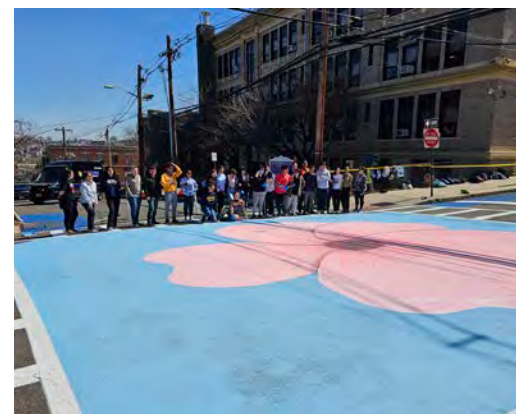




Pedestrian Safety Demonstration Project

Belleville, Essex County, NJ

2023



About the Report

This report has been prepared as part of the North Jersey Transportation Planning Authority (NJTPA) Complete Streets Technical Assistance program with financing by the Federal Transit Administration and the Federal Highway Administration of the U.S. Department of Transportation. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The NJTPA is solely responsible for its contents.

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The Alan M. Voorhees Transportation Center (VTC) is a national leader in the research and development of innovative transportation policy. Located within the Edward J. Bloustein School of Planning and Public Policy at Rutgers University, VTC has the full array of resources from a major research university on transportation issues of regional and national significance.

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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

In 2022, Belleville Township sought the expertise of the North Jersey Transportation Planning Authority (NJTPA) Complete Streets Technical Assistance (CSTA) Program to help install a temporary demonstration project next to a Township school. Demonstration projects are an approach to neighborhood building that uses short-term, low-cost, scalable interventions to affect long-term change related to street safety and public space. The intent of this project was to enhance pedestrian safety, bring public art to the Township, and help residents see what permanent changes could look like. After consultation with the project team, Belleville Middle School was selected as the location for this project.

The CSTA team conducted a site visit and drafted two alternatives for Belleville to consider. One alternative focused exclusively on the intersection of Holmes Street and High Street, where the team proposed installing curb extensions and an art mural. The second alternative included sidewalk extensions over a wider area. Because this was Belleville's first experience with a temporary demonstration project, the Township elected to move forward with a more focused approach.

Township officials recruited local artist Athena Zhe to design the intersection mural, and on May 25, 2023, enlisted the help of the Belleville High School Art Club to paint the intersection. Following the installation, the project team shared an online survey with residents to understand how the project was being received. Feedback was generally positive, with many respondents hoping to see a similar installation by other schools.

Belleville and school district officials can use the knowledge gained with this project to repeat the process at other locations. In addition, the Township can apply for grant funding to make some of the changes permanent. A list of potential funding resources and recommended design guides can be found in the appendices.



Figure 1. Belleville Middle School, as seen from Washington Street.

Background

The NJTPA created the CSTA Program in 2018 to assist municipalities in advancing or implementing Complete Streets, a need identified by the Together North Jersey (TNJ) consortium. This report is part of the third year of the CSTA Program, in which seven municipalities were selected to receive technical assistance. Municipalities were chosen for the program through a competitive application process based on the following criteria: the need for technical assistance, commitment to project implementation, opportunity for public engagement, and the strength of their respective municipal teams. In addition, projects at locations with high crash rates and projects with the potential to involve and benefit traditionally under-served populations were given additional consideration.

Belleville Township requested a Complete Streets temporary demonstration project as part of an effort to address safety concerns around schools, especially when children are arriving or departing. In its application, the Township identified five potential locations adjacent to schools. High Street, a narrow one-way street behind Belleville Middle School, was their first choice (Figure 2). According to the application, many drivers travel at unsafe speeds on High Street when passing Belleville Middle School. In addition, the roadway becomes congested during school dismissal. Although the Township has taken various steps to improve safety, including temporary traffic control by the police department, officials wanted to see infrastructure improvements that can provide safety benefits at all hours. After reviewing the five candidate locations during an online meeting with Township officials, the Township and the CSTA team selected the Belleville Middle School location.

Township officials were interested in seeing how a temporary demonstration project could improve safety quickly, provide an opportunity for residents to provide feedback, and learn how a successful project could be implemented at other locations around town. While the technical assistance project could only provide guidance for one installation, the methods are replicable and lessons are applicable at similar intersections across the Township.



Figure 2. Aerial view of Belleville Middle School during the installation of the demonstration project.

What is a Complete & Green Street?

Complete & Green Streets are part of a movement where municipalities, counties, and states adopt policies that require road engineering and design projects to consider the mobility needs of everyone (Figure 3). Everyone includes all roadway users and all travel modes—pedestrians, cyclists, transit users, freight, and travelers of all ages and abilities.

Section 11206 of the new Bipartisan Infrastructure Law (BIL), also known as the Infrastructure Investment and Jobs Act (IIJA) of 2021, defines Complete Streets standards or policies as those which “ensure the safe and adequate accommodation of all users of the transportation system, including pedestrians, bicyclists, public transportation users, children, older individuals with disabilities, motorists, and freight vehicles.” This section of the BIL requires that States and MPOs use 2.5 percent of their planning and research funds for Complete Streets activities that will increase safe and accessible transportation options.

Complete Streets should tailor the road 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, lighting, and signs.

Regardless of the context, Complete & Green 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 at 20 mph they are down to five percent (Figure 4 and Figure 5). Complete & Green Streets recognize that all users of the transportation network, whether traveling by car, bus, train, or taxi, become pedestrians at some point during their journey.

Complete Streets is also an implementation strategy of the Safe System Approach, adopted as the guiding principle behind the USDOT National Roadway Safety Strategy, which sets out that deaths and serious injuries due to roadway crashes are unacceptable. Safe System Approach refocuses transportation system design and operation on anticipating human errors and reducing impact forces to minimize crash severity and save lives. Under this approach, the transportation agencies implement proactive, redundant systems of safety to prevent crash fatalities and serious injuries. Complete Streets addresses two of the five elements of a Safe System (Safe Roads and Safe Speeds) and advances the proactive implementation of safety infrastructure.



Figure 3. This Complete Street in New Brunswick, NJ, features a bicycle path, bus lane, and enhanced pedestrian crossing.

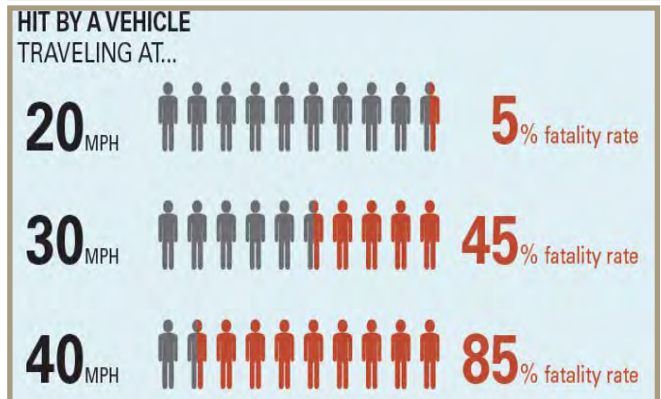


Figure 4. Graphic showing increased fatality rate as vehicle speeds increase. (USDOT)

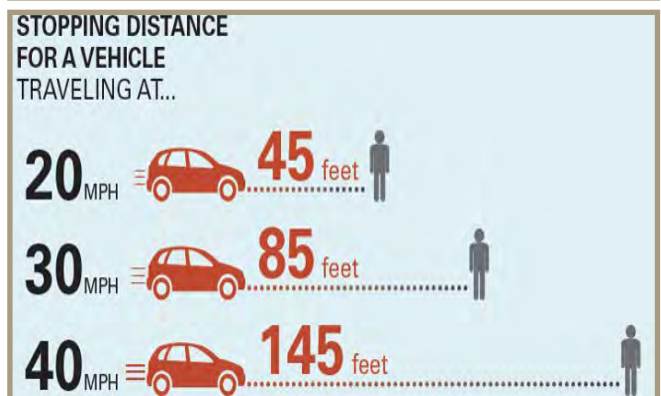


Figure 5. Graphic showing increased stopping distance as vehicle speeds increase. (USDOT)

Benefits of Complete Streets

While the primary benefit of Complete & Green Streets is improved safety for all roadway users, there are other positive outcomes. Complete streets create better places to live, work, and do business.

Public Health

Complete Streets make it possible for people to routinely choose walking, bicycling, and transit to access community destinations such as supermarkets, medical services, and entertainment destinations, leading to greater physical activity and social connectivity. Improving walkability, bikeability, and transit access helps solve urgent public health problems by improving safety and sociability and by reducing air pollution.

Green Streets

Green Streets use green infrastructure practices installed within the public right-of-way to manage stormwater while preserving the primary function of a street as a conduit for vehicles, pedestrians, bicyclists, and transit riders (Figure 6). Green Streets and Complete Streets can complement each other by creating an inviting and comfortable walking and bicycling environment by incorporating green infrastructure elements, such as street trees and rain gardens that provide shade and remove pollutants from the air, while minimizing flooding along streets and sidewalks that interferes with and discourages walking and bicycling.



