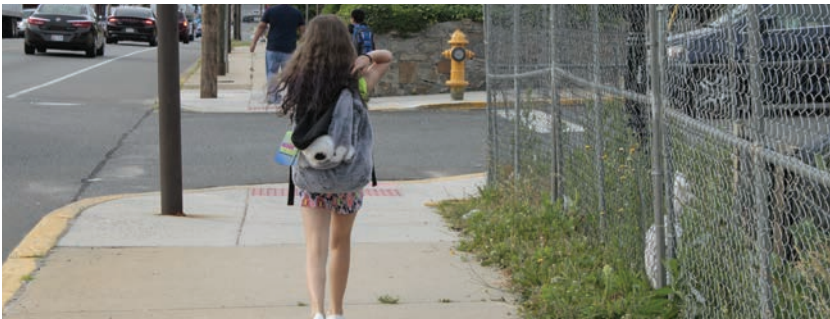
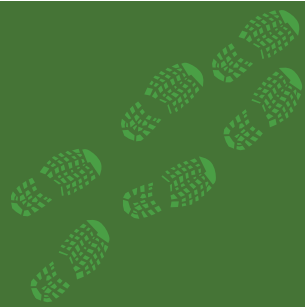


BELLMAWR SCHOOL DISTRICT

BELL OAKS
BELLMAWR PARK
ETHEL M BURKE



DECEMBER, 2017
SCHOOL TRAVEL PLAN



NEW JERSEY

Safe Routes to School



**CROSS
COUNTY
CONNECTION**

TRANSPORTATION MANAGEMENT ASSOCIATION

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Sponsored by the New Jersey Department of Transportation with funding from the Federal Highway Administration.

Bellmawr School District Travel Plan

Prepared by:

Cross County Connection

Transportation Management Association

December 2017

Cross County Connection Transportation Management Association was formally incorporated in 1989 through efforts of a group of southern New Jersey business leaders, local government officials, and representatives from the New Jersey Department of Transportation and New Jersey Transit Corporation to address mobility issues in the region and reduce the number of vehicles on state and local roadways. Today, Cross County Connection is a non-profit organization partnering with the New Jersey Department of Transportation, New Jersey Transit, Federal Highway Administration and its members to provide solutions to complex transportation problems for counties, municipalities, employers and commuters in Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester and Salem Counties.

A School Travel Plan is a document that helps to identify student walking and bicycling travel corridors (through student locations, crash data analysis, and existing pedestrian and bicycling infrastructure) and recommends infrastructure improvements to make them safer for students. A School Travel Plan helps to identify short term and long term solutions to help encourage students to walk and bicycle to school safely. The objective of a School Travel Plan is to create a safer walking and bicycling environment for students, encourage more students to walk and bicycle to and from school, reduce negative environmental impacts of automobile trips to school, and to establish healthy lifestyle habits of among schoolchildren through increased physical activity

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1 INTRODUCTION

The Bellmawr School District serves students in pre-kindergarten through eighth grade. The school district consists of three schools: Ethel M. Burke Elementary, Bellmawr Park Elementary, and Bell Oaks Upper Elementary. The Bellmawr School District recognizes the importance of active transportation to the physical and environmental health of its students and community. They have partnered with Cross County Connection to develop a Safe Routes to School (SRTS) travel plan as a means to encourage more students to bike and walk to school.

The Bellmawr School District Travel Plan uses the 5 E's of the SRTS Program – Engineering, Education, Encouragement, Enforcement and Evaluation – to identify actions and programs to encourage more students to safely walk or bike to school. The desired outcomes of the Bellmawr School District Travel Plan are: to create safe places to bike and walk; improve the health of students; and reduce traffic congestion around schools. The travel plan was created in collaboration with Bellmawr municipal staff, school district officials and faculty at Bellmawr's three elementary schools.

Setting

The community of Bellmawr Borough is located in western Camden County, bordering Gloucester County to the south. Neighboring municipalities include Gloucester City, Haddon Heights Borough, Barrington Borough, Runnemede Borough, Westville Borough, Brooklawn Borough, and Deptford Township. The Borough's population is 11,262 with an area of 3.11 square miles, resulting in a population



density of 3,621 residents per square mile.

Bellmawr is located at the heart of one of southern New Jersey's busiest travel corridors. Three of the region's major highways, I-295, I-76, Route 42 converge in Bellmawr, dividing the Borough into eastern and western sections. Only Browning and Creek Roads connect the two. The New Jersey Turnpike runs along Bellmawr's southern border with Runnemede, adding additional traffic volume to its roadways, especially the Black Horse Pike (NJ Route 168), which serves as a turnpike exit and runs north to south through the Borough's eastern side (refer to Map 1).

