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Hopewell Elementary School Travel Plan



Prepared By

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Introduction

This Safe Routes to School (SRTS) travel plan is for Hopewell Elementary School, located in Hopewell Borough, Mercer County. This plan was prepared by Greater Mercer Transportation Management Association, a nonprofit, public-private partnership dedicated to promoting and providing transportation choices designed to reduce congestion, improve mobility, increase safety, and further sustainability in Mercer and Ocean County. Established in 1984, the association consists of large and small employers, local governments, metropolitan planning organizations, and state agencies who share a commitment to providing transportation choices that are good for the community, good for commuters, good for business, and good for the environment. The Borough of Hopewell and Hopewell Elementary School were interested in creating a school travel plan to explore ways to support and encourage safe walking and biking to school.

Travel Plan Goals

A School Travel Plan documents specific challenges to walking and biking to school and identifies short-term and long-term solutions to address these issues. The objective of the School Travel Plan is to create a safer walking and bicycling environment for students so that more students and their parents can comfortably choose active transportation for the trip to school. An increase in students walking and biking contributes to additional Safe Routes to School goals, including improving the overall health of children through increased physical activity and reducing congestion and the accompanying negative environmental impacts of automobile trips to school.

Safe Routes to School

Safe Routes to School is a federal, state, and local program that aims to make it safer and more accessible for students to walk and bike to school. Safe Routes to School programs incorporate the Six E's: engagement, equity, engineering, encouragement, education, and evaluation to achieve its goals.

The NJ Safe Routes to School Program, provided by Greater Mercer TMA in Mercer and Ocean County and the NJ Safe Routes to School Resource Center, is sponsored by the New Jersey Department of Transportation with funding from the Federal Highway Administration.

Setting and School Description

The Borough of Hopewell is located in Mercer County, New Jersey, and covers an area of 0.72 square miles: approximately 1.5 miles east-to-west and 0.75 miles north-to-south. The Borough was incorporated in 1891 from portions of Hopewell Township, which surrounds the Borough.

The Borough has seen a slight decline in population over the past 20 years, going from 2,035 people in 2000 to 1,918 in 2020, according to Decennial Census Counts provided by the U.S. Census Bureau. As a small historic borough, much of the land has already been developed, with most of the new construction being redevelopment, mainly commercial properties along Broad Street (County Road 518). Most recently, a multi-family development has been approved for the southwest corner of the Broad Street and S Greenwood Avenue intersection. In addition, a new housing project was approved in 2018 along Model Avenue, consisting of 13 attached housing units, two of which are affordable housing units.

Hopewell Elementary School is located at 35 Princeton Avenue, Hopewell, New Jersey 08525. For the 2020-2021 school year, there were 412 students enrolled. The following table summarizes the number of students by grade.

<i>Table 1: Number of Students Per Grade (2020 – 2021 School Year)</i>	
Grade	Number of Students
Pre-K	22
Kindergarten	57
1st Grade	61
2nd Grade	67
3rd Grade	60
4th Grade	73
5th Grade	72
Total	412

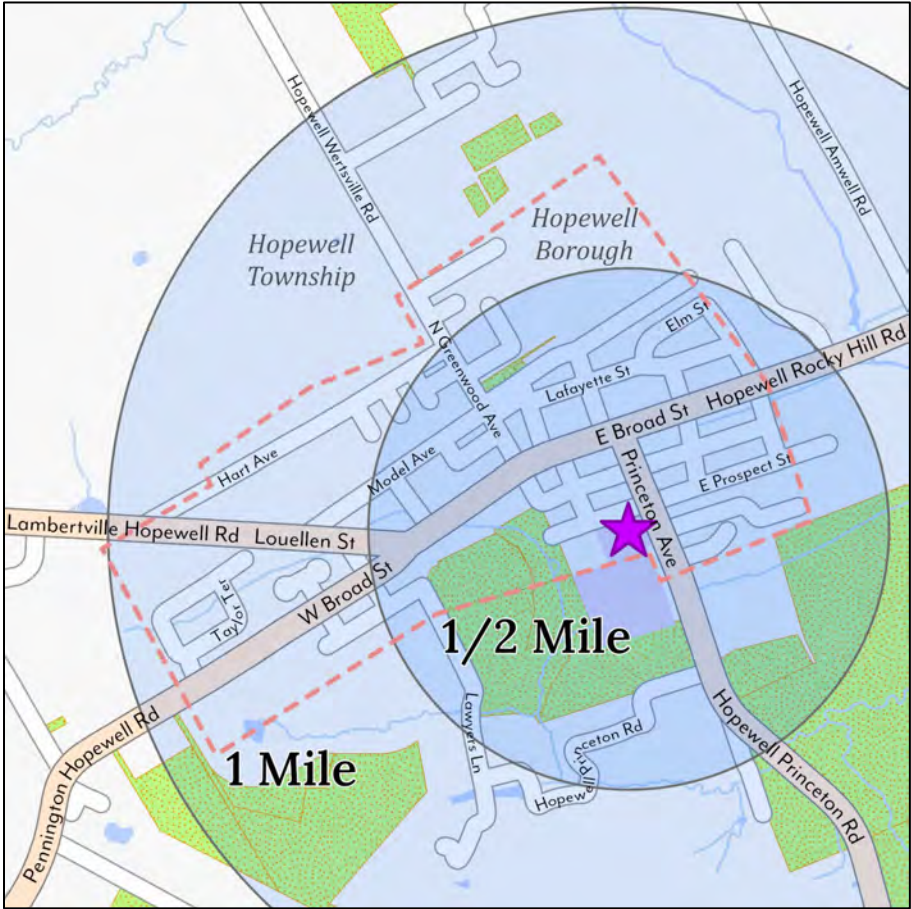
The small size of the Borough means there is an excellent opportunity to increase walking and biking to school. Most of the Borough is located within ½ mile, as the crow flies, of Hopewell Elementary, and the entirety of the Borough is located within ¾ miles, as the crow flies, of the school (Map 1). The longest possible walk for a Hopewell Borough household to the elementary school is 1.5 miles, however most households have much shorter walks. Hopewell Elementary School mainly serves Hopewell Borough residents, but some students come from outside the Borough.

Hopewell Elementary School is part of the Hopewell Valley Regional School District, which covers Hopewell Borough, Hopewell Township, and Pennington Borough. The District serves students in pre-kindergarten through twelfth grade.

According to the NJ Department of Education 2020-21 School Performance Report:

- Nearly 22% of students had disabilities
- 7% of students were Hispanic
- 3.4% were economically disadvantaged

Map 1: Location of Hopewell Elementary School



Working Groups and Partnerships

Greater Mercer TMA developed this plan in partnership with the Working Group shown below. Key partners for implementation are also listed. An asterisks (*) indicates which members also participated in the May 5th and June 10th walk audits.

<i>Table 2: Working Groups and Partnerships</i>		
Organization-2022	Role/Responsibility	Contact
Greater Mercer Transportation Management Association	Key Partner	Steve daCosta* sdacosta@gmtma.org
Greater Mercer Transportation Management Association	Key Partner	Lisa Serieyssl* Safe Routes to School Coordinator lseryssl@gmtma.org
Greater Mercer Transportation Management Association	Key Partner	Jacob Thompson* jthompson@gmtma.org
Borough of Hopewell	Key Partner	Michele Hovan Borough Administrator michele.hovan@hopewellboro-nj.us
Hopewell Borough Council	Key Partner	Ryan Kennedy, Council Member* ryan.kennedy@hopewellboro-nj.us
Hopewell Pedestrian, Bicycle & Safety Advisory Committee	Key Partner	Krista Weaver, Chair*
Borough of Hopewell	Consultant Engineer	Mark Kataryniak, PE PTOE Ferreiro Engineering mark.kataryniak@ferreiroengineering.com
Hopewell Elementary School	Key Partner	David Friedrich Principal (Principal at time of walk audit) davidfriedrich@hvrds.org
Hopewell Elementary School	Key Partner	Christine Laquidara Interim Principal christinelaquidara@hvrds.org
Hopewell Township	Community Partner	Chief James Rosso Hopewell Township Police Department jrosso@hopewelltpw.org
Other Community Members	Walk Audit Participants	Several Parents and Residents*
*Participated in the May 5 th and June 10 th walk audits		

Existing Conditions

School Travel Conditions

Hopewell Elementary School was built in the 1920s, with a horseshoe driveway entering and exiting onto Princeton Avenue, which was the original access to the school. The school's property extends along Princeton Avenue from East Prospect Street southward for about 375 feet. The school now uses a wider two-lane entrance drive offset from 2nd Street and an exit drive offset from 1st Street. There is one pedestrian crosswalk in the immediate vicinity of the school, at the intersection of Princeton Avenue and East Prospect Street. It is one of three posts for school crossing guards in the Borough. See map 2.

The school grounds are contained by East Prospect Street to the north and Princeton Avenue (County Route 569) to the east, while Beden Brook contains the western and southern portions. Beden Brook is a large (over 70 acres) swath of mostly undeveloped public land with about 2.5 miles of trails and Hopewell Borough Park, sometimes referred to as Gazebo Park, in the northeast corner. Some of the parents conducting the walk audit indicated that they and other parents use Hopewell Park as a cut-through to get to the school and avoid walking along the roads. Most of this trail is unpaved and located on a former farm pasture that has been mowed, making it unsuitable for biking.

Arrival/Dismissal

Many students arrive at Hopewell Elementary School by bus or family car, and some walk or bike with their families to the school. In accordance with state law N.J.S.A 18A:39-1, all public elementary school students who live more than two miles from their school are entitled to transportation. Within the district's 60-square-mile sending area, students are transported by district vehicles and private bus companies.

