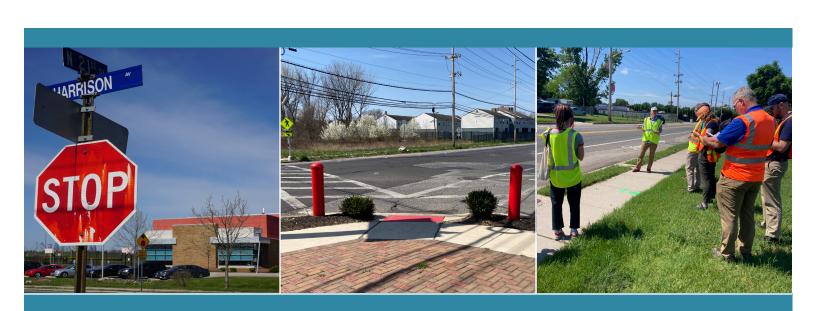


# **Harrison Avenue**

PEDESTRIAN ROAD SAFETY AUDIT







#### The Delaware Valley Regional Planning Commission

is the federally designated Metropolitan Planning Organization for the Greater Philadelphia region, established by an Interstate Compact between the Commonwealth of Pennsylvania and the State of New Jersey. Members include Bucks, Chester, Delaware, Montgomery, and Philadelphia counties, plus the City of Chester, in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer counties, plus the cities of Camden and Trenton, in New Jersey.

DVRPC serves strictly as an advisory agency. Any planning or design concepts as prepared by DVRPC are conceptual and may require engineering design and feasibility analysis. Actual authority for carrying out any planning proposals rest solely with the governing bodies of the states, local governments or authorities that have the primary responsibility to own, manage or maintain any transportation facility.



**DVRPC's vision** for the Greater Philadelphia Region is a prosperous, innovative, equitable, resilient, and sustainable region that increases mobility choices by investing in a safe and modern transportation system; that protects and preserves our natural resources while creating healthy communities; and that fosters greater opportunities for all.

**DVRPC's mission** is to achieve this vision by convening the widest array of partners to inform and facilitate data-driven decision-making. We are engaged across the region, and strive to be leaders and innovators, exploring new ideas and creating best practices.

TITLE VI COMPLIANCE | DVRPC fully complies with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice, and related nondiscrimination mandates in all programs and activities. DVRPC's website, www.dvrpc.org, may be translated into multiple languages. Publications and other public documents can usually be made available in alternative languages and formats, if requested. DVRPC's public meetings are always held in ADA-accessible facilities, and held in transit-accessible locations whenever possible. Translation, interpretation, or other auxiliary services can be provided to individuals who submit a request at least seven days prior to a public meeting. Translation and interpretation services for DVRPC's projects, products, and planning processes are available, generally free of charge, by calling (215) 592-1800. All requests will be accommodated to the greatest extent possible. Any person who believes they have been aggrieved by an unlawful discriminatory practice by DVRPC under Title VI has a right to file a formal complaint. Any such complaint must be in writing and filed with DVRPC's Title VI Compliance Manager and/or the appropriate state or federal agency within 180 days of the alleged discriminatory occurrence. For more information on DVRPC's Title VI program or to obtain a Title VI Complaint Form, please visit: www.dvrpc.org/GetInvolved/TitleVI, call (215) 592-1800, or email public affairs@dvrpc.org.

DVRPC is funded through a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments. The authors, however, are solely responsible for the findings and conclusions herein, which may not represent the official views or policies of the funding agencies.

# **Table of Contents**

EXECUTIVE SUMMARY	1
CHAPTER 1: BACKGROUND	
Introduction	
Previous Studies	
NJDEP Waterfront Park Project	
CCMUA RFP	7
Waterfront Trails Project_	
Ablett Plan	
ULI Study	
Cramer Hill Plan	
Corridor Selection	
What is a Pedestrian Road Safety Audit?	
The PRSA Process	10
CHAPTER 2: EXISTING CONDITIONS	13
Study Area Corridors: Description and Analysis	
Study Location Study Location	
Roadway Characteristics	
Traffic Volumes	
Transit Service	15
Demographics	15
CHAPTER 3: CORRIDOR ANALYSIS	17
Study Area Crash Findings	
Crash Concentration Areas	18
State Street & Harrison Avenue	18
Other Crash Sites	
Observed Travel Speeds	19
CHAPTER 4: FINDINGS AND RECOMMENDATIONS	21
Introduction	21
Alignment with Planned Improvements/Projects	21
Experimental Pop-Up	
Identified Issues & Potential Improvement Scenarios	24
Road Owners' Response	33
CHAPTER 5: CONCLUSION	35

# **FIGURES**

Figure 1: Road Safety Audit Study Area	3
Figure 2: Kroc Center and Waterfront Park in Progress, July 2018.	6
Figure 3: Potential Trail Alignments	7
Figure 4: Proposed Harrison Avenue Sidepath	8
Figure 5: Proposed Intersection Improvements at 27th St and Harrison Ave	8
Figure 6: Regional Map of Study Location	13
Figure 7: Harrison Avenue Existing Conditions	14
Figure 8: E. State Street Existing Conditions	15
Figure 9: Crashes by Year 2015-2019	17
Figure 10: Crashes by Collision Type 2015-2019	17
Figure 11: Map of Crash Severity	18
Figure 12: Crash Diagram of Harrison Avenue and E. State Street	19
Figure 13: Harrison Avenue Observed Travel Speeds	19
Figure 14: State Street Observed Travel Speeds	19
TABLES	
Table 1: Intersection of E. State Street & Harrison Avenue	24
Table 2: Harrison Avenue, Waterfront Park-Adjacent	26
Table 3: E. State Street, Harrison Avenue to the State Street Bridge	27
Table 4: E. State Street, Harrison Avenue to River Avenue	29
Table 5: Harrison Avenue, 17th Street to 27th Street	31
APPENDICES	
APPENDIX A: ROAD SAFETY AUDIT PRESENTATION	A-1
APPENDIX B: PARTICIPANT LIST	
APPENDIX C: ROAD OWNER RESPONSE	B-3
Table C-1: Intersection of State Street & Harrison Avenue	B-3
Table C-2: Harrison Avenue, Waterfront Park-Adjacent	B-3
Table C-3: E. State Street, Harrison Avenue to the State Street Bridge	B-3
Table C-4: E. State Street, Harrison Avenue to River Avenue	B-4
Table C-5: Harrison Avenue, 17th Street to 27th Street	B-4

# **Executive Summary**

The Delaware Valley Regional Planning Commission's Office of Safe Streets focuses on eliminating roadway deaths and serious injuries to make roadway travel safer on every mode, for every person. The safety program is designed to assist state and local partners address crash trends through collaboration, planning studies, and analyses at the local, county, and regional levels. This work supports DVRPC's goal of Regional Vision Zero 2050 (the elimination of roadway deaths in the region by 2050).

The Pedestrian Road Safety Audit (PRSA) program provides local roadway owners and community stakeholders the opportunity to examine a roadway using a collaborative process employing a multidisciplinary team to consider crash and related data, plus field work. This report is the final document of the Harrison Avenue PRSA conducted in the City of Camden, Camden County, New Jersey. The recommendations resulting from this data-driven effort are the first step toward implementation of safety improvements with funding from several possible sources, including as part of upcoming investments by the Camden County Municipal Utilities Authority's (CCMUA) Harrison Avenue Green Streets and Green Infrastructure project and the Housing Authority of the City of Camden's (HACC) redevelopment of Ablett Village of Cramer Hill funded by the U.S. Department of Housing and Urban Development. Both projects provide opportunities to advance audit recommendations that would greatly enhance the safety of study area residents while also accomplishing their original project objectives.

The Harrison Avenue audit study area, shown in Figure 1, focuses on the intersection of Harrison Avenue and E. State Street, which includes the main pedestrian and bicyclist entrance to the recently opened Cramer Hill Waterfront Park. This 62-acre park—which is a reclamation of the former Harrison Avenue Landfill—turned the previously scarred landscape into a passive recreational green space, which features a fishing plaza, hiking and biking trails, a picnic area, a playground, a sensory garden, and shoreline observation areas.

Upon its opening in the fall of 2021, this park became a new destination for the people of the neighborhoods located along both Harrison Avenue and E. State Street. The PRSA study area was widened beyond the intersection to include E. State Street from the bridge (west) to the intersection with River Avenue (east), and Harrison Avenue from the E. State Street intersection north to 27th Street. This expanded study area provides the opportunity to fully consider the needs of local residents that would likely access the park by walking, biking, or any other non-auto modes.

In addition to the Cramer Hill Waterfront Park, the PRSA study area includes the Salvation Army Kroc Center located along Harrison Avenue closer to the northern end of the study area. The Kroc Center is both a local and regional attraction which is accessible via car, walking or biking, and is served directly via a NJTranist bus line.

Twenty reportable crashes occurred in the study area during the five-year period 2015–2019, resulting in one fatality and 17 injuries; two involved pedestrians. The greatest concentration of crashes occurred at the Harrison Avenue and E. State Street intersection.

Because this project occurred during the pandemic, the pre-audit and post-audit meetings were held virtually via Zoom. An optional half day in-person field audit was conducted which was attended by 10 team members in addition to the DVRPC facilitators. The full attendee list is found in Appendix B. In addition to the in-person field audit, DVRPC developed a web-based application that allowed team members to conduct a visit to the study area at any time to capture observations using a mobile device, or to perform a virtual visit via computer from anywhere. This was designed to accommodate as many people as possible.

The report presents a brief history of the park site and the Cramer Hill neighborhood via plans and studies that preceded the PRSA effort, some of which will bring substantive changes to the study area creating an opportunity to incorporate audit recommendations. Chapter 2 explores existing conditions followed by the crash analysis in Chapter 3. The identified issues and recommendations, presented in Chapter 4, are the result of a collaborative process with the study stakeholders that ensures accuracy and promotes group buy-in.

Thanks to concerned stakeholders, this audit location was selected for a complementary planning effort. Toward the end of the PRSA, DVRPC's Experimental Pop-ups (Expo) team provided technical assistance to Camden City, Camden County, and Camden Community Partnership (CCP) to advance the Harrison Avenue PRSA project. The Expo program, now in its third year, offers assistance to communities to "test innovative solutions to transportation problems" through demonstration projects. These projects test the effectiveness of an improvement using low-cost, temporary materials. Expo is highly collaborative and requires dedication and cooperation among all partners: DVRPC, local elected officials, city employees, etc. Ideally, an Expo project will lead to a permanent installation.



