



High Street to Madison Avenue Walkable Community Workshop

Borough of Dunellen, Middlesex County, NJ

2020



About the Report

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Executive Summary

Complete Streets are streets designed for all users, all modes of transportation, and all ability levels. They balance the needs of drivers, pedestrians, bicyclists, transit riders, emergency responders, and goods movement based on local context.

-State of New Jersey Complete Streets Design Guide

The Borough of Dunellen, New Jersey, participated in the North Jersey Transportation Planning Authority (NJTPA) Complete Streets Technical Assistance (CSTA) Program in 2020. The CSTA Program selected eight municipalities to receive up to \$10,000 in technical assistance to advance complete streets projects. This report identifies several recommendations to promote walking as a means of travel and to improve walkability along High Street, Walnut Street, South Madison Avenue, South Avenue, and Madison Avenue in Dunellen. The report also calls for installation and improvement of crosswalks throughout the route that comply with the Americans with Disabilities Act (ADA). Additionally, the report recommends that narrow sidewalks should be supplemented with on-street facilities that provide additional space for walking and bicycling while addressing overly wide vehicle travel lanes. Long-term recommendations include a road diet, to reduce the width of travel lanes and create space for people walking and biking, and traffic studies to determine appropriate intersection controls.

The most significant obstacles to walkability in the study area are the long distances between crosswalks, narrow or missing sidewalks, and noncompliant driver behavior at crosswalks, such as failing to stop for pedestrians. This report calls for Dunellen to adopt a complete streets policy that ensures future road maintenance and improvements are made with consideration for all users.

The recommendations in this report were developed through a collaborative process with municipal officials and stakeholders. This included a virtual Walkable Community Workshop (WCW) that was held on July 13, 2020. A follow-up virtual presentation was conducted on August 10, 2020 to collect feedback before finalizing the recommendations. Both meetings were conducted virtually due to COVID-19.

The study area consists entirely of municipal roads. The John P. Faber Elementary School is located at the southernmost point of the study area (Figure 1). Improvements along these roads are necessary to ensure student safety, particularly for students whose families do not have access to a vehicle. These roads also provide an important connection between the Borough's southwestern residential neighborhood and the downtown commercial district, which includes the Dunellen Train Station.

The lessons learned by all participants during the half-day workshop can be applied to other municipal-owned roads in Dunellen. The field audit form, information about the NJTPA's pedestrian safety education program, Street Smart NJ, and a list of potential funding resources can be found in this report's appendices. The Borough can use these resources to conduct other walkability audits and projects.



Figure 1. John P. Faber School in Dunellen, New Jersey.

Background

The North Jersey Transportation Planning Authority (NJTPA) created the Complete Streets Technical Assistance (CSTA) Program in 2018 to assist municipalities in advancing or implementing complete streets, a need identified by the Together North Jersey (TNJ) consortium. TNJ was created in 2011 to develop the first comprehensive plan for sustainable development for North Jersey. Sustainable Jersey (SJ) and the Alan M. Voorhees Transportation Center (VTC) at Rutgers University were retained to provide technical assistance for this program. In its first year, the program successfully supported nine municipal governments seeking to implement complete streets in their communities. This report is part of the second year of the CSTA Program, in which eight additional municipalities were selected to receive technical assistance. Municipalities were chosen for the program based on the following criteria: the need for technical assistance; commitment to project implementation; opportunity for public engagement; the strength of their respective municipal teams; and the project's potential effects on Environmental Justice (EJ) populations.

Through the CSTA Program, municipal employees and stakeholders participated in a virtual Walkable Community Workshop (WCW) on July 13, 2020 to learn about the benefits of complete streets and proven strategies for making streets safer for the most vulnerable users—pedestrians and bicyclists. The workshop included an hour-long classroom-style training. The project team then guided participants through a virtual walking audit along High Street, Walnut Street, South Madison Avenue, South Avenue, and Madison Avenue. The virtual walk audit, led by staff from VTC with support from SJ and the NJTPA, enabled participants to identify problems and potential improvements for the study area.

Dunellen is a small suburban community bisected by North Avenue (State Route 28) and railroad tracks supporting the NJ TRANSIT Raritan Valley Line commuter train service. The northern end of the corridor is located at Madison Avenue and North Avenue, at the beginning of Dunellen's downtown commercial district. The Dunellen high school and middle school campus is a five-minute walk north of this intersection, beyond the study area. Additionally, the Dunellen Train Station is a five-minute walk east of the intersection through the downtown commercial district. Aside from a large office building on South Avenue, the remainder of the study area is mostly lined with single family homes until the southernmost point where the John P. Faber Elementary School is located.

The Dunellen school district does not provide busing, so students are either driven to school or arrive on foot or bicycle. The route from North Avenue to the elementary school lacks appropriate pedestrian infrastructure including sidewalks and crosswalks to support students walking to and from school. Dunellen officials expressed interest in improving walkability along the route to encourage active transportation (such as walking and biking) to school and alleviate traffic congestion in the area. Improving pedestrian infrastructure would also help students in zero-car households arrive to school safely.

Various policy, planning, and programmatic efforts have been made to improve pedestrian safety and mobility throughout Dunellen. In 2019, Dunellen participated in the Together North Jersey Transit Hub Guide pilot program. Strategies developed from community feedback collected through the pilot include improving bicycle and pedestrian facilities in the area surrounding the train station, improving bicycle and pedestrian connections throughout Dunellen, and increasing opportunities for safe mid-block crossings throughout the town. In 2012, Dunellen was designated a Transit Village through the Transit Village Initiative, which supports municipal efforts to redevelop and revitalize areas around transit stations. As part of this program, the town redeveloped a vacant printing facility on South Washington Avenue across from the train station into a mixed-use site with rental properties, townhomes, and shopping.

What is a Complete Street?

Complete streets are roads designed for all users, all modes of transportation, and all ability levels (Figure 2). They balance the needs of drivers, pedestrians, bicyclists, transit riders, emergency responders, and goods movement based on the local context. Complete streets should tailor to the specific needs of the surrounding environment. A school zone, for instance, may require reduced speed limits, narrower travel lanes, and wider sidewalks to achieve a safer setting for students. Meanwhile, streets along transit routes should incorporate the needs of bus and rail commuters by installing benches, shelters, and enhanced lighting and signs.

Regardless of the context, complete streets should be designed to improve safety for pedestrians and bicyclists, who are the most vulnerable road users. Reduced speed limits, raised medians, and other design elements can help create a safer environment for seniors, children, and people with disabilities.

To put traffic speeds into perspective, a 10 mph reduction in vehicle speed dramatically decreases the chance of pedestrian fatalities in a collision. The U.S. Department of Transportation (USDOT) cites collisions in which pedestrians are struck by a vehicle traveling 40 mph as being fatal 85 percent of the time. Comparatively, at 30 mph, pedestrian fatality rates drop to 45 percent, and down to 5 percent at 20 mph (Figure 3 and Figure 4). Complete streets recognize that all users of the transportation network, whether traveling by car, bus, train, or taxi, become a pedestrian at some point during their journey. Creating a safer environment benefits everyone.



Figure 2. A complete street, as seen in New Brunswick, New Jersey. No two complete streets are alike, as they should always reflect the context of the street and the character of the community.

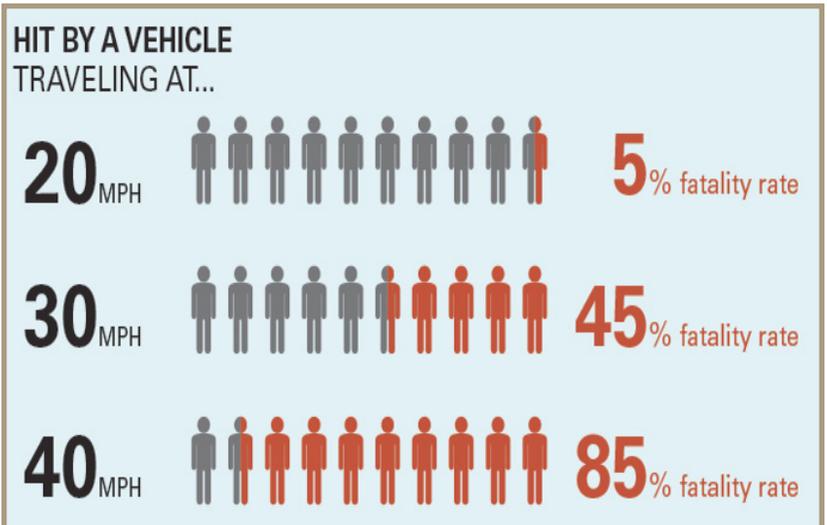


Figure 3. Graphic showing increased fatality rate as vehicle speeds increase.

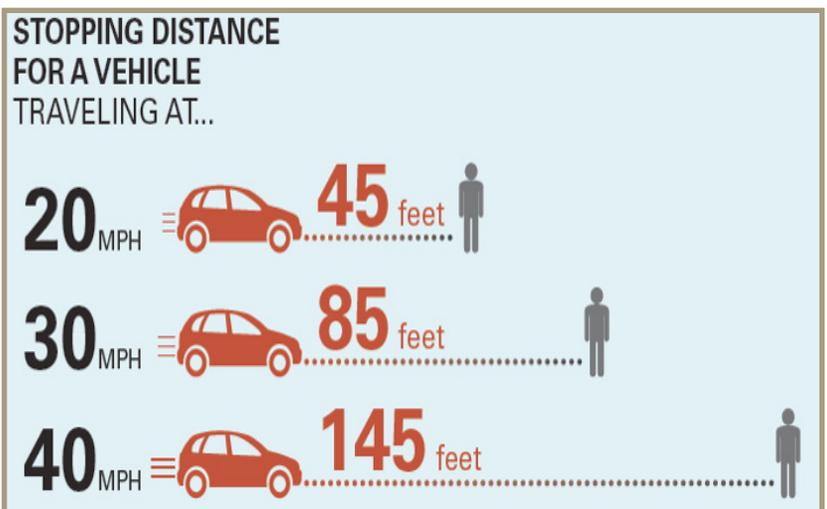


Figure 4. Graphic showing increased stopping distance as vehicle speeds increase.

Benefits of Complete Streets

While the primary benefit of complete streets is improved safety for all roadway users, there are other positive outcomes. Complete streets create better places to live, work, and do business. These benefits include mobility, equity, health, quality of life, economic vitality, and environmental health.

Mobility

Creating or enhancing multi-modal transportation options expands mobility opportunities for everyone, including nondrivers, youth, and senior citizens (Figure 5). In turn, increased mobility improves access to jobs and services, which is crucial for people who cannot afford or choose not to own a car, as well as those who are unable to drive due to a disability or their age.

Equity

Complete streets help decrease the necessity of the automobile for access to opportunity. Transportation costs comprise a significant portion of a household budget, approximately 20 percent in the United States. Much of this is due to the high cost of automobile ownership, including insurance, fuel, maintenance, registration fees, and financing. However, household transportation costs drop to just 9 percent in communities with improved street connectivity and accommodations for other modes.

Connected communities allow residents to use less energy and spend less money to get around, allowing for fewer car trips and the use of other less expensive modes of transportation like bicycling, walking, or public transit. Providing a variety of transportation choices across different price points allows families to free up more money for housing or other needs.

Health

Complete streets enhance opportunities for increased walking and bicycling which in turn leads to the numerous health benefits associated with increased physical activity. The Center for Disease Control (CDC) supports complete streets to combat obesity (Figure 6).

Quality of Life

Livable, walkable communities diminish the need for automobiles. Walking or bicycling around town creates a sociable environment, fostering interactions between family, friends, or clients and increasing community involvement. These interactions, in turn, entice users to enjoy the surroundings they would otherwise ignore in a car. A reduction in vehicle use can also increase the quality of life thanks to reductions in noise and stress associated with congestion and crashes (Figure 7).



Figure 5. When a street lacks accessible sidewalks and ramps, it is not complete.



Figure 6. Trails, such as this one in Monroe, New Jersey, can encourage exercise and lead to improved health.



Figure 7. Complete Streets in Asbury Park help foster a lively social environment.

Economic Vitality

Improving streetscapes revitalizes business districts. Complete streets generate more foot traffic when they create great places where people want to be, which can encourage both residents and visitors to spend more money at local shops and restaurants that they may have driven past before. Such is the experience in Somerville, New Jersey, where one block of Division Street was converted to a pedestrian plaza. The area witnessed a sharp decline in vacant commercial properties; vacancy dropped from 50 percent to zero after the plaza was developed (Figure 8).¹



Figure 8. Division Street in Somerville was converted into a pedestrian plaza that has become a popular gathering space.

Environmental Health

By reducing automobile use, complete streets can contribute to cleaner air. Additional sustainable design elements installed along complete streets can also bring other environmental benefits. For example, landscape improvements (green streets) can reduce impervious cover, reduce or filter stormwater runoff, and contribute to water quality improvement (Figure 9).



Figure 9. Green infrastructure used to narrow the roadway and provide a shorter crossing distance for pedestrians.

Complete Streets in New Jersey and Dunellen

New Jersey is a leader in the complete streets movement. In 2009, NJDOT was among the first state DOTs in the nation to adopt an internal complete streets policy. In 2010, the National Complete Streets Coalition ranked NJDOT's complete streets policy first among 210 state, regional, county, and municipal policies nationwide. Since 2009, NJDOT has funded five Complete Streets Summits, and over a dozen educational workshops intended to disseminate the latest information about complete streets to planners, engineers, elected officials, and advocates. In 2017, NJDOT released the *New Jersey Complete Streets Design Guide* to inform New Jersey communities on how to implement complete streets projects. In 2019, NJDOT released the *Complete & Green Streets for All: Model Complete Streets Policy and Guide* to serve as a new resource for local best practices in policy language. Communities of all sizes throughout the state have joined NJDOT in adopting complete streets policies. Of New Jersey's 21 counties, eight have adopted complete streets policies. Additionally, 167 municipalities have implemented complete streets policies affecting 3.8 million (44 percent) of the state's residents (Figure 10).²

As of October 2020, Middlesex County has a complete streets policy, however, Dunellen does not.

1. "Complete Streets Case Study: Somerville, New Jersey," Alan M. Voorhees Transportation Center, 2016.

2. New Jersey Bicycle and Pedestrian Resource Center, "NJ Complete Streets Policy Atlas," 2018. <http://njbikeped.org/complete-streets-2/>.