Goals

A Safe Routes to School Travel Plan provides a summary of existing walking and bicycling conditions; identifies potential infrastructure improvements; and recommends supportive programs and policies that educate and encourage safe pedestrian and bicycle travel to and from school. These objectives are consistent with the National Safe Routes to School Program goals for improving the health of schoolchildren through increased activity, increased travel safety, and reducing reliance on motor vehicles to get to and from school. The goals of the Bellmawr School District Travel Plan are as follows:

- To encourage more students to walk and bike to school
- To create a safer walking and bicycling environment for students who wish to walk and bike to school
- To improve the overall health of schoolchildren through increased physical activity
- To establish healthy lifestyle habits among young schoolchildren that will continue into the future
- To reduce congestion and the negative environmental impact of automobile trips to schools, especially the effects of vehicles idling in close proximity to children

Project Overview

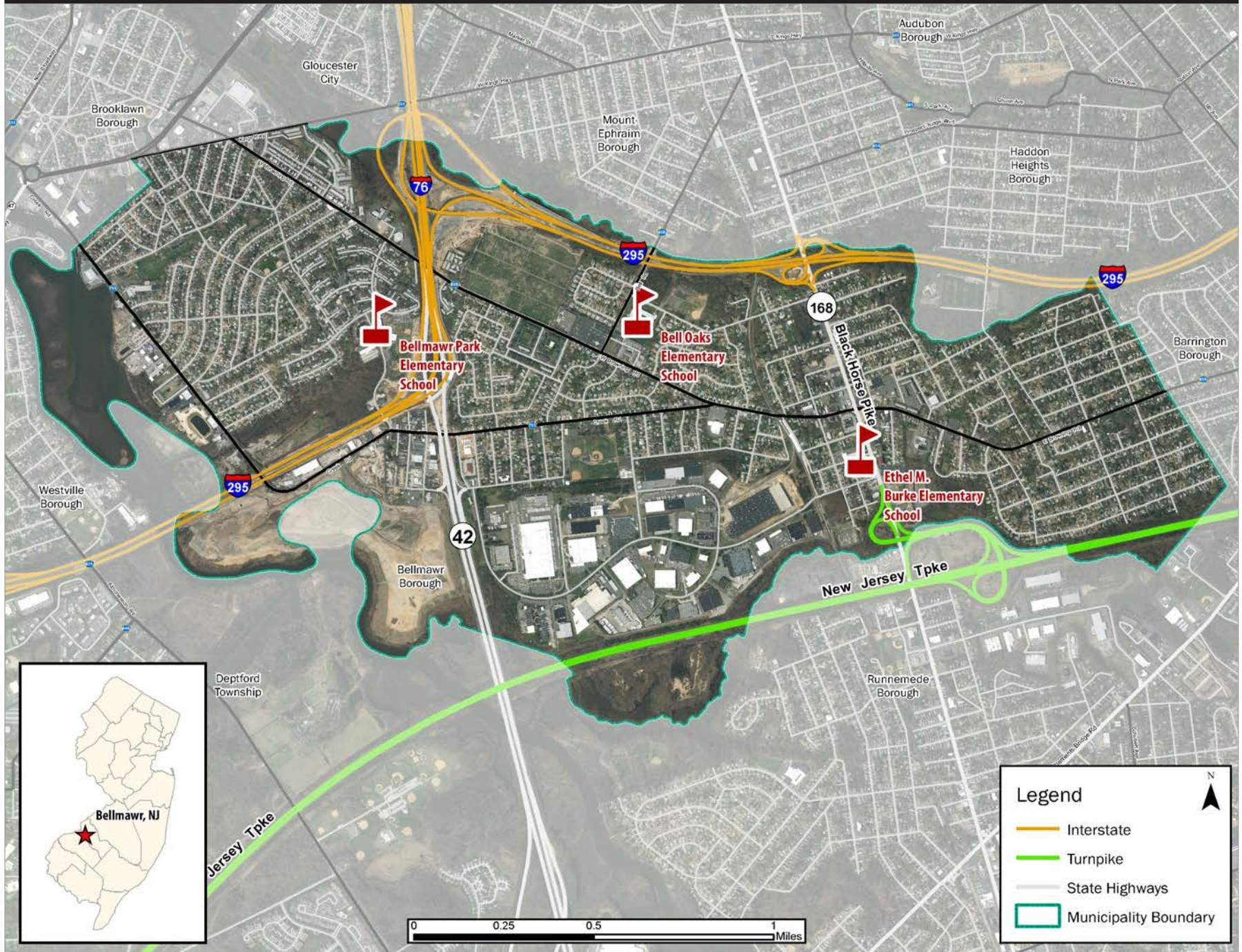
Chapter 2 assesses existing conditions of the student travel environment in Bellmawr. Chapters 3 and 4 address the first "E" of the SRTS process - Engineering. Chapter 3, provides an overview of pedestrian and bicycle safety audit findings and describes potential infrastructure improvements to enhance safety of children walking and bicycling to school. Chapter 4 expands upon these audit findings and identifies specific issues and infrastructure improvements that should be considered in the immediate areas surrounding Bellmawr's three elementary schools. Chapter 5 details how to integrate the remaining 4 E's of the SRTS Program - Education, Encouragement, Enforcement and Evaluation - by identifying actions and programs to encourage more students to safely walk or bike to school. Chapter 6 summarizes the findings and includes a list of resources to assist Bellmawr Borough and Bellmawr School District with advancing their SRTS initiative.

