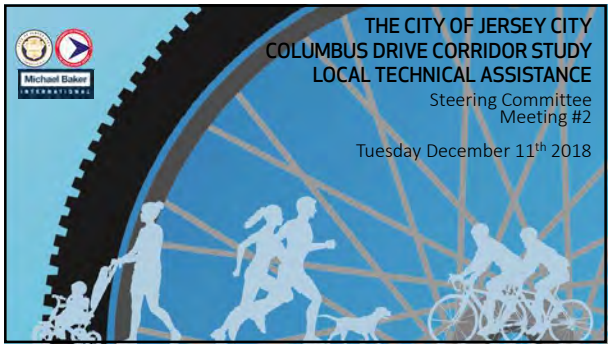
Expressed concern that recommendations didn't consider environmental concerns that affect pedestrians and bicyclists.

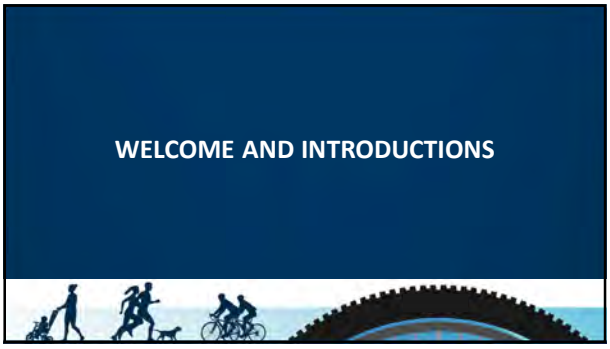
- Stormwater mitigation should be addressed within the report.
- Stormwater collects at several locations along Columbus Drive multiple times a year, making pedestrian bicycle facilities unusable.

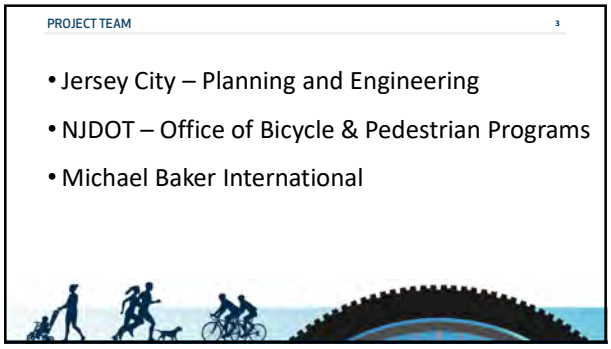
IV. Next Steps

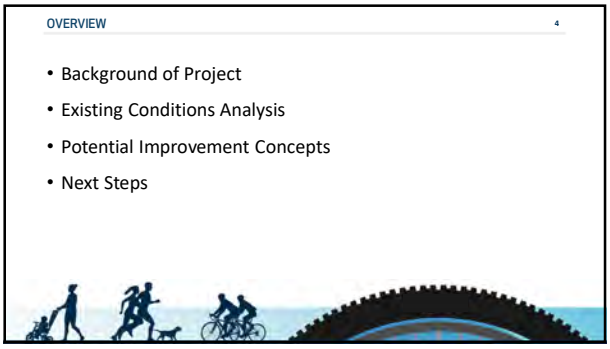
Next steps for the project are:

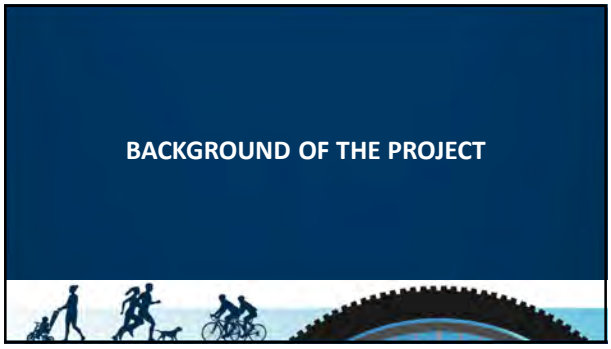
d. complete the HSM analysis of proposed conceptual designs,
e. prepare and distribute the second community survey with the help of Susan Blickstein,
f. write the HSM analysis memoranda,
g. develop the implementation matrix of proposed safety countermeasures,
h. and draft and finish the Complete Streets Implementation Plan.

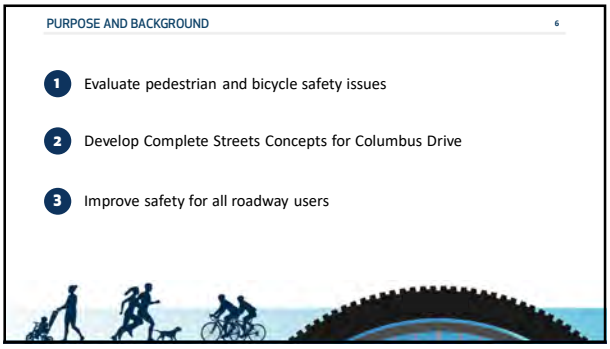

THE CITY OF JERSEY CITY
COLUMBUS DRIVE CORRIDOR STUDY
LOCAL TECHNICAL ASSISTANCE
Steering Committee
Meeting #2
Tuesday December 11th 2018


WELCOME AND INTRODUCTIONS


PROJECT TEAM
3
• Jersey City – Planning and Engineering
• NJDOT – Office of Bicycle & Pedestrian Programs
• Michael Baker International


OVERVIEW
4
• Background of Project
• Existing Conditions Analysis
• Potential Improvement Concepts
• Next Steps


BACKGROUND OF THE PROJECT


PURPOSE AND BACKGROUND
6
1 Evaluate pedestrian and bicycle safety issues
2 Develop Complete Streets Concepts for Columbus Drive
3 Improve safety for all roadway users

JERSEY CITY TRAFFIC SAFETY INITIATIVES

7

- Vision Zero
- Complete Streets
- Safe Routes to School
- NJTPA Local Safety Program
- NJDOT Local Technical Assistance

(Proposed Newark Avenue Pedestrian Mall, Jersey City Traffic Safety)

JERSEY CITY TRAFFIC SAFETY PLANS AND STUDIES

8

- Pedestrian Enhancement Plan
- School Travel Plan
- Bicycle Master Plan
- Grand Street Study
- Montgomery Street Redesign
- Road Safety Audits

(Montgomery Street Concept)

PROJECT STEERING COMMITTEE ROLE

9

Steering Committee Meeting #1

Present scope and goals of the project. Identify stakeholder roles and responsibilities. Document existing resources, safety concerns, and community needs. Brainstorm improvements.

Steering Committee Meeting #2

Present existing conditions analysis. Share potential improvement concepts. Document opportunities, deficiencies, and constraints for active transportation facilities.

PROJECT STEERING COMMITTEE ROLE

10

Steering Committee Meeting #1

Present scope and goals of the project. Identify stakeholder roles and responsibilities. Document existing resources, safety concerns, and community needs. Brainstorm improvements.