Figure 6. Green infrastructure used to narrow the roadway and provide a shorter crossing distance for pedestrians.

Economic Vitality

Improving streetscapes can help to strengthen or revitalize 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. For example, pedestrianizing Division Street in Somerville, New Jersey attracted new businesses and helped to revitalize a struggling business corridor (Figure 7). The economic benefits also extend to individuals by lowering costs related to car ownership. By walking, biking, and taking transit for more trips, households save money on driving expenses like gasoline, parking, and maintenance, and can choose to own fewer vehicles – or no vehicles at all.



Figure 7. Division Street in Somerville was converted into a popular pedestrian plaza.

Transportation Equity

Fair and equitable distribution of transportation investments is a fundamental principle of Complete Streets. All users of the transportation system should benefit from our shared streets regardless of income, ethnicity, ability, or other differences. For those whose transportation choices are limited by circumstance or location, pedestrian, bicycle, and transit access to essential services and community destinations such as hospitals, medical offices, senior centers, schools, employment centers, bus routes, and transit stops can be life-changing.

Complete Streets in New Jersey and Belleville

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. Since 2009, NJDOT has funded six Complete Streets Summits and over a dozen local, regional, and statewide in-person and online 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 (with updates in 2020), 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. One of the positive outcomes of these efforts is that 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, 174 municipalities have implemented their own policies (Figure 8).

Belleville adopted a Complete Streets policy in 2022, and Essex County adopted a policy in 2012.

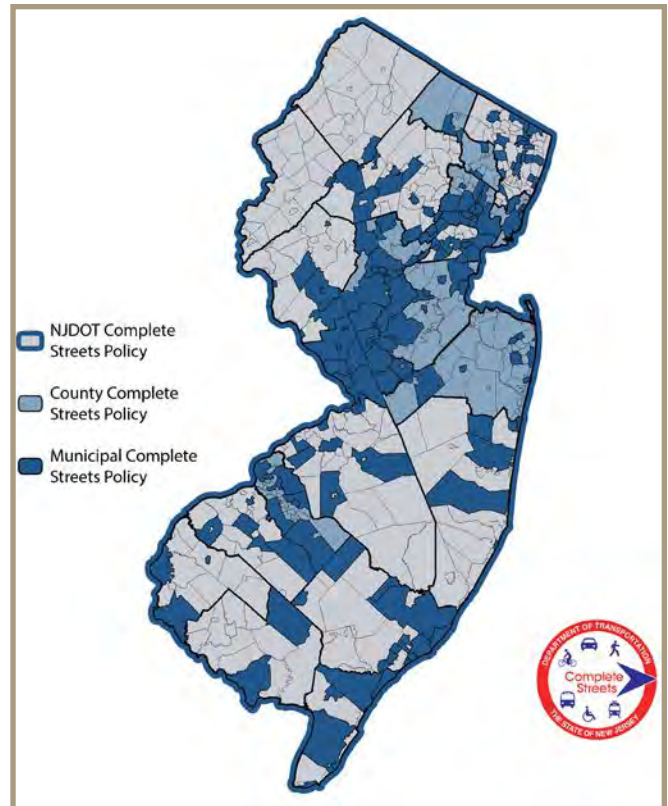


Figure 8. Complete Streets Policies in New Jersey, as of June 15, 2023. Visit <https://njbikeped.org/nj-complete-streets-policy-compilation/> for a constantly updated list of policies.

What is a Temporary Demonstration Project?

Demonstration projects are an approach to neighborhood building that uses short-term, low-cost, scalable interventions to affect long-term change related to street safety and public space. This approach can draw attention to perceived shortcomings, widen public engagement, test interventions, and inspire action. (Figure 9).

Demonstration projects allow a municipality to quickly make high-priority safety and livability improvements while more permanent improvements move through the various project design and funding steps. Demonstration projects also provide flexibility in that improvements can be temporary. Rather than debating the costs and benefits of a sidewalk extension, a municipality can paint one and observe the new dynamic between pedestrians and drivers without committing to a permanent change. It also allows for the collection of operational data and community feedback that can be used to refine the final permanent design.



Figure 9. A demonstration project in Red Bank, NJ created during of a previous CSTA project.

At its core, demonstration projects are designed to spark a conversation about long-term change in the direction of Complete Streets. The project can be used to solicit local ideas to address planning challenges, taking the debate out of city hall and placing it on the street where people can experience and respond to the proposed changes. Demonstration projects seek to spur conversation around neighborhood improvements, allowing residents to evaluate changes before permanent installation.

Best Practices in Demonstration Projects

Successful projects employ low risks for high returns, inspiring people to think differently about their surroundings. For example, painting curb extensions helps residents to experience safer, more visible street crossings and provide input for permanent implementation. Beyond function, demonstration projects may provide aesthetic improvements through the installation of planters. Examples of demonstration projects in New Jersey include:

Painted Curb Extensions

Maintaining visibility at intersections can improve safety outcomes for all roadway users. While New Jersey law prohibits parking within 25 feet of a corner for visibility, this regulation is frequently violated. In 2017, the City of Jersey City engaged planning consultants to conduct a series of six walkability workshops. The workshops included a public-feedback board, tables and chairs, wayfinding signage, planters, and colorful paint (Figure 10). By shortening the crossing distance for pedestrians, curb extensions provide a tangible experience of potential safety improvements, allowing participants to offer input for future implementation. Temporary curb extensions are now part of the municipal toolkit and have been installed throughout the city.



Figure 10. Painted curb extensions in Jersey City. Photo by Street Plans.

Pedestrian Mall

In 2015, Jersey City created a new pedestrian plaza on Newark Avenue using planters, paint, tables, and chairs. One of the major concerns about pedestrianizing a roadway was how a plaza would affect many businesses, both in terms of visibility from drivers and being able to receive deliveries. The temporary demonstration project allowed all stakeholders to view the results with the understanding that the design can be fully reversible, if needed.

However, the temporary plaza was very successful, and in 2021 the city completed a permanent plaza with stone pavers, larger planters, enhanced lighting, benches, pedestrian safety bollards, and other public space features (Figure 11). New Brunswick, which installed a similar temporary plaza as a response to Covid-19, is currently studying the deployment of a permanent installation.

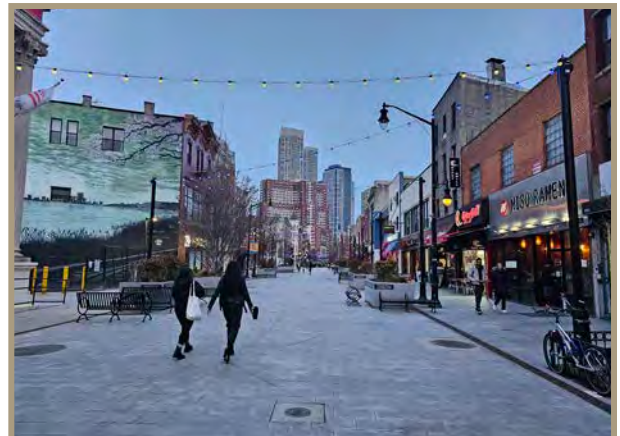


Figure 11. Originally a demonstration project, the Newark Avenue pedestrian plaza is now a permanent installation.

Temporary Bicycle Lanes

As part of the creation of a Complete Streets Policy and Implementation Plan, Keyport Borough constructed a temporary demonstration project to show community members what potential improvements to the intersection of Maple Place, Atlantic Street, and Church Street could look like. The project aimed to calm traffic, increase motorist visibility of pedestrians and bicyclists at the intersection, and create safe access to the nearby Henry Hudson Trail. The project included the installation of a temporary bike lane and crosswalk (Figure 12).



Figure 12. Bicyclists navigating the temporary on-road bicycle path in Keyport, NJ. Photos by NJTPA.

Assessment of Need

According to the 2020 US Census, Belleville is home to approximately 37,480 residents within an area of 3.37 square miles. The median age is 41.3, and the estimated median household income is \$75,808. Belleville is home to a high population of Hispanic residents, 48.6 percent, compared to 20 percent statewide. Belleville is a town of immigrants, with 35.1 percent of residents born outside the United States. The Township borders the municipalities of Bloomfield, Newark, and Nutley in Essex County; Lyndhurst and North Arlington in Bergen County; and Kearny in Hudson County.

Existing Conditions

The extent of study area includes the roadway surrounding Belleville Middle School, which are Holmes Street to the north, High Street to the west, Van Houten Place to the south, and Washington Avenue (Route 7) to the east.

Belleville Middle School occupies most of the block. The school building sits on about 40 percent of the northern end of the block. An equal amount of space is devoted to a school parking lot and unoccupied green space in the center. The southern end of the block has three buildings: a private home, a small commercial building, and a vacant three-story building, formerly home of Eastern International College, which was recently purchased by the school district.