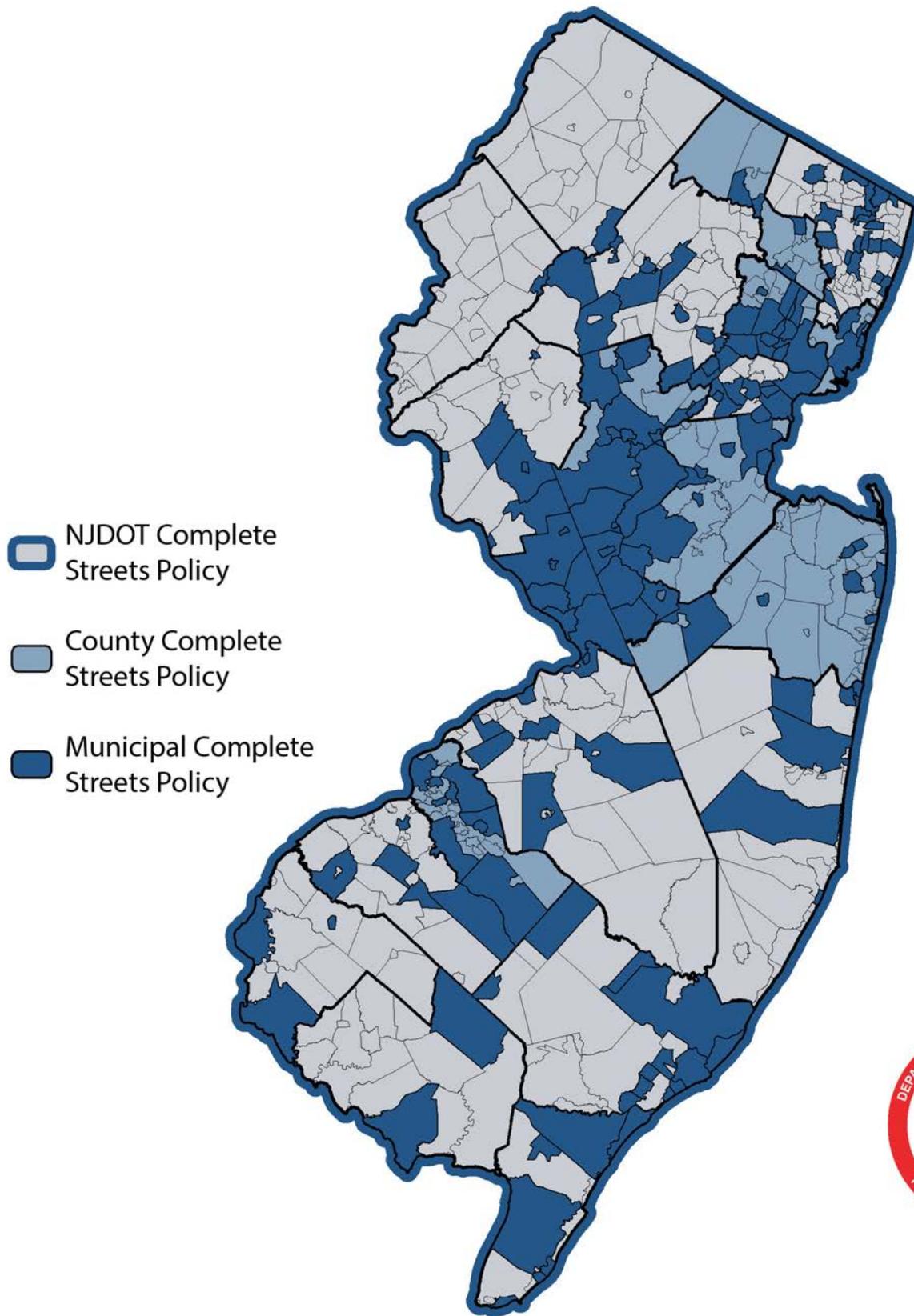


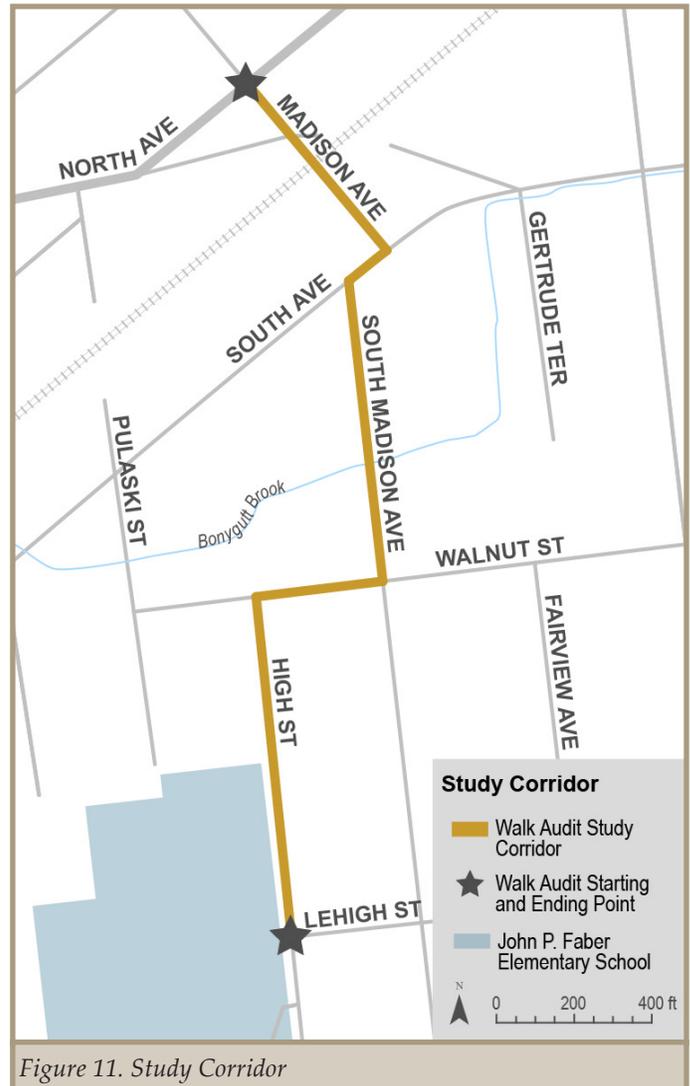
Figure 10. Complete Streets Policies in New Jersey, as of October 15, 2020. Visit <http://njbikeped.org/services/complete-streets-policy-compilation/> for a constantly updated list of policies.

Walking Audit Location

Dunellen is home to approximately 7,284 residents and comprises an area of 1.1 square miles (US Census Bureau, 2018). The Borough is bordered by North Plainfield and Green Brook to the north, Middlesex to the west, and Piscataway to the east and south. The median age of residents is 38.2 years and the estimated median household income is \$69,868. Dunellen is home to a relatively high population of Hispanic residents, 30 percent compared to 20 percent statewide. Fewer than 1 percent of Dunellen's population rides a bicycle to work, 3 percent walk to work, and nearly 8 in 10 drive alone to work. Only 7 percent of Dunellen residents use public transportation to get to work as compared to 11 percent statewide.

The walking audit location includes sections of five different roads in Dunellen's southwest corner (Figure 11). The southernmost point of the study area begins at the intersection of High Street and Lehigh Street. John P. Faber Elementary is located on the western side of the street. High Street is a one-lane single direction road running south. Pull-in diagonal parking is located along the street in front of the school. Further north, the street is residential on both sides with on-street parking. The study area continues west on Walnut Street for one block. Walnut Street runs east-west with bidirectional traffic, parking on both sides, and single family homes. It then continues north onto South Madison Avenue, with residences located on both sides of the street. The study area continues northeast on South Avenue for about 100 feet before turning north onto Madison Avenue.

The characteristics of the study area begin to change to a mixture of residential and commercial along Madison Avenue after the railroad underpass. All of the intersections along the route are non-signalized, except for the intersection of Madison Avenue and North Avenue. The route provides an important connection between the residential neighborhoods, Dunellen schools, and the downtown commercial district.



Assessment of Need

The study area was selected due to Dunellen's interest in promoting safe alternatives to driving to school. The route also creates a connection between Dunellen's southwest residential neighborhoods and the centrally located downtown district, which has shopping, entertainment, and public transportation access. Addressing safety concerns for bicyclists and improving the pedestrian realm will also generate foot traffic for local businesses and encourage bicyclists to ride on the road rather than on the sidewalk.

The route is unwelcoming to pedestrians with inconsistent sidewalk availability, faded crosswalks, and high volumes of vehicular traffic, especially approaching the public schools. Poor sidewalk condition due to tree root uplifts and discontinuity/unevenness at driveways and walkways have also created tripping hazards. Walking audit participants noted that vehicular traffic can make walking feel unsafe at times, especially at and near the intersection of South Avenue and Madison Avenue because of low pedestrian visibility and speeding. As such, bicyclists ride on the sidewalks because they do not feel comfortable bicycling along the roads, creating further hazards for pedestrians. A 2004 study conducted by Dunellen counted 260 vehicles at Faber Elementary School during the morning drop-off and only 11 walkers from South Madison Avenue. A 2006 study recorded that 53 percent of middle school students were driven to school.

Data

Traffic

According to municipal officials, the intersection of Madison Avenue and South Avenue receives approximately 715 vehicles during the morning school drop-off hours between 7:45 am and 8:15 am. Average daily traffic count data is not available for any of the roads in the study area.

Speed

The speed limit is 25 mph throughout the study area. Traffic speed data is not available for the route.

Crash History

There were 690 crashes, including 25 that involved a pedestrian or bicyclist, in Dunellen between 2015 and 2019. The only crash involving a pedestrian or bicyclist along the study route took place at the intersection of Madison Avenue and North Avenue, the northernmost intersection of the study area. The crash occurred on October 7, 2019 at 1:53 p.m. The bicyclist was a 51-year-old male who sustained injuries. Another crash involving a pedestrian occurred just south of the study area at the intersection of High Street and Center Street on July 7, 2016 at 7:14 p.m. The pedestrian was a 69-year-old female who sustained injuries.

Workshop Methodology

Prior to conducting the workshop, the CSTA project team met with Dunellen officials to discuss the study area and gain a better understanding of the roads, their location, use, and appropriateness for a walking audit. Workshop participants included residents, municipal officials, the town planner and engineer, school officials, Middlesex County planners, representatives from Keep Middlesex Moving (KMM) transportation management association, and NJTPA staff.

The virtual WCW included a one-hour presentation on the fundamentals of complete streets and best practices concerning pedestrian design to ensure that all attendees had a common understanding of complete streets and the relationship between road design and behavior. It included instruction on ways to better support walking and bicycling, and insight into the causes of vehicular speeding. Additionally, the presentation covered traffic engineering techniques to better accommodate bicyclists and pedestrians, and proven measures to reduce speeding.

Following the presentation, participants were provided a link to the walking audit forms so that they could complete it during the virtual tour of the study area. The virtual audit, led by the project team, was conducted using Google Streetview and began at the intersection of High Street and Lehigh Street. The audit continued north along High Street, then continued east on to Walnut Street before turning north on South Madison Avenue. The audit continued east on South Avenue before turning north on Madison Avenue. The audit was completed at the intersection of Madison Avenue and North Avenue. The audit consisted of discussing issues, writing observations, and identifying the existing conditions witnessed by participants familiar with the area. A post-audit debrief was conducted to review the most important findings and potential recommendations for improvements.

Following the virtual walk audit, the project team developed a series of recommendations for the corridor. On August 10, 2020, the designs were presented during a public meeting where community members had an opportunity to provide feedback. The designs were then revised for inclusion in this report.

Workshop Findings

This section highlights the existing conditions of the study area that were identified during the walking audit. It begins with route-wide commonalities of the study area, including sidewalks, intersections, safety, and comfort. This is followed by a detailed description of conditions along the route.

Route Summary

Sidewalks

Sidewalks are only provided on one side of the street throughout much of the study area. The New Jersey Complete Streets Design Guide states that a 5-foot minimum width is required to meet accessibility standards, but sidewalks should be constructed as wide as possible to accommodate pedestrian demand. Some sidewalks do not meet this 5-foot standard and those that do likely experience enough demand to warrant widening because of the proximity to the school and train station. This is especially needed when sidewalks are only available on one side of the road. Sidewalk maintenance issues were identified at various locations, including raised and cracked concrete (Figure 12; Figure 13). Other commonly witnessed issues include sidewalks obstructed by parked vehicles and sidewalks with no buffer from the vehicle travel lane (Figure 14).



Figure 12. Looking north where a sidewalk ends on S. Madison Avenue.



Figure 13. Looking south on Madison Avenue near Bound Brook Road



Figure 14. Looking west on South Avenue near South Madison Avenue

Intersections and Crosswalks

Intersections throughout much of the study area have faded crosswalk markings and either missing or non-compliant curb cuts and ramps (Figure 15). Often, marked crosswalks are installed on only a portion of the intersection, such as at South Avenue and South Madison Avenue. Crossing the street even at the marked crosswalk at this intersection is particularly challenging due to the skewed intersection, long crosswalks, and fast-moving traffic. Walking audit participants and study team members noted that a number of crosswalks along the route are obstructed by vehicles that stop past the marked stop bar to improve the driver's visibility of oncoming traffic (Figure 16).

Safety

When the research team conducted a field audit at 5 p.m. on a summer weekday, both vehicular and pedestrian traffic was consistent. Although the study corridor was not observed at night, the distance between overhead cobra lighting fixtures appears to be spread out too far to provide uniform lighting. Pedestrian-oriented lighting is only provided at the intersection of Madison Avenue and North Avenue (Figure 17). Lighting under the train overpass also may be insufficient. A nighttime observation would be needed to ascertain whether there is a need to address pedestrian lighting along the entire route.

A speed study was not conducted; however, the research team noted that cars appeared to be traveling over 25 mph and drivers did not yield to pedestrians in crosswalks. This was especially observed along South Avenue. This section of the study area was noted as being particularly uncomfortable for pedestrians. In this area there is no shoulder and no on-street parking, placing the pedestrian immediately adjacent to the travel lane and creating a sense of discomfort and concern for personal safety. The large volume of traffic, including trucks and buses, exacerbates this issue.

Comfort and Appeal

The area was free of litter, graffiti, and other quality of life concerns that could discourage walking or bicycling. The area would benefit from pedestrian-oriented lighting and streetscaping efforts, especially those that create a buffer between pedestrians and moving vehicles.



Figure 15. Missing curb cuts and ramps



Figure 16. Looking west on South Avenue across Madison Avenue.



Figure 17. Intersection of Madison Avenue and North Avenue

Detailed Conditions

High Street: Lehigh Street to Walnut Street

The southern end of the study area begins at the intersection of High Street and Lehigh Street, where the road is approximately 35 feet wide with one lane of traffic traveling south. Sidewalks are only installed on the western side of the road and measure approximately 5 feet. On-street parking is not permitted during school hours. During school pickup times, cars park along the full length of the road, including near the Lehigh Street intersection, which creates visibility challenges, according to WCW participants.

A high visibility ladder crosswalk is installed at this intersection and continues on Lehigh Street as an on-road sidewalk, where parking is prohibited during school hours. There is a pedestrian crossing stop sign (R1-6a) at the center of the road adjacent to the crosswalk (Figure 18). Truncated domes are missing from the curb ramp leading into the crosswalk (Figure 19).

Further north, High Street widens to 40 feet with parallel parking during non-school hours on the east side and angled pull-in parking on the west side. WCW participants noted this angled parking creates a number of challenges during school drop-off and pickup times. There is no buffer between the sidewalk and the angled parking, so drivers were observed parking with the front of their vehicle hanging over the sidewalk. This occupies already limited space on narrow sidewalks (Figure 20). As drivers back out from these spaces, they were observed having difficulty entering into the stopped line of traffic while avoiding the pedestrians walking on the road .

Continuing north, High Street transitions to a width of 35 feet with on-street parking on both sides. Sidewalks are narrower here, measuring only approximately 4 feet. Again, they are only available on the western side of High Street. The sidewalks here are buffered by a planting strip with mature trees that provide shade (Figure 21). Sidewalks do not continue across driveways, are raised at walkways, and uplifted by trees in several locations.



Figure 18. Looking north on High Street at Lehigh Street



Figure 19. Looking east across High Street onto Lehigh Street



Figure 20. Looking south along High Street near the elementary school parking



Figure 21. Looking south on High Street towards the elementary school

Walnut Street: High Street to South Madison Avenue

Walnut Street is an east-west residential corridor. This section of Walnut Street is municipally-owned, but further east it turns into County Route 678. It is approximately 35 feet wide with one travel lane in either direction and on-street parking on both sides. At the western end of Walnut Street, prior to the intersection with High Street, sidewalks are provided only on the southern side of the road. From High Street to South Madison, sidewalks are only provided on the northern side of the street. Beyond South Madison, sidewalks are provided on both sides of Walnut Street.

At the intersection of High Street and Walnut Street, one parallel crosswalk is marked. This crosswalk connects the end of the sidewalk on the southern side of the street to the beginning of the sidewalk on the northern side of the street. The crosswalk striping is faded (Figure 22). Truncated domes are missing from the curb ramp on both sides (Figure 23). WCW participants also noted drainage issues as this crosswalk commonly experiences flooding. There is no crosswalk striped across High Street or on the east side of the intersection, however, according to New Jersey Statute 39:4-36, drivers are still required to stop for pedestrians crossing at unmarked crosswalks.

Further east on Walnut Street, sidewalks are provided only on the northern side of the road. They are buffered by grassy planting strips with mature trees. The sidewalks along this section of the corridor are narrow and uneven (Figure 24). Near the South Madison Avenue intersection, a wooden fence abuts the sidewalk, which exacerbates the narrowness (Figure 24 and Figure 25). WCW participants said Walnut Street does not have enough speed limit signage in this area.