# CHAPTER 1:

# Background

# Introduction

The Harrison Avenue Pedestrian Road Safety Audit (PRSA) was initiated by DVRPC following the Urban Land Institute's 10-minute Walk Study after the recent opening of the Cramer Hill Waterfront Park located at the corner of Harrison Avenue and E State Street in Camden's Cramer Hill neighborhood. A former landfill, the site was transformed into a 62-acre waterfront park, making it the largest park in the City of Camden. The multi-million dollar project features an inviting natural landscape with active amenities including a fishing plaza, hiking and biking trails, a kayak launch, picnic areas, playground, a sensory garden, and shoreline observation areas.



**Cramer Hill Waterfront Park** Source: DVRPC



The Kroc Center Source: DVRPC

This park is not only the reclamation of an important waterfront natural area, it's also an investment in the neighborhood and in the quality of life for Cramer Hill residents—especially for those that live close by. For the people in this community where the car-less household density is above regional average, the need for safe and easy non-motorized access to the park is critical.

The study area also includes the Kroc Center, located along Harrison Avenue directly adjacent to the new park. Run by the Salvation Army, the Kroc Center is a community hub offering programs and classes including many specifically designed for school-aged children like summer camp and an after-school program. These contiguous local amenities are destinations intended to serve the people of the neighborhood in which they are located, as well as residents from Camden City and beyond.

The Harrison Avenue Pedestrian Road Safety Audit brought together a diverse set of stakeholders to focus on connecting local citizens to these amenities by active means of transportation: walking and biking. The speed and behavior of traffic is a primary concern for anyone using the roadway on foot or by bike, and can be the determining factor in a person's decision to visit anywhere, if they have a choice. For those without options, they must be protected also.

The PRSA process identifies safety issues through an intensive and collaborative forum and uses brainstorming and local knowledge to enhance analysis findings in developing a range of improvement recommendations. This work was conducted with local roadway owners (City of Camden and Camden County) and local stakeholders from the public, private, and nonprofit sectors. Crash data used was provided by NJDOT. DVRPC conducted additional analysis using GIS. This final report represents a step toward implementation of DVRPC's 2022 *Transportation Safety Analysis and Plan*.

### **Previous Studies**

The remediation of the Harrison Avenue Landfill into the Salvation Army Kroc Community Center and the Cramer Hill Waterfront Park (Figure 2) helped serve as a catalyst for a number of planning documents focused on Cramer Hill and the neighborhood's development. The Harrison Avenue Road Safety Audit is a major opportunity to bring these studies together and inventory the concerns and potential areas for improvement consistent with the findings of the road safety audit, as shown by the Identified Issues and Potential Improvement Scenarios section.

The studies are presented in reverse chronological order based on project completion or plan publication. The studies covered by this section include the 2009 Cramer Hill NOW! Plan (Cramer Hill Plan), the 2015 DVRPC Camden County Bicycling and Multi-Use Trails Plan (County Trails Plan), the 2019 Urban Land Institute 10-Minute Walk Study of Cramer Hill Waterfront Park (ULI Study), the 2020 Department of Housing and Urban Development Transformation Plan for Ablett Village/Cramer Hill (Ablett Plan), the 2021 Camden Waterfront Trails Project (Waterfront Trails Project), the 2021 Camden County Municipal Utilities Authority's Request for Proposals for "Engineering Services Needed for Concept Development Study Harrison Avenue Green Streets and Green Infrastructure Project" (CCMUA RFP), and the New Jersey Department of Environmental Protection Project on the Harrison Avenue Landfill / Cramer Hill Waterfront Park Project (NJDEP Waterfront Park Project). Two plans relevant to the study area, the Kroc Center development plan and the City of Camden Active Transportation Network Vision Plan, were not available for review as part of this study.



Figure 2: Kroc Center and Waterfront Park in Progress, July 2018

Source: New Jersey Office of Natural Resource Restoration (ONRR)

### **NJDEP Waterfront Park Project**

New Jersey's Office of Natural Resource Restoration (ONRR), in conjunction with the Division of Coastal Engineering (DCE) and the Camden Redevelopment Agency (CRA), embarked on a journey to transform the remaining 62 acres of the former Harrison Avenue Landfill site into the Cramer Hill Waterfront Park. Even after its closure in 1971, the Harrison Avenue Landfill continued to be an eyesore and public health concern for the Cramer Hill Community because of the illegal dumping that the lack of an official landfill cap enabled. In 2006, 24 acres of the landfill were remediated for the construction of the Kroc Community Center. The Hazardous Discharge Site Remediation Fund awarded the New Jersey Department of Environmental Protection (NJDEP) \$22 million, in addition to the \$4 million in public funds awarded later, to remediate the landfill into a park. The Cramer Hill Waterfront Park project contract was awarded to JPC Group, Inc. on January 30, 2018. The project included landfill capping, natural resource restoration, shoreline protection, and park construction, with a scheduled completion date of August 2021. The park opened on November 30, 2021 and prompted additional need for a pedestrian- and bike-friendly community corridor along Harrison Avenue and E. State Street.

#### **CCMUA RFP**

The Camden County Municipality Utilities Authority (CCMUA) published a Request for Proposals (RFP) in April 2021 for engineering services on a concept development study for the Harrison Avenue Green Streets and Green Infrastructure Project. This project would focus on near-term community benefits of green infrastructure, such as a reduction in street flooding from combined sewage systems, for the Cramer Hill portion of Harrison Avenue. Outcomes are to include an inventory of existing conditions, evaluation of the cause for street flooding in the area, and the provision of alternative concept designs for mitigating flooding through Green Stormwater Infrastructure and Complete Streets. The RFP submission deadline was in June 2021 and a contract was awarded to Colliers with preapproved FEMA funding of \$23 million. The design phase will be completed around January 2023.

# **Waterfront Trails Project**

The Camden Waterfront Trails Project, prepared for Camden Community Partnership (formerly Cooper's Ferry Partnership) in January 2021, supplements existing plans for the Cramer Hill neighborhood and the Cramer Hill Waterfront Park by providing recommendations for safe, enjoyable, accessible, and low maintenance waterfront trails that connect to larger regional trail networks. The waterfront trails project is divided into the North Camden Project Area and the Cramer Hill Project Area. Construction on the North Camden Project Area trails is scheduled to begin in 2022 as part of the Link, a 33-mile trail crossing Camden County and into Gloucester County. The Cramer Hill Harrison Avenue portion is scheduled to be completed in Phase 1 of the Camden Waterfront Trails Project.

The study explored potential trail constraints of flood risk, property ownership, and nature preservation. Proposed trail routes are mapped in Figure 3. The preferred route is on-road from Harrison Avenue to 27th Street before splitting between Harrison and Polk streets to 29th and returning to Harrison Avenue from 29th to 36th Street.

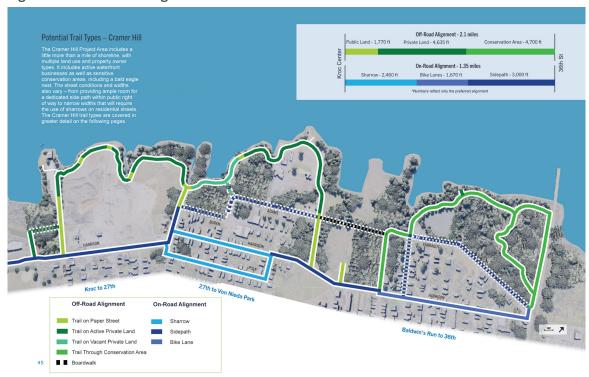


Figure 3: Potential Trail Alignments

Source: Camden Waterfront Trails Project

A rendering of the proposed Harrison Avenue Sidepath, Figure 4, shows recommended improvements like additional crosswalks at the 24th Street intersection, improved signage for wayfinding, bicycle storage and maintenance station, landscaping along the CCMUA facility, and stormwater management.

Figure 4: Proposed Harrison Avenue Sidepath



Source: Camden Waterfront Trails Project

Figure 5: Proposed Intersection Improvements at 27th St and Harrison Ave



Source: Camden Waterfront Trails Project

Recommended improvements for the intersection of 27th Street and Harrison Avenue, shown in Figure 5, list potential improvements like high-visibility pedestrian crossings, stormwater management, and bicycle crossing markings for the transition between the sidepath to the sharrow.

#### **Ablett Plan**

The Choice Neighborhoods Transformation Plan for Ablett Village/Cramer Hill (the "Plan"), funded by a grant from the Department of Housing and Urban Development (HUD), was prepared on behalf of the Housing Authority of the City of Camden and published in September 2020. The plan identified the historical and existing conditions of the Cramer Hill community, as well as the demographics and needs of its residents. It included a detailed planning process with public engagement before exploring the transformation plan's priorities and implementation. The six priorities are housing, jobs, education, safety, health, and empowerment. Recommendations that directly addressed transportation or had transportation implications were found throughout all six of the priorities.

The main focus of the project, the 220-unit Ablett Village redevelopment, would provide a variety of housing options, services, and community amenities. This redevelopment is expected to propel a transformation of the E. State Street corridor into a more pedestrian- and bike-friendly neighborhood space. To better serve the 60 percent of residents without a car and encourage more active forms of transportation, the Plan recommends solutions to address Cramer Hill's poor pedestrian and bicyclist conditions. The issues for pedestrians and bicyclists include having to share road space with fast moving and heavy through-traffic, cross at unsafe intersections, and navigate areas with poor lighting and sidewalk disrepair.

The key recommendations for E. State Street revolve around the development of the corridor as a Complete and Green Street. Complete Street improvements include better facilities for public transportation, improved and expanded lighting and sidewalks, improved bike lanes and signage, and narrowing travel lanes to 11 feet to minimize speeding. A Green E. State Street would require the construction of stormwater management facilities like rain gardens, bioswales, permeable pavement in parking lanes, tree plantings, and stormwater curb extensions. Additionally, a potential neighborhood gateway at E. State Street and River Avenue would provide opportunities to include public art, landscaping, lighting, and signage to create a sense of identity and community and provide safety benefits.

### **ULI Study**

In October 2019, soon after the death of a 17-year-old pedestrian killed at the intersection of Harrison Avenue and E. State Street, the Urban Land Institute (ULI) conducted a 10-minute walk study of the blocks around the then mid-construction Cramer Hill Waterfront Park.

The Camden-based nonprofit, Cooper's Ferry Partnership (now Camden Community Partnership) asked ULI to

consider the following in drafting their recommendations: short-term park management and opportunities in the context of a city with limited resources, short-term infrastructure management opportunities that incorporate high-quality access points to the park and potential mitigation strategies, and long-term park management and opportunities that promote the equitable financial success of the park and its surrounding community.