Steering Committee Meeting #2

Present existing conditions analysis. Share potential improvement concepts. Document opportunities, deficiencies, and constraints for active transportation facilities.

EXISTING CONDITIONS ANALYSIS

DATA COLLECTION – EXISTING RESOURCES

12

- Traffic Volumes
- Crash Reports
- Police Department Input
- Master Plans
- Existing GIS Data
- Safe Routes to School Data
- Existing Ordinances
- Signal Timing and Phasing
- Transit Routes

DATA COLLECTION – FIELD INVENTORY AND COUNTS

13

- Trip Generator Map
- Roadway Attribute Data
- Data for Highway Safety Manual Analysis
- Pedestrian and Bicycle Activity
- Turning Movement Counts
- Traffic Counts
- Sidewalk Condition

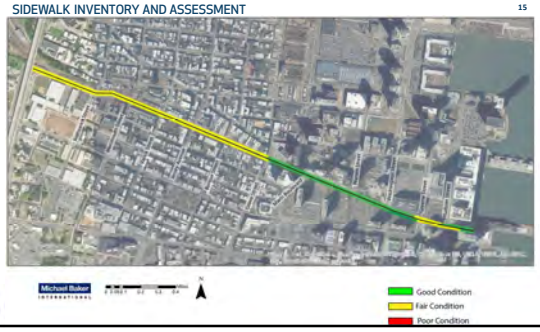
EXISTING CONDITIONS ANALYSIS

14

1. Sidewalk Inventory and Assessment
2. Bicycle Compatibility Assessment
3. Intersection Assessment
4. Bicycle and Pedestrian Crash Review

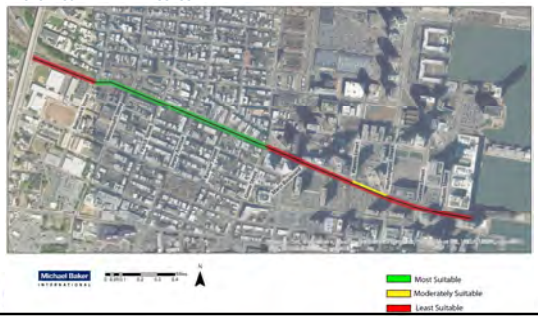
SIDEWALK INVENTORY AND ASSESSMENT

15



BICYCLE COMPATIBILITY ASSESSMENT

16



PUBLIC INFORMATION CENTER

17

- "What would you like to see more of on Columbus Drive?"
  - Protected Bike Lane
  - Pedestrian Scramble
  - Protected Intersections for Bikes
- Other Comments
  - Floating Bus Island
  - Water fountains
  - Buses and shuttles leaving the westbound stop at Grove Street and turning left on Grove Street

PUBLIC SURVEY

18

- **315 respondents**
- **87%** live within walking distance of Columbus Drive
- **78%** aware of **Jersey City VisionZero**
- **68%** believe **continuous bike lanes** would improve safety for all roadway users
- **67%** would like to see **high-visibility crosswalks**
- **65%** would like to see **traffic-calming measures**
- **59%** would like to see **consistent roadway configuration**
- **54%** would like to see **longer pedestrian crossing signals**

HIGHWAY SAFETY MANUAL ANALYSIS

HSM ANALYSIS

20

Purpose: predict the number of crashes expected within the project limits in the design and build years for each alternative developed

Data Used: traffic count volumes, ATR volumes, 3-year crash history, and signal timing plans

Current status: base model built, waiting on finalized list of countermeasures

Next Step: finalize recommendations and countermeasures so that alternatives can be modeled

Worksheet 3C – Site-Specific EB Method Summary Results for Urban and Suburban Arterials

(1)	(2)	(3)	(4)	(5)	(6)
Crash severity level	$N_{predicted}$	N_{pred}	N_{exp}	$N_{expected}$	$N_{observed}$
Total	$(2)_{CMB}$ from Worksheet 3A	$(2)_{CMB}$ from Worksheet 3B	$(3)_{CMB}$ from Worksheet 3B	$(6)_{CMB}$ Worksheet 3A	(3)+(4)+(5)
	68.4	14.4	0.9	62.6	77.9
Fatal and injury (FI)	$(3)_{CMB}$ from Worksheet 3A	$(2)_{CMB}$ from Worksheet 3B	$(3)_{CMB}$ from Worksheet 3B	$(5)_{TOTAL} * (2)_{FI} / (2)_{TOTAL}$	(3)+(4)+(5)
	22.0	14.4	0.9	20.1	35.4
Property damage only (PDO)	$(4)_{CMB}$ from Worksheet 3A	–	–	$(5)_{TOTAL} * (2)_{PDO} / (2)_{TOTAL}$	(3)+(4)+(5)
	46.4	0.0	0.0	42.5	42.5

POTENTIAL IMPROVEMENT CONCEPTS

Road Diet Concept – Existing Conditions

22

Road Diet Concept

23

Road Diets provide overall crash reduction of 19 to 47%

- Fewer lanes for pedestrians to cross
- Calms traffic
- Reduces Right Angle crashes
- "Complete Streets" environment

Source: FHWA

Road Diet Concept with Cycle Track

24

Road Diets provide overall crash reduction of 19 to 47%

- Fewer lanes for pedestrians to cross
- Calms traffic
- Reduces Right Angle crashes
- "Complete Streets" environment

Source: FHWA

Source: NACTO

Roundabouts

25

- Channelized approaches
- Center island
- Results in lower speeds and fewer conflict points
- 78% reduction in severe crashes
  Source: FHWA
- U-Turns

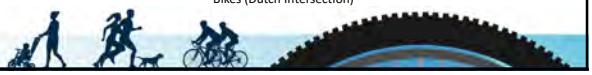
INTERSECTION IMPROVEMENTS

26

Bike Boxes

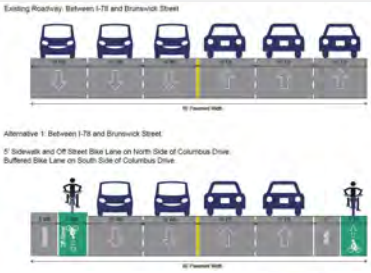
Protected Intersection for Bikes (Dutch Intersection)