Several WCW participants expressed strong concerns about safety at the intersection of Walnut Street and South Madison Avenue. It is controlled by two stop signs located on Walnut Street. The stop bar on the eastern side of Walnut Street is located approximately 35 feet from the adjoining travel lane on South Madison Avenue, creating visibility issues for



Figure 22. Looking east on Walnut Street toward the High Street intersection



Figure 23. Looking south on High Street towards the elementary school



Figure 24. Looking east on Walnut Street

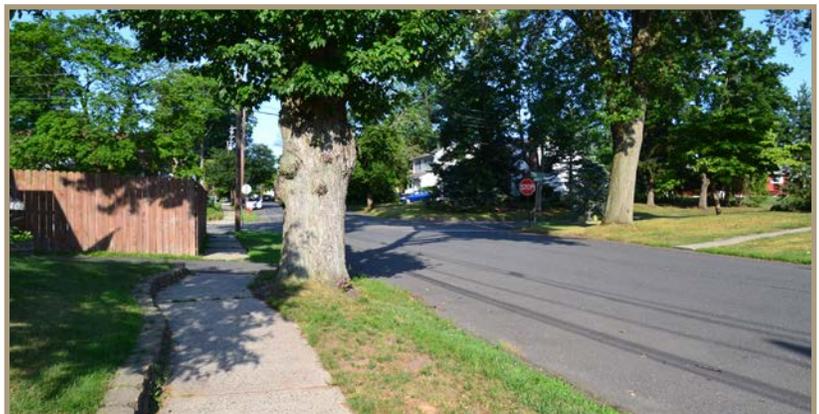


Figure 25. Looking east on Walnut Street near South Madison Avenue

stopped drivers (Figure 26). Participants discussed creating a four-way stop here but were concerned about impeding already slow moving traffic during school drop off and pick up times. A four-way stop could be helpful in ensuring the safety of all users while promoting safe vehicle movement through the intersection. However, a traffic study would be needed to determine if a four-way stop sign is warranted at this intersection.

Parallel crosswalks are striped at all four legs of the intersection, but they are faded. The southern side of the intersection is missing ADA-compliant curb cuts with truncated domes (Figure 27). An in-street pedestrian crossing stop sign (R1-6a) is located at the center of South Madison Avenue adjacent to the crosswalk at the northern end of the intersection. WCW participants noted that the sign is often moved into a travel lane, forcing drivers to maneuver around it. At the time that CSTA team members audited the corridor, the sign was set back from the intersection rather than at the crosswalk (Figure 28). The sign can be permanently placed with bolts in order to avoid movement and should be placed directly at the crosswalk.

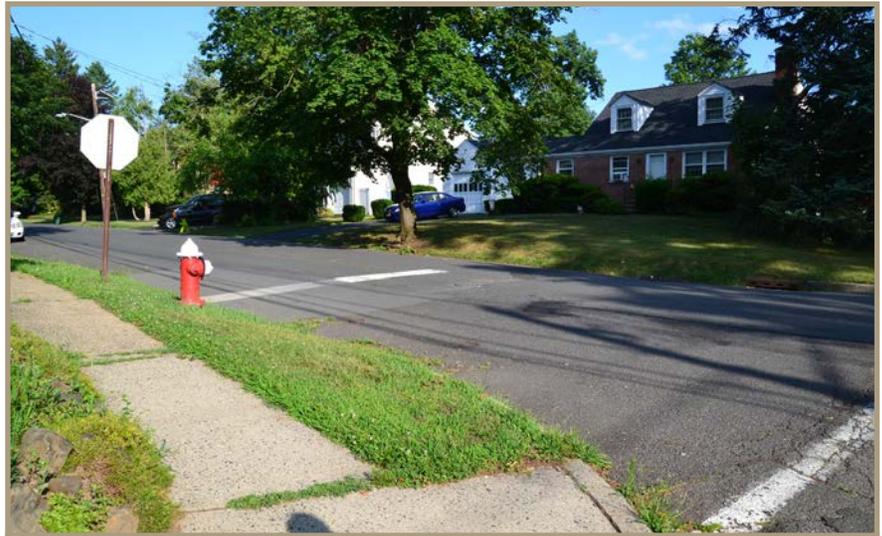


Figure 26. Looking east on Walnut Street at South Madison Avenue



Figure 27. Looking south across Walnut Street from South Madison Avenue

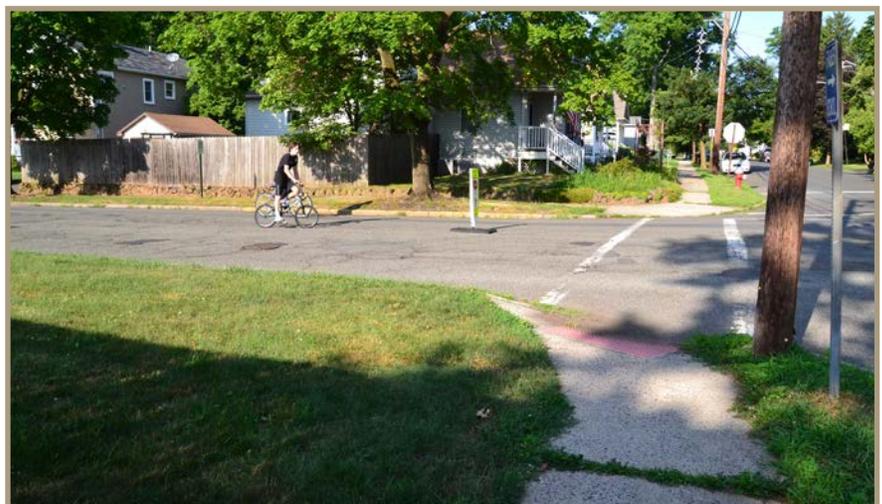


Figure 28. A pedestrian crossing sign at the intersection High Street and South Madison Avenue

South Madison Avenue: Walnut Street to South Avenue

South Madison Avenue is a residential north-south corridor with one lane of traffic in either direction. It measures approximately 35 feet wide. On-street parking is not permitted on the western side of the street, as marked by a yellow curb. Sidewalks measuring approximately four feet wide are installed along the eastern side of the street. Large trees provide some shade but have also created uplifted sidewalks (Figure 29). Approximately 350 feet north of the Walnut Street intersection, sidewalks begin on the western side of the street as well (Figure 30). The Dunellen Fire Department is located near the midpoint of the block (Figure 31).

South Madison Avenue intersects South Avenue at an awkward angle (Figure 32). The stop bar is set back approximately 30 feet from the intersection. Drivers often stop in the crosswalk to check for oncoming traffic. A ladder crosswalk is marked at this long crossing, which measures approximately 60 feet (Figure 32). The only marked crossing over South Avenue is located on the northern side of the intersection. It is marked with a faded continental crosswalk and a movable in-street pedestrian crossing stop sign (Figure 33). WCW participants noted that this is a challenging place to cross as the crosswalk is not very visible and may be unexpected for drivers approaching from the north. It is located just around a curve and is less than 75 feet from the large Madison Avenue intersection.

WCW participants noted that the intersection is fairly dark at night. Each crosswalk should be lit in order to ensure crossing pedestrians are visible to drivers. It is also important to have uniform lighting throughout the corridor to ensure personal safety.



Figure 29. Large trees along the eastern side of South Madison Avenue



Figure 30. Looking south on South Madison Avenue toward Walnut Street



Figure 31. The Dunellen Fire Department



Figure 32. Looking northeast on South Avenue at the intersection of South Madison Avenue

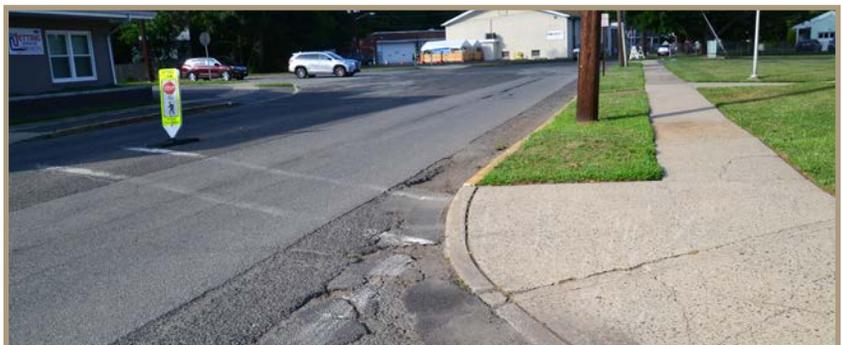


Figure 33. Looking north across South Avenue at South Madison Avenue

South Avenue: South Madison Avenue to Madison Avenue

South Avenue is a busy east-west corridor that connects Dunellen with several neighboring towns. It is 35 feet wide with one lane of traffic in either direction. A speed study was not conducted in the area, but WCW participants and CSTA team members believed that passing traffic was traveling over the 25 mph speed limit. Additionally, the north side of the street feels particularly uncomfortable for pedestrians as there is no buffer between large volumes of traffic and pedestrians on the sidewalk (Figure 34; Figure 35).

The intersection of South Avenue and Madison Avenue presents many safety concerns. There is only one marked crossing at this intersection. A faded ladder crosswalk extends approximately 60 feet across Madison Avenue. Residents noted that the intersection is consistently busy at various times throughout the day. During peak traffic times, drivers form two lanes of traffic in each direction on Madison Avenue as traffic at the stop sign lines up separately to turn in either direction. Drivers often block the crosswalk to better view oncoming traffic (Figure 36; Figure 37). WCW participants also noted that traffic turning onto Madison Avenue forms two lanes of traffic in anticipation of the light at North Avenue, even though there is no striping to indicate that two lanes exist.



Figure 34. Looking northeast on South Avenue across Madison Avenue



Figure 35. Looking southwest on South Avenue at South Madison Avenue



Figure 36. Looking northeast on South Avenue across Madison Avenue



Figure 37. Looking southwest across Madison Avenue at South Avenue

Madison Avenue: South Avenue to North Avenue

Madison Avenue is a north-south corridor that connects Dunellen's southern residential areas with the downtown commercial district. It is approximately 40 feet wide with one travel lane in each direction. Four-foot sidewalks are installed along both sides of Madison Avenue. A small grassy buffer runs along the sidewalk up to the intersection with Bound Brook Road.

As noted previously, cars form two lanes approaching North Avenue, which extends back to the South Avenue intersection during peak traffic times. There is no striping visible on the roadway to distinguish the travel lanes (Figure 38). An NJ TRANSIT railroad overpass is located between Madison Avenue and Bound Brook Road (Figure 39; Figure 40). Dunellen officials are working with NJ TRANSIT to improve lighting under the overpass. WCW participants discussed opportunities to install murals on the overpass. WCW participants noted that buses often idle just south of the overpass as they wait to continue their route.

WCW participants described the intersection of Madison Avenue and Bound Brook Road as challenging and in need of attention. A bus stop is located on Bound Brook Road 60 feet west of the intersection and across the street from an auto repair shop. Between these two uses, Bound Brook Road can get chaotic. Additionally, the bus stop lacks amenities such as lighting and a covered seating area. Drivers who have navigated through these obstacles on Bound Brook Road then pull into the crosswalk at Madison Avenue in order to see around the brick building on the northwest side of the intersection. Curb ramps are either missing entirely or in need of maintenance and truncated domes. The ladder crosswalks are faded.

WCW participants noted that drivers waiting for the North Avenue light often block the crosswalks and center of the intersection. WCW participants stated other towns have used on-road murals or striping to discourage drivers from stopping in the intersection. WCW participants also stated that pedestrians have a difficult time crossing either road. The mural could also help direct attention to the crosswalks and improve safety for pedestrians at this intersection.

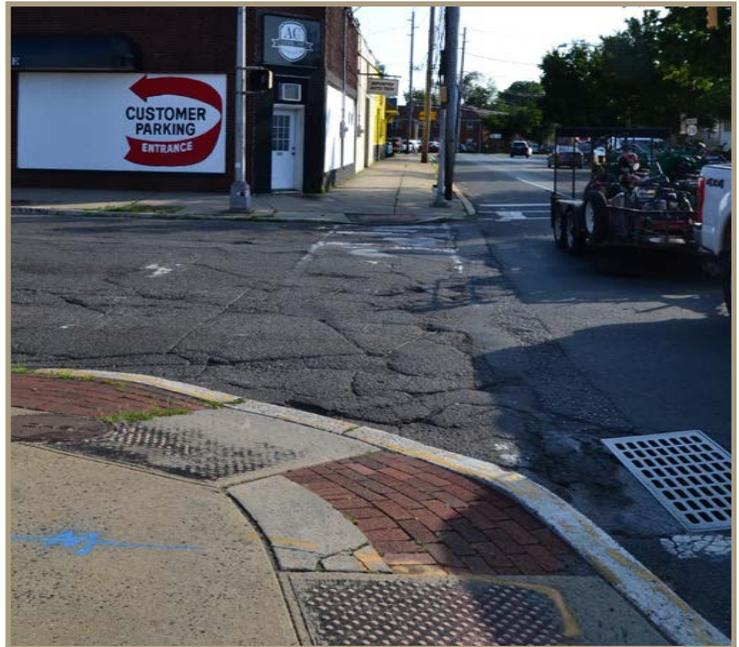


Figure 38. Looking south on North Avenue across Madison Avenue



Figure 39. Looking northwest on Madison Avenue

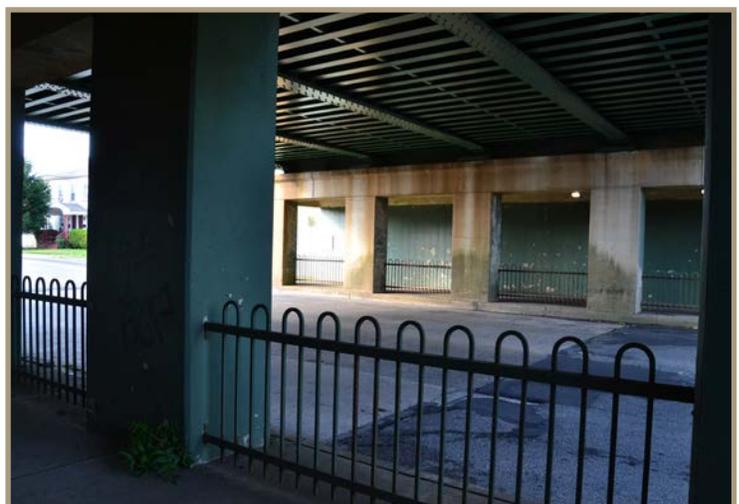


Figure 40. Looking north across Madison Avenue under the NJ TRANSIT overpass

Recommendations

During the workshop, participants expressed the desire to encourage and support walking and bicycling throughout the study area, and to improve safety for those already walking and biking.

I. Adopt a Complete Streets Policy

Adopting a complete streets policy is an important first step toward implementing complete streets, as it defines the meaning of complete streets, establishes goals, and lays out the ways in which the municipality will accomplish the goals. The most successful policies state that complete street practices and principles should be a standard part of regular roadway maintenance, planning, and design. An implementation plan and checklist can also be developed to ensure that the municipality remains on the right path year after year. Additionally, municipalities who are seeking SJ certification earn points for adopting and instituting a complete streets policy. The New Jersey Department of Transportation offers a guide to policy development and a separate guide on how to create an implementation plan. These resources are among those available at <http://njbikeped.org/complete-streets-resources/>. In 2019, the state released a new model policy guide, which should be used as a template for a new municipal policy (https://www.state.nj.us/transportation/eng/completestreets/pdf/CS_Model_Policy_2019.pdf).

2. Improve Crosswalks and Sidewalks

The neighborhood surrounding the study area is well suited for walking, thanks to the interconnected nature of its streets and proximity to the elementary school, downtown commercial district, and the train station. However, missing, unmaintained, or narrow sidewalks make walking challenging in several locations along the route.

Crosswalk visibility can be improved in several ways. Standard parallel crosswalks are common, but continental or ladder crosswalks are more visually striking and harder to miss. Rectangular Rapid Flashing Beacons (RRFBs) can be used at unsignalized crosswalks, which flash when activated by a pedestrian. LED lighting can also be installed along the crosswalk in the roadway at particularly busy locations. Lastly, raised crosswalks can be used as both a speed management tool and a way to make crosswalks more noticeable to drivers. Crosswalks should be well-lit with light fixtures at both ends of the crosswalk to ensure visibility at night.

In the long-term, sidewalks should be built along the missing sections of the observed streets. Sidewalks should be at least 5 feet wide and have ADA-compliant curb ramps at corners. High visibility crosswalks should be striped in all directions at the intersections. As the borough looks for funding for completing the sidewalk network, steps should be taken to immediately improve safety in the community.

An opportunity exists to create on-street sidewalks in the neighborhood similar to the one already installed on Lehigh Street. The creation of on-street sidewalks also serves to decrease the space available to motorists, which helps to slow drivers down. In places such as High Street the road is wide enough to install a 10-foot on-street path that can accommodate bicyclists and pedestrians traveling in both directions. These temporary on-street paths and sidewalks should be linked with high visibility crosswalks and include ADA treatments such as truncated domes.