The study included a walk audit and 45 interviews with residents, nonprofits, developers, and city officials. ULI grouped their recommendations along a timeline of immediate action (pre-park opening), short-term action (0-5 years), and long-term action (5–10 years). Because the short- and long-term actions called for transportation network improvements and a focus on pedestrian and cyclist infrastructure, these recommendations prove most relevant to the Harrison Pedestrian Road Safety Audit. Recommendations included improving the integration of pedestrian and cyclist networks across Harrison Avenue, E. State Street, the Circuit Trail, the Kroc Center, and surrounding public transit facilities. Special attention should be paid to the pedestrian access routes along Harrison Avenue and E. State Street that are subject to frequent flooding and create uninviting and hazardous walking conditions for pedestrians along high-speed vehicular traffic. ULI experts also recommended traffic calming, such as in the form of street trees and a painted bike lane, on Harrison Avenue and E. State Street. A specific improvement recommendation identified the creation of a gateway for Cramer Hill Waterfront Park at the E. State Street bridge. The E. State Street pedestrian- and cyclist-only bridge, which connects Cramer Hill to North Camden, was notably underused. Its proximity to Cramer Hill Waterfront Park presents an opportunity to encourage more pedestrian foot traffic and create a sense of place.

# **County Trails Plan**

DVRPC's Camden County Bicycling and Multi-Use Trails Plan (2015) is the culmination of efforts that began in 2008 to connect non-motorized users, like bicyclists, to various recreation, education, and employment attractions within Camden County. Other projects related to this work include: the Circuit, a William Penn Foundation funded project creating regional trails; the Cross County Connection TMA Bicycle Inventories; and local projects such as the Camden Greenway and Municipal Bicycle and Pedestrian Plans. The Camden



**Standard Bicycle Lane Design in Camden City** Source: DVRPC

County Bicycling and Multi-Use Trails Plan project conducted an inventory of existing bike and trail facilities, located county attractions (such as schools and colleges, bodies of water, and retail districts and employment centers), and identified trail alignments along proposed greenways such as Cooper River Park and the Camden Greenway. The plan also included a web survey for public input. It identified the purposes for biking or walking, the factors that prevent biking and walking trips, and the improvements that could be made to encourage more walking and biking. This input informed the plan's network recommendations, which include on-road bicycle facilities along Harrison Avenue and E. State Street.

### **Cramer Hill Plan**

The Cramer Hill NOW! Plan, led by the Cramer Hill CDC and completed in 2009, outlined short- and long-term goals for the community's economic, environmental, and social well-being. These goals incorporated key transportation recommendations for its street and transit network, with a particular focus on E. State Street and Harrison Avenue. E. State Street was identified as needing to be redesigned to address the current inequitable distribution of space to vehicles, which hosts extra-wide lanes that encourage dangerous speeding. Harrison Avenue, while not as severe as E. State Street, has many of the same issues. The Cramer Hill Plan identified a desire to transform E. State Street into a more welcoming and pedestrian- and bike-friendly gateway into Cramer Hill. Other goals identified include the following: encouraging use of public transportation by improving bus stops and constructing a light rail stop for Cramer Hill, mitigating negative transportation and infrastructure impacts by reducing truck traffic in the

neighborhood and redesigning transportation networks with the rail corridor in mind, and improving overall bike and pedestrian accessibility by establishing a bike advocacy group, establishing multi-use trail networks, and improving overall streetscape design.

### **Corridor Selection**

In anticipation of the opening of the Cramer Hill Waterfront Park, the main pedestrian entrance to the park was the focal point of the PRSA. From the initial field visit by the project team it was concluded that to best consider safe vulnerable user access to the park the study area should be broadened. E. State Street was extended from the foot of the State Street Bridge through the intersection with Harrison Avenue to the intersection with River Avenue. This length of E. State Street captures the Centennial Village housing development located across from the Waterfront Park along eastbound E. State Street. It is important to note that despite the short distance between the housing entrance to the park across E. State Street, no access is provided to the park to accommodate these residents, rather, they must walk the ½ mile east to the Harrison Avenue intersection to enter the park. East of Harrison Avenue is the Ablett Village housing development, also located along eastbound E. State Street, and extends to the intersection with River Road. These two developments are the population centers closest to the park.

As mentioned, the Kroc Center is situated along Harrison Avenue directly north of the park, and is also a local destination. Along northbound Harrison Avenue and across from the Kroc Center is a residential neighborhood which extends from 17th Street to 27th Street, and also includes a green space park. To ensure access to both the Waterfront Park and the Kroc Center, the Harrison Avenue portion of the study area was extended from the intersection with E. State Street north to 27th Street.

# What is a Pedestrian Road Safety Audit?

A proven safety countermeasure, road safety audits (RSA) are a tool championed by the Federal Highway Administration to improve safety on state and local roads. RSA's depart from more typical safety reviews by using a multidisciplinary team that looks beyond motorized road users only to consider all road users and human factors that may contribute to unsafe road conditions. DVRPC has been performing road safety audits in the Greater Philadelphia region since 2006.

The aim of an RSA is to answer the following questions: What elements of the road may present a safety concern: to what extent, to which road users, and under what circumstances? What opportunities exist to eliminate or mitigate identified safety concerns? A pedestrian-focused RSA considers these questions as they pertain to non-motorized users of the system—pedestrians and bicyclists—also known as vulnerable users. The PRSA process is guided by FHWA's

PEDESTRIAN AND BICYCLIST ROAD SAFETY AUDIT (RSA) GUIDE AND PROMPT LIST



Source: Federal Highway Administration

Pedestrian and Bicyclist Road Safety Audit (RSA) Guide and Prompt Lists. Updated in 2020, this guide combines the pedestrian-only guide (2007) with the bicyclist-only guide (2012) into a single resource. Although the guide addresses pedestrian and bicyclist safety, they are distinct modes with specific safety concerns. It is important to think of the system as-a-whole, considering all modes and the needs of all people involved. This holistic approach helps balance demand and promotes safety.

# **The PRSA Process**

Prior to the COVID-19 pandemic, DVRPC's Pedestrian Road Safety Audit process would typically accomplish the pre-audit meeting, field visit, and post-audit meeting all in one day. Sensitive to virus concerns, DVRPC developed a hybrid approach which involved holding both the pre-audit and post-audit meetings virtually, and the optional field

visit in-person. To accommodate those that chose not to participate in-person for the field visit, we developed a web tool that allowed stakeholders to log comments on a map of the study area either from a desktop or via mobile device. Our intent was to enable stakeholders to conduct an independent evaluation of the corridor either while visiting the study area, or via the internet. The web tools developed for this process will be used in future DVRPC RSA efforts.

The pre-audit meeting—at which the audit team reviewed location characteristics and crash details along with related data—was held virtually via Zoom on June 4, 2021. Fourteen stakeholders attended the pre-audit meeting. See Appendix A for the pre-audit presentation. The in-person field audit was held on Wednesday, June 16, 2021 from 10 a.m. to 12 noon. The audit team met in the Kroc Center parking lot, and outfitted with safety vests conducted a survey of the study area on foot, led by DVRPC staff. The audit team stopped at key locations where safety problems were particularly acute to observe conditions and record comments either on the mobile app or with pen and paper. Finally, on Thursday, July 1, 2021, the post audit meeting was held virtually via Zoom and was attended by 18 stakeholders. At this meeting DVRPC staff led the stakeholders through a review of the findings from the field audit to finalize study area problem descriptions and locations, which included discussion of potential improvements. The full participants list can be found in Appendix B.

Staff then incorporated stakeholder recommendations gathered at the post-audit meeting into a draft table of identified problems and potential improvements scenarios to be included in the final report. This table was shared with stakeholders for review and sign-off.

### CHAPTER 2:

# **Existing Conditions**

# **Study Area Corridors: Description and Analysis**

The Harrison Avenue Road Safety Audit addressed safety along two intersecting corridors: Harrison Avenue from E. State Street to 27th Street and E. State Street from the Cooper River bridge to River Avenue. This section of Harrison Avenue is three-quarters of a mile and the section of E. State Street is one-half of a mile. Found near the confluence of the Cooper River with the Delaware River, the area is a mix of wetlands with more developed tracts, including important sub regional destinations. The hydrology of the area makes it prone to flooding in heavy rainfall.

The area is characterized by several key landmarks, primary among them the new Cramer Hill Waterfront Park, which has its main pedestrian access at the intersection of State Street and Harrison Avenue. The Kroc Center is located further north on Harrison Avenue and, like the new waterfront park, serves as an important community center for the City of Camden and nearby municipalities. Ablett Village and Centennial Village are both subsidized housing developments along the south side of State Street. The east side of Harrison Avenue, across from the waterfront park and Kroc Center, is a mix of single-family homes, undeveloped lots, recreational land, and a large towing company facility.

# **Study Location**

The study area, shown in Figure 6, is located in the Cramer Hill neighborhood of Camden, NJ. The Cramer Hill neighborhood is in the northeast section of Camden, separated from Downtown Camden to the west by the Cooper River, and from neighborhoods to the south and east by the Conrail rail yard.

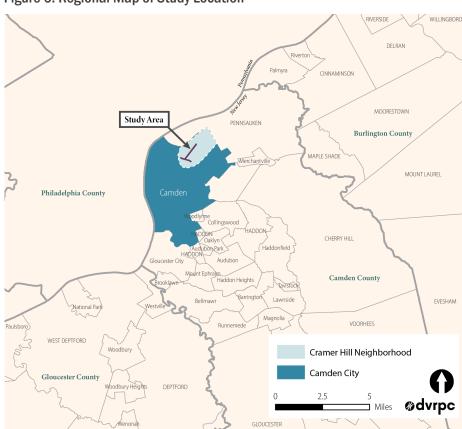


Figure 6: Regional Map of Study Location

HARRISON AVENUE PEDESTRIAN ROAD SAFETY AUDIT

Source: DVRPC

# **Roadway Characteristics**

Harrison Avenue between E. State Street and 27th Street is a two-way, two-lane facility owned by the City of Camden. The roadway from E. State Street to 25th Street is 44 ft across, curb-to-curb, with bike lanes in both directions and a parking lane on the east side. The southbound bicycle lane, which does not have an adjacent parking lane, is unusually wide at 8 ft. The other lanes are more typical: 11 ft travel lanes, 9 ft parking lane, and a 5 ft northbound bicycle lane. The bicycle lanes in both directions are conventional, meaning they do not have any form of protection or buffers from vehicular traffic. From 25th Street to 27th Street, the cross-section of Harrison Avenue changes. It narrows from 44 ft to 28 ft, losing the parking lane and both bicycle lanes (sharrows encourage drivers to continue to share the road with bicyclists). This four-block stretch lacks any lane markings, including a centerline, but maintains one lane of traffic in each direction. Since the roadway width is lost on the west side of the road, there is a severe shift from the centerline south of 25th Street to the implied centerline north of the intersection.