Pedestrian Scramble



Corridor Improvements – I-78 to Brunswick Street

27



Corridor Improvements – I-78 to Brunswick Street

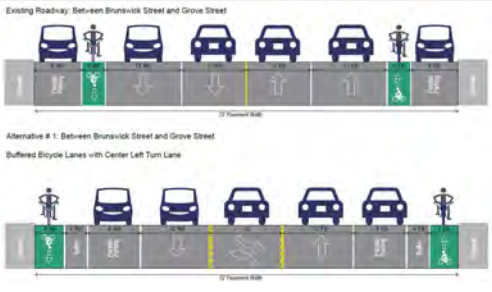
28

Corridor Improvements – I-78 to Brunswick Street

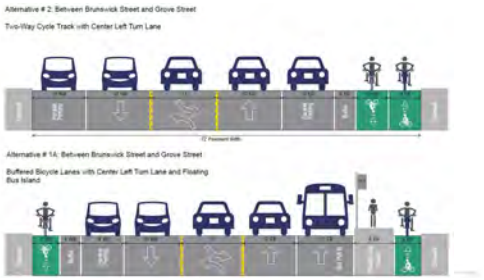
29

CORRIDOR IMPROVEMENTS - BETWEEN BRUNSWICK ST AND GROVE ST

30



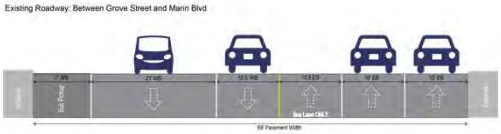
CORRIDOR IMPROVEMENTS - BETWEEN BRUNSWICK ST AND GROVE ST 31



CORRIDOR IMPROVEMENTS - BETWEEN BRUNSWICK ST AND GROVE ST 32

CORRIDOR IMPROVEMENTS - BETWEEN BRUNSWICK ST AND GROVE ST 33

CORRIDOR IMPROVEMENTS – BETWEEN GROVE ST AND MARIN BLVD 34

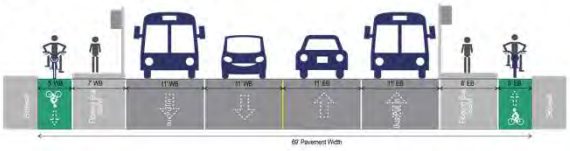


CORRIDOR IMPROVEMENTS – BETWEEN GROVE ST AND MARIN BLVD 35

CORRIDOR IMPROVEMENTS – BETWEEN GROVE ST AND MARIN BLVD 36

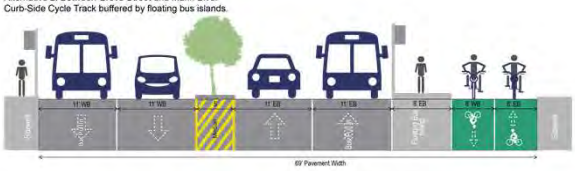
CORRIDOR IMPROVEMENTS – BETWEEN GROVE ST AND MARIN BLVD 37

Alternative 1: Between Grove Street and Marin Blvd. Curb-side bike lanes buffered by floating bus islands.



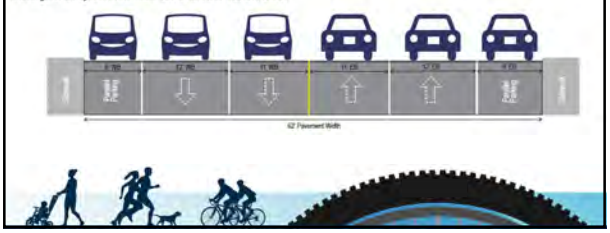
CORRIDOR IMPROVEMENTS – BETWEEN GROVE ST AND MARIN BLVD 38

Alternative 2: Between Grove Street and Marin Blvd.
Curb-Side Cycle Track buffered by floating bus islands.



CORRIDOR IMPROVEMENTS – BETWEEN MARIN BLVD AND HUDSON ST 39

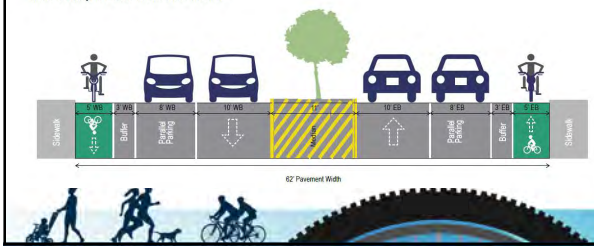
Existing Roadway: Between Marin Boulevard and Hudson Street



CORRIDOR IMPROVEMENTS – BETWEEN MARIN BLVD AND HUDSON ST 40

Alternative # 1: Between Marin Boulevard and Hudson Street

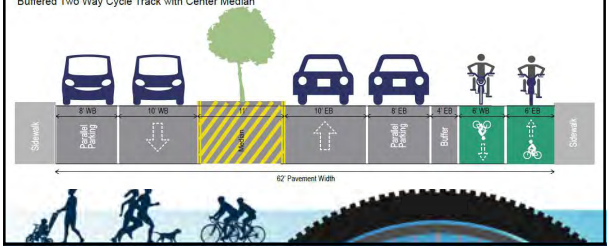
Buffered Bicycle Lanes with Center Median



CORRIDOR IMPROVEMENTS – BETWEEN MARIN BLVD AND HUDSON ST 41

Alternative # 2: Between Marin Boulevard and Hudson Street

Buffered Two Way Cycle Track with Center Median



CORRIDOR IMPROVEMENTS – BETWEEN MARIN BLVD AND HUDSON ST 42

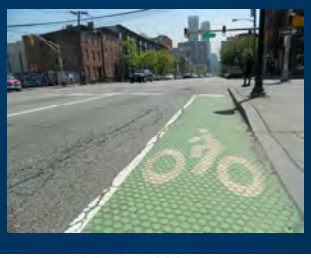
CORRIDOR IMPROVEMENTS – BETWEEN MARIN BLVD AND HUDSON ST 43

NEXT STEPS – SURVEY

NEXT SURVEY - EXAMPLE 45

QUESTIONS?

Contact:
Barkha Patel
Project Manager
bpatel@jcnj.org
(201) 547-5010



Meeting Sign In

Michael Baker INTERNATIONAL

Project: The City of Jersey City Columbus Drive Corridor Study
Steering Committee Meeting #2
Place/Room: City Hall - Administration Conference Room - 280 Grove Street, Jersey City

Date: 12/11/2018
Time: 6:00 PM

	PRINT NAME	ORGANIZATION	PHONE	EMAIL
1.	Sutapa Bandyopadhyay	NJTPA		sband@njtpa.org
2.	Ayla Schermer	Bike JC	412-719-7824	ayla.schermer@gmail.com
3.	BARKHA R PATEL	JC	201-547-5021	bpatel@jcnj.org
4.	Joseph Sandwith	JC PD	201 547 5403	JSandwith@NJJCPS.org
5.	Lt. Scott Schnee	JCPD	201-547-5403	SSchnee@njjcps.org
6.	JENNIFER CATO	JC TRAFFIC	201 547 4530	JCATO@JCNJ.ORG
7.	ALEXANDER MIRESCU	PADNA	201 232 8125	alexander.mirescu@gmail.com
8.	Andrew Lappitt	Michael Baker	609-807-2610	
9.	William Riviere	NJDOT	609.530.4646	William.riviere@dot.nj.gov
10.	Andrew Vischio	Jersey City Traffic	201 547-4419	avischio@jcnj.org
11.	Tom DiBiase	MBI		
12.	Amy Wong	MBI		
13.	Alec Lamoreaux	MBI		
14.				
15.				
16.				
17.				
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21.				