3. Investigate Road Diet Options

Currently, roads throughout the corridor are wider than necessary. Reallocating some space for other uses can help slow traffic and create a safer environment for all road users.

High Street: Lehigh Street to Walnut Street

WCW participants discussed a variety of options for the section of High Street near the elementary school, including expanding the sidewalks into Gavornik Park. Participants also discussed reverse angle parking, which angles the parking in the opposite direction so that drivers can back into the parking space. This makes leaving the parking space much safer. It is important to note that the New Jersey Complete Streets Design Guide, published by NJDOT in 2017, states that angled parking should not be used “at the expense of sidewalk width.” The existing 5-foot sidewalk is not wide enough to meet the needs of the elementary school students and families, so opportunities for widening this sidewalk should be explored (see Figure 42).

By switching from angled to parallel parking and narrowing the travel lane to 10 feet, a significant amount of space becomes available. This space can be used in a variety of ways; Figure 43 provides one example. The additional sidewalk space can remain on one side of the road or be distributed across both sides. A contra-flow (reverse direction) bicycle lane could be placed between on-street parking and the edge of the road. In order for the contra-flow lane to continue north, where High Street narrows to 30 feet wide, on-street parking would have to be removed from one side of the street (Figure 44). Alternatively, a 10-foot multi-use path could be striped along the western side of the road for bicyclists and pedestrians to share (similar to that pictured in Figure 45).

Any changes to this section of the corridor must also consider that the road narrows to 30 feet further north (Figure 44). While the design presented in Figure 43 would require the use of sharrows further north, there is another option. Figure 45 depicts the narrower section of High Street with a mixed-use path along the western side of the road. This 11-foot path should be separated from traffic by a two-foot buffer with bollards. Separating the path into two lanes may help pedestrians and bicyclists safely share the space. The on-street path can continue from the intersection with Walnut Street to the narrowing of the road just north of Lehigh Street. A portion of the path could continue all the way to the elementary school. WCW participants discussed movable bicycle racks owned by the school. They can be placed at this location (Figure 41).



Figure 41. Looking south on High Street near Lehigh Street

Reallocating this space does not require making costly and permanent changes upfront. Instead, temporary changes can be made using cones, movable bollards, and/or paint to create sidewalks and/or bicycle lanes on the street. These temporary changes would allow community members an opportunity to experience High Street in a new way and provide feedback for adjustments or potential enhancements. Community leaders can further promote active transportation through the education efforts described in the following section. A combination of these infrastructure and education efforts will alleviate some of the parking demand at the elementary school.

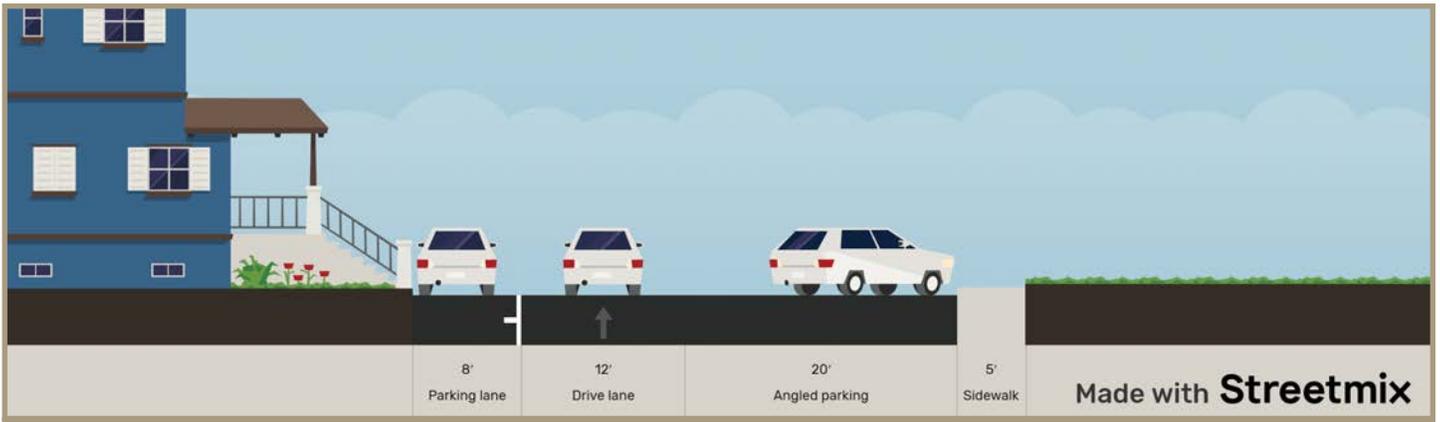


Figure 42. Current Allocation of space on High Street near the elementary school.

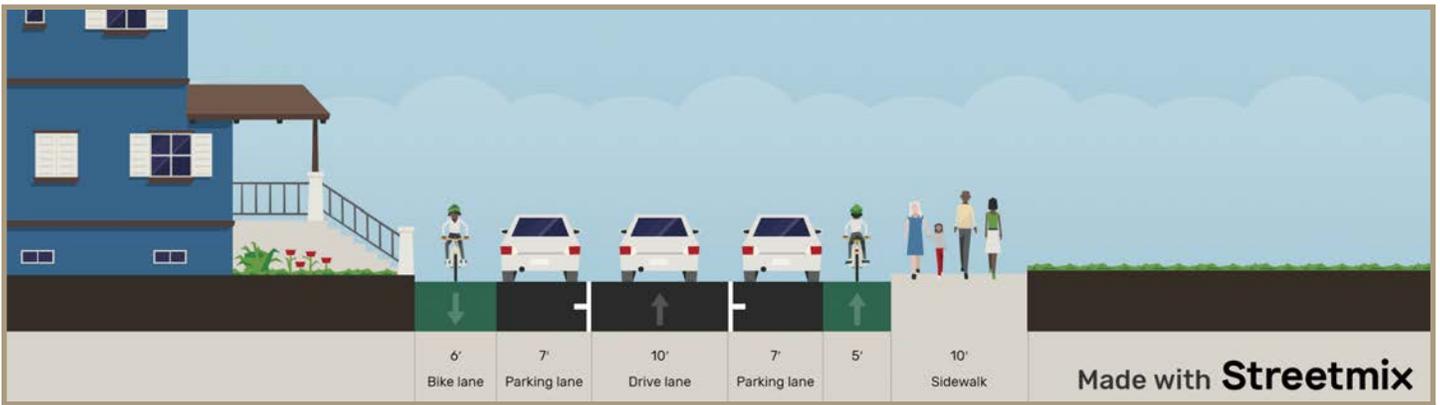


Figure 43. High Street with parallel parking, contra-flow bicycle lane, and extended sidewalk space.

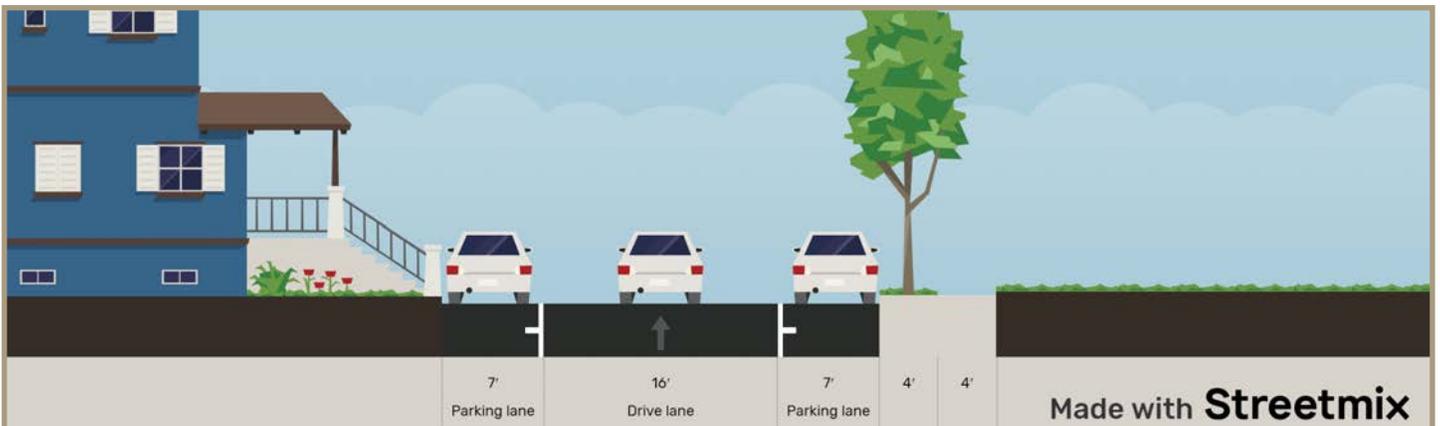


Figure 44. High Street current allocation of space near Walnut Street.

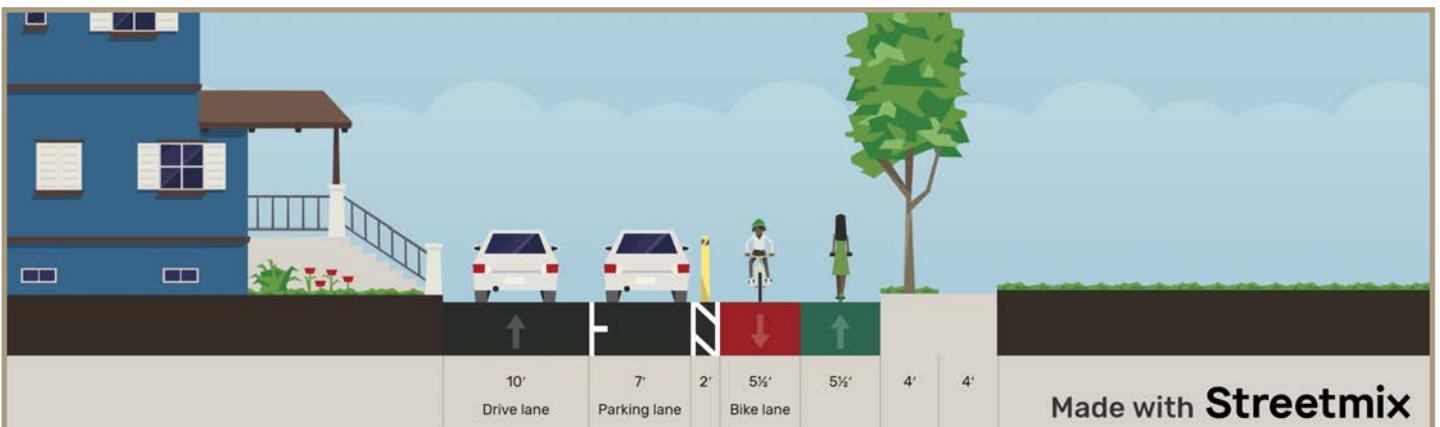


Figure 45. High Street near Walnut Street with a multi-use path.

South Madison Avenue

Figure 46 shows the current layout of South Madison Avenue near Walnut Street, where sidewalks are only available on the east side of the street. The extra-wide travel lanes can be narrowed to create space for an on-street sidewalk and/or bicycle lane as shown in Figure 47. Sharrows can be added on the east side of the road for bicyclists traveling north. Splitting the bicycle lane so that there is one lane in either direction would mean reducing the lanes to 4 feet. This is the absolute minimum width for a bicycle lane, so it cannot be shared with pedestrians.

The recommendations described here may also be considered for South Walnut Street, as the layout of both roads are very similar.

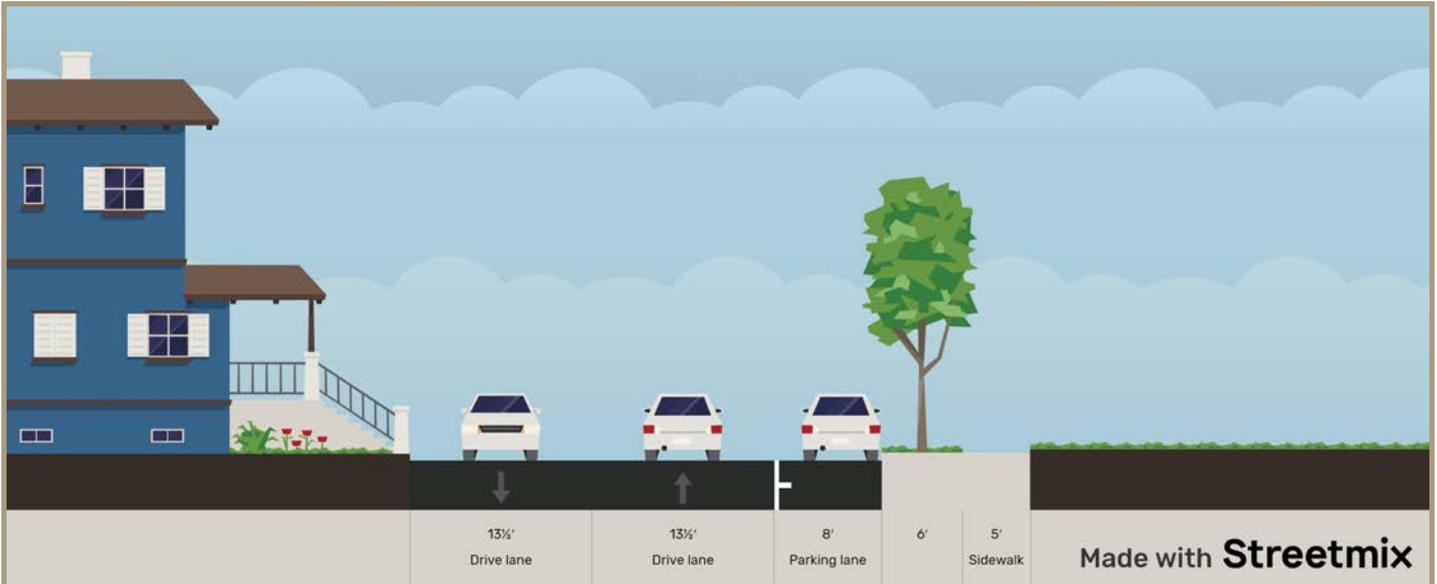


Figure 46. South Madison Avenue current allocation of space near Walnut Street.

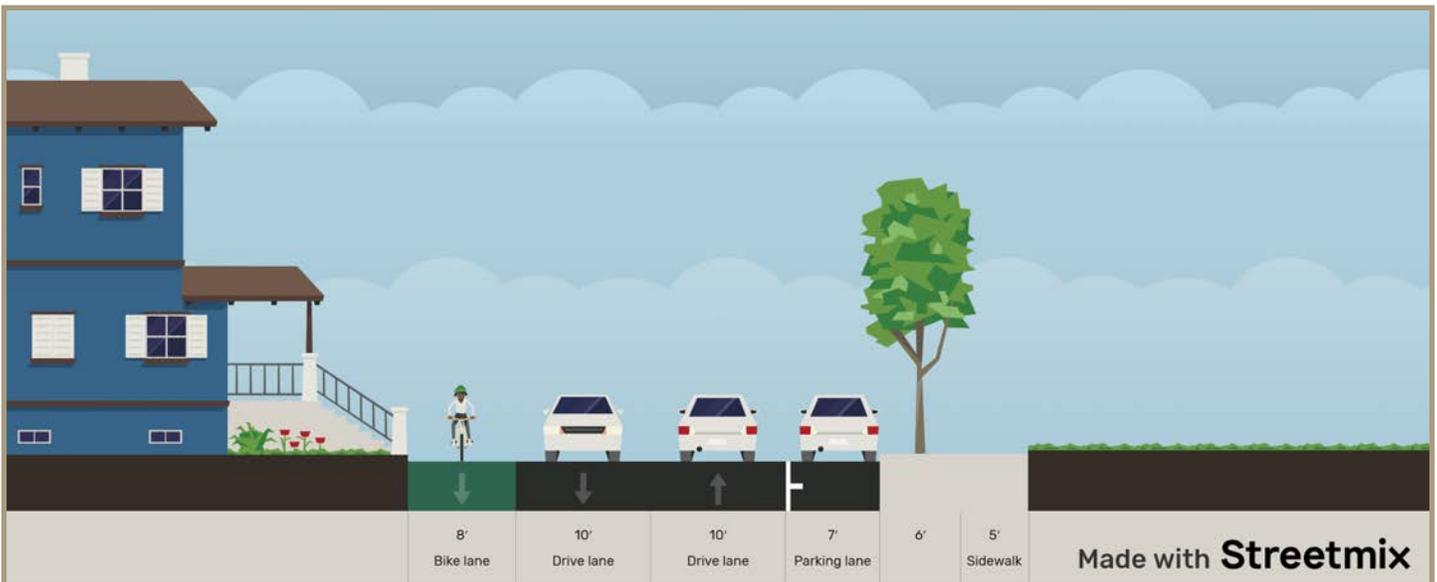


Figure 47. High Street near Walnut Street with a bicycle lane.