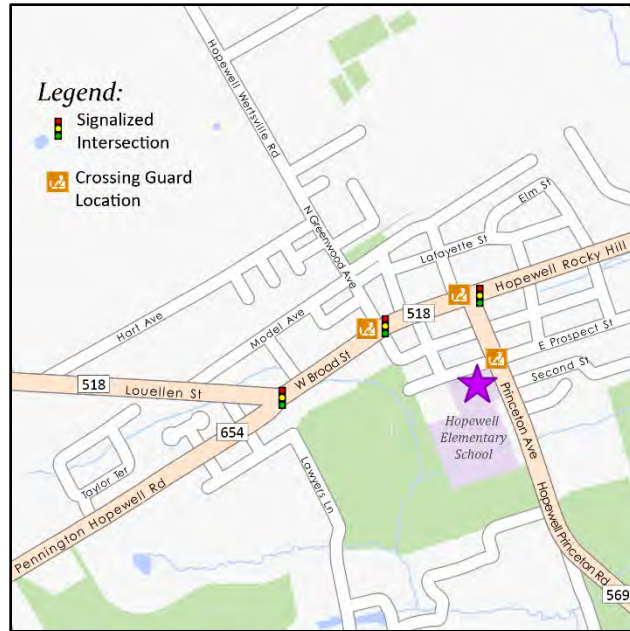
A total of six buses and two vans transport Hopewell Elementary School's K-5th grade students:

Arrivals begin officially at 8:15 am, and the principal greets students as they get off their buses. Students coming by bus are dropped off at the school's south entrance, accessed from a driveway on Princeton Avenue near 2nd Street. Some students may arrive earlier by bike or on foot. Students are allowed to walk and bike to school on their own once a parent has completed the school's permission form and returned it to the Main Office.

A total of three crossing guards are posted in Hopewell Borough: at the crosswalk in front of Hopewell Elementary School at Princeton Avenue and East Prospect Street, at the intersections of Princeton Avenue and East Broad Street, and at the corner of Broad Street and Greenwood Avenue (See map 2 and 3).



Map 2: Hopewell Elementary School Grounds



Map 3: Crossing Guard Locations

If a family's home is not eligible for transportation due to its proximity to the school, the district offers a subscription bus service for a yearly fee. Additionally, the school district will arrange bus transportation for the Pre-Kindergarten students whose parents do not opt for voluntary transportation. Currently, two other school vans transport Pre-K students.

If a parent brings their child to school in the family vehicle, there are two drop-off locations: The primary drop-off is via the main entrance drive on Princeton Avenue, adjacent to the parking lot, and the second location for quick drop-offs is in the horseshoe loop at the front of the school.

Dismissal for students in grades K-5 is at 3:35 pm. At dismissal, students board the school buses on East Prospect Street (northside) of the school property. Dismissal for parents picking up their students occurs in the loop at the front of the school or in the main parking lot off of Princeton Avenue Table 3 displays the start and end times for K-5 and pre-school classes.

<i>Table 3: Typical School Day Hours</i>		
Grade	Start Time	End Time
Pre-school-morning	9:00 AM	11:30 AM
Pre-school-afternoon	12:30 PM	3:00 PM
Kindergarten to 5 th Grade	8:35 AM	3:35 PM

Hopewell Valley YMCA provides before- and after-school child care at Hopewell Elementary School. Students enrolled in the before/after-school care program with the YMCA follow the rules set forth by the program supervisors. Students in before-school care may arrive from 7:00 am, and students in after-school care should be picked up by 6:30 pm.

Current Safe Routes to School Programming

Hopewell Elementary School already has some Safe Routes to School Programming, summarized below:

- 2022 Safe Routes to School Bronze Recognition for the Borough of Hopewell and First Step Recognition for Hopewell Elementary School
- Annual Walk to School events
- Summer camps at Hopewell Valley YMCA walk & bike safety instruction to grades K-1st

Travel Tallies

Increasing and improving bicycle and pedestrian safety infrastructure and reducing traffic hazards would provide families with greater confidence that walking, rolling, and biking to school is safe, encouraging more parents to allow their children to walk or ride a bike to school. School travel tallies have not been conducted. However, they should be collected during the school year. Travel Tallies have typically been required to obtain Safe Routes to School Funding.

Hopewell Borough Travel Conditions

Three high-volume County roads go through the Borough, and except for N and S Greenwood Avenue, all of the major roads in the Borough are County Roads. E and W Broad Street (County Road 518) serves as the main street in the Borough; it is an east-west route that connects the borough to US Route 206, seven miles to the east, and to State Route 31, three miles to the west. E Broad Street is Hopewell's busiest street, carrying 9,597 vehicles daily according to 2022 traffic counts. The Borough's main north-south streets are N Greenwood Avenue to the north and Princeton Avenue (County Road 569) to the south. North of the borough limit, N Greenwood Avenue becomes Hopewell-Wertsville Road (County Road 607), and to the south, Princeton Avenue changes to Hopewell-Princeton Road. Lastly, to the west, Broad Street becomes Pennington-Hopewell Road (County Road 654) which connects Hopewell to Pennington Borough. Table 4 lists the major roads in Hopewell Borough and their respective Annual Average Daily Traffic (AADT).

<i>Table 4: Annual Average Daily Traffic for Major Roads in Hopewell Borough</i>					
Street Name	County Road Number	Date Counted	Annual Average Daily Traffic (AADT)		
			<i>Inbound</i>	<i>Outbound</i>	<i>Combined</i>
W Broad St	CR 518	2/2021	3,705 (EB)	3,798 (WB)	7,503
E Broad St	CR 518	2/2022	4,971 (WB)	4,626 (EB)	9,597
Lambertville Hopewell Rd	CR 518	2/2022	2,424 (EB)	2,145 (WB)	4,569
N Greenwood Ave	N/A	2/2021	2,088 (SB)	2,010 (NB)	4,098
S Greenwood Ave	N/A	3/2021	782 (SB)	1,162 (NB)	1,944
Hopewell Rocky Hill Rd	CR 518	2/2021	4,014 (WB)	3,696 (EB)	7,710
Hopewell Princeton Rd	CR 569	2/2022	2,377 (NB)	2,378 (SB)	4,755

Within the Borough are several parks and playgrounds. The surrounding areas have more extensive trails and preserves, including the Lawrence Hopewell Trail, the Watershed Reserve, St Michael's Farm Preserve, and the Sourlands Preserve. The Borough and surrounding Hopewell Township have a strong biking culture, with many cyclists traveling along Broad Street to get to the Sourlands Preserve and other destinations. Sourland Cycles, a popular bike shop along Broad Street, has provided bike racks to many local businesses and restaurants to further encourage cycling in the Borough.

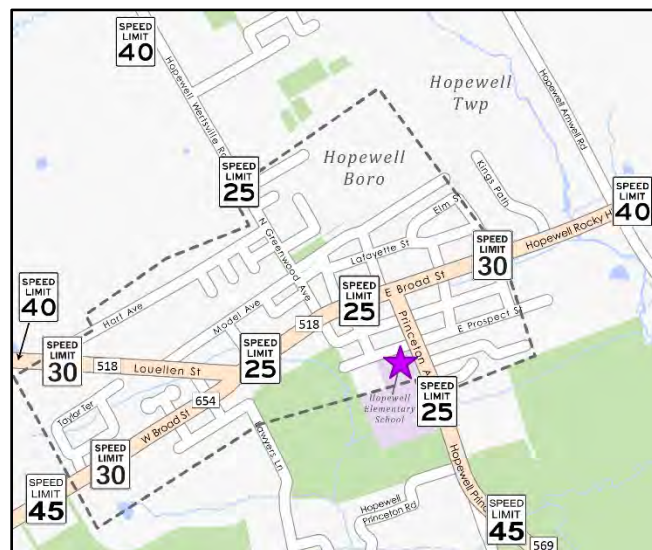
Although there is currently no biking infrastructure in the Borough, Mercer County has planned improvements for the County roads in the Borough. These improvements are listed in the 2020 Mercer County Bicycle Master Plan, which outlines planned improvements for all county roads. The plan calls for most of Lambertville Hopewell Road, Broad Street, and Hopewell Rocky Hill Road to have buffered bicycle lanes, with certain segments being standard bicycle lanes. The planned bicycle facility differences are likely due to road width variations and speed limits. The plan's GIS data further indicate that most of these roads will receive road diet treatments reducing travel lanes to 11 feet and removing all on-road parking. However, it is unlikely that Hopewell Borough will agree to remove on-street parking for most of Broad Street, as it is the main commercial street in the Borough.

Lastly, there is a CSX owned railroad track running east-west through the northern portion of the borough that carries freight trains, though service is infrequent. There is no public transit service within the Borough.

Speed Limits

Being a historic Borough in a relatively rural area, speeding as vehicles approach the Borough is a concern. The major roads leading into the Borough have speed limits at or above 40 MPH. As drivers approach the Borough, the speed limit of major roads is reduced to 25 or 30 MPH depending on the street. All major roads have radar speed signs that provide feedback to drivers to remind them to slow down and indicate when they are speeding. Map 4 shows the speed limits of major roadways in Hopewell Borough. Map 5 on page 10 shows the locations of radar speed signs.

Map 4: Hopewell Borough Speed Limits (Note: Speed limit signs represent the approximate location of speed limit changes for vehicles entering Hopewell Borough)



Existing Pedestrian Infrastructure

Hopewell Borough has an extensive sidewalk network, with most streets having sidewalks on both sides of the road. However, there are some notable gaps: S Elm Street has no sidewalks, Hart Avenue has no sidewalks on approximately 75% of the street, and Model Avenue has no sidewalks on about 50%.

In addition, a majority of intersections have some kind of marked crosswalk. The table below shows the breakdown of crosswalks at intersections. The data comes from the Delaware Valley Regional Planning Commission's "Pedestrian Portal" GIS dataset. The data shows that in Hopewell Borough, there are a total of 91 crosswalks that are either marked or unmarked. An unmarked crosswalk is typically defined as the continuation of an existing sidewalk across a road, and is usually, but not always, located at an intersection. For this dataset, gaps in the sidewalk for large driveways, such as an entrance to a parking lot or business, that do not have any crosswalk markings, are also classified as unmarked crosswalks. This is the case for sidewalk gaps on S Greenwood Avenue due to the Fire Department's driveway and on W Broad Street due to a business's driveway. However, both are still walkable and would not force a pedestrian to walk in the street.

In total, 76% of crosswalks in Hopewell Borough are marked, with only 24% being unmarked. Of the 69 marked crosswalks in the borough, 87% of the crosswalks are standard parallel line crosswalks, with 13% being the more visible continental crosswalk or ladder crosswalk. Table 5 below summarizes the crosswalk data and Map 5 on the next page shows the sidewalk network, location and type of crosswalk, and locations of radar speed signs in Hopewell Borough.