THE CITY OF JERSEY CITY
COLUMBUS DRIVE CORRIDOR STUDY
LOCAL TECHNICAL ASSISTANCE

Steering Committee Meeting #2

Tuesday, December 11, 2018, 6:00 PM to 8:00 PM
Jersey City Division of Planning
280 Grove Street, City Hall Admin Conference Room, Jersey City

AGENDA:

I. **Welcome and Introductions** *(Jersey City/ Michael Baker International)*

II. **Background of Project**
   a. Jersey City Traffic Safety (Jersey City)
   b. Vision Zero initiatives (Jersey City)

III. **Existing Conditions Analysis**
   a. Data Collection efforts (MBI)
   b. Public Outreach efforts (MBI)
   c. Updated survey response summary (MBI)
   d. Public Information Center feedback (MBI)

IV. **Conceptual Alternatives**
   a. Present Concepts
   b. Obtain feedback on concepts from Steering Committee

V. **Community Outreach Strategy/Next Steps**
   a. Next edition of Survey – Discuss how concepts should be refined for survey

Columbus Drive Corridor Study

Location: Columbus Drive from Center Street to the Waterfront.
Project Need: Numerous bicycle and pedestrian crashes have occurred in recent years along the project corridor resulting in severe injuries and fatalities.
Project Purpose: Evaluate pedestrian and bicycle safety issues and develop concepts for the corridor that address safety and the needs of pedestrians and cyclists.
Study Timeframe: Completion of this study is expected in August, 2019.
Project Team: Jersey City, New Jersey Department Of Transportation (NJDOT)—Office of Bicycle and Pedestrian Programs, Michael Baker International, Inc.

Columbus Drive Study Limits

Issues on the Corridor

- **1** pedestrian fatality and **18** injuries as a result of (2015-2017).[1]
- **207** total crashes along the corridor resulting in **1** fatality and **59** injuries (2015-2017).
- **78%** of survey respondents feel "very unsafe" or "moderately unsafe" when walking along the project corridor.[2]
- **89%** of survey respondents feel "very unsafe" or "moderately unsafe" when biking along the project corridor.
- **65%** of survey respondents felt that measures needed to be taken to reduce vehicle speeds.
- **10** intersections provide insufficient yellow and red signal phase lengths based on NJDOT standards.
- Double parking occurs frequently along the corridor.

Proposed Improvements

- Provide one travel lane in each direction.
- Provide dedicated left turn lanes to improve traffic flow at intersections.
- Install 5' parking-protected bike lanes.
- Provide on-street parking in both directions.
- Replace on-street parking at corners with loading zones.
- Install protected intersections at each intersection within the project limits (see reverse side for details).
- Install curb bump outs at each intersection within the project limits to reduce crossing distances.
- Increase yellow and all-red signal timings to comply with NJDOT and ITE standards.
- Install ADA compliant curb ramps.
- Install "floating" bus islands between Grove St. and Marin Blvd. to reduce conflicts between buses and bikes.
- Install planters, green infrastructure, benches, trash cans, and other streetscape amenities wherever appropriate.

Benefits of Proposed Design

- **28%** decrease in pedestrian crashes predicted by Highway Safety Manual Analysis in the design year (2043).
- **40%** decrease in total crashes predicted by Highway Safety Manual Analysis in the design year (2043).
- Improves pedestrian and bicycle visibility at intersections.[3]
- Reduces vehicle speed.[4]
- Reduces opportunities for double parking.
- Reduces pedestrian crossing distances.
- Reduces conflicts among all modes.
- Creates opportunities for green infrastructure.
- Maintains on-street parking.
- Maintains emergency vehicle access.

1. NJDOT Crash Records for Hudson County (2015-2017). https://www.state.nj.us/transportation/refdata/accident/rawdata01-current.shtm
2. The public survey was launched in May, 2018 and remained open until July of 2018. In total, 315 individuals responded and 98% of respondents were Jersey City residents.
3. NACTO. (2019, May). *Don't Give Up at the Intersection: Designing All Ages and Abilities Bicycle Crossings* (Publication).
4. FHWA. (2016, March). *Road Diet FAQ* (United States, Federal Highway Administration).

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Columbus Drive Corridor Study: Description of Proposed Design Elements

Protected Bike Lanes

Protected Bike Lanes are exclusive bike facilities that combine the experience of a conventional on-street bike lane with a separated path. Protected lanes provide space exclusive to cyclists, separated from travel lanes, parking, and sidewalks by a painted or physical buffer. The proposed design includes two-way protected bike lanes along the north side of Columbus Drive from Merseles Street to Monmouth Street and one-way protected lanes on both sides of the street from Monmouth Street to Hudson Street. The proposed design also includes a "floating" on-street parking lane to separate the bike lanes from travel lanes. This, combined with concrete buffers, will create safe and comfortable conditions for cyclists.

Image 1: Car double parked in bike lane along Columbus Drive
Image 2: Protected bike lane in St. Louis, courtesy of Paul L. Wojciechowski

Protected Intersections

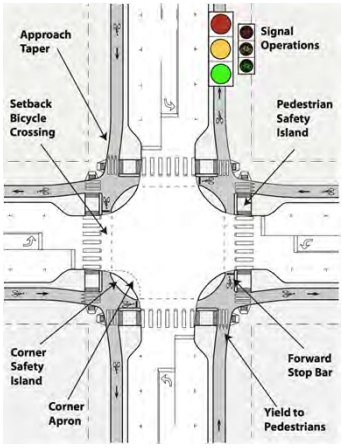
Protected intersections improve pedestrian and cyclist safety at intersections by utilizing strategically placed concrete islands to:

- Provide physical barriers between pedestrians and cyclists and cars
- Delineate space
- Minimize exposure to conflicts
- Reduce the speed of turning vehicles
- Provide enhanced and more direct sight lines
- Increase comfort for bicyclists of all ages and abilities[5]

Protected intersections have been implemented in cities such as New York City, Salt Lake City, Berkeley, and Austin. After implementation in San Francisco:

- 85% of bicyclists reported feeling safer
- 55% of pedestrians reported feeling safer
- 100% of drivers yielded to pedestrians
- 96% of drivers yielded to bicyclists
- 98% of vehicles turned at speeds at or below the speed limit[6]

A video explanation of protected intersections can be found at: https://vimeo.com/86721046



Protected intersection features, courtesy of NACTO "Don't Give up at the Intersection" Bicycle Crossing Design Guide

Loading Zones

The proposed design provides zones between Barrow Street and Warren Street to be used flexibly throughout the day for quick stops, pick-ups, drop-offs, ride hailing services, and deliveries. These strategically-placed zones can be managed by time of day to, for example, allow for deliveries in the early morning, 15-minute parking during the day, and quick stops during the evening. The zones are also intended to alleviate double-parking and the conflicts and delays that can cause.