Washington Avenue is a four-lane roadway with metered parallel parking and commercial buildings on the eastern side (Figure 13). Wide sidewalks are available on both sides of the street, but lack streetscaping. The intersection with Holmes Street has a traffic signal, and a crossing guard is active during school arrival and dismissal. NJ TRANSIT bus route 13 stops at the intersection in both directions. While the study team reviewed existing conditions and vehicle/pedestrian interactions on Washington Avenue, that roadway was not considered for a temporary demonstration as it is administered by NJDOT and not the Township. However, the study team did observe drivers moving faster than the speed limit, and the roadway did appear to be wider than needed for the observed traffic volumes. NJDOT is in communication with both the Township and the county on a redesign.

Van Houten Place is a two-way 30-foot-wide roadway with parking on one side (Figure 14). It is lined with single family homes. Sidewalks have recently been rebuilt and corner curb ramps are ADA-compliant. However, there is no marked crosswalk across Van Houten Place where High Street terminates.

High Street is also 30 feet wide but one-way northbound from Van Houten Place to Holmes Street. The roadway is used for parking by school staff, and all street parking spots were occupied during the observation. The study team noticed that prior to dismissal the school buses block traffic entirely as they wait near the school (Figure 15). High Street is a primary access point in and out of the school for students who use doors 2, 3, and 4. Sidewalks are available on both sides of the roadway; but are approximately five feet wide, which is too narrow for the number of students walking at dismissal time.



Figure 13. Looking north on Washington Avenue.



Figure 14. Looking west on Van Houten Place.



Figure 15. Looking south on High Street.

Holmes Street is also 30-feet-wide (Figure 16). Street parking is only permitted on the southern side and is prohibited adjacent to the school. Aside from Washington Avenue, Holmes Street is the only roadway with through traffic, as it provides a connection between Washington Avenue and a variety of residential roadways to the west. Students leaving the school use one door (5) to exit.

During school dismissal, the police department blocks access to Holmes Street from Washington Avenue, making it temporarily one-way eastbound (Figure 17). Police officers also control traffic at the intersection of Holmes Street and High Street, primarily to ensure that the school buses can safely exit High Street. Most school buses were observed making left turns, with only one continuing straight.

The project team observed that most students leaving school walked west on Holmes Street or north on High Street (Figure 18). Fewer students went in other directions. Very few were observed using bicycles (Figure 19). Some parents were observed picking up students in vehicles next to the school, but this is not encouraged by the school (Figure 20).



Figure 16. Looking west on Holmes Street, from the intersection with Washington Avenue.



Figure 17. Looking east on Holmes Street, toward the intersection with Washington Ave.



Figure 18. Intersection of Holmes Street and High Street full of students at dismissal.



Figure 19. Only a few students bicycle.



Figure 20. Looking east on Holmes Street, some parents pick up adjacent to the school.

Traffic Volumes and Speed

NJDOT recorded traffic counts on Holmes Street between Hornblower Avenue and Dewitt Avenue in 2015 and 2018. While that block is not within the study area, traffic volumes are similar in front of the school. Those observations found an annual average daily traffic (AADT) volume of 2,471 in 2015 and 2,619 in 2018. As a comparison, Rutgers Street between Main Street and Stephen Street had a recorded volume of 20,420 in 2020. The 2018 count found a peak traffic volume of 342 vehicles between 8 am and 9 am and 244 vehicles between 3 pm and 4 pm.

As part of the demonstration project, Belleville police set up two radar speed trailers on Holmes Street to capture vehicle speed and volume from each direction. They found a similar AADT of 2,635 vehicles.

Crash History

According to NJDOT crash data, during the five years from 2017-2021, there were 55 crashes on the roadways surrounding the Middle School. Of those, 51 crashes occurred along Washington Avenue. The remaining four crashes were on Holmes Street.

Five crashes involved a pedestrian, four of which occurred at the intersection of Holmes Street and Washington Avenue. Of the four, two involved middle school-aged pedestrians. One pedestrian-involved collision happened at the intersection of Holmes Street and High Street in 2018. The age of the pedestrian was not available.

During the same period, there was one collision involving a bicyclist. This involved a 12-year-old male and occurred at the intersection of Holmes Street and Washington Avenue.

Design Alternatives

During the project kick-off meeting on May 2, 2022, which was conducted online, the Township and CSTA project team reviewed five potential demonstration project sites identified in the technical assistance program application and selected Belleville Middle School as a feasible location for a project. Following the meeting, the CSTA team conducted a site visit to take measurements, analyze existing conditions, and view traffic interactions during school dismissal. Based on the information gathered, the project team developed two options for Belleville.

Alternative A

The first design alternative focused entirely on the intersection of High Street and Holmes Street. The proposal includes painted sidewalk extensions at the corners, as marked with red (Figure 21). The borders of the curb extensions were proposed to have vertical delineators (flex posts) for greater visibility and to discourage driver encroachment. A mural, to be drawn by a local artist, was proposed in the center of the intersection. The initial design called for planters to be placed inside the corner sidewalk extensions, however, the final installation replaced planters with vertical delineators (flex posts) to simplify installation and maintenance.

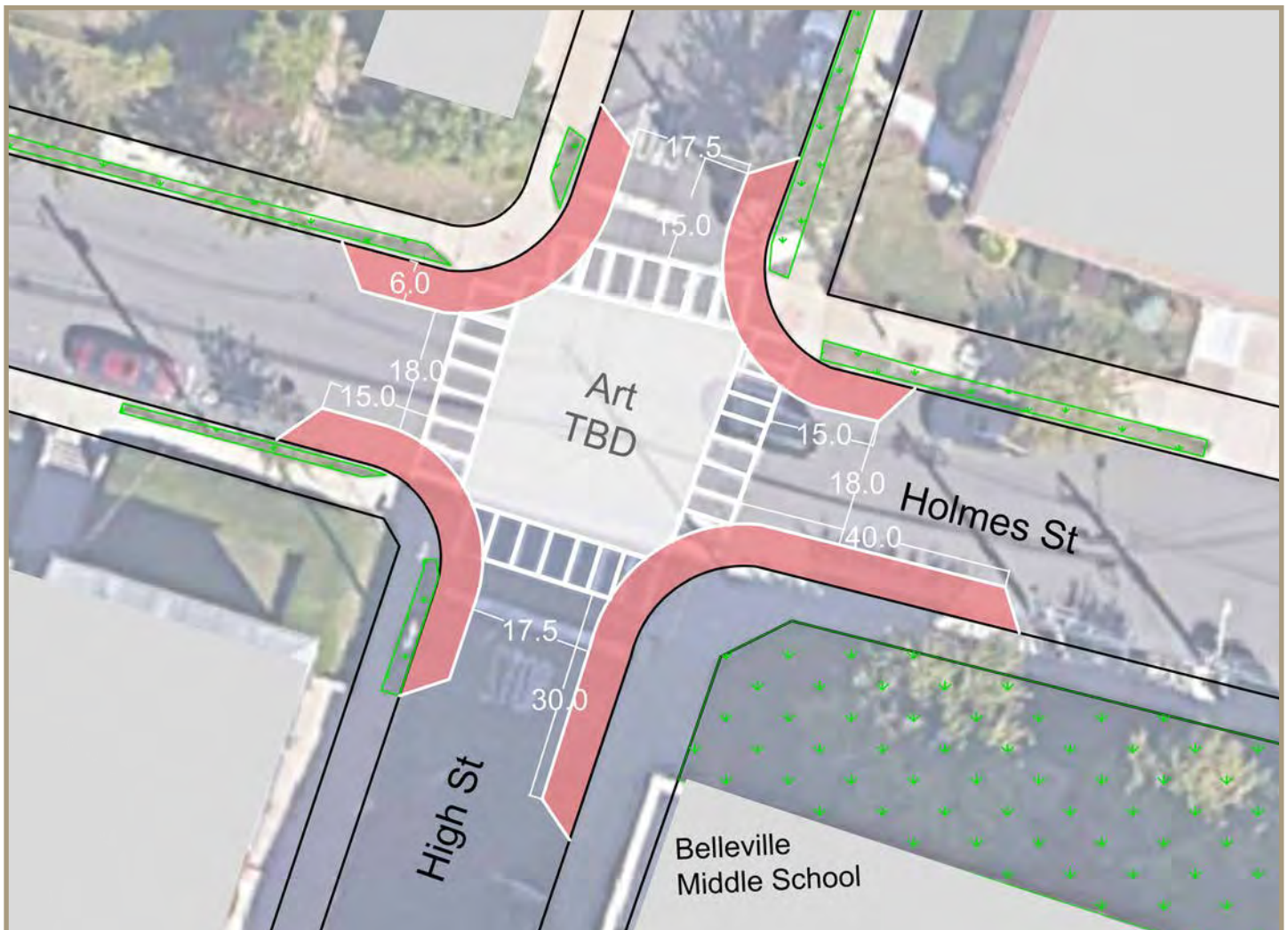


Figure 21. Alternative A, curb extensions at the intersection of Holmes Street and High Street.