<i>Table 5: Number of Crosswalks in Hopewell Borough</i>		
Type of Crosswalk	Number of Crosswalks	Percent of Total
<i>High Visibility Crosswalk: Continental or Ladder</i>	9	10%
<i>Standard Parallel Line</i>	60	66%
<i>Unmarked Crosswalk</i>	22	24%
Total	91	

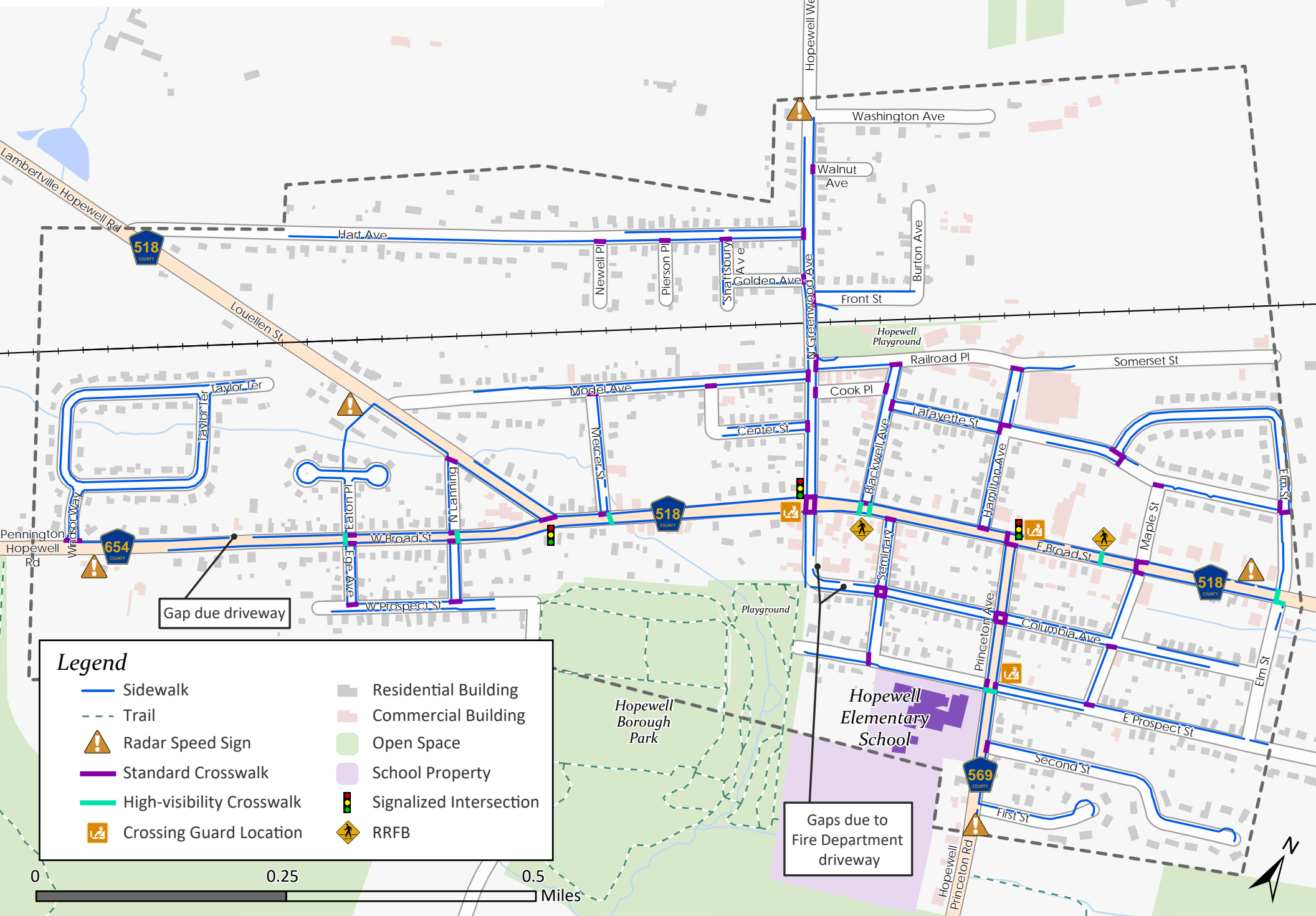


Picture 1: RRFB and Continental Crosswalk at Broad St and Blackwell Ave



Picture 2: Standard Crosswalk at Princeton Ave and Prospect St

Map 5: Existing Pedestrian Infrastructure in Hopewell Borough



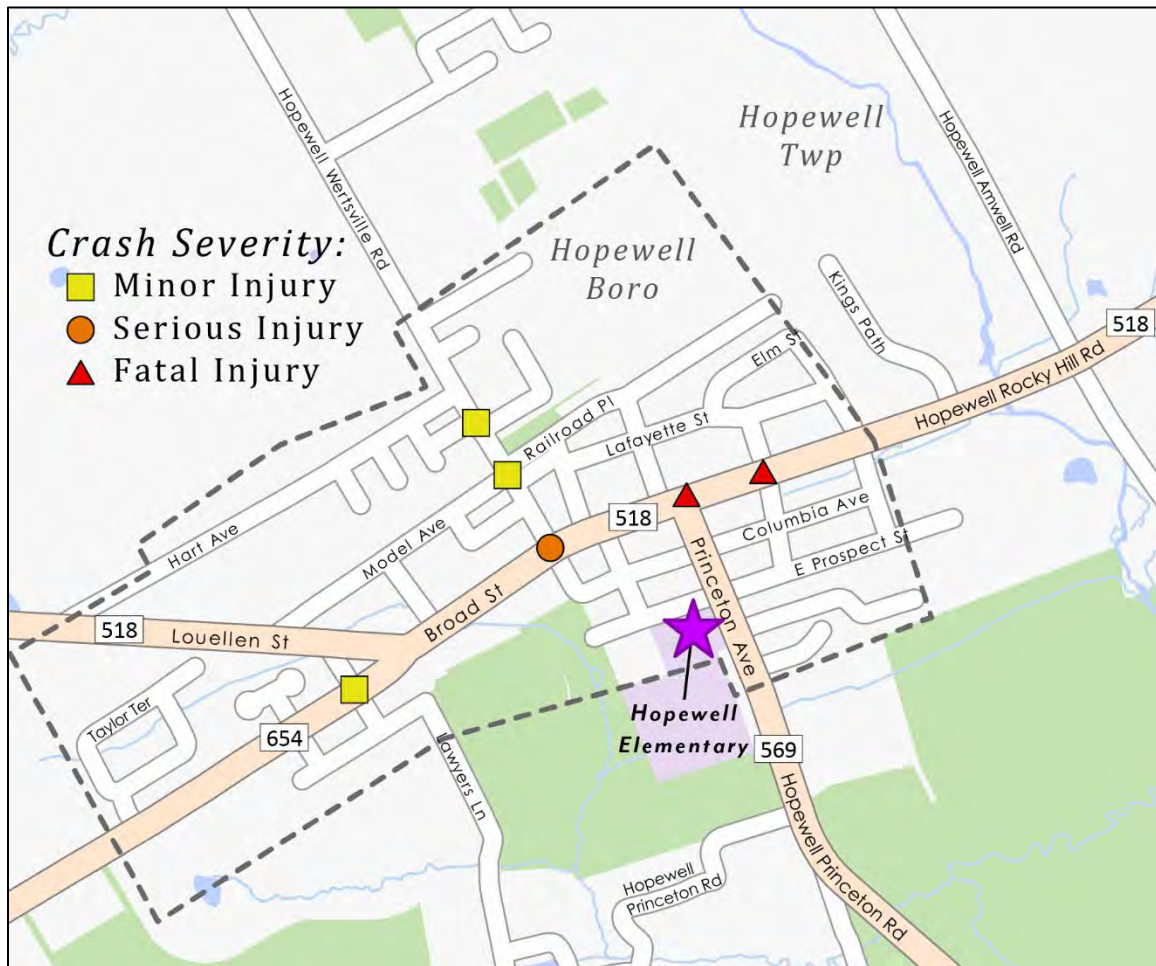
Crash Data

A crash analysis for Hopewell Borough was conducted using the New Jersey Division of Highway Traffic Safety's crash analysis tool, Numetric. Numetric compiles data based on crash reports provided by the New Jersey Department of Transportation (NJDOT). The crash reports are completed and submitted to NJDOT by the responding officer. They include location, time of day, the severity of the injury, whether pedestrians or bicyclists were involved, and other circumstances related to the crash. The crash data provided by Numetric is comprehensive but not exhaustive. Crashes are not included in this data for various reasons, including incomplete crash reports and unreported crashes.

Between 2012 and 2021, there were six reported pedestrian or bicyclist crashes in Hopewell Borough. All reported pedestrian or cyclist crashes occurred on a major road (Map 5). Three of the crashes resulted in minor injury, one resulted in serious injury, and two resulted in fatal injury. None of the crashes involved children. The most recent fatal crash happened on May 13th, 2021, and resulted in the death of a cyclist. This crash occurred at the intersection of Princeton Avenue and Broad Street. The cyclist was traveling east on Broad Street when a vehicle making a left turn onto Princeton Avenue struck her. The crash took place at 4 PM.

The second fatal pedestrian crash occurred in 2013 on E Broad Street, near the intersection of Maple and E Broad Street. In this incident, two pedestrians were crossing E Broad Street when a pickup truck struck them while attempting to make a left turn onto E Broad Street. The other pedestrian received significant injuries but survived. The driver in this incident received a citation for failing to yield to a pedestrian. When the crash occurred, there was no marked crosswalk at the intersection. Since that time, a standard parallel lines crosswalk was added. In addition, a continental crosswalk and a rectangular rapid-flashing beacon (RRFB) were also installed approximately 180 feet to the east. The following map displays the locations of all reported pedestrian and cyclist crashes in Hopewell Borough between 2013 and 2021.

Map 6: Hopewell Elementary Vicinity Pedestrian and Cyclist Crash Data 2013-2021 (Source NJDHTS)



A complete list of Hopewell Borough pedestrian or bicyclist-involved crashes from 2012-2021 is listed in Appendix A.

Audit Findings and Recommended Infrastructure Improvements

The following sections discuss the findings of the walk audit. It is divided up into three sub-sections. The first section provides a general overview of the two pedestrian road safety audits (PRSA) conducted. The following two sections, “General Findings and Recommendations” and “Major Corridor Findings and Recommendations,” provide a summary of the issues and recommendations found during the PRSA. The “General Findings and Recommendations” section summarizes issues that were observed multiple times during the audit or issues that are not on a major corridor. The “Major Corridor Findings and Recommendations” describes issues and recommendations on major roads.