School Descriptions

Map 1 shows all three elementary schools' locations within Bellmawr Borough. Bellmawr Park is located in eastern Bellmawr; Bell Oaks is centrally located; and Ethel M. Burke is located in the west. All three schools are located within a two mile distance from one another. District elementary schools are located in primarily residential areas, though are often near roads with commercial activity and high motor vehicle traffic volumes. The immediate areas around schools are conducive to walking and bicycling where appropriate infrastructure exists.

Bell Oaks Elementary is the school district's "upper" elementary school, hosting grades five through eight. Its total enrollment is approximately 460 students. Bellmawr Park Elementary hosts grades pre-kindergarten through four. Its enrollment is approximately 465 students. Ethel M. Burke Elementary also hosts grades kindergarten through four. It is the smallest school in the district, with approximately 285 students enrolled.

MAP 1: LOCATION OF BELLMAWR BOROUGH, CAMDEN COUNTY, NJ



Safe Routes to School (SRTS) Travel Plan Working Group

The Bellmawr School District Travel Plan was developed by Cross County Connection in partnership with the SRTS working group members listed below in Table 1. Melissa Gleason, Vice Principal of Bell Oaks Elementary, was the primary contact for the travel plan and coordinated input from Bellmawr School District and Borough.

Table 1: Bellmawr School District SRTS Working Group

Organization	Role	Contact
Cross County Connection TMA	SRTS Program Assistance	Patrick Farley Sr. Land Use & Transportation Planner farley@driveless.com
Cross County Connection TMA	SRTS Program Assistance	Marili Tapia Transportation Analyst tapia@driveless.com
Bellmawr School District	Implementation	Annette Castiglione Superintendent of Schools
Ethel M. Burke Elementary	Implementation	Frank Jankowski Principal fjankowski@bellmawrschools.org
Bell Oaks Upper Elementary	Implementation	Anthony Farinelli Principal afarinelli@bellmawrschools.org
Bell Oaks Upper Elementary	Implementation	Melissa Gleason Vice Principal mgleason@bellmawrschools.org
Bellmawr Park Elementary	Implementation	Elizabeth Calabria Bellmawr Park Principal ecalabria@bellmawrschools.org
Bellmawr Borough Police Department	Enforcement	Various Officers