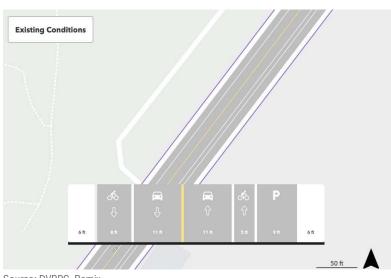


Figure 7: Harrison Avenue Existing Conditions

Source: DVRPC, Remix

Six foot sidewalks are provided on either side of Harrison Avenue at the E. State Street intersection, but they narrow further north and in some locations disappear or fall into unusable disrepair on the east side of the roadway. There are no sidewalks on either side of Harrison Avenue north of 25th Street. There are three marked crosswalks with stop controls across Harrison Avenue at 20th, 22nd, and 24th Streets. Between E. State Street and 20th Street, there are no pedestrian crossings and no stop controls — a distance of 1,600 ft.

E. State Street from River Avenue to the Cooper River bridge is a two-way, two-lane facility owned by Camden County. The roadway is 54 ft across, curb-to-curb, and includes parking lanes in both directions. West of Harrison Avenue, the roadway includes buffered bike lanes. Lane widths are typical west of Harrison Avenue: 11 ft travel lanes, 8 ft parking lanes, and 5 ft bicycle lanes with a 3 ft buffer. East of Harrison Avenue, the bike facilities end and the parking lanes widen to approximately 15 ft

There is a 5 ft sidewalk on the south side of the roadway with a 4 ft landscaping buffer along the curb. This pedestrian facility is reflected on the north side of the street east of Harrison Avenue, but not west. The landscaping buffer gives way to pavement in some sections west of Harrison Avenue. There are four well-marked crosswalks over E. State Street in the study area, at Harrison Avenue, Pierce Avenue, Wayne Avenue, and River Avenue. All of these crosswalks have some form of high-visibility treatment, such as signage, pedestrian-actuated or automatic signals, and continental striping in which wide white stripes run parallel to the curb. Two additional crosswalks, one west of Centennial Village and one between Wayne and Harrison Avenues, consist only of fading, conventional striping.

Existing Conditions

Existing Conditions

Festivate St.

Festivate

Figure 8: E. State Street Existing Conditions

Source: DVRPC, Remix

# **Traffic Volumes**

Vehicle counts were taken in the study area in January 2019 (Harrison Avenue and State Street) and in January 2021 (E. State Street and the State Street Bridge). East of Harrison Avenue, E. State Street traffic volumes were less than 5,000 annual average daily traffic (AADT) in each direction, and as little as 2,200 AADT in the eastbound direction. The 2021 count at the State Street Bridge recorded 8,900 AADT total (both directions combined). Harrison Avenue traffic volumes were 4,300 AADT southbound and 4,700 AADT northbound.

Pedestrian and bicycle counts were taken most recently in the study area in September 2020 and May 2021. Bicycle counts taken in front of the Kroc Center found 11 average daily bicyclists (ADB) northbound passing this spot; this was down from counts in October 2017 (27 ADB) and in April 2015 (45 ADB). Bicycle traffic was higher at the State Street Bridge with 58 ADB on the Old State Street Bridge path in 2021. 188 daily pedestrians were counted in the same spot. An earlier pedestrian count from April 2015 found 264 pedestrians passing the Kroc Center on the west side of Harrison Avenue, and 152 pedestrians passing the same spot on the east side.

### **Transit Service**

The study area is served by the 419 and 452 NJTransit bus routes. E. State Street at Harrison Avenue is served by both routes and is the highest ridership stop in the study area, as reported by NJ Transit during the road safety audit. Both routes have additional stops on State Street at River Rd, Pierce Avenue, and Centennial Dr. Both routes also stop on Harrison Avenue in front of the Kroc Center. This stop serves as a layover facility for NJTransit.



NJ Transit Bus Stop Source: DVRPC

# **Demographics**

The study area is located in census tract 6009 in Camden City, Camden County. The percent of people that identify as one or more racial minorities is above average for the region, at nearly 70 percent. In addition, those that identify as an ethnic minority (of Hispanic or Spanish origin), is also 70 percent, which is well above average for the region. Nearly three-quarters of the tract is low income (well above average) and nearly one-quarter report having limited English proficiency, also well above the regional average.

Youth are also well-represented in the census tract, with nearly 40 percent of residents under 18 years old, well above the regional average and a strong indicator of who might be visiting the new Cramer Hill Waterfront Park. The percentage of people with one or more physical and/or mental disabilities is above average for the region at 17.5 percent.

### CHAPTER 3:

# **Corridor Analysis**

# **Study Area Crash Findings**

A crash analysis of the study area investigated crash trends in the most recent five years of data available at the time of the road safety audit. This included reportable crashes from 2015–2019; made available by NJDOT. A reportable crash in New Jersey is any crash that results in personal injury or a minimum of \$500 of property damage. Importantly, many crashes in the NJDOT dataset are missing longitude/latitude data making locating the crash within the study area difficult; locating the crash data using SRI/milepost data helps to lower the number of

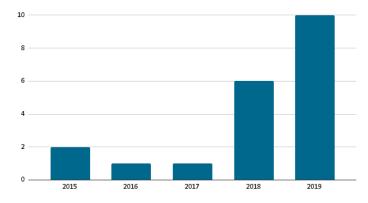
unlocated crashes, but it is not as accurate.

Twenty reportable crashes, shown in Figure 9, occurred in the study area during the five- year period 2015–2019, resulting in one fatality and 17 injuries, and involving 52 people. Most of these crashes occurred toward the end of the five-year period, in 2018 and 2019. Given the low overall number of crashes, it is not possible to confidently identify a trend from this uptick (it could simply be statistical "noise"). Continued monitoring of crash trends at this location would help to understand if this trend is a sustained uptick or if it will revert to the mean.

Of the 20 crashes from 2015 to 2019 in the study area, rear-end, hit fixed object and angle crashes were the most common, as shown in Figure 10. Two of the 20 crashes involved pedestrians, including the single fatality. None involved bicyclists. Over half of the crashes (14) occurred at an intersection, the rest occurred at midblock locations.

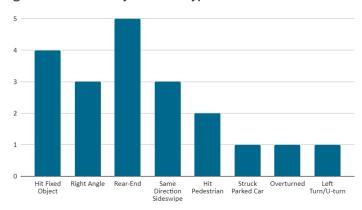
Other factors in crashes that are consistently tracked in police crashes records include the time of day, day of the week, light conditions,

Figure 9: Crashes by Year 2015-2019



Source: NJDOT 2015-2019

Figure 10: Crashes by Collision Type 2015-2019



Source: NJDOT 2015-2019

weather, and road surface conditions. Of the 20 crashes from 2015 to 2019 in the study area, 12 occurred during either the a. m. peak (6:00 a.m. to 9:00 a.m.) or the p.m. peak (4:00 p.m. to 7:00 p.m.). Of the remaining crashes, three crashes occurred during the day between the peaks, while the remaining five occurred between 7:00 p.m. and 6:00 a.m. Crashes were split fairly evenly between days of the week, ranging from two on Thursday and Friday to four on Wednesday and Saturday. Crashes were split between daytime and nighttime: 9 occurred in daylight and 11 under either dark or dawn conditions. More crashes occurred on dry road conditions (11) and under clear skies (12) than in wet or icy road conditions (8) and rain (7). This area of Camden is prone to flooding in heavy rainstorms; while there is not an unusually high number of crashes that occurred in rainy conditions, this may nevertheless be a factor in those crashes that did occur.

# **Crash Concentration Areas**

In much of the study area, shown in Figure 11, the total number of crashes is too low to draw inferences about crash trends. However, there are a few areas of concern in places where concentrations of crashes have occurred.



Figure 11: Map of Crash Severity

Source: DVRPC, NJDOT 2015-2019

### **State Street & Harrison Avenue**

The intersection of State Street and Harrison Avenue, shown in Figure 12, experienced the greatest number of crashes of any location in the study area, accounting for 11 of the 20 crashes, including the fatal pedestrian crash. Contributing circumstances to these crashes included several instances of unsafe speeds and improper passing, indicating that drivers on State and Harrison are executing unsafe overtaking maneuvers and traveling above the 25 mph speed limit. In addition, a number of crashes involved turning vehicles, which may be addressed by calming turning movements at the intersection. Unsafe driver behaviors like speeding, overtaking, and taking turns at high speeds were observed by participants during the road safety audit.

COLLISION TYPES

Rear-End
Left Turn
Sideswipe (Same Dir.)
Angle

Rear-End
KSI Crash

Rear-End
KSI Crash

Figure 12: Crash Diagram of Harrison Avenue and E. State Street

Source: DVRPC, NJDOT 2015-2019, Nearmap 2021

### **Other Crash Sites**

Six crashes occurred on Harrison Avenue between E. State Street and 27th Street, spread out along the corridor. All were either property damage only crashes or resulted in possible injuries (also known as "complaint of pain"). Three crashes occurred on E. State Street between Harrison Avenue and River Avenue. All were possible injury crashes.

Miles

# **Observed Travel Speeds**

Prior to the audit, the study team measured free-flow travel speeds at key locations throughout the study area. A minimum of ten speed readings were recorded per location and subsequently analyzed to determine an average speed and an 85th percentile speed for each location.

Travel speeds along Harrison Avenue are generally around the 25 mph speed limit by the Kroc Center (see Figure 13). Drivers travel faster further south along the new Cramer Hill Waterfront Park and as they approach the E. State Street intersection. This stretch of Harrison Avenue does not have any traffic controls which may curb speeding.

Travel speeds along E. State Street were observed consistently exceeding the speed limit (25 mph) averaging well above 30 mph while 85th percentile speeds surpassed 35 mph (see Figure 14). This was despite the presence of a police vehicle at the base of the State Street Bridge during observations. The elevated travel speeds along E. State Street suggest that the road is not designed to encourage compliance with the speed limit.

Figure 13: Harrison Avenue Observed Travel Speeds

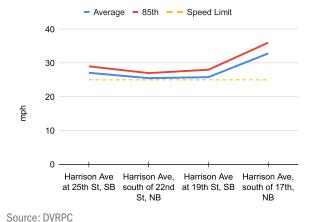
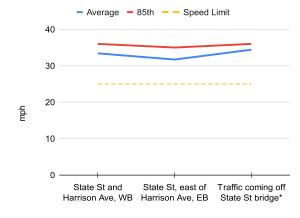


Figure 14: State Street Observed Travel Speeds



Source: DVRPC

### CHAPTER 4:

# **Findings and Recommendations**

# Introduction

The following section summarizes the issues, potential improvement scenarios, and next steps for Harrison Avenue PRSA. The analysis is organized by location and includes photos where appropriate to help understand the identified issues. This list has been vetted by the audit team.