Description of Walk Audits

Pedestrian safety conditions in Hopewell Borough were assessed by conducting two pedestrian road safety audits (PRSA). The audits were conducted approximately one month apart at two separate locations. The first occurred on May 5th, 2022 and the second on June 10th, 2022. Among the attendees were Hopewell Elementary School parents and Borough residents, local government representatives, and three members of GMTMA.

The first PRSA covered most of the perimeter of the school grounds, while the second PRSA focused on a specific intersection. These audits aim to identify strengths and weaknesses of the existing infrastructure available to students to walk or bike to school and offer recommendations based on the findings. Participants compiled handwritten notes for each point of interest and turned these in to GMTMA staff.

The following is a description of each audit:

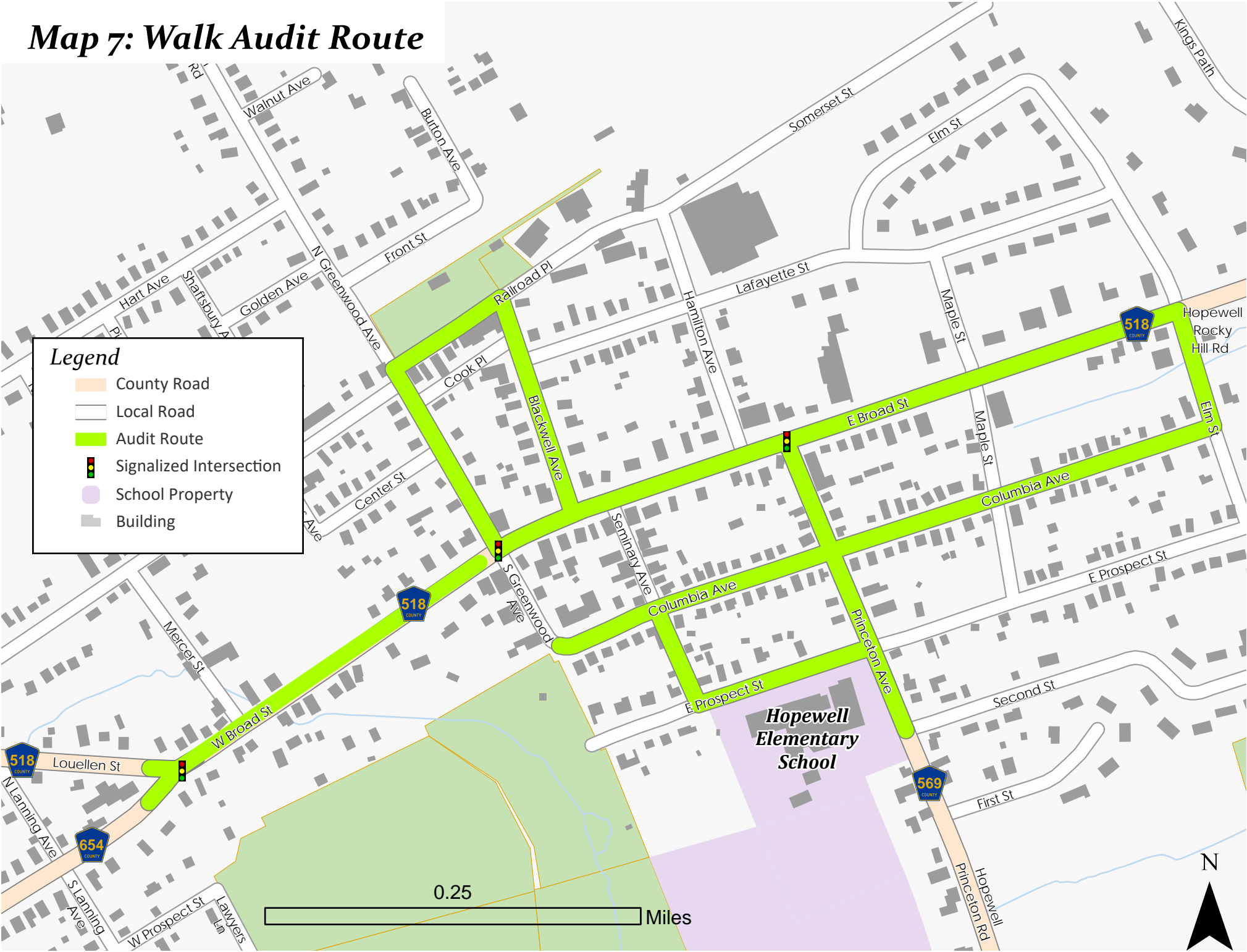
Location 1: Area within about 1-mile walking distance of school grounds.

Location 1 covered the neighborhood immediately adjacent to the school grounds and the main roads that most students would use to walk to school, as well as the intersections where crossing guards are present during arrival and dismissal. The streets covered were E Broad Street, Princeton Avenue, N & S Greenwood Avenue, Seminary Avenue, Maple Street, Elm Street, Columbia Avenue, E Prospect Street, Cook Place, and Railroad Place (See Map 7). The area audited overlapped with the central downtown core of Hopewell Borough.

Location 2: Intersection of Louellen Street and W Broad Street and segment of W Broad Street

The second audit location focused primarily on the intersection of Louellen Street and W Broad Street, a notorious intersection within the Borough. Audit participants indicated that most parents avoid this intersection when walking their children to school. The audit team also covered a short segment of W Broad Street between Louellen Street and N Greenwood Avenue (See Map 7).

Map 7: Walk Audit Route



General Findings and Recommendations

Sidewalks

As discussed previously, there is an extensive sidewalk network in Hopewell Borough, with most residential streets already having sidewalks. However, there are some residential streets that have incomplete segments that would force families to walk on-road to reach Hopewell Elementary School. Streets that are missing segments include: Louellen Street, Hart Avenue, the north side of Maple Street, and S Elm Street. E Prospect Street, where Hopewell Elementary School is located, only has sidewalks on one side of the street, the side in which the school is located.

Additionally, during the audit, several locations were found to have damaged sidewalks due to the root systems of large street trees. In these areas, the sidewalks become difficult to walk over and are potential tripping hazards. This is especially true for those with mobility impairments or parents with strollers. Any sidewalk lifting above ¼ inch is a violation of ADA standards. This issue occurs throughout the Borough but is most common along side streets. Some locations were also found to have overgrown bushes or shrubbery that obstructed the sidewalk.



Picture 3: Overgrown Bush Obstructing Sidewalk on Broad St

Recommendations

- Conduct sidewalk survey to determine all locations that have displaced sidewalks due to street trees. Work with Greater Mercer TMA to develop a mapping tool to allow residents to report locations with damaged sidewalks.
- Fix damaged sidewalks.
- Add sidewalks to streets with incomplete or no sidewalks, including but not limited to: Louellen Street, Hart Avenue, Maple Street, Elm Street, Columbia Avenue, Lafayette Street, and E Prospect Street. Map 5 on page 10 shows the location of sidewalk gaps. Priority should be placed on streets that do not have sidewalks on either side of the street and would have the most significant impact on the number of families who can walk to school. For example, adding sidewalks to Maple Street would benefit approximately 40 households.
- Remind residents to trim overgrown bushes or shrubbery.



Picture 4: Sidewalk Damaged by Street Tree on Columbia Ave

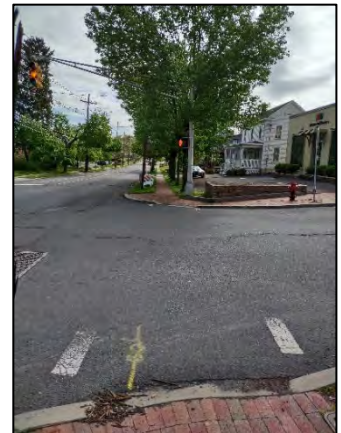


Picture 5: Damaged Sidewalk on Broad Street

Crosswalks

While most intersections have marked crosswalks, most use the standard parallel line crosswalk. This type of crosswalk is much less visible compared to continental crosswalks. In addition, many of the standard crosswalks and some of the continental crosswalks were faded or almost completely gone, making it very difficult for drivers to recognize them.

Many drivers were observed not yielding to pedestrians at crosswalks. This behavior was observed frequently near the school at the Princeton Avenue and Prospect Street intersection, despite a crossing guard present. In one instance, a vehicle failed to yield to the crossing guard while the crossing guard was in the street, resulting in a near miss. The crossing guard confirmed that this is a common occurrence. Pedestrians were also observed crossing at unmarked crosswalks. Additionally, during the audit, many families were seen choosing to cross Princeton Avenue at an unmarked crosswalk near 2nd Street rather than the E Prospect Street intersection, which has a crossing guard and marked crosswalk. It is unclear why families chose to do this, however it is likely due to convenience since these families appeared to live on 2nd Street.



Picture 6: Substantially Faded Crosswalk at Broad St and Princeton Ave

Recommendations

- Conduct a crosswalk survey to determine which crosswalks are faded and need to be re-painted.
- Replace standard crosswalks with continental crosswalks for any intersection on a major road; Broad Street, Princeton Avenue, and N Greenwood Avenue. Refer to Map 5 on page 10.
- Add crosswalks to key side street intersections missing crosswalks including: Columbia Avenue & Maple Street, Columbia Avenue & Elm Street, E Prospect Street & Seminary Street, E Prospect Street & Elm Street, Blackwell Avenue & Lafayette Street. Refer to Map 5 on page 10.
- Add in-street pedestrian crossing signs to Princeton Avenue & E Prospect Street and Broad Street & N Lanning Avenue¹. These will help alert drivers of the crosswalks and provide traffic calming.
- Add painted yield lines in front of crosswalks along major roads, this will further enhance visibility and guide vehicles on where to stop. These are typically added to mid-block crossing's, but can also be added to crosswalk's at intersections.



Picture 7: Yield Lines at Mid-block Crossing in New Brunswick, NJ



Picture 8: Yield Lines at Intersection in Los Angeles, CA



Picture 9: Yield Lines at Intersection in Fremont, CA

¹ As per Mercer County policy, in-street pedestrian crossing signs are not allowed on County roads. The Borough will need to get permission from Mercer County to place in-street pedestrian signs on any County road.

Speeding

All major roads outside of Hopewell Borough have higher speed limits (40 MPH and above) as they approach the Borough. Speed limits along these roads are reduced to either 25 or 30 MPH as they get closer to the Borough; however, many drivers were observed traveling above these speed limits as they entered the Borough. Speed is a major contributing factor to the severity of pedestrian and bicyclist crashes.