The sidewalk extensions decrease the crosswalk distances, provide more space for pedestrians, slow turning vehicles, and discourage illegal parking close to the corners. The extensions were designed to accommodate turning school buses. Alternative A is the design that the Township decided to install.

Alternative B

The second alternative took everything proposed in Alternative A and expanded it to cover a larger area by creating block-long painted sidewalk extensions. This would have included closing eastbound Holmes Street to motor vehicle traffic between High Street and Washington Avenue, effectively making Holmes Street one-way westbound on this block. The wider sidewalks were designed to accommodate large volumes of children arriving at and leaving the school. As this was Belleville's first experience with a temporary demonstration project, the Township team elected to start with a smaller project. Had this option been selected, the Township could have experimented with long-term one-way traffic along Holmes Street.



Figure 22. Alternative B, expanded sidewalks at the intersection of Holmes Street and High Street.

Supporting Materials

The CSTA team provided Belleville with guidance on the installation and design of the project, including the materials needed, usage of a speed trailer for pre/post data collection, and a photo gallery of intersection murals for inspiration. These documents can be found in Appendix C and Appendix D. The team also advised the artist that the mural design should not intrude into the existing crosswalk, following FHWA guidance on aesthetic usage of colored pavement.

In addition, the CSTA team developed an informative flyer that Belleville Middle School distributed to parents, and the Township shared through their media channels. This flyer informed community members about the demonstration project and solicited comments through an online survey. The English version of the flyer is found on the next page. The Spanish version can be found in Appendix E.

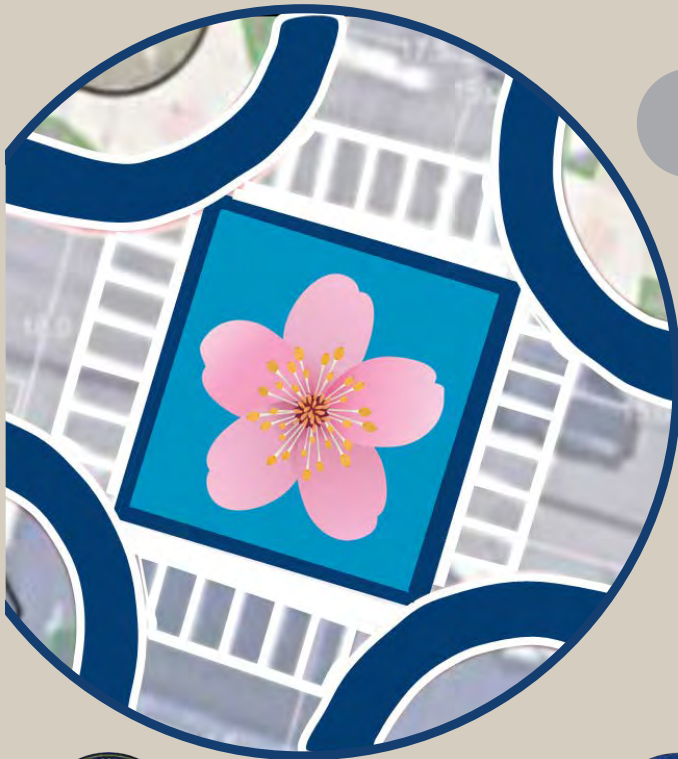
CROSSWALKS FOR A SAFER COMMUNITY

Belleville Middle School Project

We'd like your feedback on the temporary mural and other improvements installed in March at the intersection of Holmes Street and High Street, adjacent to Belleville Middle School.

The purpose of this design is to improve travel safety and add art to the community.

If these improvements are successful, they can become permanent, and inspire similar installations at other intersections in Belleville.



Demonstration Features

- Painted curb extensions
- Art mural at the intersection
- Sidewalk extensions in front of school
- Flexible posts marking the curb extensions

Benefits

- Curb extensions increase visibility and shorten crosswalks to improve pedestrian safety
- Public art draws attention to the school zone, increasing driver awareness and school pride



We want to hear from you!

To complete a short survey, scan the QR Code or visit <http://go.rutgers.edu/Belleville>

The project is part of the NJTPA Complete Streets Technical Assistance Program, <https://www.njtpa.org/completestreets>

Figure 23. Informational flyer shared with the community in advance of the installation.

Installation

Township and school officials were responsible for acquiring the materials and organizing the installation. Local artist Athena Zhe designed the cherry blossom mural. The installation team elected to use traffic paint as it would last longer than traditional paint. Because traffic paint is only available in a limited set of colors, the artist combined the bases to create the colors needed for the art. To assist the artist with the installation, the Belleville team decided to bring in the High School Art Club as an educational experience. A high school drone operator attended the installation to help document the event. Additional volunteers, including staff from EZ Ride TMA assisted with the painting.

The mural and curb extensions were installed on March 29, 2023 (Figures 24 through 36). The artist used chalk to mark the outline of the art before the installation. Belleville police assisted the team by closing the roadway as soon as class started for the day. While the team hoped to be finished by 3 pm, installation took longer than expected due to the complexity of the cherry blossom design. In addition, the project team underestimated the quantity of paint that would be needed, as the porous asphalt absorbed the base layer. As such, Belleville officials had to shop for additional paint in the afternoon. Although these setbacks were a challenge, the artist was able to finish the design before the end of the day, and the intersection was re-opened to traffic the following morning, allowing the paint time to dry overnight. The vertical delineators were back-ordered by the supplier and were installed by the public works department on April 10, 2023.



Figure 24. The students began by drawing the center of the flower.



Figure 25. The team worked their way out from the center.



Figure 26. As the artist added detail to the flower, students filled in the rest of the intersection.



Figure 27. Volunteers helped by painting the curb extensions.



Figure 28. Additional views of the installation.



Figure 29. Students posing for photos.

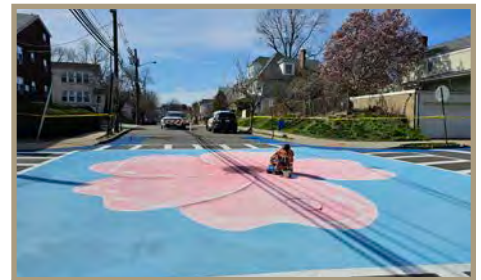


Figure 30. Additional views of the installation.



Figure 31. Installation in progress as seen from above.



Figure 32. Installation as seen from above.

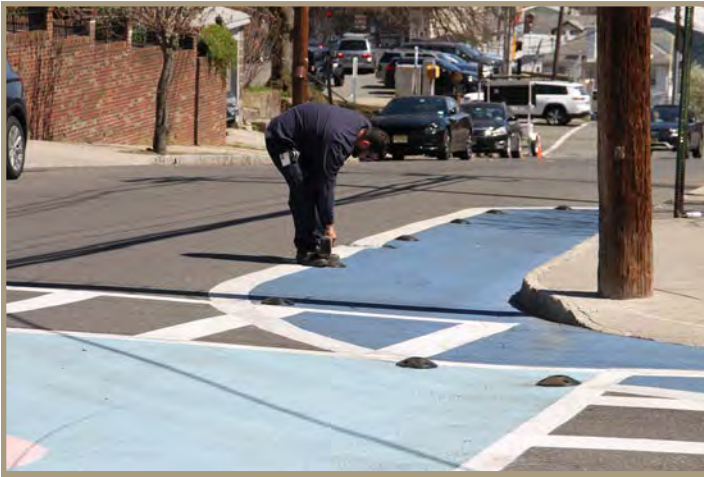


Figure 33. Addition of vertical delineators on April 10, 2023.



Figure 34. Addition of vertical delineators on April 10, 2023.



Figure 35. View of completed project.



Figure 36. View of completed project.

Local Input

The project team used an online survey to gather input on the demonstration for community members. The Township shared the survey link with parents and Belleville residents through newsletters, email blasts, and social media. The survey asked respondents a series of questions about their experience at the intersection before and after the demonstration project. Respondents were also asked whether the changes made crossing the intersection feel safer, if they wanted the changes to become permanent, and if demonstration projects should be tested at other locations. The survey was available in English and Spanish and can be viewed in [Appendix F](#).

The survey received 164 responses, of which eighty percent were from female respondents. Thirty five percent of respondents identified as Hispanic, which matches Township demographics. The median age of respondents was 43, with 22 responses submitted by persons affiliated with the school district and 62 by parents of students. One survey response was submitted by a high school student, and none from middle school students. Sixty-four percent of respondents stated that they travel through the intersection several times a week, with seventy-four percent of trips happening in a vehicle.

Sixty-three percent of respondents stated that they believe the changes made the intersection safer. This was followed by twenty-four percent who said the demonstration did not make a change in safety. Only four percent of responses stated that the changes made the intersection less safe. When asked to explain multiple respondents noted that the art was attention-grabbing, which slowed down drivers. Two comments noted that the delineators successfully prevented drivers from parking in or too close to the crosswalk. However, one person said the vertical delineators made the intersection less safe because it made the roadway too narrow. Another person stated that the art created a distraction for drivers. Additional comments were left requesting bicycle lanes, speed bumps, and converting the intersection to a four-way stop.