The Next Steps column in Tables 1-5 lists the likely primary agency responsible for taking action, and identifies concurrent complementary plans which should be considered when advancing these recommendations. Given fiscal constraints and competing priorities it is assumed that these recommendations will be addressed within existing programs where appropriate, though some may require a new contract or special funding where more significant improvements are needed.

# **Alignment with Planned Improvements/Projects**

The Cramer Hill neighborhood, as discussed in the Previous Studies section of the Introduction, has been subject to many planning efforts in recent years. The Harrison Avenue Pedestrian Road Safety Audit presents an opportunity to emphasize actions that are consistently identified across existing plans and better align them with the goal of improving safety along the corridor. To do so, relevant plans and projects are identified in the Identified Issues and Potential Improvement Scenarios section (Tables 1-5) under the column for "concurrent plan opportunities."

The following studies are listed as a concurrent plan opportunity: the 2015 DVRPC Camden County Bicycling and Multi-Use Trails Plan (County Trails Plan), the 2019 Urban Land Institute 10-Minute Walk Study of Cramer Hill Waterfront Park (ULI Study), the 2020 Department of Housing and Urban Development Transformation Plan for Ablett Village/Cramer Hill (Ablett Plan), the 2021 Camden Waterfront Trails Project (Waterfront Trails Project), and the 2021 Camden County Municipal Utilities Authority's Request for Proposals for "Engineering Services Needed for Concept Development Study Harrison Avenue Green Streets and Green Infrastructure Project" (CCMUA RFP).

For road work or flood management related improvements on Harrison Avenue, the CCMUA RFP will be the most relevant concurrent plan since it involves major road work. Any issue related to bike infrastructure is also being considered by the County Trails Plan and the Waterfront Trails Project. Speed management and traffic calming are two issues that most concurrent plans and projects focus on. Issues relating to pedestrian conditions will likely involve the Ablett Plan or the ULI Study.

There were no conflicts explicitly identified between DVRPC's proposed improvements and the proposed improvements from previous plans. Any conflicts that may be found should defer to the PRSA findings since PRSA solutions consider safety to be the highest priority and since these findings are the most recent.

# **Experimental Pop-Up**

DVRPC had the opportunity to put some of the recommendations from the road safety audit to the test through the Commission's Experimental Pop-Ups (Expo) program, in partnership with Camden County, Camden City, and CCP. Expo uses quick-build strategies in partnership with local roadway owners to test innovative infrastructure solutions to safety and operational challenges. In the case of Harrison Avenue and E. State Street, this will include creating parking-separated bike lanes and addressing pedestrian safety concerns at bus stops and key intersections, particularly the intersection of State and Harrison. For instance, the Expo project seeks to calm turning movements by creating a curb extension at the northwest corner of the intersection. This intervention has the effect of making the movement of turning vehicles slower and more predictable.

The goal of Expo projects is to test these new solutions through rapidly deploying low-cost interventions. As of the time of writing this, the Expo is expected to be installed by the end of 2022. Before and after speed and volume data will be taken as well as feedback from the community and other stakeholders. This will help to inform permanent changes to the roadway under construction projects planned for Harrison Avenue in the near future, and eventually E. State Street as well.

THIS PAGE INTENTIONALLY LEFT BLANK

# **Identified Issues & Potential Improvement Scenarios**

Table 1: Intersection of E. State Street & Harrison Avenue

	D	etails	Potential Improvement Scenario	Next Steps
1		At Hargrove business entrance along Harrison Avenue NB existing roadway legend warning of driveway ahead provides insufficient notice for users (hand painted, not MUTCD compliant traffic control device).  E. State & Harrison	Add appropriate signs and improve roadway striping with retroreflective material, and an MUTCD approved design.	Responsible Party: Property owner
2		Missing turning accommodations for bicyclists and micromobility users turning from E. State Street onto Harrison Avenue NB, forcing vulnerable users to mix with automobile traffic (audit team witnessed woman on mobility scooter attempting this movement).  E. State & Harrison	Incorporate bicyclist/ micromobility accommodations (striping, signs, etc.) into traffic calming improvements at intersection, consider a protected intersection design.	Responsible Party: Camden County  Concurrent Plans: County Trails Plan; Waterfront Trails Project; ULI Study; Ablett Plan; Cramer Hill Plan
3		The wide turning radius and alignment of the Harrison/ E. State intersection enables/encourages Harrison Avenue SB drivers to roll through the stop sign for better sight distance of E. State Street traffic, and allows above-the-speed-limit left turns onto Harrison Avenue NB (photo shows a "human bump-out" on the footprint of where a concrete bump-out would likely be placed).  E. State & Harrison	Incorporate traffic calming improvements (e.g., travel lane narrowing, etc.), upgraded pedestrian crossings (shortened crossing distance, add missing crossings), and bicyclist accommodations (e.g., bike lane).	Responsible Party: Camden County/ Camden City  Concurrent Plans: County Trails Plan; Waterfront Trails Project; ULI Study; Ablett Plan; Cramer Hill Plan
4		Existing bus stop amenities need review given unusual traffic conditions (e.g., speeding).  E. State & Harrison	Work with NJTransit to identify needs and opportunities for bus pull-outs and address encroachment on pedestrian space.	Responsible Party: NJTransit  Concurrent Plans: Cramer Hill Plan; Ablett Plan

	D	etails	Potential Improvement Scenario	Next Steps
5	Ungraded manhole cover of street creates a potent		Through maintenance, replace	Responsible Party: Camden County
		safety hazard.  E. State & Harrison	with bike-friendly manhole cover.	Concurrent Plans: County Trails Plan; Waterfront Trails Project
	Safe pedestrian crossings are not prioritized in current intersection design: crossings are unnecessarily long, not perpendicularly aligned, and no pedestrian crossing is provided on the west side of the intersection for crossing E. State Street to access the park — as a result this facility fails to adequately raise the pedestrian profile and properly protect users.  E. State & Harrison  revisit intersection design anarrow travel lanes, better align crossings, and use la curb ramps which align with the width of the crossing stripes, install continental style crosswalk striping w/ retroreflective material to improve nighttime visibility. These improvements should be part of an intersection redesign that incorporates narrowing via curb extension.		crossing of E. State Street on west side of intersection, revisit intersection design to narrow travel lanes, better	Responsible Party: Camden County, Camden City
6			curb ramps which align with the width of the crossing stripes, install continental-style crosswalk striping w/retroreflective material to improve nighttime visibility. These improvements should be part of an intersection redesign that incorporates lane narrowing via curb extensions and complementary design	Concurrent Plans: County Trails Plan; Waterfront Trails Project; ULI Study; Ablett Plan; Cramer Hill Plan
7	Several areas of stormwater pond litter blocking drainage inlets.  E. State & Harrison	ing along road edge due to debris/	Increase frequency of routine maintenance.	Responsible Party: Camden City, CCMUA
8	Intersection illumination is insufficient for safe vulnerable user access: currently only two cobra style lights for whole intersection — cobras benefit drivers only; Harrison Avenue SB has no street lights.		Research lighting best practices and add upgrades; install pedestrian-scale	Responsible Party: Camden City
	E. State & Harrison		lighting to complement auto- focused lighting.	Concurrent Plans: Ablett Plan
9		Roadway edge of E. State Street EB at Harrison Avenue intersection: flooding, overgrowth, pedestrian crossing RRFB sign is obstructed by telephone poll and is not faced perpendicular to oncoming traffic.  E. State & Harrison	Reposition signs to make properly visible; clear drainage and trim overgrowth and address both through regular maintenance.	Responsible Party: Camden City

Table 2: Harrison Avenue, Waterfront Park-Adjacent

	De	tails	Potential Improvement Scenario	Next Steps
1		Missing arrow head on bicyclelane roadway symbol.  Between 17th & 18th	Address through maintenance during next installment of annual striping and/or resurfacing program.	Responsible Party: Camden City
•		Ponding at vehicle entrance to the park along Harrison Avenue SB.	Consider regrading as part of any	Responsible Party: Camden City, CCMUA
2	Between E. State & 17th	proposed construction project.	Concurrent Plans: CCMUA RFP	
3		Missing sidewalk block along Harrison Avenue NB.  Between E. State & 17th	Replace missing sidewalk section.	Responsible Party: Property owner
4	Poor lighting in general, especially and bicyclists).	y for vulnerable users (pedestrians	Research lighting best practices for vulnerable users and drivers, and add upgrades: install	Responsible Party: Camden City
	Between 17th & 18th		pedestrian-scale lighting to complement auto-focused lighting.	Concurrent Plans: Ablett Plan
	Field data collection revealed speeds above posted limits, and speeding traffic was observed during the audit event; this long uninterrupted stretch of roadway allows drives to travel above the speed limit compromising safety for all non-motorized users.		Consider traffic calming to regulate speed and discourage aggressive driving.	Responsible Party: Camden City
5				Concurrent Plans: County Trails Plan; CCMUA RFP; ULI Study; Ablett Plan

Table 3: E. State Street, Harrison Avenue to the State Street Bridge

Details	Potential Improvement Scenario	Next Steps
Crosswalk striping faded over E. State Street at Centennial Dr, no landing—curb ramp or sidewalk—on north side across from Centennial Drive.  Centennial Drive	Improve crossing with continental-style crosswalk striping, create a connection (sidewalks, etc.) to nearby bus stop along E. State Street WB.	Responsible Party: Camden County
No streetlights along E. State Street EB (south side).  Between State Street Bridge & Harrison Avenue	Add lighting and consider adding pedestrian-scale lighting to complement roadway lighting.	Responsible Party: Camden County  Concurrent Plans: Ablett Plan
Missing pedestrian access from Centennial Village entrance to Cramer Hill Waterfront Park; no direct pedestrian connections to Waterfront Park along E. State Street.  Centennial Drive	Consider completing the local network by filling in the gaps in pedestrians and bicycle facilities, including at the park access along E. State Street. Include traffic calming measures to improve the safety and comfort of pedestrians and cyclists.	Responsible Party: Camden County  Concurrent Plans: Ablett Plan
Missing sidewalk along E. State Street WB, pedestrians must walk in roadway shoulder.  Between State Street Bridge & Harrison Avenue	·	Responsible Party: Camden County  Concurrent Plans: Ablett Plan

	Details		Potential Improvement Scenario	Next Steps
5		Littered/poorly maintained sidewalk, debris/trash blocking stormwater drainage grates along E. State Street EB between Centennial Drive and Harrison Avenue.  Between State Street Bridge & Harrison Avenue	Address through maintenance, and review maintenance protocols.	Responsible Party: Camden City/property owners
•	E. State Street traffic (east and west-bound) observed exceeding the posted speed limit (staff collected speed data, and audit team observed speeding during the field audit).  Between State Street Bridge & Harrison Avenue  Integrate traffic calming along E. State Street as part of the recommended pedestrian access improvements.		Responsible Party: Camden County	
6			recommended pedestrian	Concurrent Plans: Ablett Plan