In addition, residents also reported that two streets, Hart Avenue and Model Avenue, are being used as cut-through streets to avoid traffic lights on Louellen Street and Broad Street. Both these streets are residential and not designed for high speeds or high traffic volumes. Residents reported that suspected cut-through vehicles appear to be traveling above the 25 MPH speed limit of these roads. This is particularly dangerous along Hart Avenue as the sidewalk network is incomplete.

Residents have also stated that S Greenwood Avenue, which becomes Columbia Avenue, is also used as a cut-through street to avoid traffic lights on Broad Street. S Greenwood Avenue and Columbia Avenue are important walking routes to Hopewell Elementary School and used by many families to avoid traveling on major roads. Additionally, families use S Greenwood Avenue to get to Hopewell Borough Park, which has trails that are used to cut-through to Hopewell Elementary. As an essential walking route, measures should be taken to calm traffic on these streets and discourage use as a cut-through.

In addition to infrastructure improvements, another solution for reducing incidents of speeding in Hopewell Borough is to institute a Pace Car program. A Pace Car Program is a citizen-based campaign that aims to make their community safer for pedestrians, bicyclists, and drivers by reducing vehicle speed. Residents register as a pace car driver, sign a pledge to drive the speed limit, stop for pedestrians in marked crosswalks, yield to pedestrians in unmarked crosswalks at intersections, share the road with pedestrians and bicyclists of all ages and abilities, eliminate texting and phone use while driving, and display the Pace car magnet on their car. The Pace car magnet communicates the intention to drive the speed limit to other drivers and helps slow down the traffic.



Picture 10: PACE Car Magnet Used in Hightstown, NJ

Recommendations

- Add or improve gateway treatments to major roads as they approach Hopewell Borough.
- Work with Mercer County to reduce lane width to 11 feet for major roads.
- Conduct traffic study along Hart Avenue, Model Avenue, and S Greenwood Avenue to confirm reports of drivers using these streets as cut-through streets.
- Add turning restrictions along Hart Avenue and Model Avenue to reduce the number of cut-through vehicles.
- Add speed humps² to slow traffic on Hart Avenue, Model Avenue, and S Greenwood/Columbia Avenue.
- Institute a Pace Car program. This can be a modification and re-launching of the existing “Heads Up Hopewell” safety campaign.

² Speed humps, as opposed to speed bumps, reduce speeds to 15 to 20 MPH and are smaller and longer, making them more appropriate for streets where traffic still needs to flow smoothly.

Biking

As stated previously, there is a strong biking culture in Hopewell Borough. During the audit and subsequent visits, numerous bicyclists were observed traveling along Broad Street. According to residents, it is very common for bicyclists to travel through Hopewell Borough on their way to the Sourland Mountain Preserve and other destinations. According to the Principal and parents, a number of students currently bike to school, and there is already a bike rack located at the north entrance of the school. Providing bicycle improvements would greatly improve safety for cyclists and could increase the number of students biking to school.

The poor condition of some sidewalk segments in Hopewell Borough makes them unsafe for children using them to ride their bikes. Aside from fixing these sidewalks, another option for improving bike safety would be to establish a bicycle boulevard route to Hopewell Elementary School. Bicycle boulevards are linear corridors of interconnected, traffic-calmed streets where bicyclists are afforded an enhanced level of safety and comfort. Most local streets in Hopewell Borough already have slower moving traffic and low traffic volume making them suitable candidates for bicycle boulevards. Adding additional traffic calming measures and route signage to these streets may increase parent's willingness to allow their children to bike to school.

Another consideration would be to add bike lanes to Broad Street. In order to preserve parking along Broad Street, one feasible alternative would be to remove parking on one side of the street, narrow the travel lanes to 11 feet and parking lanes to 8 feet, and add a two-way separated 10 foot-wide bike lane with a 3 foot buffer. The benefits of two-way bike lanes, as indicated by the New Jersey Complete Streets Design Guide, are that they "reduce the detour length for bicyclists by providing contra-flow movement and permitting more convenient and direct routes. Research indicates that two-way separated bicycle lanes are more attractive to bicyclists of all ages and abilities" (State of New Jersey, 2017). Having a buffered bike lane may make parents more comfortable having their children bike to school on Broad Street.



Picture 11: Buffered Two-way Bike Lane in New Brunswick, NJ

In addition, a number of residents indicated that families who live west of the Louellen and Broad Street intersection use trails in the Hopewell Borough Park to get to Hopewell Elementary School. A large portion of the park is located on an old farm pasture and has a number of trails that are unpaved. The trails in this section of the park are mowed into the former pasture and are unsuitable for biking. Some sections of the trail near the playground are a mix of crushed stone and gravel, however the large size of the gravel is not ideal for biking. Being able to travel on bike away from major roadways greatly improves safety for families going to school. Improving these trails so they are more suitable for bikes could greatly increase the number of students biking to school. Refer to Map 5 on page 10 to see the current location of these trails.



Picture 12: Existing Trail in Hopewell Borough Park

Recommendations

- Conduct further evaluation for implementation of two-way separated bike lanes along Broad Street.
- Establish a bicycle boulevard route along local streets.
- Upgrade some Hopewell Borough Park trails from un-paved trails to crushed stone to enable bicyclists to use them more comfortably. The upgraded path should connect W Prospect Street to E Prospect Street.



Picture 13: Bicycle Boulevard Signage in Princeton, NJ



Picture 14: Bike Boulevard Signage in Princeton, NJ

Safe Routes to School Disabled Student Inclusion

The following are recommendations aimed to help improve walkability for students with disabilities.

- Maintenance of current ADA-compliant pads and addition of pads to sidewalks to enable access during Walk to School events.
- Adjust safety presentation styles for those with ADHD and other learning obstacles.
- During schoolwide walk audit events, tailor routes for special needs students.
- Train the Trainers approach- Pass along safety education to the aides who have to tailor educational needs based on individual student plans.
- Look into funding sources for purchasing specially-tailored bicycles for disabled.

Major Roadway Findings and Recommendations

This section addresses more specific issues observed on the major roadways in Hopewell Borough. These roadways include: Princeton Avenue (County Road 569), E and W Broad Street (County Road 518), N and S Greenwood Avenue, and the intersection of Louellen Street (County Road 518) and Broad Street (County Road 518 and 654).

Princeton Avenue (Country Road 569)

Princeton Avenue is the main approach into Hopewell Borough from the south (traveling north) and the street that Hopewell Elementary School is on. When approaching Hopewell Borough from the south, the road is named Hopewell-Princeton Road and is a steady downhill approach for 1.2 miles with a speed limit of 45 mph. At the Borough line the road becomes Princeton Avenue, and the speed limit abruptly drops to 25 mph followed by an up-hill section. Due to the transition from a high-speed rural road to a slower in-town road, vehicles are often traveling above the speed limit as they get close to the school. This makes crossing near the school more hazardous.

Near Hopewell Elementary School there are a number of signs and pavement markings to indicate that the speed limit is 25 MPH and that it is a school zone. Since 2019, a speed feedback sign has been mounted on the speed limit sign post near the border of Hopewell Borough. The sign provides feedback for vehicles traveling north as they enter the Borough. A small “Drug-Free School Zone” sign and a small gateway sign “Welcome Hopewell Borough” follow shortly after. At 1st Street there is a “School Zone 25 MPH” pavement marking.

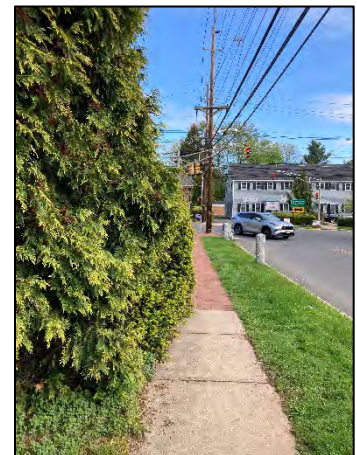
For vehicles traveling south toward the school there are “School Zone 25 MPH” pavement markings near the intersection of Columbia Avenue, and a flashing pedestrian crossing sign. However, during the audit, the sign did not seem to be activated and it is unclear if this sign is still functional. In addition, the lettering for both “School Zone 25 MPH” markings are six feet for the numbers and three feet for the words. This is smaller than the MUTCD standard of minimum six-foot lettering. The markings are also broken up into four lines of information, which is more than the MUTCD standard of three lines of information maximum.

Sidewalks extend along both sides of Princeton Avenue from East Broad Street southward to Hopewell Elementary School entrance drive near 2nd Street. From that point the sidewalk continues on the east side. In general, the sidewalks are in good condition though tree roots have made parts uneven. ADA pads are missing (at the crosswalks on 1st Street and 2nd Street), or need replacement in places.

In several places along Princeton Avenue bushes or plantings have overgrown the sidewalk, narrowing the path for pedestrians. On-street parking is not permitted on Princeton Avenue from Monday to Friday 7am to 7pm and there are no restrictions on the weekends.



Picture 15: Inactive Pedestrian Crossing Sign (Photo taken during school hours)



Picture 16: Overgrown Bush along Princeton Ave

Intersections along Princeton Avenue

The origination of Princeton Avenue is at the intersection with East Broad Street (County Road 518), one of three signalized intersections in the Borough. This is a major intersection, as it is where traffic enters Hopewell's downtown area from the south along Princeton Avenue. It is also the location of a cyclist fatality in 2021. Furthermore, Hopewell Elementary is $\frac{1}{4}$ mile south of this intersection, making it an important node for school travel. The intersection has standard crosswalks and pedestrian activation buttons, however many of the crosswalks are very faded.

There is a high volume of truck traffic: box deliveries, construction, and tractor trailers that turn through this intersection. As a result, the utility pole located near the southwest curb is struck repeatedly by the trucks making the turn onto Princeton Avenue from East Broad Street.

Additionally, this intersection is technically a three-way intersection as Princeton Avenue does not continue north, however there is a driveway to the hair salon located at the north end of the intersection. There is no signage or traffic signal for traffic exiting this driveway, potentially endangering all road users, but leaving pedestrians particularly vulnerable, should a vehicle exit during a pedestrian cycle. The second of the Borough's three school crossing guards is posted at this intersection, and the guard finds it a very challenging location. To cross school children safely, the guard relies on the pedestrian activation button to stop traffic.