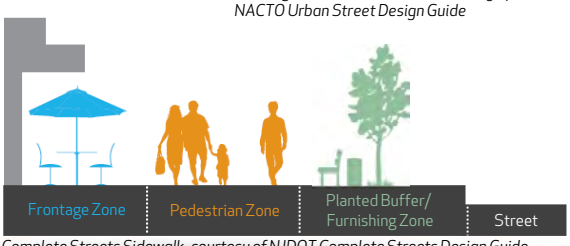
Floating Bus Islands

"Floating" bus islands are bus stops separated from the sidewalk by a bicycle lane. They create dedicated space for bus passengers to wait, board, and exit buses and help to reduce conflict between buses, pedestrians, and cyclists by keeping buses out of bike lanes. Floating bus islands also help to reduce stop delays by keeping buses closer to travel lanes. Floating bus islands are typically used on streets with moderate to high bus ridership, high bicycle volumes, and high pedestrian volumes. In the proposed design, floating bus islands are recommended in both directions at the Grove Street bus stop.

Floating Bus Island in Seattle, courtesy of NACTO Urban Street Design Guide

Streetscape Amenities

Streetscape amenities such as pedestrian scale lighting, benches, trash and recycling receptacles, and bike parking can help streets serve more than just vehicles. By providing amenities that improve safety, livability, and sustainability, Columbus Drive can become a more functional and enjoyable place to be.



Complete Streets Sidewalk, courtesy of NJDOT Complete Streets Design Guide

5. Massachusetts Department of Transportation. (2015). *Separated Bike Lane Planning & Design Guide*. From Massachusetts Department of Transportation website.
6. San Francisco Municipal Transportation Agency. (n.d.). *9th and Division Street Protected Intersection: San Francisco's first protected intersection*

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APPENDIX G

NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

LOCAL SAFETY PROGRAM

FY 2020 APPLICATION

NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY
LOCAL SAFETY AND HIGH RISK RURAL ROADS PROGRAMS
FY 2020 APPLICATION

This application is for the FY 2020 NJTPA Local Safety and High Risk Rural Roads Programs. A technical review committee (TRC) will evaluate each application and determine if it should be recommended for Highway Safety Improvement Program (HSIP) funding under one of these two programs. The TRC will also determine the year best suited for construction authorization based on project complexity, size and/or level of design assistance needs. The Local Safety and High Risk Rural Roads Programs provide federal Highway Safety Improvement Program funding for design, construction and construction inspection of safety improvements on county and local roadways. See the Program Guidelines for more details on eligibility for both programs, including changes for the FY 2020 solicitation.

APPLICATION DEADLINE: December 5, 2019 at 3 PM

SECTION 1: PROJECT LOCATION AND ROADWAY INFORMATION

Project Name: Columbus Drive Corridor Improvements

Project Location (County, Municipality): Hudson County, Jersey City

SRI Route and Street Name: 09061559__-Columbus Drive
09061616__-Cristopher Columbus Drive
NJDOT Straight Line Diagram attached in **Appendix A**

Milepost or milepost limits: Columbus Drive MP 0.00 – 1.03
Cristopher Columbus Drive MP 0.00 – 0.16

Cross-streets (if applicable): Eastern road limit to Center Street

Jurisdiction of the roadway and sidewalks (if applicable): Municipal

Width of the roadway and ROW: Width of Roadway = 60’ – 75’ (varies)
Width of ROW = 80’ – 198’ (varies)

SECTION 2: SPONSORING AGENCY

Project Sponsor: Jersey City

Project Manager’s Name and Title: Barkha Patel, Senior Transportation Planner

Project Sponsor’s Contact Information (Address, telephone, e-mail):

Address: 13-15 Linden Avenue East, Jersey City
Telephone: 201-547-5021
E-mail: bpatel@jcnj.org

SECTION 3: PROJECT ELIGIBILITY

- Is the project eligible for High Risk Rural Roads Program funding (See **ATTACHMENT A**)?
  Yes [ ] No [X]

- If submitting more than one proposal for the Local Safety Program, what is the Sponsor's priority of ***this*** proposal? ***Priority # _____ of 2 proposals***

- In order to be eligible for HSIP funding, the project must be within identified within the limits of the segments and/or intersections on one of the network screening lists provided in the solicitation. Identify the Network Screening Lists and Ranks that make this project eligible for HSIP funding:

- Include a crash diagram or diagrams (if the project includes multiple intersections)

  Crash diagrams for the corridor are included in **Appendix B**.

- Include HSM calculations if the project's construction cost exceeds $250,000.

  HSM calculations and a memorandum reviewing the results of the HSM Analysis can be found in **Appendix C**.

- If the project is located within a segment or intersection that does not fall within the top 20 on any of the network screening lists, provide an explanation as to why this location was selected over other, more severe locations:

  The Columbus Drive corridor and several intersections along its length were ranked in NJTPA's Hudson County network screening lists. These rankings are summarized in Table 1.

Table 1: Columbus Drive Rankings on NJTPA Network Screening Lists

Subregion	Network Screening List	Major Street	Ranked Cross Street/Segment	Hudson County Rank	Overall Rank (Weighted Average)
Hudson County	Intersection List	Columbus Drive	Monmouth Street	72	1136
Hudson County	Intersection List	Columbus Drive	Grove Street	223	2815
Hudson County	Intersection List	Columbus Drive	Marin Boulevard	301	3845
Hudson County	Intersection List	Columbus Drive	Barrow Street	469	5255
Hudson County	Intersection List	Columbus Drive	Christopher Columbus Drive	614	6801
Hudson County	Intersection List	Columbus Drive	Jersey Avenue	844	9029
Hudson County	Intersection List	Columbus Drive	Hudson Street	1347	15178
Hudson County	Intersection List	Columbus Drive	Varick Street	1500	16179
Hudson County	Intersection List	Columbus Drive	Greene Street	1642	17348
Hudson County	Pedestrian Intersection List	Columbus Drive	Grove Street	41	324
Hudson County	Pedestrian Intersection List	Columbus Drive	Christopher Columbus Drive	119	647
Hudson County	Pedestrian Intersection List	Columbus Drive	Hudson Street	217	1161
Hudson County	Pedestrian Intersection List	Columbus Drive	Marin Boulevard	324	1865
Hudson County	Pedestrian Intersection List	Columbus Drive	Barrow Street	363	2014
Hudson County	Pedestrian/Bicycle Intersection List	Columbus Drive	Grove Street	51	412
Hudson County	Pedestrian/Bicycle Intersection List	Columbus Drive	Christopher Columbus Drive	153	836
Hudson County	Pedestrian/Bicycle Intersection List	Columbus Drive	Hudson Street	291	1551
Hudson County	Pedestrian/Bicycle Intersection List	Columbus Drive	Marin Boulevard	427	2613
Hudson County	Pedestrian/Bicycle Intersection List	Columbus Drive	Barrow Street	485	2838
Hudson County	Pedestrian/Bicycle Intersection List	Columbus Drive	Jersey Avenue	485	2838
Hudson County	Pedestrian/Bicycle Intersection List	Columbus Drive	Monmouth Street	834	5065
Hudson County	Pedestrian Corridor List	Columbus Drive	Columbus Drive (MP 0.56-0.95)	106	697
Hudson County	Pedestrian/Bicycle Corridor List	Columbus Drive	Columbus Drive (MP 0.56-0.95)	130	857
Hudson County	Roadway Corridor List	Columbus Drive	Columbus Drive (MP 0.08-1.00)	120	1690
Hudson County	Roadway Corridor List	Columbus Drive	Christopher Columbus Drive (MP 0.00-0.22)	635	7617