Table 4: E. State Street, Harrison Avenue to River Avenue

	De	tails	Potential Improvement Scenario	Next Steps
0		Deteriorated sidewalk along E. State Street WB.  Ablett Village Drive	Work with property owner to repair damaged sidewalk blocks.	Responsible Party: Property owners/Ablett Village
2		Vehicle blocking sidewalk, possibly a recurring issue.  Ablett Village Drive	Enforce parking regulations, educate locals on the importance of no-parking zones.	Responsible Party: Camden City, property owners
3		Flooding, pavement condition issues.  Ablett Village Drive	Consider regrading as part of any proposed construction project.	Responsible Party: Property owners/Ablett Village  Concurrent Plans: Ablett Plan
4		Utility poles block sidewalk.  Ablett Village Drive	Investigate relocation with roadway owner and utility company.	Responsible Party: Camden County, utility company

	Details	Potential Improvement Scenario	Next Steps
5	Many street crossings lack sufficient curb ramps; some crossings are unnecessarily long.  Between Harrison Avenue & River Avenue	Evaluate existing crossings and prioritize installation of additional, and safer, pedestrian facilities.	Responsible Party: Camden County  Concurrent Plans: Ablett Plan
6	Missing bike lanes in both directions along E. State Street from Harrison Avenue east to River Avenue.  Between Harrison Avenue & River Avenue	Add bike lane striping to continue bicyclist access.	Responsible Party: Camden County  Concurrent Plans: Ablett Plan

Table 5: Harrison Avenue, 17th Street to 27th Street

	De	etails	Potential Improvement Scenario	Next Steps
1		No crossing accommodation from west side of street to east, missing ADA ramps.  19th & Harrison Avenue	Add continental crosswalks and ADA ramps at each curbline.	Responsible Party: Camden City  Concurrent Plans: Ablett Plan; ULI Study; CCMUA RFP
2	Line striping needs to be updated  19th & Harrison Avenue	, needs reflectivity.	Address through maintenance and/or re-striping program.	Responsible Party: Camden City Concurrent Plans: CCMUA RFP
3		Curb is overgrown along Harrison Avenue NB.  Between 26th & Cambridge	Address through maintenance.	Responsible Party: Property owners
4		No sidewalks on either side; no intersection crossing amenities.  Between 24th & 27th	Add missing sidewalk sections; add pedestrian crossings amenities where appropriate.	Responsible Party: Property owners, Camden City  Concurrent Plans: Ablett Plan; ULI Study; CCMUA RFP

	De	tails	Potential Improvement Scenario	Next Steps
5		Bike lane needs attention, presence of debris (gravel and glass) creates a hazard.  18th & Harrison Avenue	Address through maintenance.	Responsible Party: Camden City  Concurrent Plans: County Trails Plan; Waterfront Trails Project
6		Missing trail blazers and appropriate pavement markings for access to the Circuit Trail.  24th & Harrison Avenue	Add appropriate upgrades and trailblazers to make the Circuit Trails connection.	Responsible Party: Camden City  Concurrent Plans: CCMUA RFP; County Trails Plan; Waterfront Trails Project
7		Pedestrian access to the Kroc Center at intersections presents challenges for pedestrians, especially disabled pedestrians (e.g., local senior community).  Between 19th & 20th	Engage with local seniors to assess needs and develop plan for improvements.	Responsible Party: Camden City Concurrent Plans: Ablett Plan; ULI Study
8	Residents report speeding and ag Harrison Avenue (echoed by the accompliance (illegal passing), exist considered ineffective, drivers obscontrolled intersection at Kroc Ce	udit team), and reportedly low ting traffic control measures served disregarding the stop nter entrance.	Use traffic calming as part of a larger corridor plan to address access and speed issues along Harrison Avenue.	Responsible Party: Camden City  Concurrent Plans: CCMUA RFP; County Trails Plan; Waterfront Trails Project

	De	etails	Potential Improvement Scenario	Next Steps
9		Narrowing of Harrison Avenue north of 25th St combined with a shift in the centerline creates alignment issues which present safety concerns; site of a fatal crash where speeding was a factor.  Between 25th & 27th	Explore cross-section realignment as part of corridorwide improvement plan.	Responsible Party: Camden City Concurrent Plans: CCMUA RFP
0		Between 17th and 21st Streets along Harrison Avenue NB the sidewalk is either missing completely, obstructed, or overgrown to the point of making it impassable, also there are no pedestrian crossings.  Between 17th St & 21st St	Add missing sidewalk sections, reveal and maintain overgrown sections, remove obstructions. Install crosswalks and ADA ramps, where determined feasible.	Responsible Party: Camden City; Property owners  Concurrent Plans: CCMUA RFP; ULI Study

#### **Road Owners' Response**

The Road Owner Response is a response to the actions and responsibilities outlined for each safety concern listed in the audit report. This documentation is helpful when there are upcoming projects that will address certain concerns or when the road owner and design team do not plan on addressing all of the safety issues. Details on design and installation are subject to change based on engineering review and available budget. The Road Owner Response can be found in Appendix C.

#### **CHAPTER 5:**

### Conclusion

The Harrison Avenue PRSA was conducted to identify issues that compromise safety for current and future users of the Cramer Hill Waterfront Park and surrounding study area. The audit process and the resulting final document highlight the safety issues posed to drivers, transit users, pedestrians, and bicyclists and present the needed improvements by location organized for systematic implementation by the roadway owner. Some of the strategies identified can be implemented through routine maintenance; all will be constrained by available time and budgetary priorities.

Officials from Camden County and the City of Camden, the two road-owning agencies, were engaged during the audit process, and have been especially integral to the DVRPC Expo program. Though it's not uncommon to have smaller maintenance issues addressed in a short time following the field audit, the Harrison Avenue PRSA being followed by a very comprehensive Expo project is a rare opportunity.

Although improving crash safety for all study area users is always the overall goal, the Harrison Avenue PRSA paid special attention to the needs of vulnerable users: pedestrians, bicyclists, micromobility users, and transit users. The Expo project installations are designed to make the study corridor safer through improvements like turn calming, upgraded pedestrian crossings, bicyclists accommodations, and lane delineations, among others. These changes directly address the vulnerable road user safety issues identified through the audit process.

Engineering strategies are most effective when part of a coordinated effort. The Expo project offers the opportunity to pair infrastructure changes with education on road safety that includes diverse stakeholders, including the City, community organizations, nonprofit groups, and public safety. New Jersey's pedestrian decoy program is one example of an "edu-forcement" program conducted by law enforcement to educate drivers on pedestrian safety.

The Harrison Avenue PRSA coincides with several important local initiatives: the plan by the Camden County Municipal Utilities Authority to upgrade the sewer line beneath Harrison Avenue, and the recent award of federal funds to develop the Ablett Village housing complex along E. State Street. Both projects provide opportunities to advance audit recommendations that would greatly enhance the safety of study area residents while also accomplishing their original project objectives.



## **Appendices**

**A:** Road Safety Audit Presentation

**B:** Participant List

**C:** Road Owner Response



### **Road Safety Audit Presentation**



# Harrison Avenue Pedestrian Road Safety Audit

Camden, NJ

**ødvrpc** 

Friday, June 4th, 2021 11:00 am via Zoom virtual meeting



The Delaware Valley Regional Planning Commission is the federally designated Metropolitan Planning Organization for a diverse nine-county region in two states: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey.



**DVRPC's vision** for the Greater Philadelphia Region is a prosperous, innovative, equitable, resilient, and sustainable region that increases mobility choices by investing in a safe and modern transportation system; that protects and preserves our natural resources while creating healthy communities; and that fosters greater opportunities for all.

**DVRPC's mission** is to achieve this vision by convening the widest array of partners to inform and facilitate data-driven decision-making. We are engaged across the region, and strive to be leaders and innovators, exploring new ideas and creating best practices.



### **Audit Team Introductions**

- Bicycle Coalition of Greater Philadelphia
- Camden County
- Camden County Municipal Utilities Authority
- Camden County Police Department
- City of Camden Department of Planning and Development
- Camden Housing Authority
- Cramer Hill Residents Association
- Cross County Connection TMA
- Cooper's Ferry Partnership
- DVRPC PPTF
- NJDEP
- NJ Transit
- Salvation Army/Kroc Center
- The Michaels Organization/Urban Practice
- Tri-State Transportation Campaign





### **PRSA Schedule**

- 1. Meeting #1 Pre-audit: Friday, June 4, 11AM
  - project purpose
  - existing condition/data review
  - audit tools and event preview
- 2. Meeting #2 Field Audit: Wednesday June 16, 10AM-12noon
  - in-person visit to study area as a group
  - individual/independent field visit
- 3. Meeting #3 Post-audit: TBD
  - itemize & summarize field findings
  - discuss improvement scenarios
  - next steps

@dvrpc

Harrison Ave Road Safety Audit

**Project Background** 

### **Supporting & Concurrent Efforts**

- Cramer Hill NOW! Plan 2009
  - Set forth a vision for the neighborhood's waterfront
- Ray and Joan Kroc Corps Community Center 2014
- NJDEP 2016
  - Announced close/cap landfill, design & develop a 62-acre park
- Camden County Bicycling and Multi-Use Trails Plan 2015
- ULI 10 Minute Walk Study (Cramer Hill Waterfront Park) 2019
  - Invited by Cooper's Ferry Partnership
- HUD Transformation Plan for Ablett Village/Cramer Hill
  - Urban Practice leading implementation plan which includes a complete and green street for E. State St.
- CCMUA RFP
  - Will involve infrastructure improvements to Harrison Ave.
- City of Camden Active Transportation Network Vision Plan NV5

@dvrpc

### Harrison Ave. and E. State Street

**ULI - 10 Minute Walk Recommendations & Observations** 

Cramer Hill Waterfront Park
will present an unparalleled
opportunity for Camden residents

to connect with the Delaware and Cooper River waterfronts when it comes online in 2021."

SARAH BRYANT, DIRECTOR OF COMMUNITY INITIATIVES, COOPER'S FERRY PARTNERSHIP

# Harrison Ave. PRSA - DVRPC Work Program Project - FY '22

"Camden County and Camden City requested a planning project to consider the access recommendation of the 10 Minute Walk study"

"Kroc Center and Cramer Hill Waterfront Park are located in a place where access by pedestrians and bicyclists is not ideal"

"The Fall '21 opening of the waterfront park will result in foot, bike and auto traffic increases"

- Vehicular speeding common on both Harrison and E State
- Not comfortable for bicyclists or pedestrians

**ødvrpc** 

### **Questions**

Any reactions or questions to the project background?