Lastly, on the west side of the intersection, along East Broad Street, there used to be a left-turn lane to Princeton Avenue. However following road work there, the lane striping has become ambiguous. This can lead to some confusion on where left turning cars should position themselves.



Picture 17: Parents and Students Using a Faded Crosswalk at Princeton Ave and Broad St Intersection.



Picture 18: Damaged Utility Pole at Princeton Ave and Broad St Intersection



Picture 19: Ambiguous Line Striping on Broad St at Princeton Ave and Broad St Intersection



Picture 20: Driveway that Empties into Princeton Ave and Broad St Intersection

The intersection of Princeton Avenue and E Prospect Street is the principal crosswalk to Hopewell Elementary School and is the post of one of the Borough's three crossing guards. The south side of the intersection has a continental crosswalk, with the east and west side only having standard parallel line crosswalks. There is no crosswalk on the north side.

During the walk audit the crossing guard was nearly hit by a driver at this intersection, the crossing guard communicated that this was a somewhat common occurrence. Subsequent to our audit, on June 16th at about 4pm, a car stopped for the crossing guard in the crosswalk was rear-ended by a second vehicle and pushed forward about 40 feet (Case # HB2022-001023). These occurrences may be due to a hill just north of the intersection that reduces visibility of the crosswalk. Although there are school crossing signs and painted on-street markings, additional and more visible school zone warnings should be considered.

South of E Prospect Street, there are two intersections, 1st Street and 2nd Street, that have no crosswalks to cross over Princeton Avenue. During the audit multiple families were observed choosing to cross at 2nd Street, despite it being an unmarked crosswalk and the presence of a crossing guard at the E Prospect Street intersection.

Lastly, the Columbia Avenue intersection does have standard parallel line crosswalks on all four sides, however they are considerably faded. ADA pads are present on each side of the 4 street corners, however on the southwest corner the transition from the sidewalk to the curb and to the street is very uneven. Parents were also observed crossing at this intersection. Vehicles were observed failing to yield to pedestrians using this intersection.

Recommendations

- Work with Hopewell Township and Mercer County to make a graduated reduction in speed and posted speed limits (from 45mph to 25 mph) on the northbound side of Hopewell-Princeton Road/County Route 569, as it approaches the borough.
- Install additional, attention-grabbing gateway treatment(s) on Princeton Avenue at Borough entrance.
- Add paint and bollard curb extensions at E Prospect Street intersection to help calm traffic. This could be a good example: <https://www.idahosmartgrowth.org/app/uploads/2019/04/Examples-of-Paint-being-used-for-Curb-Extensions.docx.pdf>



Picture 21: Painted Curb Extension in Idaho

- Re-paint “25 MPH School Zone” marking to meet MUTCD standards of minimum six-foot height lettering and maximum three lines of information (MUTCD Section 7C.06 Pavement Word and Symbol Markings).
- Sidewalks should be repaired where tree roots have made them uneven.
- Install and replace ADA pads as needed.
- Prune overgrown bushes restricting pedestrian travel along sidewalks.
- Verify flashing yellow School Zone warning beacons are fully operational. Although the sign is on a County road, it was not installed or owned by Mercer County.
- In order to increase awareness of the Princeton Avenue and E Prospect Street crossing, an overhead pedestrian flashing sign with radar speed sign attached should be installed north and south of Hopewell Elementary School. This can replace the current yellow school zone warning beacon. This is one of Mercer County’s preferred safety measure and is currently installed on other County Roads in the County.



Picture 22: Overhead Pedestrian Flashing Sign in Hopewell Township

- Install RRFB signals at the intersection of Princeton Ave and E Prospect Street. The sign should be in the sightline of drivers headed south towards the intersection from the north. These signals would help the crossing guard, and provide further indication of the crosswalk’s presence.
- Upgrade crosswalk pavement markings to continental-style for all intersections on Princeton Avenue.
- Add continental crosswalks to the 2nd Street intersection for parents crossing at this currently unmarked intersection.
- Close the driveway in the middle of the E Broad Street intersection and direct in and out traffic through the driveway to the same property, about 60 feet east.
- Remove the ambiguous lane striping on E Broad Street.
- Consider adding a pedestrian refuge island at the Princeton Avenue and Prospect Street intersection, to serve as further traffic calming.

West and East Broad Street

Broad Street is the main road running through Hopewell Borough’s downtown area. West of the N Greenwood Avenue intersection it is called W Broad Street and to the east of this intersection, E Broad Street. Broad Street is also a county road, from the west, up until the Louellen Street intersection, it is County Road 654, and east of

this intersection it turns into County Road 518. It brings a significant amount of through-traffic into the Borough. While the speed limits within the Borough are 30 and 25mph, they are 45mph leading into the Borough from the west, and 40 MPH from the east.

The road is quite wide, measuring mostly 36' within the Borough, with one segment as wide as 48.' In the downtown area, the on-street parking is needed for businesses along the road. During daytime hours there are typically many vehicles parked along Broad Street. This on-street parking helps to provide traffic calming in the center of the Borough. However, near the border of the Borough there is much less parking and the wide road leads to through-traffic speeding into downtown. There are radar speed signs near the border of the Borough on both the east and west segment of the Broad Street to help slow traffic. However, the radar speed sign on W Broad Street does not always activate early enough to allow vehicles to react and reduce their speed. This may be due to trees partially obstructing the signs radar.

There is one mid-block crossing on E Broad Street located in front of Brick Farm Market between Princeton Avenue and Maple Street. This crossing has a pedestrian activated rectangular rapid flashing beacon (RRFB) and a continental crosswalk and appropriate curb cuts. However, the yellow box indicating a no parking zone is barely visible anymore, and illegal parking within 25 feet of the crosswalk frequently occurs according to Hopewell Borough residents.

Intersections along Broad Street

All three of the Boroughs signalized intersections are located on this street. Issues and recommendations for the Louellen Street intersection and the Princeton Avenue intersection can be found in the Louellen Intersection section and Princeton Avenue section, respectively.

The intersection of E Broad Street and Blackwell Avenue is a 3-way intersection with marked crosswalks and an RRFB on the western crosswalk. Both crosswalks for crossing E Broad Street are continental style and in good condition. The biggest complaint from the audit group is that people park in the no parking zones, including large delivery trucks, which reduces visibility when approaching the crosswalks.

The Greenwood Avenue and Broad Street intersection is a signalized intersection. Several audit participants expressed their concern about this intersection and the crossing guard also described it as one of the worst intersections in the Borough. While no fatal crashes occurred at this intersection over the past 10 years, two pedestrian crashes did occur during the same period, one of which was a suspected serious injury. Another issue with this intersection, as expressed by the audit participants and the crossing guard, is that vehicles on N Greenwood Avenue turn right onto W Broad Street without paying attention to



Picture 23: Faded No Parking Zone at Mid-Block Crossing on Broad St



Picture 24: Broad St and Blackwell Ave Intersection (Photo Taken from Southwest Corner)



Picture 25: Faded Crosswalk at Broad St and Greenwood Ave Intersection (Photo Taken from Southeast Corner)

people in the crosswalk, with children being even harder to see. Only vehicle traffic traveling east on W Broad Street have a “No Turn on Red” sign, even though most right turn conflicts are said to occur at the aforementioned side of the intersection.

Another concern for pedestrians at the Greenwood Avenue intersection is that this segment of Broad Street is very wide, making this crosswalk over 60 feet long. All four sides of this intersection have standard crosswalks, and the crosswalk on the south side of the intersection is considerably faded. Furthermore, the pedestrian signal requires actuation. Prioritizing motor vehicles over pedestrians in this manner leads to prolonged waiting time for the light to change, rushing pedestrians to get across the road, and could pose problems for cyclists who may be waiting to cross during the pedestrian phase and for users unaware of the need to request the signal change.

Further east is the Maple Street and Broad Street intersection, an unsignalized intersection with standard crosswalks on the west and south side. The crosswalk on the south side is considerably faded. This intersection was the location of one of the two fatal pedestrian accidents in the Borough and a serious injury pedestrian crash. Both pedestrian crashes occurred during the same incident in 2013, when there were no crosswalks.

Despite the presence of two crosswalks, not every corner has ADA curb cuts, and the southern side of E Broad Street is a large open, paved lot that does not have a sidewalk until 400 feet further down the road. It’s possible that there isn’t heavy pedestrian traffic on this portion, but there is also no curb separating the lot from the road, meaning that cars and trucks can turn into the lot at any point, leaving pedestrians vulnerable.

East of the Maple Street intersection, is the intersection of Broad Street and Elm Street. This intersection marks the terminus of E Broad Street as it becomes Hopewell Rocky Hill Road and also the edge of the Borough. As a result, sidewalks do not extend past Elm Street. There are adequate continental crosswalks on Broad Street and the southern section of Elm Street, connecting to the corner lot. Due to being on the edge of the Borough, this intersection likely sees less pedestrian activity than other intersections discussed in this travel plan. However, due to it being right after the speed limit change on Hopewell Rocky Hill Road from 40 MPH to 30 MPH, cars are likely traveling above 30 MPH. This puts pedestrians at a higher risk of severe injury if a crash does occur.

Recommendations

- Further evaluate installing two-way separated bike lanes along the south side of Broad Street (See the “Biking” section located in the “General Findings” section for more details).
- Conduct street light analysis and consider installing additional street lights.
- Install plastic pylons along the perimeter of or within the painted yellow boxes to more effectively prevent cars and delivery trucks from parking illegally within 25 feet of the marked crosswalks.
- Repaint no parking zone and erect visible signs.



Picture 26: Missing Crosswalk and Sidewalk at Broad St and Greenwood Ave Intersection (Photo Taken from Northeast Corner)

- Add button actuated pedestrian only phasing for Greenwood Avenue intersection.
- Add “no turn on red” restrictions for all travel directions at the Greenwood Avenue intersection.
- Upgrade crosswalks to continental crosswalk at the Greenwood Avenue intersection.
- Add curb bump outs to shorten the distance for pedestrians and reduce turning speed for drivers at the Greenwood Avenue intersection.
- Add a crosswalk on the northern side of Maple Street. Sidewalks and curb cuts are already present on both sides.
- Consider installing RRFB for crosswalks at Elm Street.
- Prune trees that are obstructing the radar speed sign on W Broad Street. If possible, other adjustments to the signs programming should be made so that it activates sooner.