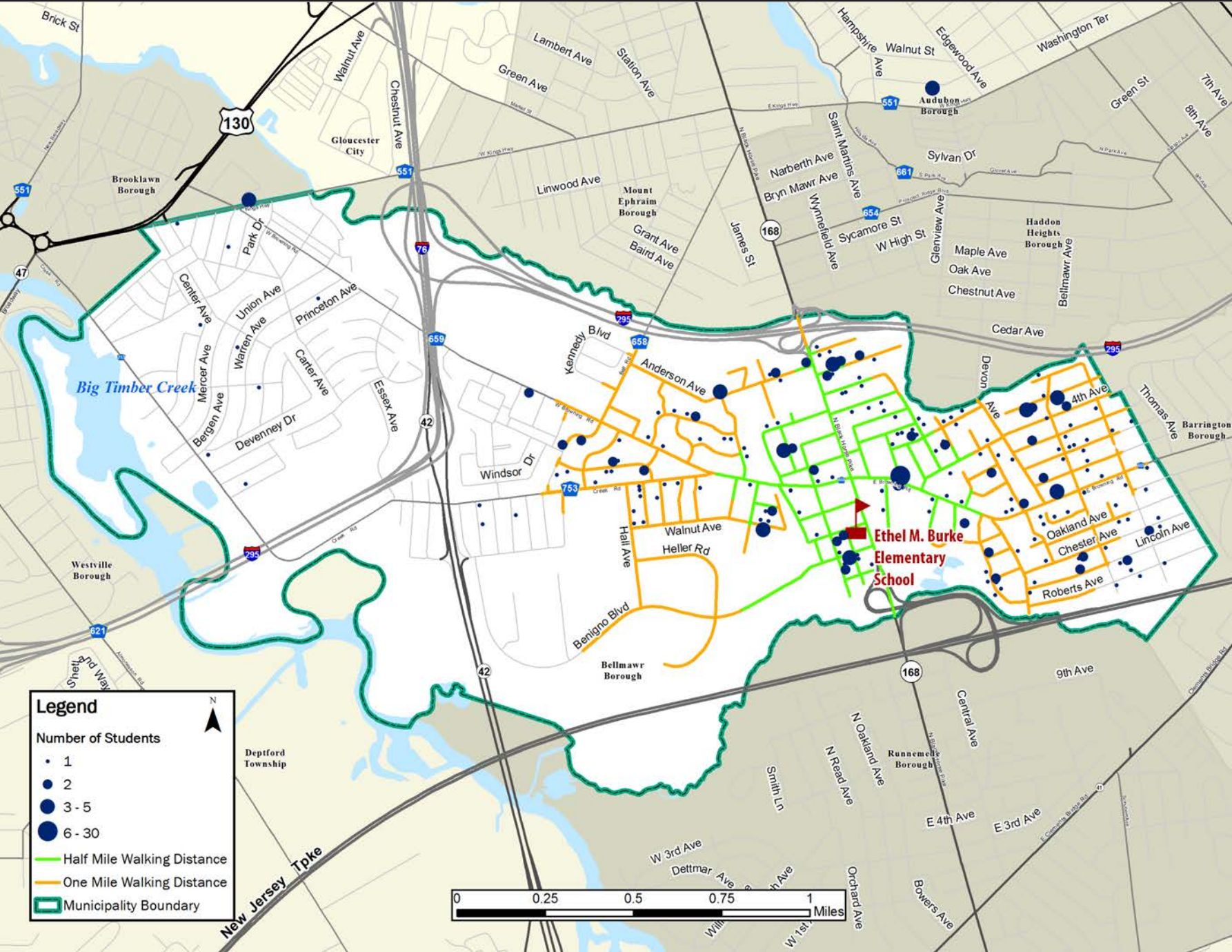
Study Area and Scope

This travel plan was prepared for the use of Bellmawr School District and Borough, through the input of SRTS Working Group members. The travel plan considers the physical characteristics of Bellmawr Borough's walking and bicycling infrastructure from the perspective of students aged 5-13. Observations, analysis and recommendations are limited to areas where these students could walk or bike to school, based on methodology provided by the National Center for Safe Routes to School (NCSRTS).

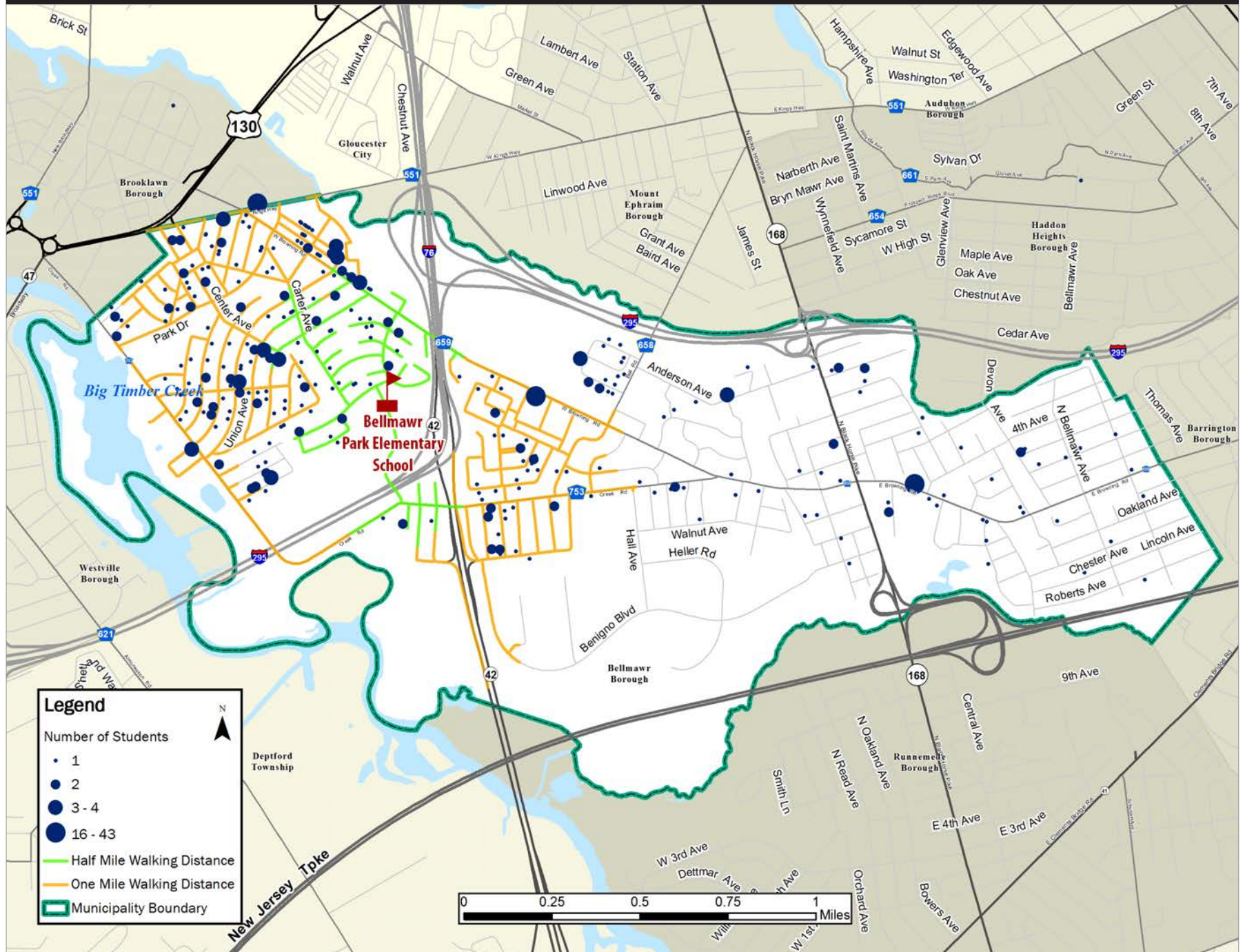
The scope of the pedestrian infrastructure component of this study is primarily focused on areas within an approximate 10 minute walking distance (roughly a half-mile) of all three schools. Bicycle infrastructure recommendations may fall in areas up to a mile from school, representing a roughly 20 minute walking distance or seven to 10 minute bike ride for school aged children. Bicycle-related recommendations are geared towards Bell Oaks students in grades five through eight that are more likely to be comfortable biking to school regularly, without supervision. Areas outside of these 10 to 20 minute walking radii will not be ignored however. Non-physical aspects of the study, such as municipal ordinances and school programs, are considered Borough-wide.