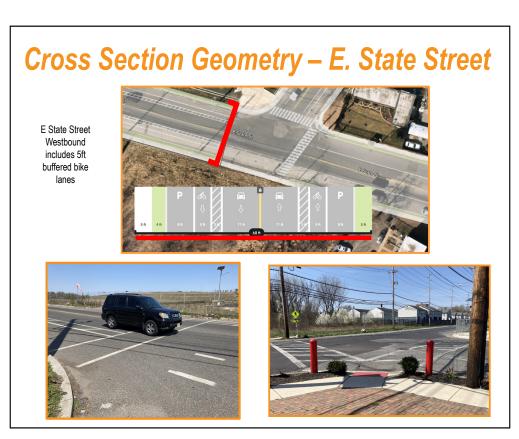


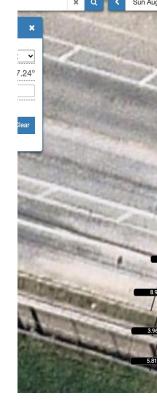
## **Operational Characteristics**

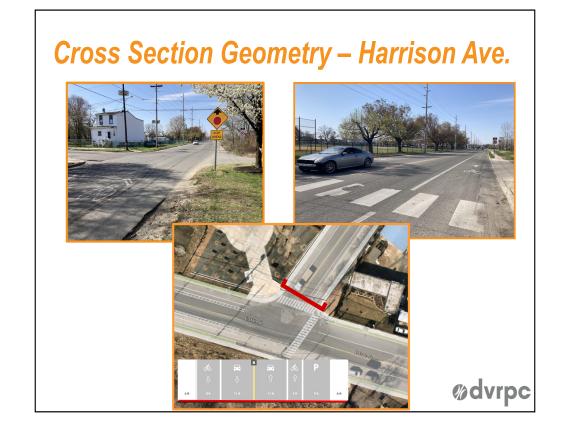
#### Roadway

- 0.60 miles (Harrison Ave)
- 0.35 miles (E State Street)
- Two-way streets
- Speed limit: 25 mph throughout
- Bike lanes throughout
- 10 Intersections:
  - 0 signalized
  - 3-ways (9)
  - 4-ways (1)
- 419 & 452 Bus Lines
- Pedestrian crosswalks









#### **Traffic Volumes**

#### **AADTs**

- Harrison Ave (NB): aprx 4,705 vehicles/day
- E State St & Centennial Drive (WB): aprx 4,880 vehicles/day
- E State St (EB): aprx 5,640 vehicles/day

#### Pedestrian Volumes (ADP)

 Harrison Ave & 22nd Street – aprx 264 people/direction

#### **Bicyclist Volumes (ADB)**

- Harrison Ave & 22nd Street (SB)

   aprx 11/day
- E State St Bridge (WB) aprx 31/day
- E State St Bridge (EB) -- aprx 61/day



Source: DVRPC Traffic Counts

@dvrpc

### **Crash Data**

#### Reportable crashes

- Reportable criteria: personal injury, or minimum of \$500 damage if property damage only
- 2015-2019 crash data from NJDOT

#### **Data Issues**

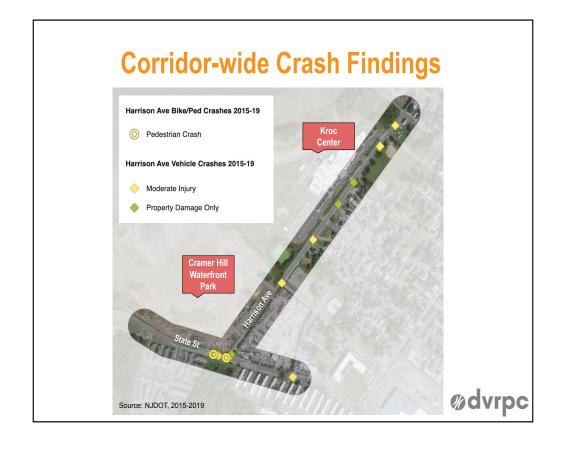
Location issues: many crashes lack accurate latitude/longitude data, SRI/milepost used instead but not as accurate

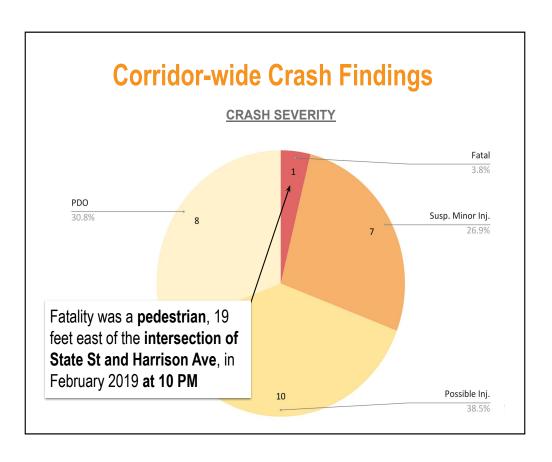
**ødvrpc** 

### **Corridor-wide Crash Findings**

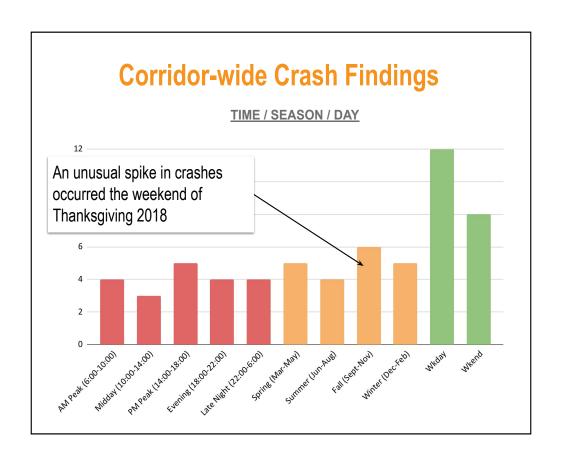
**YEAR** 

	Harrison Ave	State St	Intersection	Total
2015			2	2
2016	1			1
2017		1		1
2018	4	1	1	6
2019	5	1	4	10





#### **Corridor-wide Crash Findings COLLISION TYPE** State St @ **Harrison Ave** State St **Harrison Ave** Total **Hit Fixed Object** 5 1 6 **Right Angle** 2 1 2 5 Rear End 1 2 3 Sideswipe (Same 1 Direction) 1 2 Hit Pedestrian 1 1 Left Turn 1 1 **Hit Parked Vehicle** 1



### **Corridor-wide Summary**

#### Where:

- Midblock = 7
- At intersections = 13

#### Mode:

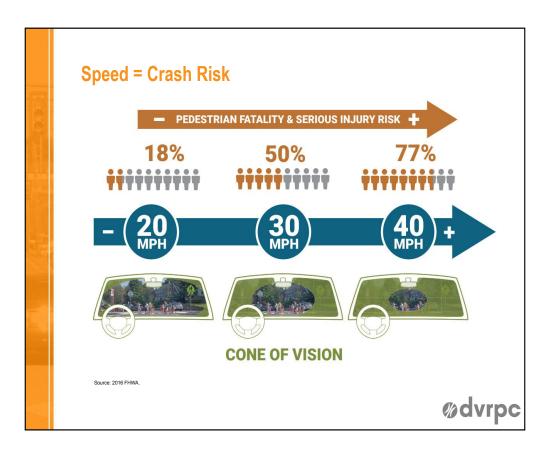
- Pedestrian crashes = 2 (1 fatal)
- Bicyclists crashes = 0
- Vehicle/vehicle = 18

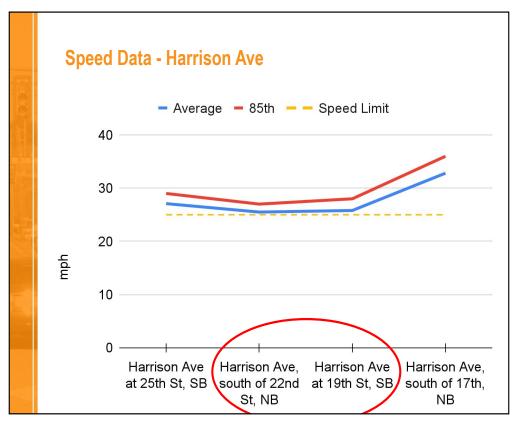
#### Predominant collision types:

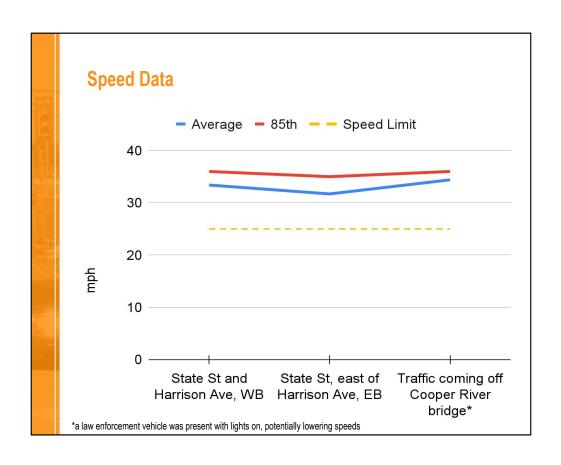
Hit fixed object, angle

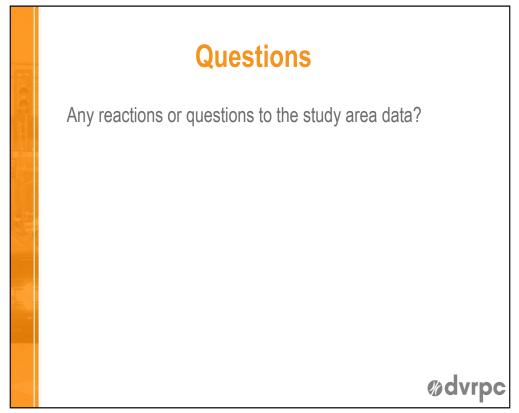
#### People involved:

• 1 person killed, 17 injured, 47 people involved



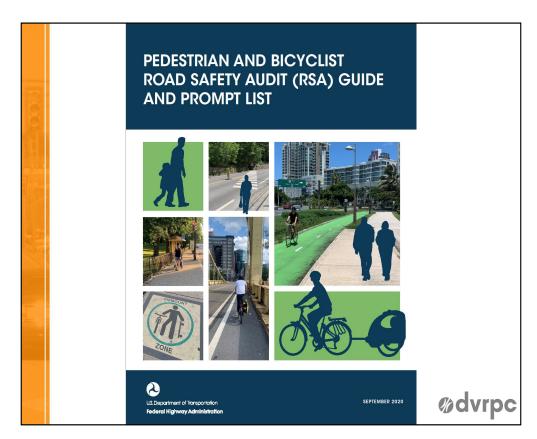






Harrison Ave Road Safety Audit

Audit Procedures



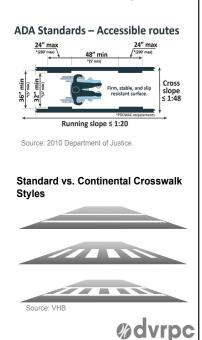
### **Basic Steps of Field Data Collection**

- 1. Gather field observation materials
- 2. Meet at study area (or visit on your own)
- 3. Conduct tour of study area and note field observations
- 4. Input observations to the RSA Data Collection Tool



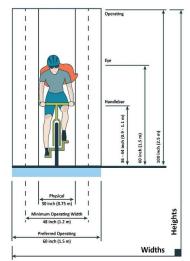
### **Principles of Pedestrian Safety**

- Connectivity
  - "desire lines" and gaps
- Accessibility
  - sidewalk width, slope, materials
  - curb ramps and other accessibility features
- Intersection Safety
  - crossing distance
  - visibility
- Safety & Comfort
  - separation
  - lighting
  - vehicle speeds & volume
  - landscaping features
  - pavement condition
  - etc...