Intersection of Louellen Street and Broad Street

The Louellen Street and Broad Street is a signalized intersection and an infamous intersection in Hopewell Borough. This is mainly due to the orientation of the cross streets, Louellen Street intersects Broad Street at an angle. The angle at which the streets intersect promotes high turning speeds and the crosswalk to cross Louellen Street is very wide, about 60 feet. Both roads have posted speed limits of 30 MPH at this location. This is also the only marked crosswalk at the intersection and it is a standard crosswalk.

At the south side of the intersection there is a three-foot retention wall. While there are two staircases built into the wall, pedestrians with mobility issues would not be able to get onto the sidewalk if they cross Broad Street. This retention wall would also make it difficult to add an ADA compliant crosswalk.

The biggest danger to pedestrians is from vehicles turning right onto Louellen Street from W Broad Street. Pedestrians have a brief, 5-second leading pedestrian interval, and right turns on red are prohibited from W Broad Street onto Louellen Street. However, given the width of the road, vehicles turning right will filter ahead, treating the no parking zone as a right turn lane and often disregard the no turn on red.

The configuration of the Louellen and Broad Street intersection may always feel dangerous for pedestrians due to the angle of Louellen Street. One solution to this could be to encourage parents to avoid this intersection by using the continental crosswalk at the W Broad Street and Lanning Avenue instead. This can be achieved by adding additional safety measures, such as an RRFB Beacon and a crossing guard, to the W Broad Street and Lanning Avenue intersection. For school travel purposes, crossing at Lanning Avenue instead of Louellen Street is a more favorable walking route for parents and students, and does not increase the distance to Hopewell Elementary



Picture 27: Louellen St and Broad St Intersection from Above



Picture 28: Traffic Backed up on Broad Street at the Louellen St Intersection. Note the Vehicle in the Shoulder Waiting to Turn Right

School. Improvements to the Louellen Avenue intersection should still be considered, however, priority should be given to improving the W Broad Street and Lanning Avenue intersection.

Recommendations

- Add RRFB Beacon to the W Broad Street and Lanning Avenue intersection to encourage parents and students to use this intersection, thereby avoiding the need to cross at the Louellen and Broad Street intersection.
- Add crossing guard to the W Broad Street and Lanning Avenue intersection.
- Add plastic pylons to prevent cars from filtering ahead at the light and force them to turn from the travel lane.
- Build a curb bump-out to shorten the curb radius and shorten the crossing length for pedestrians.
- Replace existing standard crosswalk with a continental crosswalk.
- Install a crosswalk on the western portion of the intersection, this would allow most users to take advantage of the steps leading up to the sidewalk. However, this would not be ADA-accessible without further improvements, given the elevation of the sidewalk from the road.



Picture 29: Staircase Leading to Up Sidewalk at Louellen St and Broad St Intersection

N and S Greenwood Avenue

N Greenwood Avenue serves as the major road into Hopewell Borough from the north and the only major road that is not a county road. Compared to the other major roads in the Borough, N Greenwood Avenue has the least amount of traffic, with an AADT of 4,098 vehicles according to a 2021 traffic count. Despite the lower traffic volume, N Greenwood Avenue was still the location of pedestrian or bicyclist involved crashes. Since 2012, one pedestrian and one bicyclist involved crashes occurred on this road, which resulted in possible injury and no apparent injury, respectively. Two more pedestrian involved crashes occurred at the intersection of N Greenwood Avenue and Broad Street, one of which resulted in suspected serious injury. In both incidents the driver failed to yield the right-of-way to the pedestrian. Residents have expressed strong concerns about the dangers of the Greenwood Avenue-Broad Street intersection and a desire for safety improvements. Additional issues and recommendations about this intersection can be found in the Broad Street section of this report.

North of this intersection, N Greenwood Avenue is predominantly a residential area and there is a popular restaurant and a playground on the east side of the road. From Broad Street going north, there are nine side streets, intersecting in t-junctions. According to walk audit participants, some of whom live in this neighborhood, children and families are walking, biking or rolling year-round along N Greenwood Avenue to Hopewell Elementary School and to Hopewell Park.

Further north, beyond the borough limit is Hopewell Township, N Greenwood Avenue becomes Hopewell-Wertsville Road. Within the borough the speed limit is 25mph, however for more than a half-mile on the southbound direction, Hopewell-Wertsville Road is 40 mph and there is a continuous downhill stretch. There is a radar speed sign located just south of Castle Lane, where the speed limit drops to 25 MPH. Just south of the radar speed sign, there is a bridge that goes over railroad tracks. The railroad right-of-way is owned by CSX Transportation and only carries freight trains. The bridge limits sight distance and there are signs on either side warning drivers of the limited sight line. There are no crosswalks to cross N Greenwood Avenue north or south of this bridge, presumably due to the limited site distance. The nearest crosswalk on N Greenwood Avenue is located at the Broad Street intersection.



Picture 30: Bridge Over Railroad on N Greenwood Ave. (Photo taken looking North)

Additionally, during the walk audit residents commented that there is a school bus stop for a child with special needs near the Center Street intersection.

South of Broad Street, N Greenwood Avenue becomes S Greenwood Avenue. While there is significantly less traffic volume along this segment of Greenwood Avenue, with a combined north and south AADT of 1,490 compared with N Greenwood's combined AADT of 4,098 vehicles, it is an essential walking route for families walking or biking to Hopewell Elementary School. However, the AADT on S Greenwood may see an increase after the construction of a recently approved residential development that will exit onto S Greenwood Avenue.

One issue identified by the audit team is the presence of a 90-degree curve at the end of the road where it becomes Columbia Avenue. Although, there have been no pedestrian or bicyclist crashes along S Greenwood, audit participants reported feeling uneasy about the curve. There have been three vehicle involved crashes near this curve involving vehicles striking parked cars. In two of the three crashes the involved vehicle backed into a parked car. Additionally, the presence of landscaping on the corner property partially obscures the corner. Further down the road, after S Greenwood becomes Columbia Avenue, at the Columbia Avenue and Seminary Avenue intersection, there have been resident reports of vehicles traveling on Seminary Avenue running the stop sign. However, this behavior was not witnessed by the audit team.

Due to the importance of this road for families walking or biking to Hopewell Elementary School and the identified issues, S Greenwood would benefit from traffic calming measures, barrier protection at the curve, a speed limit reduction from 25 MPH to 20 MPH, and intersection improvements.



Picture 31: Curve at S Greenwood Ave/Columbia Ave



Picture 32: Proposed Location of Sidewalk Bollards at
S Greenwood Ave/ Columbia Ave Curve

Recommendations

- Determine the appropriateness and feasibility of installing midblock crossing near the Cook Place intersection due to the limited site line of the railroad bridge.
- Add additional gateway treatments when entering Hopewell Borough from N Greenwood Avenue.
- Add signs alerting drivers of a school bus stop near the Center Street intersection.
- Reduce speed limit on S Greenwood Avenue from 25 MPH to 20 MPH.
- Consider installing barrier protection, such as bollards, at the 90-degree curve on S Greenwood Ave to protect pedestrians.
- Install traffic calming measures, such as speed humps, on S Greenwood to slow vehicles traveling around the curve. Due to the presence of a fire station on S Greenwood, speed cushions may be more appropriate. Speed cushions are either speed humps or speed tables that include wheel cutouts to allow large vehicles to pass unaffected, while reducing passenger car speeds. They can be offset to allow unimpeded passage by emergency vehicles and are typically used on key emergency response routes.
- Upgrade crosswalks at Columbia Avenue and Seminary Ave intersection to raised crosswalks. This will help to improve safety for pedestrians and decrease incidents of drivers failing to stop at the stop sign.

Summary of Infrastructure and Non-infrastructure Recommendations

The recommendations in this travel plan are intended to increase safety for students on their walk or bike ride to and from school and when appropriate, encourage more students to walk or bike. The tables below identify those actions, a responsible party for implementing them, a time frame, and a level of cost for five different categories: Engineering, Education, Encouragement, Enforcement, and Evaluation. Many actions identified as “short-term” and “low cost” can make a big difference in a shorter time frame and can be accomplished with the help of local partners. This “low-hanging fruit” can be prioritized for greater impact in a shorter period of time. However, traffic calming measures are key items to address allowing students more time to cross and greater visibility (larger driver field of vision at slow speeds).

Cost estimates are for planning purposes only – a professional engineer should prepare the actual estimates used for grant application. These estimates were prepared using the SRTS Implementation Cost sheet prepared in 2022 by NV5 to support the grant application process.³

Engineering			
Action	Time-frame	Cost	Location
ADA Pads	Short-term	\$325 Each	Borough Wide
Add “No Turn On Red” restriction	Short-term	\$50 /SF	Greenwood Avenue & Broad Street
Add “no-parking” sign	Short-term	\$50 /SF	Broad Street
Bus Stop Sign	Short-term	\$50 /SF	N Greenwood Avenue
Continental Crosswalk	Short-term	\$6.50 /SF	Broad Street, Princeton Avenue, Greenwood Avenue
Crosswalk Survey	Short-term	Not Listed	Borough Wide
Cut-through Traffic Study	Short-term	Not Listed	Hart Avenue, Model Avenue, S Greenwood Avenue
Gateway Treatment	Short-term	Not Listed	Broad Street, Princeton Avenue, N Greenwood Avenue
In-street pedestrian crossing sign	Short-term	Not Listed	Broad Street, Princeton Avenue
Pace Car Program	Short-term	Not Listed	Borough Wide
Painted Yield Lines in Front of Crosswalks	Short-term	\$12.50 /SF	Broad Street, Princeton Avenue, Greenwood Avenue
Pedestrian Only Phasing	Short-term	Not Listed	Broad Street & Greenwood Avenue
Prune Overgrown Bushes	Short-term	Not Listed	Borough Wide
Re-paint double yellow line	Short-term	Not Listed	Broad Street & Princeton Avenue
School Zone Markings	Short-term	\$12.50 /SF	Princeton Avenue

³ <https://www.saferoutesnj.org/wp-content/uploads/2022/05/Design-Treatment-Estimating-Guidelines.pdf>