Survey respondents were asked if the project made the intersection more or less attractive. Eighty-one percent stated that the project was attractive, while only six percent said it was less attractive. Many people left comments stating they were very happy about the added art in their community. Comments included:

- "Everyone loves murals. I came from a city that increased street art and murals, always something to look forward to seeing."
- "It is a beautiful painting and so random and unexpected to come across a painting on the road. Not something you see every day and it definitely makes Belleville unique."
- "It looks amazing! I've never seen this before in other towns and it makes Belleville stand out! I love this idea!"
- "Pretty art. Belleville needs to embrace how beautiful she is. Holmes has a lot of blossoms. It's fitting art."
- "Children growing up here might feel inspired to become artist and or community advocates."

Two people worried that the paint would fade and it would look ugly in the future if not touched up.

Respondents were also asked if similar projects should be installed at other locations in Belleville. Eighty-six percent of respondents answered yes, with many noting that this treatment should be extended near all schools.

The Belleville Police Department assisted the project team by placing a speed trailer near the project site for seven days before and seven days after installation. The study found that average speeds decreased from 19.24 to 18.99 mph. The 85th percentile speed also went from 26.23 to 25.95 mph. These changes are not statistically significant.

The project team drafted a press release, which the school district distributed. One local newspaper covered the installation.

Conclusion

The intersection of Holmes Street and High Street adjacent to Belleville Middle School is used by hundreds of school-aged children daily. Belleville officials aware of the safety challenges sought the help of the NJTPA's Complete Streets Technical Assistance Program to design a temporary demonstration project that could improve safety at the intersection. Painted corner curb extensions with vertical delineators were installed in March 2023, along with an intersection mural. With quick and low-cost improvements made through the demonstration project, crosswalk visibility at the intersection was improved, and art was added to the community. This report summarized the process and feedback given by members of the community. The project was a success, thanks to the efforts of the Township, school district, a local artist, and high school students.

Belleville should continue to monitor the performance and safety of the intersection. While designed as a temporary demonstration, the interventions installed through this project could be left in place or replaced with similar improvements. If a long-term installation is desired, the township should explore enhancements such as the addition of moveable vegetative planters to the curb extensions, or even the replacement of the painted curb extensions with permanent concrete curbs.

The Township should explore opportunities to employ demonstration projects at other locations. Projects could incorporate similar designs, as several survey respondents stated that they felt the mural was an asset to the community, and the curb extensions provide safety benefits for pedestrians. Other opportunities include temporary bicycle lanes, sidewalk extensions, pedestrian plazas, or parklets.



Figure 37. Belleville Middle School and surrounding neighborhood during the installation.



Appendix

A. Potential Funding Resources

B. Design Resources

C. Installation Guidance

D. Mural Examples

E. Spanish Flyer

F. Survey

A. Potential Funding Resources

This appendix provides a list of 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. This appendix also includes links to two online databases with additional funding sources. The grants listed are highly competitive, so grant application requirements should be carefully reviewed before deciding to apply. Incomplete grant applications may be automatically rejected. The most successful applications tell the story of the populations most in need of the proposed improvements, especially traditionally underserved or vulnerable populations. Applications should use compelling pictures, data, and other documentation, and indicate how and why the project was selected.

New Jersey Department of Transportation

The Division of Local Aid and Economic Development at the New Jersey Department of Transportation (NJDOT) administers funds to local public agencies such as county and municipal governments for construction projects to improve the state's transportation system. Grant support and technical assistance is provided through the Local Aid Resource Center's Help Desk (<https://njdotlocalaidrc.com/>). The New Jersey Transportation Trust Fund and the 2021 Bipartisan Infrastructure Law provide funding assistance to local governments for road, bridge, and other transportation projects. While NJDOT and the three metropolitan planning organizations that cover the state administer many federal aid programs, including Transportation Alternatives and Safe Routes to School, the USDOT administers some grant programs directly. 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 New Jersey municipalities are eligible to apply. NJDOT encourages applications for pedestrian safety improvements, bikeways, and streetscapes. Also, a common strategy to implement on-street bike lanes is to include bike lane striping within repaving projects funded through this program. Learn more here: <https://njdotlocalaidrc.com/state-funded-programs/municipal-aid>

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://njdotlocalaidrc.com/state-funded-programs/county-aid>

Bikeways: This program provides funds to counties and municipalities to promote bicycling as an alternate mode of transportation in New Jersey. A main objective of the Bikeway Grant Program is to support the state's goal of constructing 1,000 new miles of dedicated bike paths separated from vehicle traffic. Learn more here: <https://njdotlocalaidrc.com/state-funded-programs/bikeways>

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, to promote increased usage of transit by all segments of the population and decrease private vehicle use. Learn more here: <https://njdotlocalaidrc.com/state-funded-programs/safe-streets-to-transit>

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 NJDOT Commissioner and the inter-agency Transit Village Task Force to be eligible to apply. Learn more here: <https://njdotlocalaidrc.com/state-funded-programs/transit-village>

Other NJDOT Assistance

Bicycle and Pedestrian Planning Assistance (BPPA): NJDOT offers local planning assistance through the Bureau of Safety, Bicycle, and Pedestrian Programs. Under the BPPA program, on-call consultants are paired with communities to complete various projects, including bicycle and pedestrian plans, safety assessments, trail feasibility studies, and improvement plans for traffic calming projects. Priority is given to traditionally underserved communities and those with a documented safety concern. For more information, please contact the NJDOT Bicycle and Pedestrian Coordinator at bikeped@dot.nj.gov.

State-Administered Federal Aid Infrastructure Grant Programs

Transportation Alternatives Program: The Transportation Alternatives Program is a set-aside of the Surface Transportation Block Grant Program, sometimes called TA Set-Aside. It 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, are a Targeted Urban Municipality, or are a designated Transit Village. Learn more here: <https://njdotlocalaidrc.com/federally-funded-programs/transportation-alternatives>

Safe Routes to School: The Safe Routes to School Program is funded through the Federal Highway Administration’s (FHWA) Federal Aid Program and is being administered by the NJDOT, in partnership with the North Jersey Transportation Planning Authority (NJTPA), the Delaware Valley Regional Planning Commission (DVRPC), and the South Jersey Transportation Planning Organization (SJTPO). The program provides federal funds for infrastructure projects that enable and encourage children in grades K-12, 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 Streets Policy, and Transit Village designation. Learn more here: <https://njdotlocalaidrc.com/federally-funded-programs/safe-routes-to-school>

Recreational Trails Program: The Recreational Trails Grant 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. The program is currently on hold as it undergoes revisions. Learn more and get notified of future grant opportunities here: <https://dep.nj.gov/greenacres/trails-program-home/>

Federal Highway Administration-Administered Federal Aid Infrastructure Grant Programs

The Bipartisan Infrastructure Law (BIL), also known as the Infrastructure Investment and Jobs Act of 2021 (IIJA), and the Inflation Reduction Act of 2022 (IRA) established new funding programs that can be helpful for county and municipal governments looking to fund Complete Streets and other safety and active transportation projects. The new funding generally requires a 20 percent local match on a cost-reimbursement basis. In other words, for every dollar spent within the grant’s budget, up to 80 cents will be eligible for reimbursement by the federal government. Eligible entities apply for grants directly to the United States Department of Transportation through the [grants.gov](https://www.grants.gov) online portal.

Safe Streets and Roads for All Program (SS4A): This program was established out of the Infrastructure Investment and Jobs Act of 2021 (IIJA). It funds planning and implementation of projects and strategies which share the goal of eliminating roadway deaths and serious injuries. Many Complete Streets-related measures are eligible. Funding can be used to produce a comprehensive safety action plan, undergo demonstration projects, and implement permanent measures. Congress has appropriated \$5 billion to the program through fiscal year 2026, and all grants require a 20 percent local match. The SS4A program supports the National Roadway Safety Strategy and the United States Department of Transportation’s goal of zero deaths and serious injuries on our nation’s roadways. Counties, municipalities, and other non-State government entities are eligible to apply. Applications for the 2023 fiscal year are due on July 10, 2023. More information is available here: <https://www.transportation.gov/grants/SS4A>

Reconnecting Communities Pilot Program (RCP): The Reconnecting Communities Pilot Program was established by the Infrastructure Investment and Jobs Act of 2021 (IIJA). The program aims to correct the mistakes of past transportation projects that have isolated or otherwise cut off communities from jobs and other amenities. Ideal projects improve access in one or more ways, increasing opportunities for residents of impacted communities. Congress has appropriated \$1 billion for this program through fiscal year 2026. States, counties, and local units of government are eligible to apply for funding to plan and implement projects on facilities of which the applicant is the owner. Non-owners may apply for planning grants, as well as capital construction grants, provided that the facility owner has appropriately endorsed the application. All grants require a 20 percent local match. More information is available here: <https://www.transportation.gov/grants/reconnecting-communities>

Thriving Communities Program (TCP): The Thriving Communities Program provides technical assistance to governments and transit agencies. The program focuses on communities that have suffered historic disinvestment and lack the resources and capacity to successfully engage, develop, design, and deliver infrastructure projects. The program provides planning, technical assistance, and capacity building to better navigate federal requirements, identify financing and funding opportunities, and grow long-term capacity to leverage transportation investments to achieve broader economic and community development goals. More information is available here: <https://www.transportation.gov/grants/thriving-communities>

Neighborhood Access and Equity Grant Program: This program was created by the Inflation Reduction Act of 2022 (IRA). Much of the eligibility and criteria are similar to the Reconnecting Communities Pilot (RCP, see above). It appropriates an additional \$1.8 billion to reconnecting communities.