### **Principles of Bicyclist Safety**

- Space
  - operating width/height
- Stability
  - uneven surfaces
  - deteriorating pavement
  - raised obstructions (e.g. utility covers)
  - openings perpendicular to the direction of travel
  - maintaining minimum speed
- Connectivity
  - "desire lines" and gaps
- Safety & Comfort
  - separation, lighting, vehicle speeds & volumes
- Intersection Safety
  - interaction with drivers, peds, & transit



Source: 2012 FHWA.



### **Key Prompts**

Three primary categories of prompts:

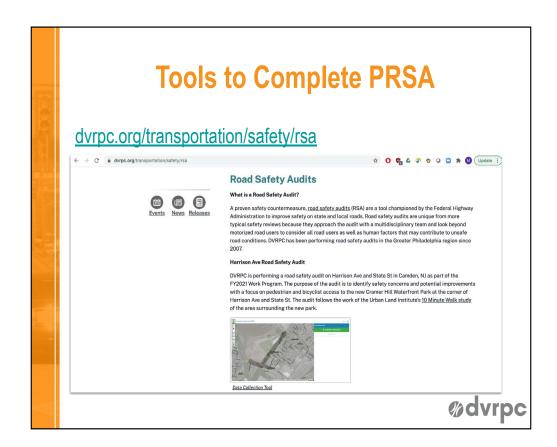
- 1. Physical Environment / Infrastructure
  - a. Are necessary infrastructure elements present?
  - b. What is the **condition** of the infrastructure?
  - c. Are infrastructure elements well-connected for all road users?
  - d. Are there obstructions or other visibility concerns?
  - e. Is the area well-lit at night?
  - f. How are connections to **transit** handled?

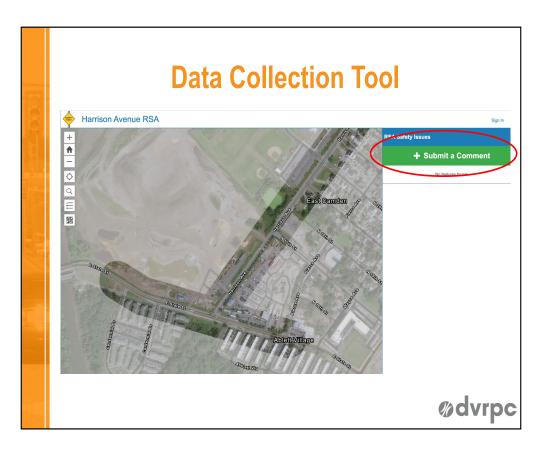
%dvrpc

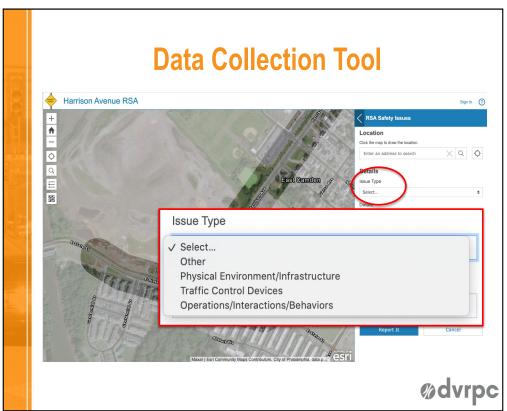
### **Key Prompts**

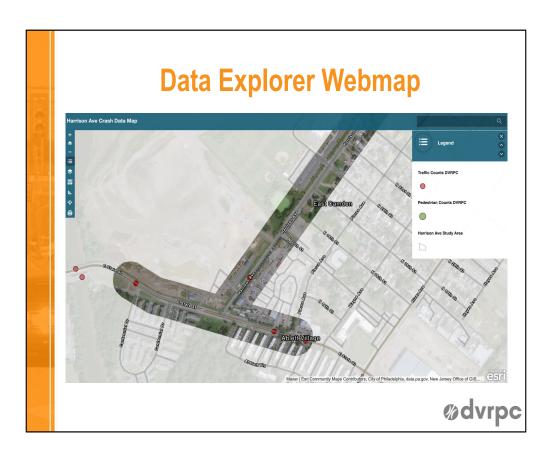
Three primary categories of prompts:

- 2. Traffic Control Devices
  - a. Are signs and pavement markings adequate and effective?
  - b. Do **signals** effectively serve all road users?
  - c. Are road users **compliant** with signs, markings, and other traffic control devices?
- 3. Operations / Interactions / Behaviors
  - a. Is the travel **speed** of road users appropriate for conditions?
  - b. Are road users behaving in a safe, compliant manner?
  - c. Do different modes **interact** with each other in a safe manner?









### **Field Visit**

What: Walking audit of the study area

When: Wed, June 16, 2021

Time: 10am-12noon

Where: Meet at Kroc Center parking lot

- Safety Vests:
  - Bring your own if you own one
  - We will provide safety vests to those that need one
- BYO Materials (optional, but recommended)
  - Water/Sunscreen
  - Notepad / Clipboard
    - Data Collection Tool is available



### **Field Visit Itinerary**

**10am:** Meet at Kroc Center parking lot, south end

#### **Audit Route:**

- Walk SB on Harrison Ave to intersection
- Split into 2 groups to audit State St (E & W)
- Return to Harrison Ave, audit NB direction
- End at 25th St



@dvrpc

# **QUESTIONS?**

https://dvrpc.org/transportation/safety/rsa

#### APPENDIX B:

### **Participant List**

Kelechi Akusobi - The Michaels Organization

Alfonso Armando - NJDEP

Kevin Becica - Camden County

John Boyle - Bicycle Coalition of Greater Philadelphia

Andrew Bush - Cooper University Health Care

Mary Cortes - Cramer Hill Residents Association

Kathy Cullen - Camden Community Partnership

Marge Della Vecchia - PS&S

Patrick C. Farley - Cross County Connection TMA

Timothy Feeney - Camden County Municipal Utilities Authority

Marco Gorini - DVRPC

Olivia Lamborn - DVRPC

Benjamin A. Lavine - NJTransit

Andrew Levecchia - Camden County

Dekel Levy - Camden County Police Department

Daniel Swartley McArdle - DVRPC Public Participation Task Force

Frank McLaughlin - NJDEP

Ann Miller - City of Camden Department of Planning and Development

Meishka Mitchell - Camden Community Partnership

Kevin Murphy - DVRPC

Benjamin Ovadia - The Salvation Army Camden Kroc

Tracey Leigh Scott - Urban Practice

Sonia Szczesna - Tri-State Transportation Campaign

Henry Toulmin - Tri-State Transportation Campaign

Chuck Valentine - Housing Authority of the City of Camden

Beth Waltrip - NJTransit

Terrell Watkins - Camden County Police Department

Edward C. Williams - City of Camden Department of Planning and Development

#### APPENDIX C:

### **Road Owner Response**

#### Table C-1: Intersection of State Street & Harrison Avenue

	Comments
1	
2	This will be addressed through the Expo project Camden County
3	This will be addressed through the Expo project Camden County
4	
5	
6	This will be addressed through the Expo project Camden County
7	
8	
9	

#### Table C-2: Harrison Avenue, Waterfront Park-Adjacent

	Comments
1	
2	
3	
4	
5	

#### Table C-3: E. State Street, Harrison Avenue to the State Street Bridge

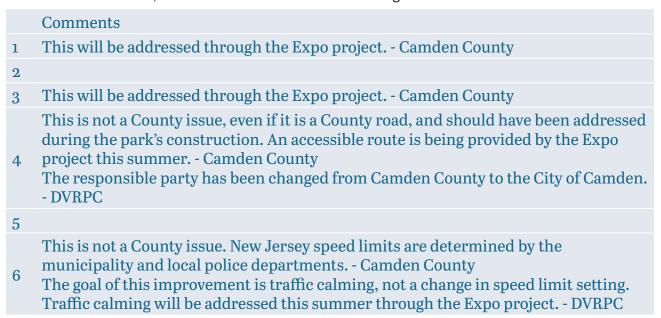


Table C-4: E. State Street, Harrison Avenue to River Avenue

	Comments
1	
2	
3	
4	
5	
6	

#### Table C-5: Harrison Avenue, 17th Street to 27th Street

	Comments
1	
2	
3	
4	
5	This will be addressed through the Expo project Camden County
6	
7	
8	
9	
10	

### **Harrison Avenue**

#### PEDESTRIAN ROAD SAFETY AUDIT

**Publication Number:** 

21054

**Date Published:** 

November 2022

**Geographic Area Covered:** 

Cramer Hill, Camden, New Jersey

**Key Words:** 

Crash, safety, audit, pedestrian, bicyclist, Camden, Cramer Hill

#### Abstract:

The opening of the new Cramer Hill Waterfront Park in Camden, New Jersey put a spotlight on traffic safety concerns on Harrison Avenue and State Street along the new amenity. In order to support pedestrian and bicyclist access to the new park, the Delaware Valley Regional Planning Commission conducted a pedestrian road safety audit with local stakeholders to identify traffic safety issues on these two streets.

#### **Staff Project Team:**

Kevin Murphy, *Manager, Office of Safe Streets* Marco Gorini, Senior Transportation Planner

#### **Staff Contact:**

Kevin Murphy
Manager, Office of Safe Streets

Phone: 215.238.2864 Email: kmurphy@dvrpc.org



190 N Independence Mall West 8th Floor Philadelphia, PA 19106-1520 215.592.1800 www.dvrpc.org





190 N Independence Mall West 8th Floor Philadelphia, PA 19106-1520 215.592.1800 www.dvrpc.org

Connect With Us! **f** | **y** | ⊙ | **in** | **D** 