Based on the review of the NJTPA's network screening lists, the Columbus Drive corridor does not rank within the top 20 of any existing network screening list for 2014-2016, however 2017 data projection places the Columbus Drive and Grove Street intersection within the Top 20 of the Pedestrian Intersection Network Screening List. This change in ranking is a result of an increase in the frequency and severity of the crashes experienced along the Columbus Drive corridor since the network screening was initially performed. Most notably, a fatal pedestrian crash that occurred at the Columbus Drive and Grove Street intersection in 2017 was not part of the crash data analyzed. To determine how the Columbus Drive corridor would rank if 2017 crash data was used, one fatality was added to the existing crash data. This analysis provided a rough estimate of how the score for the corridor would change. The changes are summarized in Table 2.

Table 2: Columbus Drive Rankings Post Inclusion of 2017 Pedestrian Fatality

Subregion	Network Screening List	Major Street	Ranked Cross Street/Segment	Existing Hudson County Rank	Updated County Rank	Change in Ranking
Hudson County	Intersection List	Columbus Drive	Grove Street	223	32	191
Hudson County	Pedestrian Intersection List	Columbus Drive	Grove Street	41	7	34
Hudson County	Pedestrian/Bicycle Intersection List	Columbus Drive	Grove Street	51	7	44
Hudson County	Pedestrian Corridor List	Columbus Drive	Columbus Drive (MP 0.56-0.95)	106	34	72
Hudson County	Pedestrian/Bicycle Corridor List	Columbus Drive	Columbus Drive (MP 0.56-0.95)	130	48	82
Hudson County	Roadway Corridor List	Columbus Drive	Columbus Drive (MP 0.08-1.00)	120	73	47

Using this methodology, the Columbus Drive corridor would rank higher if 2017 crash data were included in the original analysis. Columbus Drive and Grove Street intersection moves from 41st to 7th once the 2017 pedestrian fatality was included. While this methodology does not represent a comprehensive analysis and reranking of the network screening lists, it demonstrates that the Columbus Drive corridor is sufficiently worthy of Preliminary Engineering funding under the NJTPA's Local Safety Program.

SECTION 4: PROJECT DESCRIPTION

- Provide a description of the project location, safety issues, types of crashes that are occurring and the deficiencies that need to be addressed. Include a summary of crashes occurring at this location or within the segment. A sample has been provided in **Attachment B**.

  Columbus Drive is located within Downtown Jersey City and receives a lot of bicycle and pedestrian traffic throughout due to its large number of residential units and access to public transportation including the Port Authority PATH train at Grove Street and Exchange Place, multiple NJTRANSIT bus stops, and the Hudson-Bergen Light Rail station at Exchange Place

  A Historical Crash Analysis was conducted to summarize crash data obtained from the NJDOT Bureau of Safety Programs. From 2015 to 2017, 207 crashes occurred along the study corridor:

  - Of the 207 crashes, 47 resulted in injuries. In total, 58 people were injured and 1 person was killed. The fatality occurred in 2017 at the Columbus Drive and Grove Street intersection.

  - The Top 3 crash types represented 71% of all crashes, and the Top 5 represented 83.5%
    1. 81 (39.1%) crashes were Same Direction (Side Swipe) Right Angle.
    2. 41 (19.8%) crashes were Same Direction (Rear End).
    3. 25 (12.1%) crashes were Struck Parked Vehicle.
    4. 20 (9.7%) crashes were Pedestrian.
    5. 15 (7.2%) crashes were Right Angle.

  - 24 (11.6%) crashes were pedestrian or bicycle crashes.

  Approximately 75% of crashes occurred at signalized intersections. The top three crash locations were:

1. 25 (12.1%) crashes occurred at the Columbus Drive and Marin Boulevard Intersection.
2. 24 (11.6%) crashes occurred at the Columbus Drive and Grove Street Intersection.
3. 19 (9.2%) crashes occurred at the Columbus Drive and Jersey Avenue Intersection.

The roadway segment with the highest quantity of crashes was Segment 3, between Marin Boulevard and Grove Street (MP 0.47-0.56), with 17 crashes.

Crash diagrams are included in **Appendix B**.

- Provide a description of the proposed improvements and the expected safety benefits.
  (For instance, a strong proposal for a dedicated left turn signal would document recent left turn crashes at the intersection in question and explain how the proposed improvement would reduce the number and/or severity of these types of crashes)

  All data collected and analyzed, combined with feedback received from the public, were used to inform a holistic set of strategies designed to address specific concerns, improve mobility for all ages and abilities, and reduce crashes. Strategies are summarized by the following categories:
  - "Active" Transportation Improvements – These address walking and bicycling.
  - Transit Improvements – These benefit passengers of the areas transit modes: Port Authority Trans-Hudson (PATH) Trains, NJ TRANSIT buses, and the Hudson-Bergen Light Rail (HBLR).
  - Vehicular Improvements – These address motorized vehicle (cars, trucks, buses) travel.
  - Community Improvements – These represent opportunities to further enhance the corridor with non-transportation features such as landscaping, green infrastructure, and signage.

  Specific improvements recommended along the project corridor include:
  - Provide one travel lane in each direction.
  - Provide dedicated left turn lanes to improve traffic flow at intersections.
  - Install 5' parking-protected bike lanes.
  - Provide on-street parking in both directions.
  - Replace on-street parking at corners with loading/unloading zones.
  - Install protected intersections at each intersection within the project limits (see reverse side for details).
  - Install curb bump outs at each intersection within the project limits to reduce crossing distances.
  - Increase yellow and all-red signal timings to comply with NJDOT and ITE standards.
  - Install ADA compliant curb ramps.
  - Install "floating" bus islands between Grove St. and Marin Blvd. to improve bus transit times and reduce conflicts between buses and bikes.
  - Install planters, green infrastructure, benches, trash cans, and other streetscape amenities wherever appropriate.
  - Install bicycle signal at two-way cycle track intersections of Columbus Drive and Brunswick Street and Monmouth Street.
  - Replace traffic signal poles/equipment where necessary to implement road diet.