4. Encourage Active Transportation

Education is an essential element in creating safer streets for all users. Enforcement of pedestrian crosswalk laws provides one tool for encouraging vehicles to watch for pedestrians. There are additional opportunities to provide positive encouragement as well. The Street Smart NJ campaign is one public education tool that municipalities can use to promote safe driving, walking, and bicycling (see Figure 48). Community events provide an excellent opportunity to spread awareness about complete streets goals. One such example can be found in New Brunswick's Ciclovía, which temporarily closes a street to cars and opens it up to bicyclists, pedestrians, and various activities. These educational opportunities can also be used to spread awareness on safe ways to ride a bicycle or scooter throughout Dunellen.

Dunellen has worked closely with NJ Safe Routes to School (SRTS) and KMM to develop programs that provide various educational opportunities for youth and parents. Continuing to encourage walking and bicycling as a safe option for students would help with traffic flow and improve safety along the corridor.

During the WCW, KMM proposed an off-site drop off and pick up location to help reduce traffic volumes in the area surrounding the school. The Knights of Columbus on South Avenue was suggested as a possible location. However, when selecting a site, officials should try to steer traffic away from already congested areas such as the intersection of South Avenue and Madison Avenue.

Many of the events and activities described here would qualify Dunellen for consideration in the NJ SRTS Recognition Program. Municipalities and schools that meet the requirements for the program can also earn points toward SJ and SJ for Schools certification. More information can be found on the NJ Safe Routes to School website (<http://www.saferoutesnj.org/levels/>; <https://www.saferoutesnj.org/sustainable-jersey-actions/>).

5. Incorporate Art and Culture

Dunellen officials are working with NJ TRANSIT to improve lighting under the train overpass. An opportunity may be available to develop artwork to further brighten the overpass. Designs could work in tandem with a potential mural at the Bound Brook Road intersection that discourages drivers from blocking the intersection. Additionally, the overpass could be used as a kind of gateway to Dunellen's downtown. For example, the NJ TRANSIT overpass in New Brunswick marks a gateway onto Rutgers' College Avenue Campus (Figure 49).

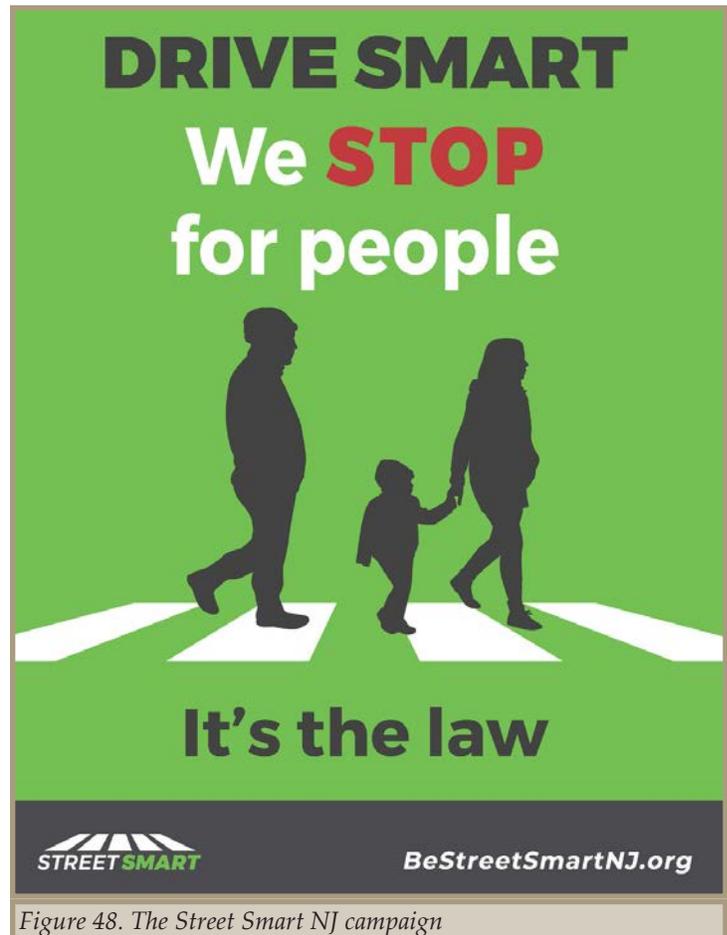


Figure 48. The Street Smart NJ campaign

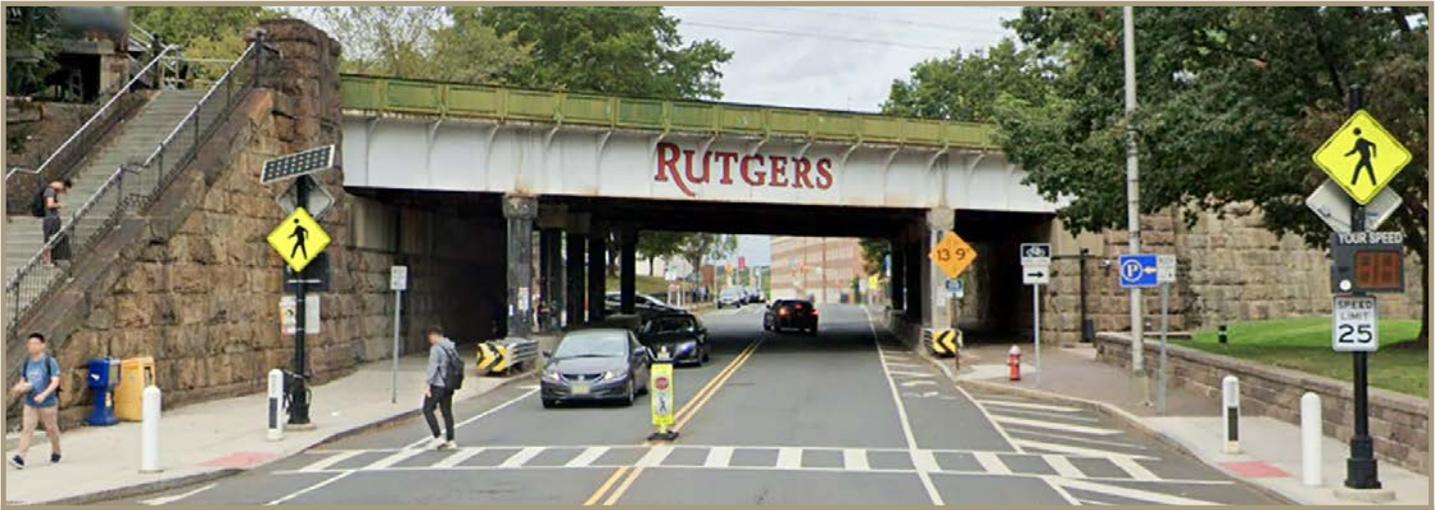


Figure 49. Image of Rutgers logo on the NJ TRANSIT overpass in New Brunswick.

Recommendations Summary

High Street: Lehigh Street to Walnut Street

- Investigate the road diet options suggested in recommendation #3, considering both temporary and long-term solutions including an on-road sidewalk or multi-use path.

Walnut Street: High Street to South Madison Avenue

- Conduct a traffic study to determine if a four-way stop is warranted at the intersection of South Madison Avenue and Walnut Street. In the short term:
 - Install RRFBs to enhance the visibility of crosswalks;
 - Permanently install the R1-6a sign by bolting it to the roadway at the crosswalk.
- Investigate the road diet options suggested in recommendation #3.
 - Temporary solutions may include painted on-street sidewalks/multi-use paths while developing plans and seeking funding for long-term plans, such as installation of sidewalks or separated paths.
- Stripe yellow “no parking” markings at the intersection of Walnut Street and South Madison Avenue. The markings should be 50 feet from the stop sign on Walnut Street and 25 feet from the intersection on South Madison Avenue, as there is no stop sign at this location.
- Install ADA-compliant ramps at all four corners of the South Madison Avenue and Walnut Street intersection.

South Madison Avenue: Walnut Street to South Avenue

- Install on-street sidewalks in the short-term while exploring funding options for long-term solutions to install sidewalks where missing.
- Increase safety at the intersection of South Madison Avenue and South Avenue:
 - Install RRFBs to increase the visibility of the crosswalk;
 - Paint stop bars on the roadway surface to let drivers know that they are approaching a crosswalk;
 - Straighten the crosswalk over South Avenue and paint or install curb extensions to shorten the crosswalk, slow traffic, and increase visibility.
- Install pedestrian-oriented lighting, especially over crosswalks.

South Avenue: South Madison Avenue to Madison Avenue

- Increase safety at the intersection of South Avenue and Madison Avenue by installing curb extensions and clearly mark the vehicle travel lanes on Madison Avenue.
- Install a marked crosswalk at the northeastern side of the intersection.
- Conduct a traffic study to determine if a traffic signal is needed at this busy intersection.
- Ensure safe pedestrian and bicycle accommodations for students heading to and from school, especially if an off-site drop-off is located at the Knights of Columbus, which could include installation of bicycle lanes or a multi-use path along South Avenue.

Madison Avenue: South Avenue to North Avenue

- Improve lighting under the NJ TRANSIT overpass and consider creating a gateway into the downtown area.
- Consider murals along the underpass and a mural at the intersection of Madison Avenue and Bound Brook Road:
 - An intersection mural could be used to help increase driver awareness of the intersection/crosswalks;
 - Designs may be developed in conjunction with local artists, school and/or community groups and should reflect Dunellen's culture and/or history.
- Clearly mark the vehicle travel lanes.
- Conduct a traffic study to see if a left-hand turn phase is needed for the traffic signal at North Avenue.

Conclusion

The roads included in this report provide an important connection between the elementary school, surrounding residential areas, and downtown commercial district. Madison Avenue can be transformed into a gateway to the downtown area for motorists, pedestrians, and bicyclists by better balancing the needs of each travel mode. South Madison Avenue, Walnut Street, High Street and South Avenue can create safer connections for all road users by reallocating road space.

Local officials, interested in improving their streets, applied to the CSTA Program to audit current conditions and develop recommendations for potential improvements. As part of this assistance, local stakeholders participated in an educational workshop on complete streets and a walkable community audit.

Road diets, continuous sidewalks, and bicycle infrastructure could greatly improve the walkability and bikeability of the area while encouraging walking and bicycling. Demonstration projects can be deployed to test out the suitability of various recommendations for suggested changes on municipal roadways along the corridor. Findings from the WCW can be used to help develop a complete streets policy.



Figure 50. Complete and green streets for all.



Appendix

A. Workshop Flyers

B. Workshop Agenda and Field Audit Form

C. StreetSmart NJ Campaign Resources

D. Potential Funding Resources

E. Design Resources

F. South Madison Avenue Striping Memo

A. Workshop Flyers

Borough of Dunellen Walkable Community Workshop

ONLINE MEETING

MONDAY, JULY 13, 2020

3:00PM TO 5:00PM

DUNELLEN IS INTERESTED in improving pedestrian connections between downtown Dunellen, the John P. Faber Elementary School, and the surrounding community. Workshop participants will learn to identify safety concerns for pedestrians and discuss possible solutions. The suggestions made during the workshop will be compiled into a final report along with recommendations to make walking a safer and more attractive option for residents of all ages and abilities.

Please join us in a virtual meeting to learn about making Dunellen's streets safer for pedestrians and provide your feedback! The meeting is open to all, pre-registration is required.

Register here: <https://go.rutgers.edu/DunellenWCW>

For more information, email: heaslya@tcnj.edu



The Complete Streets Technical Assistance Program is a collaboration between Sustainable Jersey, the Voorhees Transportation Center at Rutgers University, and the North Jersey Transportation Planning Authority. Funded by the NJTPA, the program is designed to support municipal government efforts to advance complete streets initiatives.



Borough of Dunellen Walkable Community Meeting

ONLINE MEETING

MONDAY AUGUST 10, 2020

NOON to 1:00 PM

DUNELLEN IS INTERESTED in improving pedestrian connections between downtown Dunellen, the John P. Faber Elementary School and the surrounding community. On July 13, 2020 a virtual workshop was held where participants discussed safety concerns for pedestrians and possible solutions. Based on this input, we developed recommendations to make walking a safer and more attractive option for residents of all ages and abilities. Your feedback is needed to help us finalize these recommendations.

Please join us in a virtual meeting to learn about the audit findings, view the initial design concepts, and provide your feedback! The meeting is open to all, but pre-registration is required.

Register here: <https://go.rutgers.edu/DunellenWCW2>

For more information, email: heasley@tcnj.edu



The Complete Streets Technical Assistance Program is a collaboration between Sustainable Jersey, the Voorhees Transportation Center at Rutgers University, and the North Jersey Transportation Planning Authority (NJTPA). Funded by the NJTPA, the program is designed to support municipal government efforts to advance complete streets initiatives.



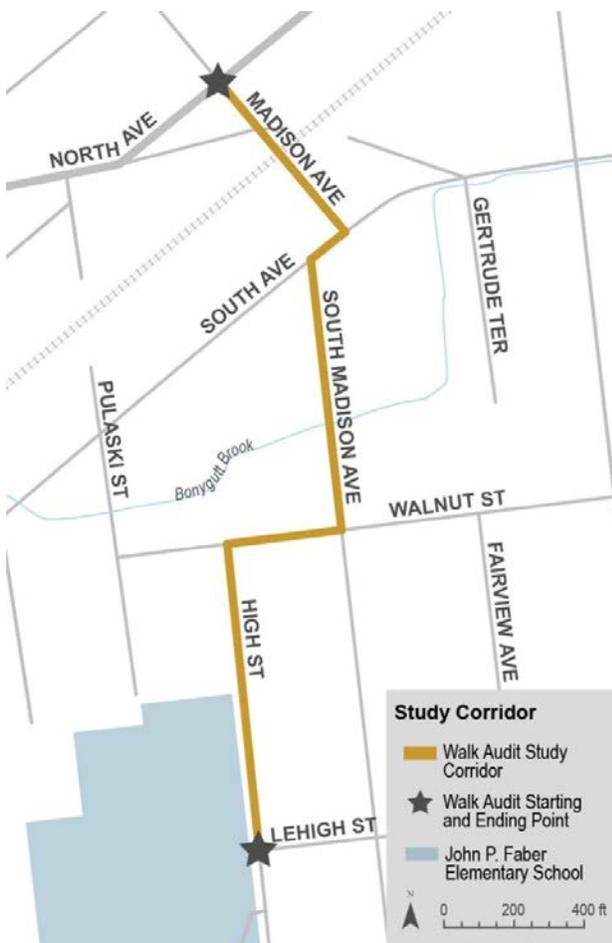
B. Workshop Agenda and Field Audit Form

BOROUGH OF DUNELLEN WALKABLE COMMUNITY WORKSHOP

HIGH STREET TO MADISON AVE

July 13, 2020 | 3:00 PM to 5:00 PM

VIRTUAL WORKSHOP AGENDA



3:00 pm Walkable Community Presentation
The Complete Streets Technical Assistance project team will lead a presentation for people who live and work in Dunellen about what to look for when auditing walking and biking infrastructure.

4:00 pm Virtual Walking Audit
Participants will virtually walk the corridor using Google Street View, assessing the existing streets and sidewalks and identifying issues to overcome to provide safer conditions for pedestrians and bicyclists.

4:45 pm Debrief and Next Steps
Participants will share recommendations to improve the safety, convenience, and comfort of the walking environment based upon what they observed during the walking audit.

5:00 pm Adjourn

Please print and complete this audit form, then scan or take a picture of each page and email it along with any photos to heasley@tcnj.edu by August 3.

The Complete Streets Technical Assistance Program is a collaboration between Sustainable Jersey, the Voorhees Transportation Center at Rutgers University, and the North Jersey Transportation Planning Authority (NJTPA). Funded by the NJTPA, the program is designed to support municipal government efforts to advance complete streets initiatives.