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 about grant opportunities here: <https://www.sustainablejersey.com/grants/>

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.sustainablejerschools.com>

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:

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

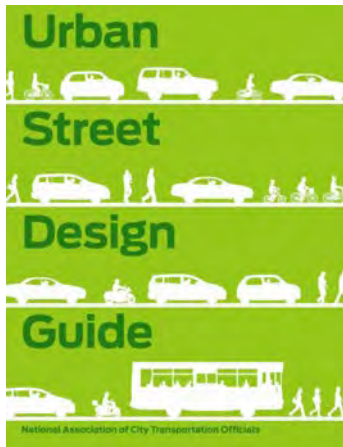
New Jersey Transportation Infrastructure Bank (NJTIB): The NJTIB is an independent State Financing Authority responsible for providing and administering low interest rate loans to qualified municipalities, counties, and regional authorities in New Jersey. The unique partnership with NJDOT was established to reduce the cost of financing transportation projects in the state. Learn more here: <https://www.njib.gov/njtib>

County and Municipal Capital Programs: In the case where alternative funds are not available but there is community consensus and political will to move forward with a project, county and municipal capital programs should be considered. Local budgets may support some projects, especially if other state and federal programs provide budget relief in other areas.

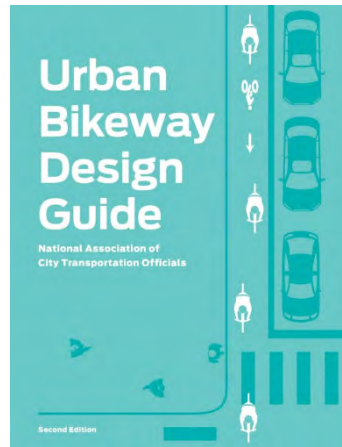
County and Municipal Open Space Trust Funds: All New Jersey counties and many New Jersey municipalities have an Open Space Trust Fund, which is a dedicated program supporting open space land acquisition. The trust funds are established by ballot measure. Depending on the fund parameters, other development projects can be eligible including trails, historical preservation, and farmland protection. For a database of ballot measures descriptions with amount of Open Space Trust Funds, visit the Trust for Public Lands LandVote Database. <https://tpl.quickbase.com/db/bbqna2qct?a=dbpage&pageID=8>

B. Design Resources

NACTO Guides



[Urban Street Design Guide](#)



[Urban Bikeway Design Guide](#)



[Transit Street Design Guide](#)



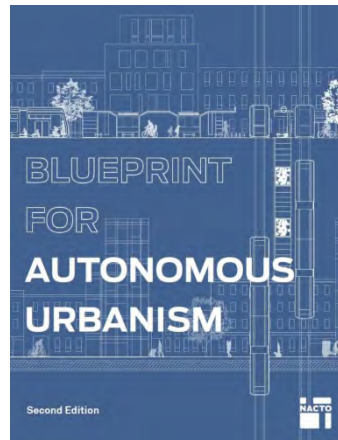
[Urban Street Stormwater Guide](#)



[Global Street Design Guide](#)



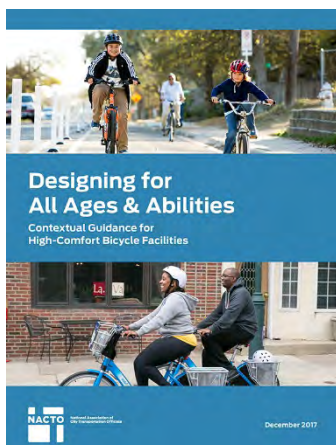
[Designing Streets for Kids](#)



[Blueprint for Autonomous Urbanism](#)



[Bike Share Station Siting Guide](#)



[Designing for All Ages & Abilities](#)



[Don't Give Up at the Intersection](#)

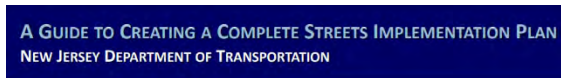
NJDOT Guides



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



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



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



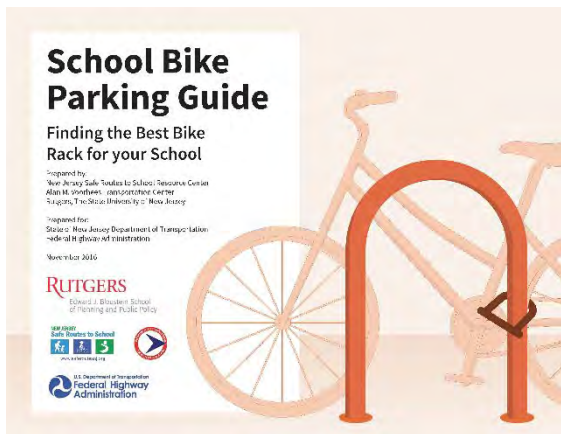
[A Guide to Policy Development](#)



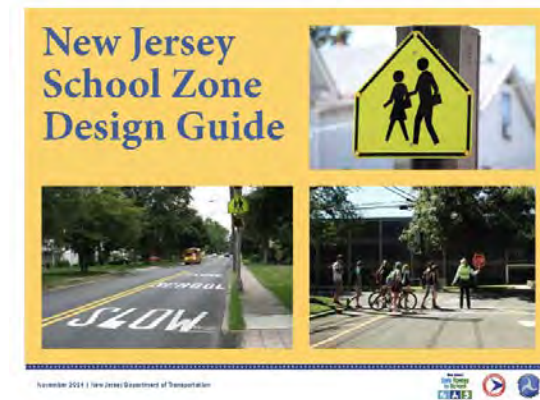
December 2012



PARSONS BRINCKERHOFF



[School Bicycle Parking Guide](#)



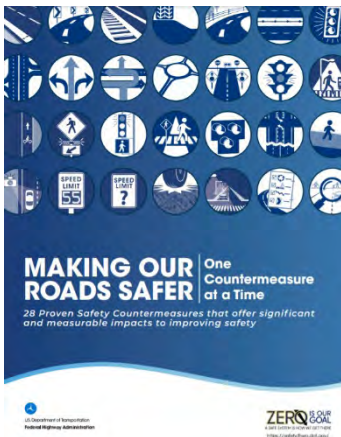
[New Jersey School Zone Design Guide](#)

ADA Guidelines

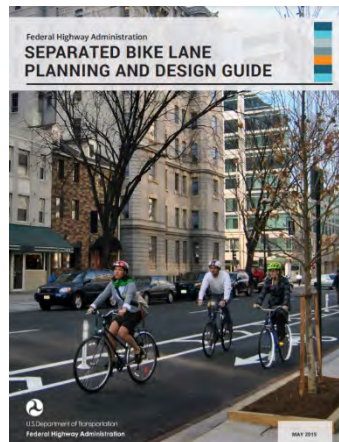


[ADA Standards for Accessible Design](#)

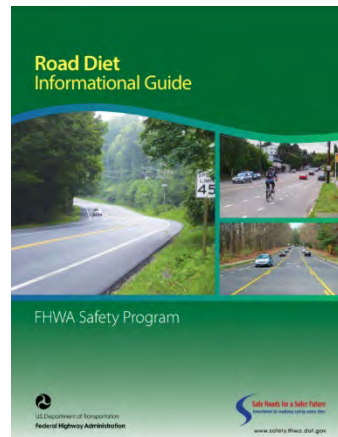
FHWA Guides



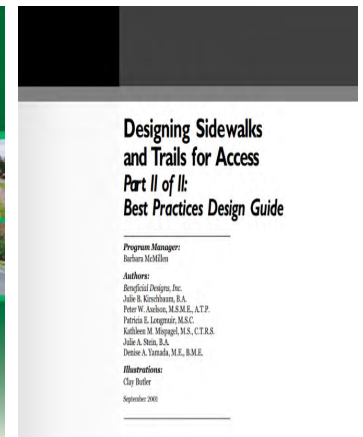
[Making Our Roads Safer: One Countermeasure at a Time](#)



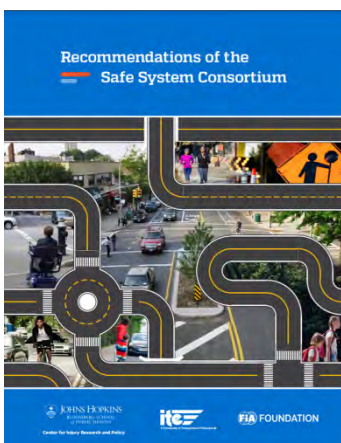
[Separated Bike Lane Planning and Design Guide](#)