Maps 2 through 4 show student locations for each of Bellmawr's three elementary schools and the extent of each school's 10 and 20 minute walking radii. Due to the compact nature of Bellmawr, much of the Borough falls physically within this half-mile radius from a school, ensuring pedestrian infrastructure recommendations will have wide impact. However, as Table 2 shows, only 26% of Bellmawr School District students live within a 10 minute walk from their respective school. Approximately 67% of Bellmawr students live within one mile from school.

MAP 2: ETHEL M. BURKE ELEMENTARY STUDENT RESIDENCES



MAP 3: BELLMAWR PARK ELEMENTARY STUDENT RESIDENCES



MAP 4: BELL OAKS UPPER ELEMENTARY STUDENT RESIDENCES

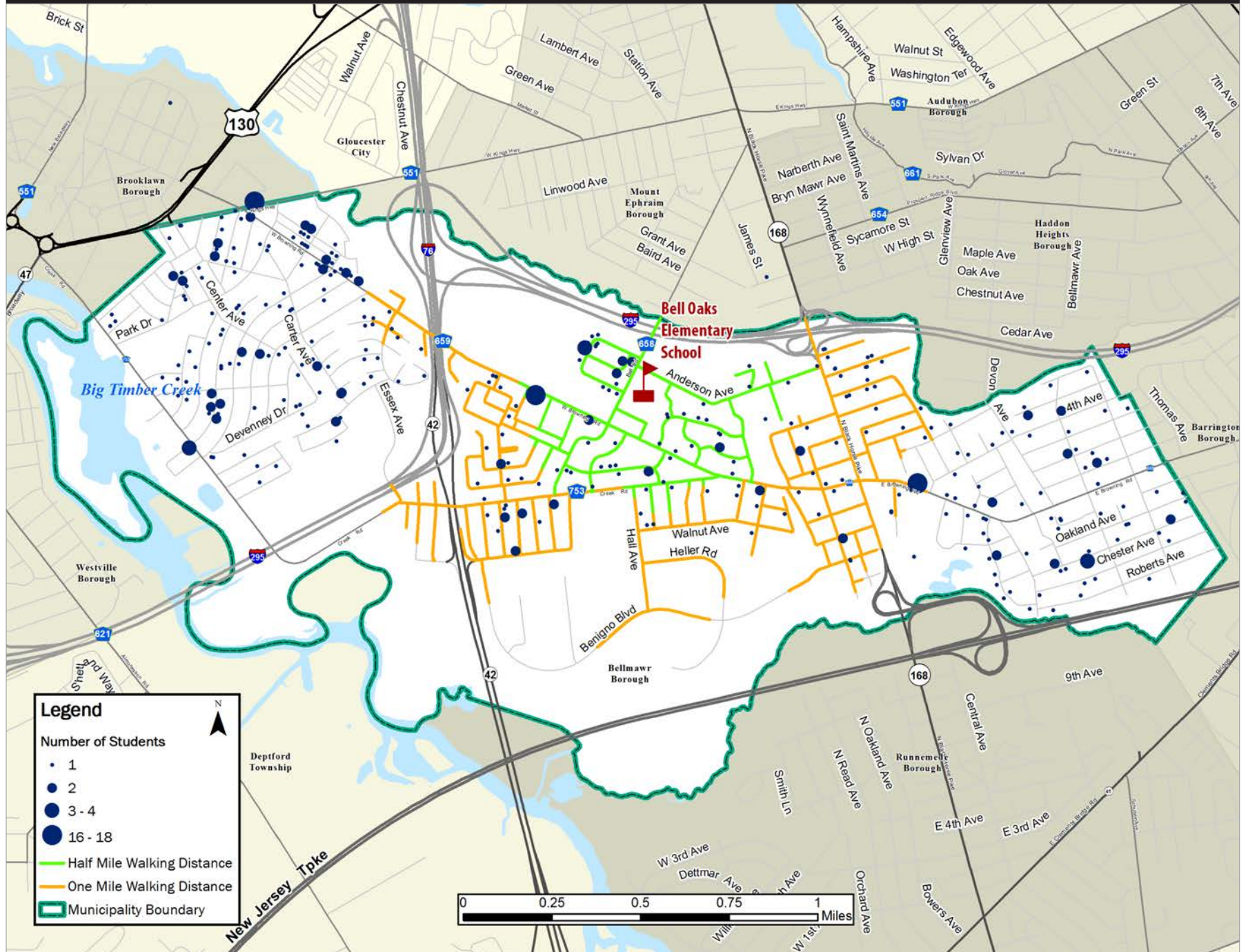


Table 2: Students Living within a 1/2 or 1 Mile from School

School	# within 1/2 mile	% within 1/2 mile	# within 1 mile	% within 1 mile
Ethel M. Burke Elementary	123	43%	253	88%
Bellmawr Park Elementary	98	21%	360	77%
Bell Oaks Upper Elementary	90	20%	201	44%
School District Total	311	26%	814	67%

Ethel M. Burke is a smaller, neighborhood scaled school. It is approximately 40% smaller than the other two schools. Its catchment area is closely centered around the school grounds on the eastern side of Bellmawr Borough.