DUNELLEN WALK AUDIT

July 13, 2020 | 3:00 PM to 5:00 PM

Contact	Person Completing:	_____
	Email:	_____
	Phone:	_____

Section 1: High Street

Design	How many lanes are there?	Are there crosswalks?
	What is the speed limit?	Is there a median?

Driver Behavior	Circle all that apply:	
	a. Speeding	e. Loud music
	b. Blocking crosswalk	f. Loud engine
	c. Not stopping for pedestrians	g. Not stopping for traffic control
	d. Double parking	

Sidewalk Condition	Are sidewalks present?
	No One Side (Which?) Both Sides
	Any problems you observed:
	a. Sidewalks or paths started and stopped, where?
	b. Sidewalks were broken or cracked, where?
	c. Sidewalk slope problems, where?
	d. Sidewalks were blocked with parked cars, signs, shrubs, etc., where?
e. Sidewalks not wide enough, where?	
f. Sight obstructions, where?	

DUNELLEN WALK AUDIT

July 13, 2020 | 3:00 PM to 5:00 PM

Curb Cuts/Ramps	<p>Circle all that apply:</p> <p>a. Missing</p> <p>b. Non ADA compliant curb cuts/ramps (too steep, not passable, etc.)</p> <p>c. Aligned with crosswalk: yes or no</p> <p>d. Truncated domes present: yes or no</p> <p>e. Truncated domes placed correctly: yes or no</p> <p>f. Curb extensions: yes or no</p> <p>g. Other concerns:</p>						
Signage	<p>Streets are labeled: Excellent Average Poor None</p> <p>Pedestrian oriented directions: Excellent Average Poor None</p> <p>Car oriented directions: Excellent Average Poor None</p>						
Parking	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">Side 1</td> <td style="width: 50%; border: none;">Side 2</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Yes: Parallel or Angled</td> <td style="border: none;"><input type="checkbox"/> Yes: Parallel or Angled</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> No</td> <td style="border: none;"><input type="checkbox"/> No</td> </tr> </table>	Side 1	Side 2	<input type="checkbox"/> Yes: Parallel or Angled	<input type="checkbox"/> Yes: Parallel or Angled	<input type="checkbox"/> No	<input type="checkbox"/> No
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Amenities	<p>Check all that apply:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input type="checkbox"/> Bench</td> <td style="width: 50%; border: none;"><input type="checkbox"/> Bus shelter</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Trash Can</td> <td style="border: none;"><input type="checkbox"/> Bicycle Racks</td> </tr> <tr> <td style="border: none;"> ▪ Overflowing? Yes or No</td> <td></td> </tr> </table>	<input type="checkbox"/> Bench	<input type="checkbox"/> Bus shelter	<input type="checkbox"/> Trash Can	<input type="checkbox"/> Bicycle Racks	▪ Overflowing? Yes or No	
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<input type="checkbox"/> Trash Can	<input type="checkbox"/> Bicycle Racks						
▪ Overflowing? Yes or No							
Lighting	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input type="checkbox"/> Overhead cobra</td> <td style="width: 50%; border: none;">Is there lighting over the crosswalk?</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Historic</td> <td style="border: none;"><input type="checkbox"/> Yes</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Pedestrian oriented</td> <td style="border: none;"><input type="checkbox"/> No</td> </tr> </table>	<input type="checkbox"/> Overhead cobra	Is there lighting over the crosswalk?	<input type="checkbox"/> Historic	<input type="checkbox"/> Yes	<input type="checkbox"/> Pedestrian oriented	<input type="checkbox"/> No
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<input type="checkbox"/> Historic	<input type="checkbox"/> Yes						
<input type="checkbox"/> Pedestrian oriented	<input type="checkbox"/> No						

DUNELLEN WALK AUDIT

July 13, 2020 | 3:00 PM to 5:00 PM

Sidewalk Condition	<p>Are sidewalks present?</p> <p>No One Side (Which?) Both Sides</p> <p>Any problems you observed:</p> <p>a. Sidewalks or paths started and stopped, where?</p> <p>b. Sidewalks were broken or cracked, where?</p> <p>c. Sidewalk slope problems, where?</p> <p>d. Sidewalks were blocked with parked cars, signs, shrubs, etc., where?</p> <p>e. Sidewalks not wide enough, where?</p> <p>f. Sight obstructions, where?</p>															
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Pedestrian oriented directions:	Excellent	Average	Poor	None												
Car oriented directions:	Excellent	Average	Poor	None												

DUNELLEN WALK AUDIT
 July 13, 2020 | 3:00 PM to 5:00 PM

Section 3: South Madison Avenue and South Avenue									
Design	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; padding: 5px;">How many lanes are there?</td> <td style="width: 50%; padding: 5px;">Are there crosswalks?</td> </tr> <tr> <td style="padding: 5px;">What is the speed limit?</td> <td style="padding: 5px;">Is there a median?</td> </tr> </table>	How many lanes are there?	Are there crosswalks?	What is the speed limit?	Is there a median?				
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c. Not stopping for pedestrians	g. Not stopping for traffic control								
d. Double parking									
Sidewalk Condition	<p>Are sidewalks present?</p> <p>No One Side (Which?) Both Sides</p> <p>Any problems you observed:</p> <ul style="list-style-type: none"> a. Sidewalks or paths started and stopped, where? b. Sidewalks were broken or cracked, where? c. Sidewalk slope problems, where? d. Sidewalks were blocked with parked cars, signs, shrubs, etc., where? e. Sidewalks not wide enough, where? f. Sight obstructions, where? 								

DUNELLEN WALK AUDIT

July 13, 2020 | 3:00 PM to 5:00 PM

Curb Cuts/Ramps	Circle all that apply:	
	a. Missing	
	b. Non ADA compliant curb cuts/ramps (too steep, not passable, etc.)	
	c. Aligned with crosswalk: yes or no	
	d. Truncated domes present: yes or no	
	e. Truncated domes placed correctly: yes or no	
	f. Curb extensions: yes or no	
g. Other concerns:		
Signage	Streets are labeled: Excellent Average Poor None	
	Pedestrian oriented directions: Excellent Average Poor None	
	Car oriented directions: Excellent Average Poor None	
Parking	Side 1	Side 2
	<input type="checkbox"/> Yes: Parallel or Angled	<input type="checkbox"/> Yes: Parallel or Angled
	<input type="checkbox"/> No	<input type="checkbox"/> No
Amenities	Check all that apply:	
	<input type="checkbox"/> Bench	<input type="checkbox"/> Bus shelter
	<input type="checkbox"/> Trash Can ▪ Overflowing? Yes or No	<input type="checkbox"/> Bicycle Racks
Lighting	<input type="checkbox"/> Overhead cobra	Is there lighting over the crosswalk?
	<input type="checkbox"/> Historic	<input type="checkbox"/> Yes
	<input type="checkbox"/> Pedestrian oriented	<input type="checkbox"/> No

DUNELLEN WALK AUDIT
 July 13, 2020 | 3:00 PM to 5:00 PM

Sidewalk Condition	Are sidewalks present?				
	No	One Side (Which?)		Both Sides	
	Any problems you observed:				
	a. Sidewalks or paths started and stopped, where?				
	b. Sidewalks were broken or cracked, where?				
	c. Sidewalk slope problems, where?				
	d. Sidewalks were blocked with parked cars, signs, shrubs, etc., where?				
	e. Sidewalks not wide enough, where?				
	f. Sight obstructions, where?				
Curb Cuts/Ramps	Circle all that apply:				
	a. Missing				
	b. Non ADA compliant curb cuts/ramps (too steep, not passable, etc.)				
	c. Aligned with crosswalk: yes or no				
	d. Truncated domes present: yes or no				
	e. Truncated domes placed correctly: yes or no				
	f. Curb extensions: yes or no				
	g. Other concerns:				
Signage	Streets are labeled: Excellent Average Poor None				
	Pedestrian oriented directions: Excellent Average Poor None				
	Car oriented directions: Excellent Average Poor None				

DUNELLEN WALK AUDIT

July 13, 2020 | 3:00 PM to 5:00 PM

Parking	Side 1	Side 2
	<input type="checkbox"/> Yes: Parallel or Angled <input type="checkbox"/> No	<input type="checkbox"/> Yes: Parallel or Angled <input type="checkbox"/> No
Amenities	Check all that apply:	
	<input type="checkbox"/> Bench <input type="checkbox"/> Trash Can <input type="checkbox"/> Overflowing? Yes or No	<input type="checkbox"/> Bus shelter <input type="checkbox"/> Bicycle Racks
Lighting	<input type="checkbox"/> Overhead cobra <input type="checkbox"/> Historic <input type="checkbox"/> Pedestrian oriented	Is there lighting over the crosswalk? <input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Frequent, good shape <input type="checkbox"/> Frequent, poor shape <input type="checkbox"/> Mostly empty tree wells	<input type="checkbox"/> Infrequent, good shape <input type="checkbox"/> Infrequent, poor shape <input type="checkbox"/> No tree wells
Additional Notes: <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>		

DUNELLEN WALK AUDIT

July 13, 2020 | 3:00 PM to 5:00 PM

Final Questions

How safe did this area feel?	0	1	2	3	4	5	6	7	8	9	10
How afraid would you be to walk ALONE in the area during <i>daytime</i> ?	0	1	2	3	4	5	6	7	8	9	10
How afraid would you be to walk ALONE in the area during <i>night</i> ?	0	1	2	3	4	5	6	7	8	9	10
How well cared for did this area feel?	0	1	2	3	4	5	6	7	8	9	10

Additional Notes:

Please print and complete this audit form, then scan or take a picture of each page and email it along with any photos to heaslya@tcnj.edu by August 3.

C. StreetSmart NJ Campaign Resources



STREET SMART NJ FACT SHEET

What is Street Smart NJ?

Street Smart NJ is a public education, awareness and behavioral change pedestrian safety campaign created by the North Jersey Transportation Planning Authority (NJTPA). The campaign combines grassroots public awareness efforts with social media, public outreach efforts and law enforcement to address pedestrian safety.

There are a number of different ways communities can participate. Nearly all campaigns enlist the involvement of community leaders, businesses and organizations and ask police to step up enforcement of pedestrian safety laws. Some campaigns have an evaluation component, including pre- and post-campaign surveys and observations at crash prone locations. Smaller campaigns may be limited to handing out information at community events and displaying signage around town.

More than 140 communities have participated in Street Smart in some way since the program's inception in 2013. NJTPA's goal is to continue growing the program across the state. Communities everywhere are invited to use the strategies and materials on the Street Smart website, bestreetsmartnj.org, to create their own campaigns. The website includes a 'How To' guide, printable materials, social media posts and a sample press release among other resources.

NJTPA staff are available to sit down with interested towns to discuss how to bring Street Smart NJ to their community.



BeStreetSmartNJ.org

 [StreetSmartNJ](https://www.facebook.com/StreetSmartNJ)

 [NJStreetSmart](https://twitter.com/NJStreetSmart)



Why do we need Street Smart?

Part of the impetus behind Street Smart NJ was that the Federal Highway Administration identified New Jersey as a pedestrian “focus” state due to the high incidence of pedestrian injuries and fatalities. In 2019, 179 pedestrians died as a result of pedestrian-vehicle crashes in New Jersey. From 2015 to 2019, 876 pedestrians were killed and thousands were injured on New Jersey’s roadways. That translates to one death every two days and 12 injuries daily.

Campaign Messages

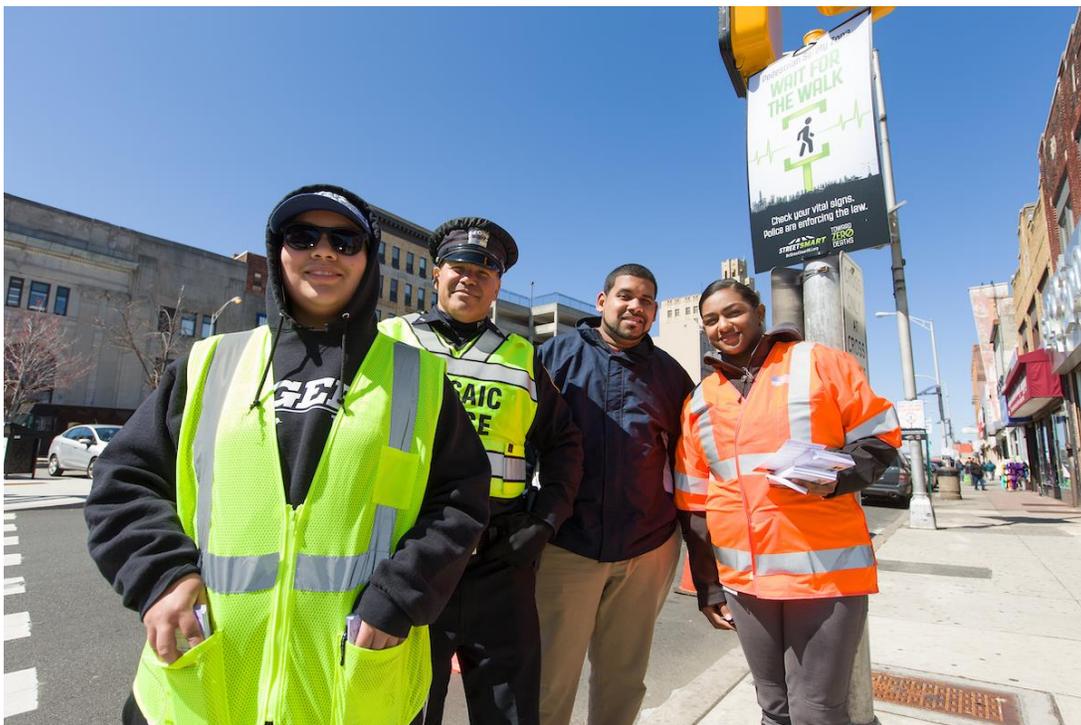
The Street Smart NJ campaign urges pedestrians and motorists to keep safety in mind when traveling New Jersey’s roads. The program’s core message is “Walk Smart – Drive Smart – Be Street Smart” with specific messages including We look before crossing; Heads up, phones down; We slow down for safety; We stop for people – it’s the law; We use crosswalks; We cross at corners; We cross at the light; and We wait for the walk. The NJTPA has developed pedestrian safety tip cards, in English and Spanish, for public distribution built around the messages. The messages are also printed on posters, banners, street signs, coasters, tent cards and coffee sleeves.

Police Enforcement

One of the keys to Street Smart NJ’s success is law enforcement participation. Police officers engage and educate, rather than simply issue citations. In many communities that participate in Street Smart NJ police have issued warnings rather than citations and even rewarded good behavior with coupons, gift cards and free t-shirts. Street Smart NJ public awareness efforts are often conducted in conjunction with this increased enforcement.

Results

Evaluations of previous Street Smart NJ campaigns have shown positive results. There was a 60 percent improvement in drivers stopping for people crossing before turning right at a red light or stop sign and 45 percent reduction in drivers running a red light or stop sign, based on an analysis of eight campaigns conducted in 2018 and 2019. There was also a 40 percent improvement in drivers stopping for pedestrians before turning at a green light and a 21 percent reduction in the number of people crossing unsafely against a signal or outside a crosswalk. The full report can be viewed at [BeStreetSmartNJ.org](https://www.beStreetSmartNJ.org).



[BeStreetSmartNJ.org](https://www.beStreetSmartNJ.org)

 [StreetSmartNJ](#)

 [NJStreetSmart](#)

D. Potential Funding Resources

This appendix provides a list of common grant programs available to New Jersey communities for the advancement of complete streets initiatives, including both infrastructure and non-infrastructure projects, and programs to increase walking and bicycling. A table has been included that lists the most common grant sources for complete street related projects. Links to two online databases with additional funding sources has also been included. Grants listed are highly competitive and grant application requirements should be carefully reviewed before making the decision to apply. From the reviewers' perspective, application review is time-consuming and often applications will not be reviewed if all the required elements are not received by the published deadline. The most successful applications tell the story of the populations most in need of the proposed improvements, especially disadvantaged communities or vulnerable groups such as seniors. Applications should use compelling pictures, data and other documentation, and indicate how and why improvements are prioritized.

New Jersey Department of Transportation

The Division of Local Aid and Economic Development at the New Jersey Department of Transportation (NJDOT) provides funds to local public agencies such as municipal governments for construction projects to improve the state's transportation system. The state's Transportation Trust Fund and the federal Safe, Accountable, Flexible, Efficient Transportation Equity Act — A Legacy for Users (SAFETEA-LU) legislation provides the opportunity for funding assistance to local governments for road, bridge and other transportation projects. NJDOT and the three metropolitan planning organizations that cover the state administer federal aid programs. NJDOT administers state aid programs. Below are some options for funding infrastructure projects through NJDOT.