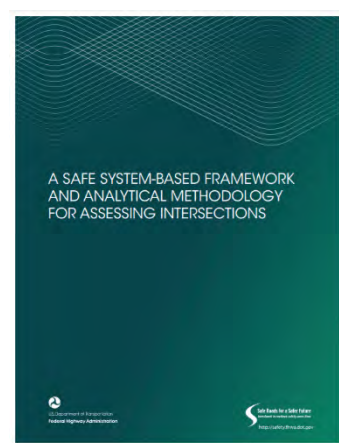
[Road Diet Informational Guide](#)



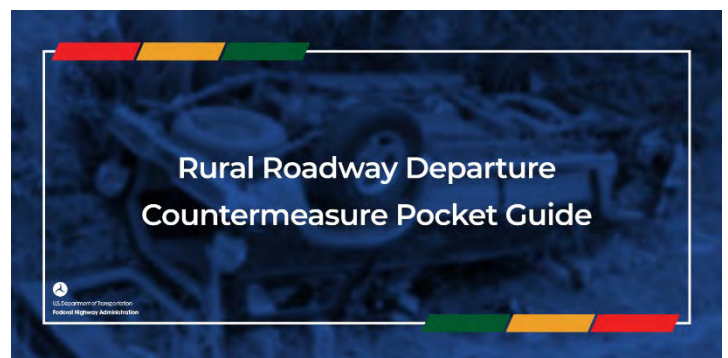
[Designing Sidewalks and Trails for Access Part II of II: Best Practices Design Guide](#)



[Recommendations of the Safe System Consortium](#)

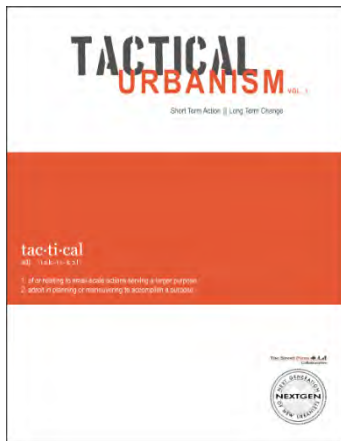


[A Safe System-Based Framework and Analytical Methodology for Assessing Intersections](#)

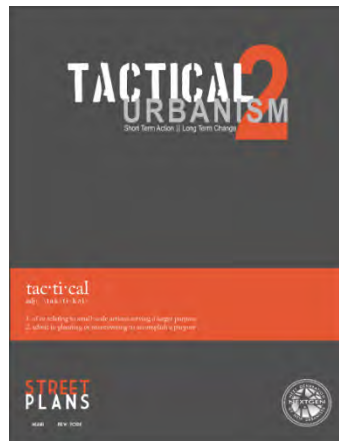


[Rural Roadway Departure Countermeasure Pocket Guide](#)

Tactical Urbanism Guides



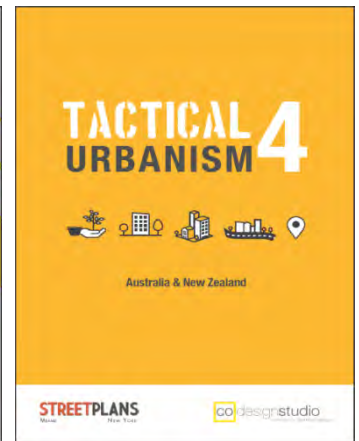
[Tactical Urbanism 1](#)



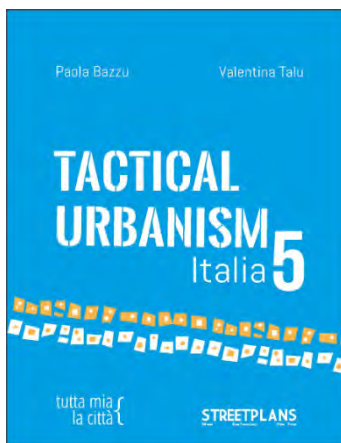
[Tactical Urbanism 2](#)



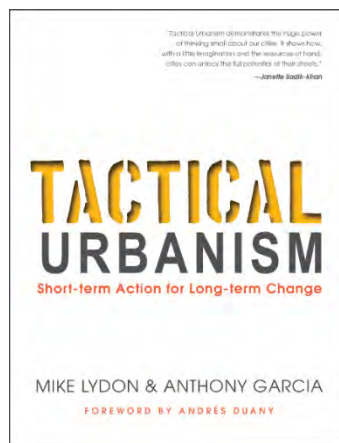
[Tactical Urbanism 3](#)



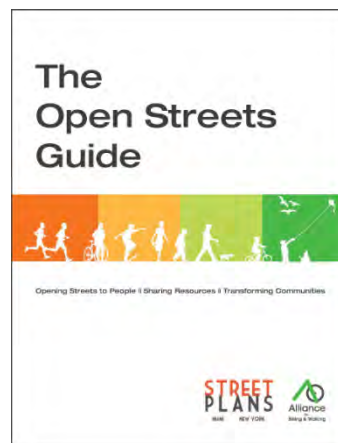
[Tactical Urbanism 4](#)



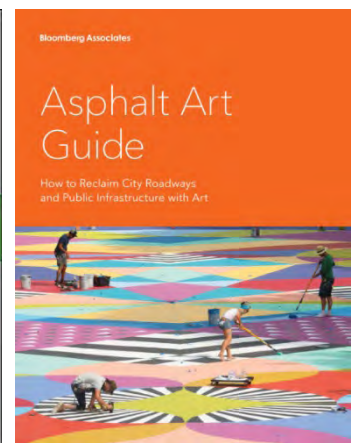
[Tactical Urbanism 5](#)



[Tactical Urbanism: The Book](#)



[The Open Streets Guide](#)



[Asphalt Art Guide](#)



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



[Fast-Track: A Tactical Transit Study](#)



[Public Space Stewardship Guide](#)



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

C. Installation Guidance

Guidance on using the planters:

- Planters to be placed parallel along the inside edge of the white stripe demarcating the perimeter of the curb extension
- Planters should be placed every 10'
- Planters may be paired with other vertical barriers to enhance visibility / sense of enclosure as required
- Identify a maintenance / stewardship partner who will be able to water and maintain the plant matter
- Ensure placement does not obstruct accessibility / ADA compliance (curb ramps)
- Retroreflective strip for night-time visibility may be warranted
- Planters may be removed during winter months, or set back a minimum of 18" to avoid plow blades

Materials summary:

White paint to mark perimeter of the curb extension	300 ft
Colored paint inside sidewalk extension	1,500 sq ft
Planters	30 units
Art Mural Paint	1,092 sq ft

Speed study:

- Prior to installation, place police speed trailer on Holmes Street, west of intersection with High Street.
- Trailer should be on stealth mode – do not provide speed feedback to motorists or other indications that will cause drivers to slow down for the study
- Placement should be continuous for minimum 48 hours (72 preferred) on weekday during normal school operations. Tuesday-Thursday preferred.
- If trailer can also track traffic counts, that is preferred but not required.
- Data collection to be repeated post-installation

D. Mural Examples



<https://mediaborough.blog/2022/01/20/call-for-street-mural-artists/>



<https://in.pinterest.com/pin/753930793840140469/>



<https://openstreetscorvallis.org/blog-2/>



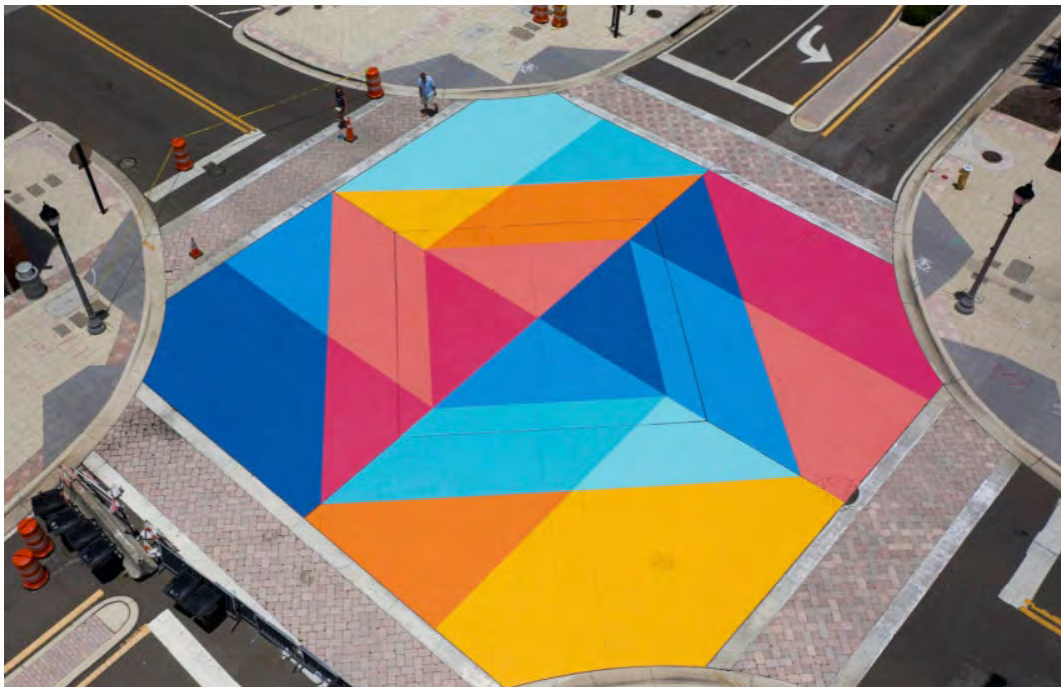
<https://www.milwaukieoregon.gov/communitydevelopment/painted-intersection-program>