Bellmawr Park, has a much larger student body. While it largely pulls students from the western side of Bellmawr, it will accommodate students from Burke's catchment area, if a grade level is overcrowded. This helps explain why they have a smaller portion of their student body residing within a half-mile from school.

Bell Oaks, is the only school in Bellmawr Borough accommodating grades five through eight, therefore their students are dispersed throughout the Borough, with a majority residing beyond a half-mile from school. However, Bell Oaks students in the higher grades may be comfortable walking greater distances or biking to school. Approximately 44% of Bell Oaks students live within a mile of school, or a 20 minute walk. With the overlap of Bell Oaks half-mile radius with those of the two lower elementary schools, Bell Oaks students traveling from beyond a half-mile should benefit from infrastructure recommendations made at E.M. Burke and Bellmawr Park along their journey. The extent of Bellmawr streets covered by each school's half-mile radius is shown on Map 5.

With each school having at least 20% of their student population residing within a half-mile, there is a large number of students that could be walking to school on a regular basis that may not be doing so. This study acknowledges there are limiting factors that could prevent students from

walking or biking to school, regardless of distance. These factors include disability, and parental burdens such as childcare, conflicting work schedule, and other time constraints. Travel plan recommendations will seek to benefit these populations in addition to those that can regularly walk or bike.

Before- and After-School Care

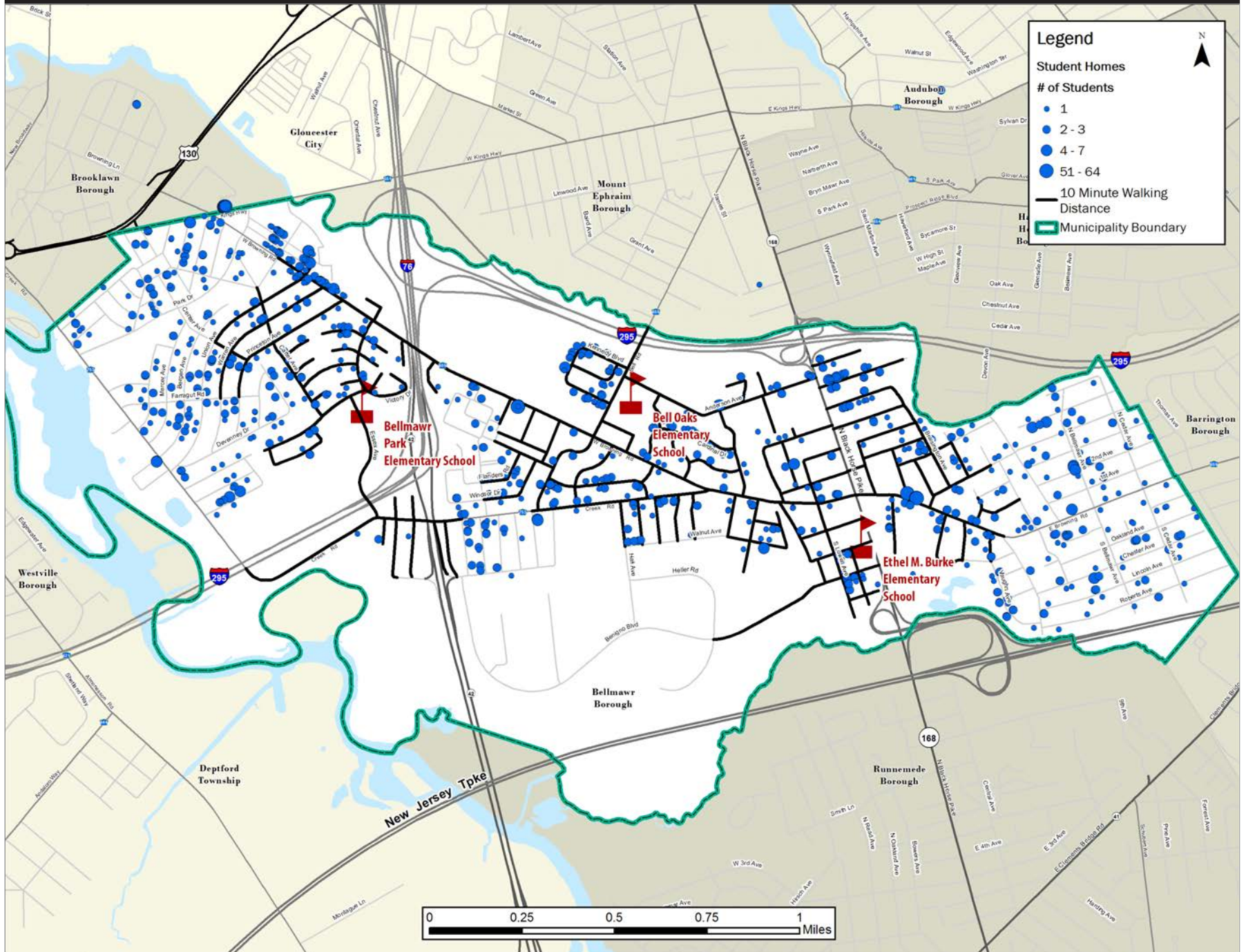
Child-care needs can impact student travel options and mode choice. Before- and after-school care is provided for grades K-8 at all three Bellmawr School District elementary schools through its Child-Centered Activities Reinforcing Excellence program (CARE). The number of children students enrolled in CARE's before- and after-school programs at each school is shown in Table 3.