State Aid Infrastructure Grant Programs

Municipal Aid: This program assists municipalities in funding local transportation projects, and all municipalities in New Jersey are eligible to apply. NJDOT encourages applications for pedestrian safety improvements, bikeways, and streetscapes. Additionally, a common strategy to implement on-street bike lanes is to include bike lane striping within repaving projects that are funded through this program. Learn more here: <https://www.state.nj.us/transportation/business/localaid/municipalaid.shtm>

County Aid: County Aid funds are available for the improvement of public roads and bridges under county jurisdiction. Public transportation and other transportation projects are also included. Learn more here: <https://www.state.nj.us/transportation/business/localaid/countyaid.shtm>

Bikeways: This program funds bicycle projects that create new bike path mileage, working towards NJDOT's goal of 1,000 miles of dedicated bikeways in New Jersey. Special consideration will be given to bikeways physically separated from vehicle traffic, but on-road bike lanes or other bike routes are also eligible for funding. Learn more here: <https://www.state.nj.us/transportation/business/localaid/bikewaysf.shtm>

Safe Streets to Transit: This program encourages counties and municipalities to construct safe and accessible pedestrian linkages to all types of transit facilities and stations, in order to promote increased usage of transit by all segments of the population and decrease private vehicle use. Learn more here: <https://www.state.nj.us/transportation/business/localaid/safe.shtm>

Transit Village: This program awards grants for transportation projects that enhance walking, biking, and/or transit ridership within a ½ mile of the transit facility. Municipalities must already be designated as a Transit Village by the Commissioner of Transportation and the inter-agency Transit Village Task Force in order to be eligible to apply. Learn more here: <https://www.state.nj.us/transportation/business/localaid/transitvillagef.shtm>

Other NJDOT Assistance

Bicycle and Pedestrian Planning Assistance: NJDOT offers Local Technical Assistance (LTA) funding through the Office of Bicycle and Pedestrian Programs. Under this program, on-call consultants are paired with communities to complete a variety of projects including bicycle and pedestrian circulation and master plan studies, safety assessments, trail feasibility studies, bikeway plans, and improvement plans for traffic calming projects. For more information, please contact the state bicycle and pedestrian program coordinator at bikeped@dot.nj.gov

Federal Aid Infrastructure Grant Programs

Safe Routes to School: The Safe Routes to School Program provides federal funds for infrastructure projects that enable and encourage children in grades K-8, including those with disabilities, to safely walk and bicycle to school. Applicants can receive bonus points on the grant if they have School Travel Plans, a Complete Street Policy and Transit Village designation. Learn more here: <https://njdotlocalaidrc.com/federally-funded-programs/safe-routes-to-school>

Transportation Alternatives Program: The Transportation Alternatives Program provides federal funds for community based “non-traditional” transportation projects designed to strengthen the cultural, aesthetic and environmental aspects of the nation’s intermodal system. Municipalities can receive bonus points on the grant if they have an adopted Complete Street Policy and are a designated Transit Village. Learn more here: <https://njdotlocalaidrc.com/federally-funded-programs/transportation-alternatives>

New Jersey Department of Environmental Protection: The Recreational Trails Program administered by the NJDEP Green Acres Program provides federal funds for developing new trails and maintaining and restoring existing trails and trail facilities including trails for non-motorized, multi-use (including land and water) and motorized purposes. Learn more here: <https://www.nj.gov/dep/greenacres/trails/grants.html>

Health and Environment Funding

Sustainable Jersey: The Sustainable Jersey Small Grants program provides capacity building awards to municipalities to support local green teams and their programs, and is not project specific. Learn more here: <http://www.sustainablejersey.com/>

Sustainable Jersey for Schools: Sustainable Jersey for Schools grants are intended to help districts and schools make progress toward Sustainable Jersey for Schools certification. Learn more here: <http://www.sustainablejerseyschools.com>

New Jersey Healthy Communities Network: The New Jersey Healthy Communities Network is a partnership of grantees, funders and advocate organizations who seek to have collective impact on community well-being to support healthy eating and active living. The Community Grant Program provides opportunities to develop healthy environments for people to live, work, learn and play by funding policies, projects and programs that support walking and bicycling. Learn more here: <https://www.njhcn.org/>

Funding from Other Sources

Various other funding sources exist that may help municipalities further complete streets projects. Both Sustainable Jersey and Together North Jersey have developed comprehensive online databases that catalog the many funding sources available. They can be found at the following locations:

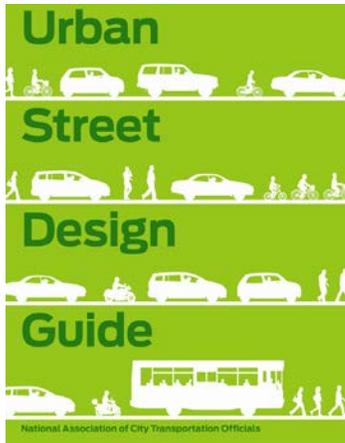
Sustainable Jersey Grants Portal: <https://www.sustainablejersey.com/grants/>

Together North Jersey Funding and Resources Database: <https://togethernorthjersey.com/funding-tools-database/>

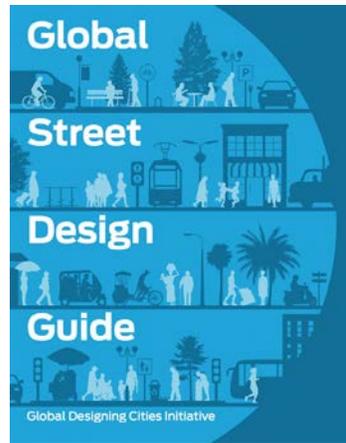
Federal Funding
1. US Department of Transportation (USDOT)
Better Utilizing Investments to Leverage Development (BUILD, replaced TIGER)
2. Federal Highway Administration (FHWA) Programs
Congestion Mitigation and Air Quality Improvement (CMAQ)
Surface Transportation Program (STP)
Highway Safety Improvement Program (HSIP)
National Highway Performance Program (NHPP)
Transportation Alternatives Program (TAP)
Safe Routes to School (SRTS)
Local Safety / High Risk Rural Roads Program (HRRR)
National Highway System (NHS)
Recreational Trails Program - Including hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles.
Federal Lands Access Program (FLAP) - The Access Program supplements State and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators.
Emergency Relief - Repair or reconstruction after national disaster, can include bicycle and pedestrian facilities
3. National Highway Traffic Safety Association
NHTSA Section 402 State Highway Safety Program
NHTSA Section 405 Non-Motorized Safety Grants
4. Federal Transit Administration Programs
Urbanized Area Formula Program (UZA) - Public transit and bike routes to transit
Fixed Guideway Capital Investment Grants - Transit systems and bike parking
Bus and Bus Facilities Formula Grants - Includes bike parking facilities
Enhanced Mobility of Seniors and Individuals with Disabilities - Access to transit facilities for seniors
State Funding
5. Municipal Aid (\$140m)
6. County Aid (\$150m)
7. Local Bridges (\$44m)
8. Safe Streets to Transit (\$1m)
9. Transit Village (\$1m)
10. Bikeways (\$1m)
11. Local Aid Infrastructure Fund (\$7.5m)
12. Safe Corridors Highway Safety Funds
13. Urban Aid (\$10m)
14. New Jersey Trails Program (Department of Environmental Protection)
15. Other Funding Sources
16. Regional/Local CMAQ Initiatives Program (NJTPA)
17. NJ Division of Highway Traffic Safety
18. Open Space & Farmland Preservation
19. Homeland Security Transit Security Grant Program (TSGP)
Other Sources
20. County Capital Program
21. Municipal Capital Programs
22. Foundations

E. Design Resources

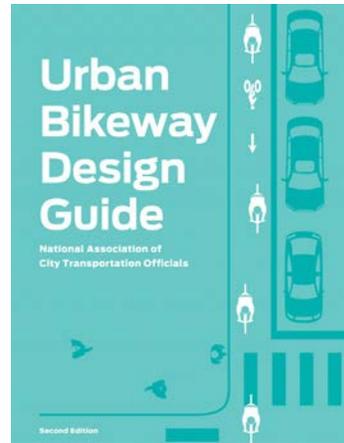
NACTO Guides



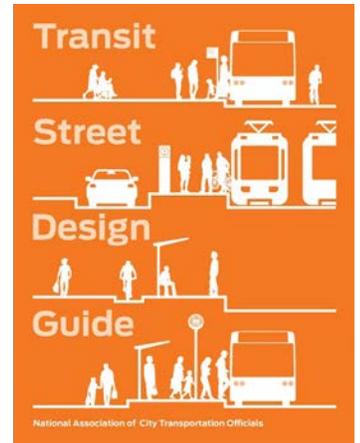
[Urban Street Design Guide](#)



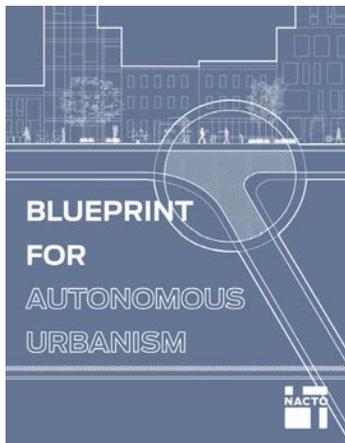
[Global Street Design Guide](#)



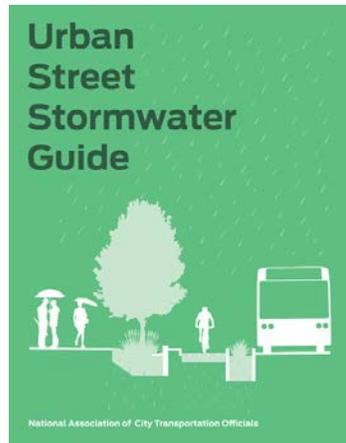
[Urban Bikeway Design Guide](#)



[Transit Street Design Guide](#)



[Blueprint for Autonomous Urbanism](#)

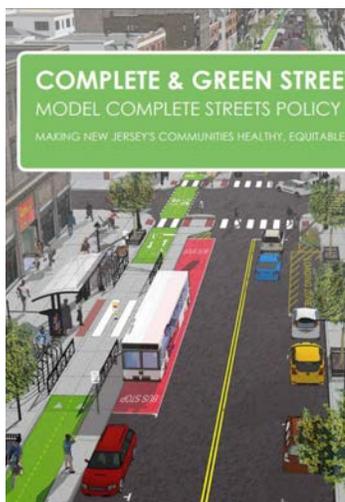


[Urban Street Stormwater Guide](#)

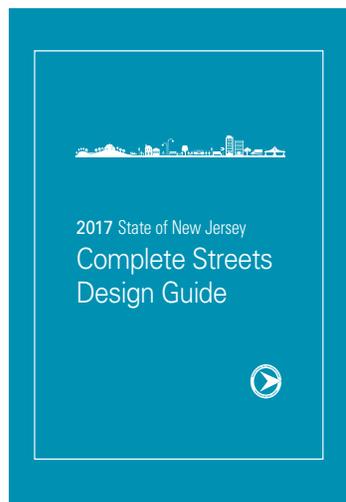


[Bike Share Station Siting Guide](#)

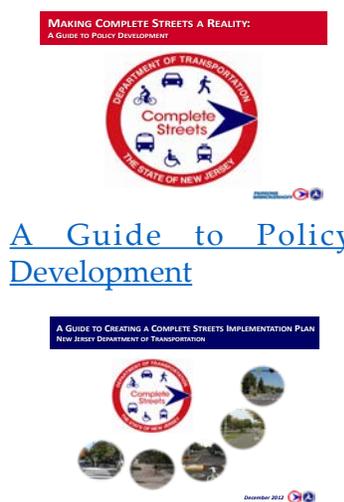
NJDOT Guides



[Complete & Green Streets for All: Model Policy and Guide](#)

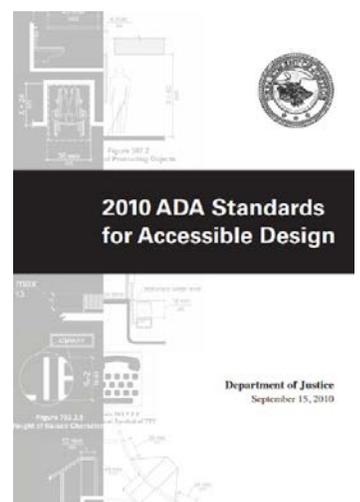


[2017 State of New Jersey Complete Streets Design Guide](#)



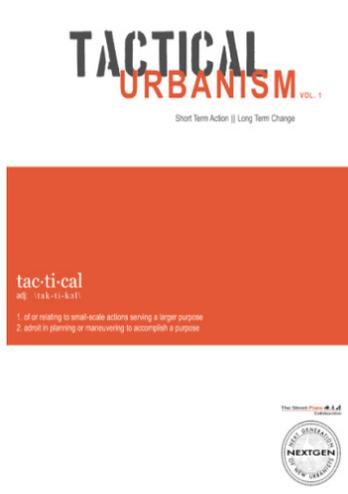
[A Guide to Creating a Complete Streets Implementation Plan](#)

ADA Guidelines

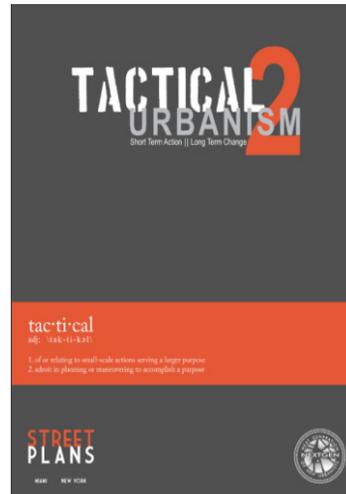


[ADA Standards for Accessible Design](#)

Tactical Urbanism Guides



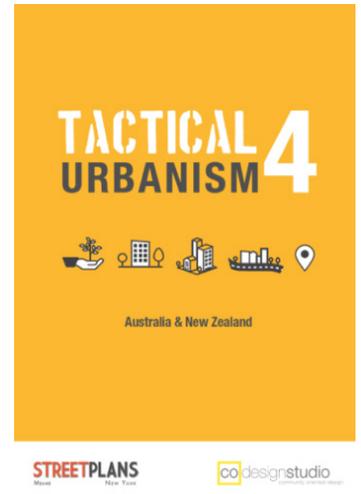
[Tactical Urbanism 1](#)



[Tactical Urbanism 2](#)



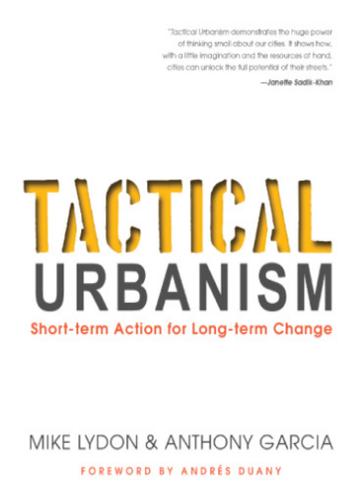
[Tactical Urbanism 3](#)



[Tactical Urbanism 4](#)



[Tactical Urbanism 5](#)



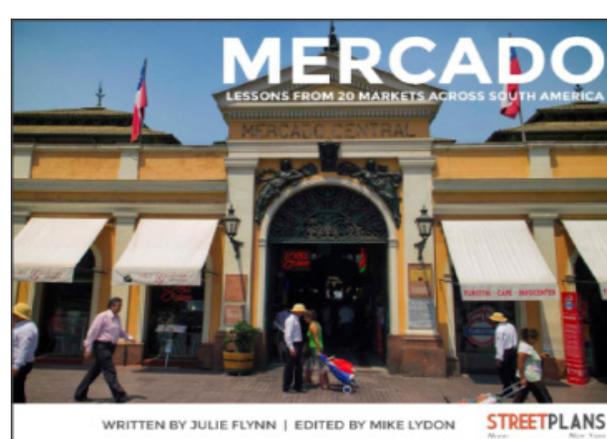
[Tactical Urbanism](#)



[Tactical Urbanist's Guide to Materials and Design Version 1.0](#)



[The Open Streets Guide](#)



[Mercado: Lessons from 20 Markets Across South America](#)



[Public Space Stewardship Guide](#)

F. South Madison Avenue Striping Memo

MEMORANDUM

TO: Dunellen Complete Streets Project Team

FROM: Alan M. Voorhees Transportation Center (VTC)

DATE: June 3, 2020

SUBJECT: South Madison Avenue Repaving – New Striping Recommendations

The Borough of Dunellen is currently participating in the Complete Streets Technical Assistance Program, a collaboration between Sustainable Jersey (SJ), the Voorhees Transportation Center at Rutgers University (VTC), and the North Jersey Transportation Planning Authority (NJTPA). Funded by the NJTPA, the program is designed to support municipal government efforts to advance complete streets initiatives. This memo contains striping improvement recommendations for South Madison Avenue, which is slated to be repaved later this year. Due to the time-sensitive nature of the repaving, these recommendations are being delivered in advance of the planned Dunellen Walkable Community Workshop, public outreach process, and accompanying draft and final report.