  For full description of the Columbus Drive conceptual design, see the Implementation Plan, which is included in **Appendix D**.

- If the project is based on recommendations from a Road Safety Audit, please include the recommendations section from the RSA. A sample has been provided as an **Attachment I**.

A summary of recommendations are described in the above section.

- Briefly summarize the results of the HSM calculations. A sample has been provided as an **Attachment C**.

  To address critical safety issues present on Columbus Drive and to ensure that all roadway users are accommodated, Michael Baker was tasked with developing a conceptual design for the Columbus Drive corridor to improve safety and reimagine the roadway as a Complete Streets corridor. To determine if the proposed design can enhance safety along the corridor, AASHTO Highway Safety Manual (HSM) Predictive Analysis was performed. HSM Predictive Analysis is a recognized method for assessing the safety benefit of potential improvement alternatives.

  The analysis performed predicts that in the design year (2043) the proposed design could decrease the number of expected vehicle crashes by up to 40% (29.42 fewer crashes per year). Additionally, HSM analysis indicates that the proposed design could result in approximately 28% (4.97 fewer crashes per year) fewer bicycle and pedestrian crashes.

  To further quantify the impact of the proposed safety countermeasures, a cost benefit analysis was performed. This analysis assessed the financial savings that result from the proposed safety investment. Using the methodology described in Chapter 7: Economic Appraisal of the HSM, the total benefit of the proposed design is $56,761,529 (2018 Dollars). The project's Cost Benefit Ratio (CBR) was determined by dividing the estimated benefits by the project's estimated cost, $8,150,000. The project's CBR was calculated to be 6.96. A positive CBR value indicates that the proposed project will have positive benefit to society.

  A memorandum that further explains the HSM analysis performed can be found in **Appendix C**.

SECTION 5: PROJECT IMPLEMENTATION

- **Estimated Construction Cost: $8,150,000**

(Attach a line item cost estimate)

A line item cost estimate is included in **Appendix E**.

- Is the Sponsor seeking Design Assistance through the NJTPA? Yes [X] No [ ]
- Is the Sponsor seeking federal funds for construction inspection? Yes [X] No [ ]
- **Estimated cost for Construction Inspection: $210,000**
- If the applicant is not seeking design assistance, will the design be prepared in-house or by a consultant and when does the Sponsor anticipate having the PSE package ready for submission to NJDOT-Local Aid?

  Jersey City is seeking design assistance.

- If plans are already complete, please include them with the application.

  The conceptual plans are included in **Appendix F**. Final design plans, specs, and estimates have not been completed and are not included within this submission.

- If a new traffic signal (or signals) is proposed, include a signal warrant analysis and LOS analysis with the application.

  New traffic signals are not proposed. Traffic signals at several intersections within the project limits will receive upgrades to the existing signal.

- List below all permits and approvals that may be required for this project:

  The NJDEP Stormwater Management Rules require best management practices for water quality, water quantity control, and ground water recharge for activities that meet the definition of a "major development." A major development is defined as any development that disturbs one (1) or more acres of land or increases impervious surface by 0.25 acres or more. It is assumed the project will not meet the definition of a major development; however, the project will result in more than 5,000 ft2 of ground disturbance, therefore a Soil Erosion and Sediment Control Plan will need to be submitted to the Hudson-Essex-Passaic (HEP) Soil Conservation District.

  Project activities are proposed in the tidal flood hazard area; however, the proposed work complies with the conditions under Permit-by-rule 9 – general construction activities in a tidal flood hazard area. The conditions under the permit-by-rule are as follows:

  1. The existing ground elevation is not raised in any floodway;
  2. No aboveground structure is constructed in any floodway;
  3. No habitable building, fuel tank, solar panel, or underground utility line that conveys a gas or liquid is constructed;
  4. No disturbance is located within 25 feet of any top of bank, unless the project lies adjacent to a lawfully existing bulkhead, retaining wall, or revetment along a tidal water or impounded fluvial water;
  5. Any clearing, cutting, and/or removal of riparian zone vegetation is limited to actively disturbed areas; and
  6. The project, in combination with all activities onsite since November 5, 2007, will not result in a net loss of greater than one-quarter acre of riparian zone vegetation.

  Projects that are deemed as a "major development" cannot use a permit-by-rule. Activities meeting a NJDEP permit-by-rule do not require formal approval from the NJDEP.

  Project activities are proposed in the regulated upland waterfront development area; however, the paved roadway separates the proposed activities from jurisdiction. Additionally, project activities are located outside of the Mean High Water Line. It is therefore anticipated that the project activities will not require an NJDEP Waterfront Development Upland Permit.

  The proposed project activities are located within several historic districts. Numerous historic properties are located adjacent to the roadway, but outside of the right-of-way. An agreement between the NJDOT and SHPO identifies undertakings which have limited or no effect on cultural resources in New Jersey. Projects that are comprised of work included on this "No Effect" list will not require additional Section 106 consultation. Incorporation of aesthetic treatments into design will ensure compatibility with each Historic District. Therefore, coordination between the NJDOT Bureau of Environmental Program Resources and NJSHPO is required to satisfy Section 106 of the National Historic Preservation Act Consultation requirements. Additionally, the project is located within identified archaeological grids. Since the area has been previously disturbed for the roadway and surrounding development, there exists a low potential for archaeological resources.
  Required Permits/Authorizations:

- NJDEP Flood Hazard Area Control Act Rules: Permit-by-Rule 9
- NJSHPO Section 106 Consultation
- Hudson-Essex-Passaic Soil Conservation District Soil Erosion and Sediment Control Plan

SECTION 6: ENVIRONMENTAL SCREENING

Please answer Yes or No to the following questions. A "List of Useful Websites for Environmental Screening" is included for your reference at the conclusion of this section. NO field testing or sampling of any kind is needed in order to answer the following questions.