Table 3: Students Enrolled in Before- and After-School CARE Programs

School	# AM CARE students	% of total student body	# PM CARE students	% of total student body
Ethel M. Burke Elementary	37	13%	56	20%
Bellmawr Park Elementary	82	18%	98	21%
Bell Oaks Upper Elementary	19	4%	23	5%

CARE's before-school hours are 7:00-8:30 AM and after-school hours are 3:00-6:00 PM. Crossing guards are not provided during these hours. The pool of students traveling to and from school is also much smaller, limiting opportunities for children to walk in groups. These two factors cause parents' concern and could understandably make them hesitant to let their child walk or bike during CARE hours. The most convenient option for parents is most often to drop-off and pick-up their child while traveling to and from work. Program recommendations found in Chapter 5, such as Walk to School day and walking school buses, should be developed to accommodate these students and allow participation if they so desire.

MAP 5: BELLMAWR STREETS WITHIN A TEN MINUTE WALK FROM AN ELEMENTARY SCHOOL



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2 EXISTING CONDITIONS

The Bellmawr School District is a “walking district.” A walking district is common in geographically small municipalities, such as Bellmawr, where students live within close proximity to school. According to state law, school districts are only required to provide transportation for K-8 students that live beyond two miles from their school. It is the board of education’s discretion to determine the transportation policy for students living within those two miles. No busing is provided for Ethel M. Burke Elementary, Bellmawr Park Elementary and Bell Oaks Upper Elementary schools. Students must either walk, bike, or travel to and from school via personal vehicle. E.M. Crossing guards are stationed at high volume student crossing locations near the schools. The crossing guard program is administered through the Bellmawr Police Department. Police occasionally provide assistance with conducting student arrival and dismissal.

School Travel Tallies

Teachers conducted student travel mode tallies at all three Bellmawr elementary schools. Bell Oaks tallies were conducted in late-January, while Burke and Bellmawr Park tallies were conducted in late March. This study analyzes travel mode data over a three day period, Tuesday through Thursday. Table 4 reports the average daily number of students using each mode to travel to and from school during this three day period. Results are shown for both morning arrival and afternoon dismissal to determine if there are fluctuations in travel mode choice.

When collecting travel tallies, there was no distinction made between



students who attend CARE's before- and after-school programs versus students who travel to and from school during regular arrival and dismissal times. However, it is assumed that a majority of CARE students travel by car, based on parent and SRTS Working Group input.

Table 4: Student Population Travel Mode

Travel Mode	EM Burke (K-4)				Bellmawr Park (K-4)				Bell Oaks (5-8)			
	AM	% Total	PM	% Total	AM	% Total	PM	% Total	AM	% Total	PM	% Total
Walk	28	11%	28	11%	22	7%	34	11%	63	15%	93	22%
Bike	0	0%	0	0%	0	0%	0	0%	13	3%	8	2%
Bus	21	8%	21	8%	3	1%	3	1%	1	0%	1	0%
Car (alone)	194	75%	191	74%	251	81%	241	79%	275	65%	244	58%
Carpool	16	6%	18	7%	34	11%	24	8%	72	17%	72	17%
Avg # of Students tallied per day	258	—	258	—	310	—	305	—	423	—	421	—

Percentages may not total 100% due to rounding

Ethel M. Burke Elementary

Ethel M. Burke Elementary travel tallies were conducted during the last week of March 2017. The travel mode of an average of 258 students was collected per day. A sizable majority of students were dropped off and picked up by car. When combining carpooling with students being dropped off alone, 81% of students traveled to and from school by car.

The use of a car did not vary much during arrival versus dismissal, with only a two student increase in carpooling balancing out a decrease of three students being picked up and dropped off by car alone. These numbers indicate 200 or more cars are converging on E.M. Burke Elementary twice a day. Even with students enrolled in before-and-after-school programs, at least 80% of these cars are all arriving to school during the same short window of time associated with school arrival and dismissal.