In response to COVID-19, Rutgers University has prohibited its employees from undergoing project-related fieldwork. Due to the ban, VTC ascertained current conditions on South Madison Avenue, such as existing striping and roadway widths, using Google Street View and Google Earth images from 2019. While both resources are a reliable substitute for information that would have been collected by VTC during in-person field visits, it is important to note that these measurements are approximate. The recommendations in this memo follow the guidance from the Manual of Uniform Traffic Control Devices (MUTCD), the New Jersey Complete Streets Design Guide, and the NACTO Urban Street Design Guide. The memo presents several recommendations for consideration by Borough officials and professionals for striping and other improvements that have the potential to increase pedestrian and bicyclist comfort and safety. The recommendations should be reviewed by a Borough Engineer or engineering consultant prior to being developing into a final design. Because paint is relatively inexpensive to install and remove, new striping designs can be installed on a trial basis and adjusted or removed, as needed.

The recommendations include high visibility crosswalks, shared-lane markings (sharrows), and on-road sidewalks. While the sharrows would be new to Dunellen, the on-road sidewalks are already in place on Lehigh Street. Together, these recommendations are intended to improve safety for all users by providing a safe space for bicyclists and pedestrians along the corridor.

High visibility crosswalks

South Madison Avenue is currently marked with Standard (transverse) crosswalk striping. The project team recommends that this striping be upgraded to high visibility striping, which is easier for drivers to see from further away, especially at night. The choices, which include Continental, Zebra and Ladder, are up to local preference (Figure 1).

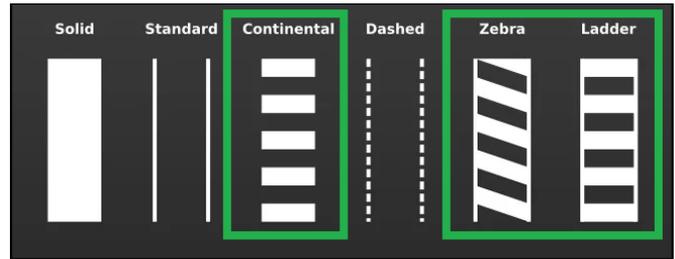


Figure 1: Crosswalk types

Shared-Lane Marking (Sharrows)

Described in MUTCD Section 9C.07, bicycle shared-lane markings are intended to attain the following results:

- Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking, in order to reduce the chance of a bicyclist impacting the open door of a parked vehicle;
- Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane;
- Alert road users of the lateral location bicyclists are likely to occupy within the traveled way;
- Encourage safe passing of bicyclists by motorists; and
- Reduce the incidence of wrong-way bicycling.

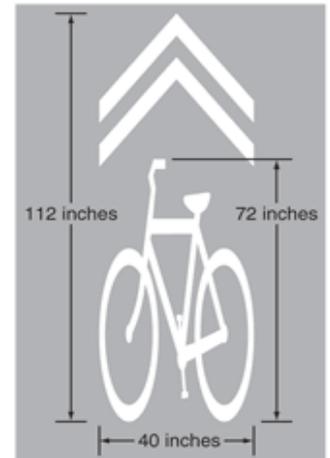


Figure 2: Shared Lane Marking standard size

Essentially, they serve to remind motorists that bicyclists are allowed on the roadway, and to instruct bicyclists on the safest place to ride. According to the New Jersey Complete Streets Design Guide, they should only be used on roadways with a speed-limit of 25mph or less, with an average daily vehicular traffic volume under 2,500, and where standard bicycle lanes cannot be accommodated. South Madison Avenue, with a width of approximately 28 feet, appears to meet these conditions.

Near intersections, where the travel lane is 11 feet wide, the center of the shared-lane markings should be 5 feet from the face of the curb, or from the edge of the pavement where there is no curb. Away from intersections, where on-street parking is allowed, shared-lane markings should be placed so that the center of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb.



Figure 3: R4-11 sign

Shared-lane markers should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter. If desired, the “Bicycles May Use Full Lane” (R4-11) sign (Figure 3) can also be installed to reinforce the meaning of the markers.

Optional “green backed sharrows” add green paint to enhance the visibility of the shared-lane markings (Figure 4).



Figure 4: Green backed sharrows in Newark, NJ

On-road Sidewalk

Currently, most of South Madison Avenue and the surrounding streets lack sidewalks. On Lehigh Street, Dunellen has created an on-road sidewalk using crosswalk markings, while prohibiting parking between 7:30am and 3:30pm on school days. The following sections recommend continuing on-road sidewalks, and the diagrams illustrate the style currently deployed in Dunellen, which are highly visible and intuitive. However, other styles have been used elsewhere, and can be substituted if desired (Figure 4 and Figure 5). It might be advisable to use a different form of marking in sections where parking is always prohibited in contrast to sections where parking is only prohibited at specific times. Additionally, vertical delineation, such as plastic bollards, should be considered near intersections where parking is always prohibited. Truncated domes, an ADA requirement, should be added at intersections.



Figure 6: Beige paint in New York City



Figure 5: Polka dot pattern in Seattle

South Madison Avenue and Center Street

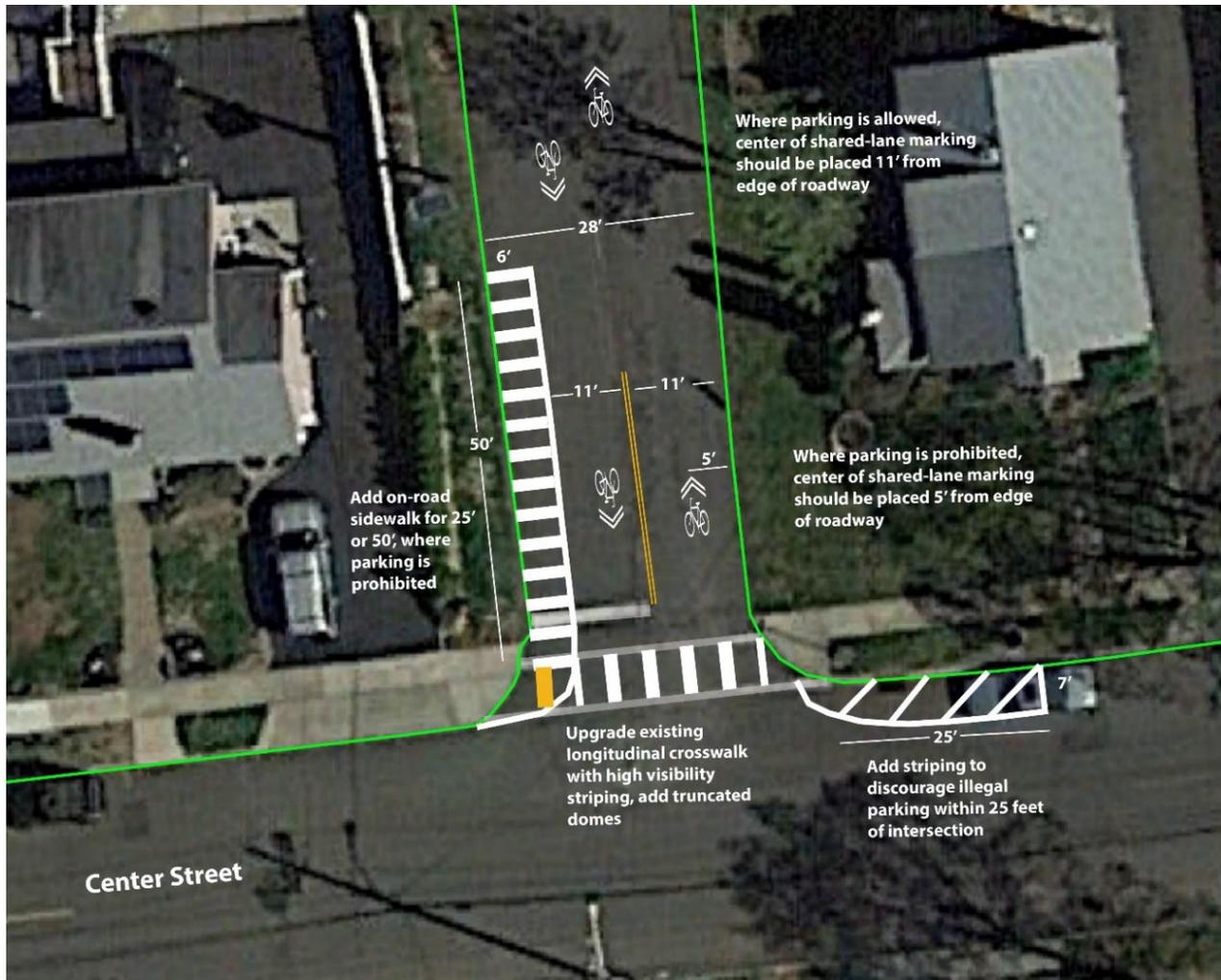


Figure 7: Proposed changes to South Madison Avenue and Center Street

- Upgrade existing crosswalk to high visibility pattern
 - Ensure four-foot gap remains between crosswalk and stop bar
- Create a six foot on-road sidewalk on west side of street for first 50 feet, where parking is not allowed as per 39:4-138 (Parking prohibited within 50 feet of a "stop" sign)
 - Parking stops and/or plastic bollards should be used to prevent incursion into the on-road sidewalk by vehicles
 - Add truncated domes at sidewalk curb ramps
- Add shared lane markings in both directions
 - Where on-road sidewalk exists, center of shared lane markings should be placed 5 feet from edge of roadway or on-road sidewalk
 - Where parking is allowed, shared lane markings should be placed 11 feet from edge of roadway
 - Shared lane markings should be located near intersection and then at intervals not greater than 250 feet thereafter
- On Center Street, add striping to discourage illegal parking within 25 feet of intersection, to improve sight lines

South Madison Avenue and Lehigh Street



Figure 8: Proposed changes to South Madison Avenue and Lehigh Street

- Realign existing crosswalks and upgrade to high visibility pattern
- Add truncated domes

Lehigh Street

- East of South Madison Avenue create a six foot on-road sidewalk on north side of the street extending 25 feet, where parking is prohibited at all times
- West of South Madison Avenue, maintain existing on-road sidewalk and connect to re-aligned crosswalk
 - Add sign prohibiting parking near corner on north side of street
 - Where parking is not allowed, parking stops and/or plastic bollards should be used to prevent incursion into the on-road sidewalk by vehicles
- West of South Madison Avenue, on the south side of the street, add striping to discourage illegal parking between the existing driveway and crosswalk
- Ensure four-foot gap exists between crosswalk and stop bar
- Add shared lane markings 11 feet from southern edge of roadway

South Madison Avenue

- South of the intersection, where South Madison Avenue is 29 feet wide, create six foot on-road sidewalk on west side of roadway for 25 feet or longer
- Add truncated domes
- North of the intersection, where South Madison Avenue is 33 feet wide and there is a sidewalk, add a five-foot southbound bicycle lane on the west side of the roadway
- Add shared lane markings in the northbound direction, 11 feet from edge of roadway

South Madison Avenue and South Avenue

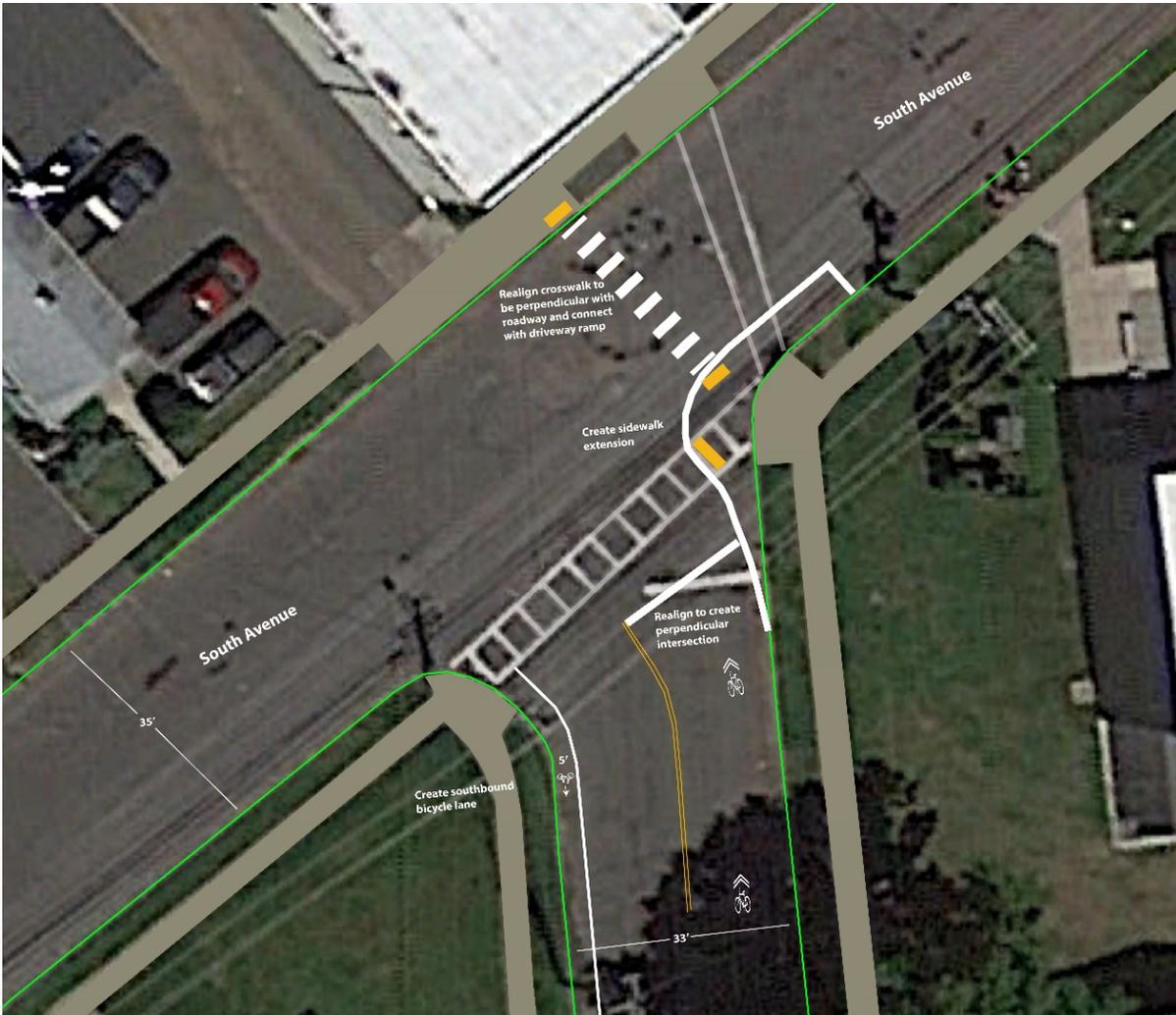


Figure 10: Proposed changes to South Madison Avenue and South Avenue

- Use striping to realign intersection so that the stop bar is perpendicular to South Avenue, see Figure 11 for example
 - Plastic bollards or other delineation should be used to reinforce sidewalk extension
- Maintain existing high visibility crosswalk across South Madison Avenue
- Realign South Avenue crosswalk and upgrade to high visibility striping
 - Crosswalk should connect from painted sidewalk extension to driveway ramp, perpendicular to roadway to shorten crossing distance
- Add a five-foot southbound bicycle lane on the west side of the roadway

- Add shared lane markings in the northbound direction, 11 feet from edge of roadway



Figure 11: Painted sidewalk extension