ADDITIONAL PROJECT INFORMATION	**YES**	**NO**
• Is this project one of the activities that qualify for a Programmatic Categorical Exclusion in the NEPA process? (See **Attachment E** for list of these project types)	**X**[1]	
If Yes, Project Type:	(3) Construction of bicycle and pedestrian lanes, paths, and facilities	
• Will right-of-way be acquired?		**X**
• Acquisition		**X**
• Easement		**X**
• Will the project result in residential or business displacement?		**X**
If yes, approximately how many? ____ Residential ____ Business		
• Will public facilities, schools, churches, emergency services, be affected by the project? (If yes list in comment section)		**X**
• Will new drainage facilities be installed/extended?	**X**	
• Will retention/detention basins be constructed?		**X**
• Have any environmental studies (Cultural Resource, Hazardous Waste, Air, Noise, Soil borings studies etc.) been undertaken previously within or adjacent to the project area? (If yes list in comment section)		**X**
• Is there any potential impact for federal and state rare, threatened or endangered species or their habitat within the project study area? (If yes list in comment section)		**X**[2]

ECOLOGY

- Are there any environmentally sensitive areas within project limits? Yes/***No***

  If yes, please describe:

  - Describe the land use/ecology of the project area:

    Yes Urban — Yes Residential — No School

    No Rural — No Agricultural — No Forested

    No Grassland/Field — No Coastal — No Open Waters (lake, stream, river)

  - Are there any of the following within project limits?

    No Wetlands — Yes Floodplains — No Sole source Aquifers

    No Stream crossings — No Vernal Pools — No Wildlife Habitat

  - Are there any of the following within the project limits? (Identify bodies of water by type and name in the comment section)

    No Category One Waters — No Trout Maintenance Streams

    No Wild & Scenic Rivers — No Trout Production Streams

    No[3] Essential Fish Habitat or Shellfish Habitat

STREAM ENCROACHMENT	**YES**	**NO**
• If the project area contains a stream, does it drain more than 50 acres? (Identify the stream)		**X**[4]
• Can it be anticipated at this time that fill will be placed in The 100-yr floodplain? (Identify the floodplain)		**X**[5]
• Is it likely that more than ¼ acre of new impervious surface will be constructed? (If so, NJDEP Stormwater Mgt. Rules apply)		**X**
• Is it likely that one acre or more will be disturbed by the proposed construction? (If so, NJDEP Stormwater Mgt. Rules apply)	**X**	

CULTURAL RESOURCES	**YES**	**NO**
• Are there known buildings or structures listed on, or eligible for listing on, the NJ and/or National Registers of Historic Places in the project study area? (If yes list in comments section)		**X**
• Are any properties included in a local county/ municipal listing of historic properties? (If yes list in comment section)		**X**

• Is the project located in a known or potential Historic District(s)? (If yes list in comments section)	X[6]	
• Are there any 50+ year old buildings in the project area? (If yes list in comments section)		X
• Will the project impact a 50+ year old bridge or culvert? (If yes list in comment section)		X
• Will the project impact a 50+ year old railroad line? (If yes list in comment section)		X
• Are there any old foundations, piles of building rubble, unusual depressions or old wells within the project limits? (If yes list in comment section)		X
• Are there any known archeological sites within the project limits?	X	

SECTION 4(f) PROPERTIES	**YES**	**NO**
• Will there be any use of land from the following (If yes list in comment section)		
• Historic Sites		X
• Publicly owned Parkland		X
• Publicly owned recreation areas		X
• Publicly owned wildlife or waterfowl refuges		X
• Federal Lands		X

HAZARDOUS WASTE	**YES**	**NO**
• Are there any known or suspected hazardous waste sites (underground storage tank (UST), landfills, known NJDEP Case, Environment Cleanup Responsibility Act (ECRA Case) within the project study area?	X	
• Are there active or abandoned industries, service stations or repair shops within the project study area?		X
• Is there evidence of potential contamination (monitoring wells, stained soils, etc.)?	X	

- Are railroads or railyards located in the project study area? **X** ____

Environmental Screening – Footnotes:

1. Potential traffic as a result of construction may create congestion, but should not significantly affect public facilities, schools, churches, or emergency services.
2. The 300' study area includes some of the Hudson River, which does have threatened and endangered species habitat; however, the project is limited to the Columbus Drive roadway and will not impact the Hudson River or the area adjacent to the river.
3. Geospatial data identifies essential fish habitat (EFH) for Bluefish, Atlantic Butterfish, and Summer Flounder within the Hudson River, adjacent to the project limits. Since the project is limited to the roadway, no EFHs will be affected by this project.
4. No streams were identified within the project area; however, the Hudson River runs near the project area. It should be noted that the Hudson River is creating the flood hazard area within the project area.
5. Floodplains were identified within the project area; however, the project limits propose work to the currently disturbed roadway with no anticipation for fill being placed in the 100-yr floodplain.
6. Four (4) historic districts were identified within the project area: Van Vorst Park Historic District, Van Vorst Park Historic District Extension, Hudson and Manhattan Railroad Transit System, and the Lower Newark Avenue Historic District.

RAILROAD CROSSINGS

NJDOT's Railroad Engineering and Safety Unit is responsible for all reviews and programs involving changes and improvements to all public rail crossings in New Jersey that are designed in compliance with Federal Railroad Administration guidelines.

The Unit conducts a Diagnostic Team Review on

- Any Local Aid project within 1,000 feet of an at-grade crossing on the approach roadway.
- Any project that is parallel to a railroad within 200 feet.

Is there are railroad crossing within the 1,000 ft. radius of the project's limits? ***Yes***/No

COMMUNITY IMPACTS AND INVOLVEMENT

Does the project have the potential to introduce any Title VI and/or Environmental Justice Issues? Yes/***No*** (If Yes, describe below)

List any local or regional groups, organizations and/or individuals who may have an interest in the project because they are known to be knowledgeable about or interested in historic properties and/or may have an interest in the improvements proposed in this project:

Groups that may be interested in the proposed project include:

- Jersey City Historic Preservation Commission
- Hudson County Genealogical and Historical Society
- The New Jersey Historical Society
- Bike Jersey City
- Powerhouse Arts District Neighborhood Association

Please attach a USGS MAP showing the project location, limits, and all environmental parameters (e.g., wetlands, historic properties) relevant to your project, based on the checklist above. Please also include route/street names and mileposts. (NJDEP maps are acceptable; please refer to the "List of Useful Websites for Environmental Screening" in **ATTACHMENT F** for the website link to NJDEP GIS and NJDEP I-MapNJ.)

An Environmental Screening Map can be found in **Appendix G**.

INSTRUCTIONS FOR SUBMITTING APPLICATION:
Submit eight (8) hard copies to:

NJTPA Local Safety Program/ High Risk Rural Roads Program
North Jersey Transportation Planning Authority
1085 Raymond Blvd.
One Newark Center, 17th floor
Newark, NJ 07102
Attention: Patricia Newton

If possible, please submit an electronic copy of the completed application via email to: **pnewton@njtpa.org. CDs are not needed.**

This application, program guidelines, and attachments are available on the Local Safety Program & High Risk Rural Roads Program page of the *NJTPA Website* at:

https://www.njtpa.org/Projects-Programs/Local-Programs/Local-Safety-Program.aspx

APPLICATION DEADLINE: December 5, 2019 at 3 PM