Action	Time-frame	Cost	Location
Speed Transition Zone	Short-term	\$50 /SF for signs	Princeton Avenue
Sidewalk Survey; GMTMA can assist in creating a map tool that can be used to report damaged sidewalks	Short-term	Free/Low	Borough Wide
Street Light Analysis	Short-term	Not Listed	Broad Street
Turning restriction sign	Short-term	\$50 /SF	N Greenwood Avenue & Hart Avenue, N Greenwood Avenue & Model Avenue
Yellow paint to extend "No-Parking"	Short-term	Not Listed	Broad Street
Bicycle Boulevard	Medium-term	\$150 / sign; \$7 /SF Shared-lane marking	Borough Wide
Bollards on Sidewalk	Medium-term	\$1,250 Each	S Greenwood Avenue/Columbia Avenue
Curb Extension, Painted or Physical	Painted: Short-term Physical: Medium-term	Varies depending on type	Princeton Avenue & E Prospect Street, Louellen Street & W Broad Street
Install Sidewalk	Medium-term	\$75 /LF	Louellen Street, Hart Avenue, Maple Street, Elm Street, Columbia Avenue, Lafayette Street, and E Prospect Street
Mid-block Crossing	Medium-term	\$6.50 /SF	N Greenwood Avenue
No parking bollard	Medium-term	Not Listed	Broad Street
Raised Crosswalk	Medium-term	\$10,000 Each	Columbia Avenue & Seminary Avenue
Rectangular Rapid Flashing Beacon (RRFB)	Medium-term	\$10,000 Each	Broad Street, Princeton Avenue
Road Diet	Medium-term	Not Listed	Broad Street, Princeton Avenue, N Greenwood Avenue
Sidewalk Repair	Medium-term	\$75 /LF	Borough Wide
Speed Hump	Medium-term	\$10,000 Each	Hart Avenue, Model Avenue, S Greenwood Avenue
Upgrade Trail to Crushed Stone	Medium-term	\$60 /LF	Hopewell Borough Park
Two-way separated bike lane	Long-term	Not Listed	Broad Street

<u>Education</u>			
Action	Responsibility	Time Frame	Cost
Educate students, families and school staff to know ways to keep students safe around each drop-off/ pick up zones:	School, School District	Short Term / Ongoing	Low
Increase community outreach about health benefits of walking and biking to school	School, PTO	Short Term	Low
Conduct community wide outreach about Safe Routes to School actions	School, GMTMA	Short Term/ Ongoing	Low
Educate community and responsible parties about snow removal on sidewalks near schools	Public Works	Short Term/ Ongoing	Low
Walk and bike safety lessons in classrooms, at least annually.	School, GMTMA	Short Term/ Ongoing	Low
Have a community wide bicycle and pedestrian safety education campaign, such as Street Smart	Township, GMTMA, Police	Short Term	Low

<u>Encouragement</u>			
Action	Responsibility	Time Frame	Cost
Establish main walking routes, safety corridors, walking school buses – safety in numbers	School, PTO, GMTMA, Community Groups	Ongoing	Low
Conduct student and parent surveys about actions and rewards that encourage more to walk/bike and feel safer walking/biking to school	School, PTO, GMTMA	Short Term	Low
Establish programs to encourage students to walk or bike to school, ex: Golden Sneaker Award, Walking Wednesday, Walking School Bus, Bike Train	School, GMTMA	Short Term/ Ongoing	Low

<u>Enforcement</u>			
Action	Responsibility	Time Frame	Cost
Enforce speed limits, pedestrian crossings, drivers stopping for pedestrians especially when students are going to/ from school	Police	Ongoing	Low / Medium
Enforce motorist compliance with crossing guard instructions	Police	Ongoing	Low / Medium
Enforce parking laws	Police	Ongoing	Low / Medium
Conduct Street Smart safety enforcement campaigns.	Police	Ongoing	Low / Medium

<u>Evaluation</u>			
Action	Responsibility	Time Frame	Cost
Conduct student travel tallies on annual basis	School	Annual	Low
Create Bicycle Master Plan; NJDOT offers free technical assistance in creating official plans through their Local Bicycle/Pedestrian Planning Assistance Program.	NJ Department of Transportation	Short Term	Free/Low

Greater Mercer TMA can help with walk and bike to school events, walking school bus programs, youth bicycle and pedestrian education, school travel plans, and surveys that provide evaluation and feedback on local programs.

Conclusion

Hopewell Borough has shown a commitment to increasing pedestrian safety over the past ten years, making a number of pedestrian safety improvements. Hopewell Elementary School is the Borough's only school and home to over 400 students, as such, prioritizing the safety of students walking and biking to and from the school is of great importance in the Borough. The Hopewell Elementary School Travel Plan was developed to identify issues and provide recommendations that would create a safer walking and bicycling environment in Hopewell Borough. The overarching goal is to allow more students and their parents to choose active transportation for the trip to school.

Issues facing the Borough include crossing major county roads, motorist speeding, damaged sidewalks, and faded crosswalks. This school travel plan is only the first step in improving the safety of students who walk and bike to school. It is up to all stakeholders to work together to see that these improvements are brought to fruition.

With most students living within one mile of Hopewell Elementary School, and compact residential development, the school is well-positioned to expand its walking and biking student body. Infrastructure improvements to address the issues detailed in this school travel plan, combined with safety programming will undoubtedly increase safety and encourage more parents to have their children travel to school by walking or biking.

Appendix A: Hopewell Borough Pedestrian and Cyclist Crashes from New Jersey Department of Traffic and Highway Safety, 2012-2022

Below is a table of pedestrian and cyclist crashes in Hopewell Borough. The crash data is provided by Numetric and is comprehensive but not exhaustive. Crashes are not included in this data for various reasons, including incomplete crash reports and unreported crashes. See Map 6 on page 12 for crash locations.

Crash Year	Crash Severity	Crash Type	Crash Location
2021	Fatal Injury	Pedalcyclist	E Broad Street (CR 518)
2015	Suspected Serious Injury	Pedestrian	W Broad Street (CR 518)
2013	No Apparent Injury	Pedalcyclist	N Greenwood Avenue
2013	Fatal Injury	Pedestrian	W Broad Street (CR 518)
2012	Suspected Minor Injury	Pedalcyclist	W Broad Street (CR 654)
2012	Possible Injury	Pedestrian	Model Avenue
2012	Possible Injury	Pedestrian	E Broad Street (CR 518)

Appendix B: FHWA Proven Safety Countermeasures

The Federal Highway Administration is promoting safety through proven roadway design features.

For a full list, see: <https://highways.dot.gov/safety/proven-safety-countermeasures>

The following local examples show bicycle and pedestrian safety features from the list of countermeasures and should be considered when analyzing traffic safety solutions. Page 39 shows the complete list.

Refuge Islands

Link: https://safety.fhwa.dot.gov/provencountermeasures/ped_medians/



- Reduces pedestrian crossing distance
- Greater pedestrian visibility
- Narrower lanes reduces driver speeding
- Flashing beacon alerts drivers
- Islands can be landscaped

Clarksville Rd, CR638, West Windsor NJ

Roundabouts

Link: <https://safety.fhwa.dot.gov/provencountermeasures/roundabouts/>



- Raised splitter island raised to form a pedestrian refuge
- Reduction in severe crashes
- Urban, rural, suburban options

George Dye Rd and Estates Blvd, Hamilton NJ

Hybrid Pedestrian Beacon (HAWK Signal)

Link:

https://safety.fhwa.dot.gov/provencountermeasures/ped_hybrid_beacon/



State Road 35, Seaside Heights NJ



- Pedestrians can cross midblock or uncontrolled intersections
- Pedestrians activate the signal
- Motorists stop completely

Road Diet

Link: https://safety.fhwa.dot.gov/provencountermeasures/road_diets/



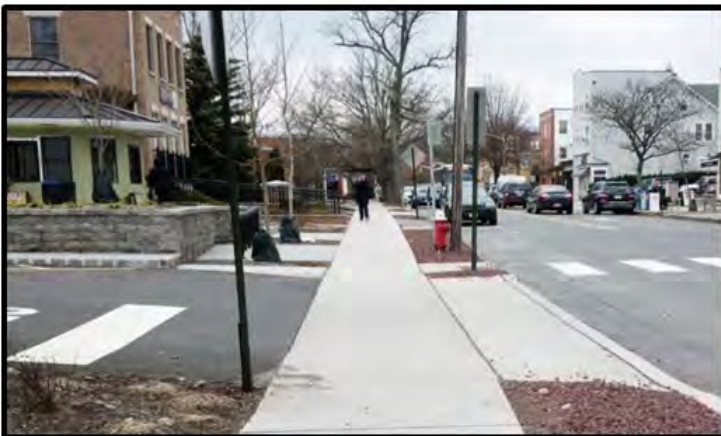
West Windsor, NJ



- Reconfigure four general travel lanes:
 - Two general travel
 - Center turn lane
 - Bike lanes

Walkways

Link: <https://safety.fhwa.dot.gov/provencountermeasures/walkways/>



Nassau Street, Princeton NJ



- Shared-use paths
- Streetscaping opportunities

Leading Pedestrian Interval

Link: https://safety.fhwa.dot.gov/provencountermeasures/lead_ped_int/



- Pedestrian given time prior to motorist green signal

Nassau Street, Princeton NJ

Proven Safety Countermeasures

SPEED MANAGEMENT



**Speed Safety
Cameras**



Variable Speed Limits



**Appropriate Speed
Limits for All Road Users**

ROADWAY DEPARTURE



Wider Edge Lines



**Enhanced Delineation
for Horizontal Curves**



**Longitudinal Rumble
Strips and Stripes on
Two-Lane Roads**



SafetyEdgeSM



**Roadside Design
Improvements at
Curves**



Median Barriers

INTERSECTIONS



**Backplates with
Retroreflective
Borders**



**Corridor Access
Management**



**Dedicated Left- and
Right-Turn Lanes at
Intersections**



**Reduced Left-Turn
Conflict Intersections**



Roundabouts



**Systemic Application
of Multiple Low-Cost
Countermeasures at
Stop-Controlled
Intersections**



**Yellow Change
Intervals**

PEDESTRIANS/BICYCLES



**Crosswalk Visibility
Enhancements**



Bicycle Lanes



**Rectangular Rapid
Flashing Beacons
(RRFB)**



**Leading Pedestrian
Interval**



**Medians and Pedestrian
Refuge Islands in Urban
and Suburban Areas**



**Pedestrian Hybrid
Beacons**



**Road Diets (Roadway
Reconfiguration)**



Walkways

CROSSCUTTING



**Pavement Friction
Management**



Lighting



Local Road Safety Plans



Road Safety Audit

Disclaimer

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