<https://www.youtube.com/watch?v= 0gebE4r3sk>

SUMMERTIME

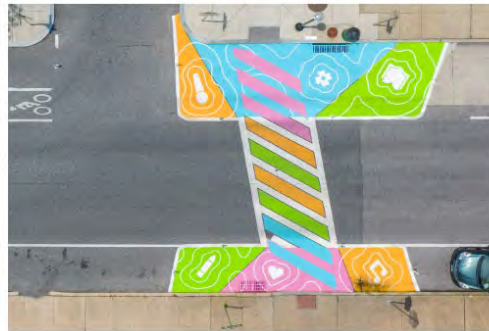
Ground mural inspired by the beauty of Florida's Gulf Coast.
The design explores the visual effects of color and geometry while activating
the intersection and providing a visual landmark for Downtown Clearwater.
Clearwater FL
June 2021



<https://www.lueza.com/mural-art/>



<https://data.bloomberglp.com/dotorg/sites/43/2019/10/asphalt-art-guide.pdf>



ainted crosswalks and bulb-outs in central Baltimore, MD. Top: 26th and St. Paul Streets by Margaret Brent Elementary/Middle School. Bottom: 29th and Barclay Streets by Barclay Elementary/Middle School. Photos courtesy of Public Artist Graham Coreil-Allen, grahamprojects.com.

<https://smartgrowthamerica.org/bringing-art-and-culture-to-the-street/>



An intersection near an elementary school in Durham, N.C. Since asphalt art was installed last May, potentially dangerous collisions between drivers and pedestrians dipped by 30 percent. (Bloomberg Philanthropies)

<https://www.washingtonpost.com/lifestyle/2022/06/08/crosswalk-art-safety-bloomberg/>



An asphalt art installation in the Jackson Ward neighborhood of Richmond, designed by local artist Chris Visions. Since it was painted in September, potentially dangerous clashes between pedestrians and drivers have decreased by 56 percent. (Bloomberg Philanthropies)

<https://www.washingtonpost.com/lifestyle/2022/06/08/crosswalk-art-safety-bloomberg/>



A new mural in Sunnyside. (Kevin J. Beaty/Denverite)



<https://denverite.com/2017/05/16/look-sunnysides-new-street-mural-tribute-walkability/>



<https://www.denvercalc.org/post/eyes-on-the-street-new-intersection-mural-at-castro-elementary-school-in-westwood>



<https://grahamprojects.com/projects/reverberations-crosswalk-calvert/>



<https://asphaltart.bloomberg.org/projects/saginaw-mi-beautifying-a-major-downtown-corridor/>



The visual speed bumps are located near Park Hill Elementary School and Stedman Elementary School (credit: CBS)

<https://www.cbsnews.com/colorado/news/murals-park-hill-elementary-stedman-traffic/>

E. Spanish Flyer

CRUCES PEATONALES PARA UNA COMUNIDAD MÁS SEGURA

Nos gustaría conocer sus comentarios sobre el mural temporal y otras mejoras que se instalaron en marzo en la intersección de Holmes Street y High Street, junto a la Escuela Intermedia Belleville.

El propósito de este diseño es mejorar la seguridad vial y agregar arte a la comunidad.

Si estas mejoras tienen éxito, pueden volverse permanentes e inspirar instalaciones similares en otras intersecciones en Belleville.



Características de la demostración

- Extensiones de acera pintadas en frente de la escuela
- Mural de arte en la intersección
- Postes flexibles que marcan las extensiones de la acera

Beneficios

- Extensiones de acera aumentan la visibilidad y acortan los cruces peatonales para mejorar la seguridad de los peatones
- El arte público llama la atención sobre la zona escolar, aumentando la conciencia de los conductores y el orgullo escolar



¡Queremos oír tus pensamientos!

Para completar una breve encuesta, escanee el código QR o visite <http://go.rutgers.edu/Belleville>



El proyecto es parte del Programa de Asistencia Técnica de Calles Completas de NJTPA, <https://www.njtpa.org/completestreets>

F. Survey

Belleville Temp Demo Survey

Start of Block: Default Question Block

Q20 Crosswalks for A Safer Community: The Belleville Middle School Project

Q2

This survey is intended to gain local feedback on the temporary mural and other improvements installed in March 2023 at the intersection of Holmes Street and High Street, adjacent to Belleville Middle School. The purpose of this installation is to improve safety and add art to the community. If these improvements are successful, they could be made permanent, and similar installations could be added at other intersections in Belleville. Since the installation is temporary, it is easy to remove it or modify it. To view the project flyer, [click here \(PDF\)](#).

This project is part of the Complete Streets Technical Assistance Program, which supports municipal government efforts to advance Complete Streets initiatives in northern New Jersey. A Complete Street is one that is safe and accessible to users of all ages and abilities. Belleville is one of seven towns to participate in the program, which is funded by the North Jersey Transportation Planning Authority. To learn more about the program visit <https://www.njtpa.org/completestreets>.

Your participation in this survey is voluntary. There are no direct benefits or payment to you for taking part in this research. By completing this survey, you will be contributing to knowledge surrounding the use, community perspective, and safety of pedestrian and bicyclist infrastructure in Belleville, NJ. If you choose to take part now, you may exit the survey at any point. In addition, you can choose to skip questions that you do not wish to answer. If you do not click on the 'submit' button after completing the form, your responses will not be recorded. If you do not wish to take part in the research, close this webpage.

I acknowledge that I have read and understand the information. I agree to take part in the research, with the knowledge that I am free to withdraw my participation without penalty.

Click on the "Start Survey" button to confirm your agreement to take part in the research.

End of Block: Default Question Block

Start of Block: Block 1

Q1 Are you a... (select all that apply)

- Student in Belleville Public Schools (1)
 - Parent/Guardian of a student in Belleville Public Schools (2)
 - Staff Member / Administrator / School Board Member in Belleville Public Schools (3)
 - Resident of Belleville (4)
 - Municipal Employee / Police Officer / Councilperson in Belleville (5)
 - Work/own a business in Belleville (6)
 - Visitor (7)
 - Other (8) _____
-

Q4 How often do you visit the intersection of Holmes Street and High Street?

- Frequently (several times per week) (1)
 - Infrequently (less than once a week) (2)
 - First time (3)
-

Q5 How do you usually travel through the intersection of Holmes Street and High Street?
(select all that apply)

- Walking (including mobility device) (1)
- Bicycling / Scootering (2)
- Driving (3)
- Passenger in car/bus (4)

Q6 I would rate the **current** safety of the intersection as:

Unsafe Neutral Safe

0 1 2 3 4 5 6 7 8 9 10

Move slider to select your answer ()



Q7 Compared to how the intersection was before, do you think the changes make it:

- More safe (1)
- Less safe (2)
- No change (3)
- Did not experience before change (4)

Q8 Use this space if you would like to tell us why:

Q9 Compared to how the intersection was before, do you think the changes make it:

- More attractive/welcoming (1)
- Less attractive/welcoming (2)
- No change (3)
- Did not experience before (4)

Q10 Use this space if you would like to tell us why:

Q11 Do you think these changes should be made permanent?

- Yes (1)
- No (2)

Q12 Use this space if you would like to tell us why:

Q13 Do you think similar projects should be installed at other locations in Belleville?

Yes (1)

No (2)

Q14 If yes, do you have a specific location in mind?

Q15 Any other comments or feedback you would like to share? Are there any changes you would suggest to make the intersection safer?

Q16 What year were you born?

Enter year (1) _____

Q17 With which race do you **most** identify with? (Select one)

- Black or African American (1)
 - White (2)
 - American Indian or Alaska Native (3)
 - Asian (4)
 - Native Hawaiian or Pacific Islander (5)
 - Not listed (6)
 - Two or more races (7)
 - Prefer not to answer (8)
-

Q18 Are you Hispanic or Latino?

- Yes (1)
 - No (2)
 - Prefer not to answer (3)
-

Q19 Which most closely describes your gender?

- Male (1)
- Female (2)
- Non-binary / Non-conforming (3)
- Not listed (4)
- Prefer not to answer (5)

End of Block: Block 1