Only 11% of students walk to and from school and no students biked. It is estimated that approximately 28 E.M. Burke students are walkers. The travel tallies indicate that the students who walk to school in the morning, also walk home in the afternoon. Based on student location data

received from the Bellmawr School District, 128 E.M. Burke students, representing approximately 43% of the total student body, live within a 10 minute walking distance from school. While there are a number of reasons why walking to school may be an unreasonable or difficult choice for some families, there may be opportunities to encourage more students living nearby to walk to school on a regular basis.

Bellmawr Park Elementary

Bellmawr Park Elementary travel tallies were conducted during the same week in March as E.M. Burke. The travel mode of over 300 students was collected per day. Bellmawr Park saw higher rates of students traveling by car, when compared to E.M. Burke. Based on collected data, 92% of students were dropped off by car in the morning and 88% were picked up by car in the afternoon. Carpooling was slightly more popular at Bellmawr Park compared to E.M. Burke, with 11% of students carpooling in the morning and 8% carpooling at dismissal in the afternoon.

It is estimated that approximately between 260 and 280 cars are traveling to and from Bellmawr Park each school day. Even with carpooling and students enrolled in the CARE program, approximately 80% of this vehicle traffic is circulating around the school during a 15 minute period associated with typical student arrival and dismissal times. This volume does not even account for staff and visitor travel to the school during these times. Not surprisingly, congestion has been reported as a major issue at Bellmawr Park Elementary.

Student walking rates are lower at Bellmawr Park compared to E.M. Burke. Only 7% of students walk to school in the morning and 11% walk home from school. This translates to roughly 22 students walking to school and 34 students walking home each day. Based on student location data, 98 Bellmawr Park students live within a half-mile from school, demonstrating there may be an opportunity to increase the number of students walking to school. Also of note, Bellmawr Park did report one student bicycling to and from school during this period.

Bell Oaks Upper Elementary

Bell Oaks Upper Elementary travel tallies we conducted at the end of January. The colder weather could cause some discrepancies in travel behavior, when compared to tallies conducted at E.M. Burke and Bellmawr Park in March. Student age would be another factor that makes comparison between Bell Oaks and the lower elementary school difficult. Bell Oaks is the Bellmawr District's only school hosting grades five through eight. The older student population at Bell Oaks would therefore have more travel independence. Higher rates of walking and bicycling should be expected, and does in fact occur. Rates of biking and walking at Bell Oaks could also be higher during warmer months.

The travel mode of over 420 students was collected each morning and afternoon. As with the previous schools, the car was the predominate mode choice, with 82% of students arriving to school in the morning by car and 75% returning home by car. Out of these morning car riders, 65% were the only student in the car, while 17% arrived as part of a carpool. Afternoons saw a drop in the number of students being driven alone. Dismissal saw 58% of students being picked up as the sole student passenger. Carpool rates remained steady at 17% during dismissal. Overall, carpooling is more common at Bell Oaks than at E.M. Burke or Bellmawr Park. Even with the slight decrease in car usage in the afternoon, over 300 cars are traveling to Bell Oaks during arrival and dismissal times, causing congestion on local roads.

The drop in car usage during dismissal could be because students, arriving to school by car in the morning, could be walking home in the afternoon. Parents, dropping off their children on their way to work, may be comfortable letting their child walk home while they are at work. Students in the higher grades of six through eight may have the maturity to take care of themselves, when a parent or guardian is not present. This notion is reinforced by relatively small number of students enrolled in Bell Oaks' before- and after-school CARE program. Only 4% of Bell Oaks students are enrolled in the program, as opposed to participation

rates in excess of 20% among E.M. Burke and Bellmawr Park's younger student population.

Walking was the second most popular mode of student travel after the car, with 15% of students walking to school in the morning and 22% walking home. This entails approximately 63 students walking to school each morning and 93 students walking home each afternoon. Bell Oaks also saw some bicycling with 2% to 3% of students biking to and from school. This equates to an estimated average of 10 students per day.

Based on student location data, walking rates are healthy at Bell Oaks Elementary. Between 15% and 20% of students walk, which corresponds well to the 20% of Bell Oaks students living within a half-mile from school. However, there may be opportunities to encourage more students to walk or bike. Approximately 44% of the students live within a mile from school. A walk between 10-20 minutes is more reasonable for older students. In addition, Bell Oaks saw few students bicycling. Infrastructure improvements, safety education and programming may be effective in encouraging more students, living within a mile from campus, to bike to school.

District Summary

The sheer number of cars traveling to and from Bellmawr schools at arrival and dismissal is sure to create serious congestion issues. This volume of automobile traffic in such contained areas during student arrival and dismissal will also lead to poor air quality and safety issues that affect all students, regardless of mode choice.

It is estimated that approximately 800 cars are converging on Bellmawr schools twice per day. The average passenger vehicle emits approximately one pound of harmful carbon emissions per mile. If you estimate each trip to and from school averages a half-mile, school based car trips emit 800 pounds of harmful carbon emissions into Bellmawr's air every weekday. Motor vehicle emissions are assumed to be an issue in Bellmawr, even without these school trips added into the mix, since the community is

located along some of the region's busiest highways.

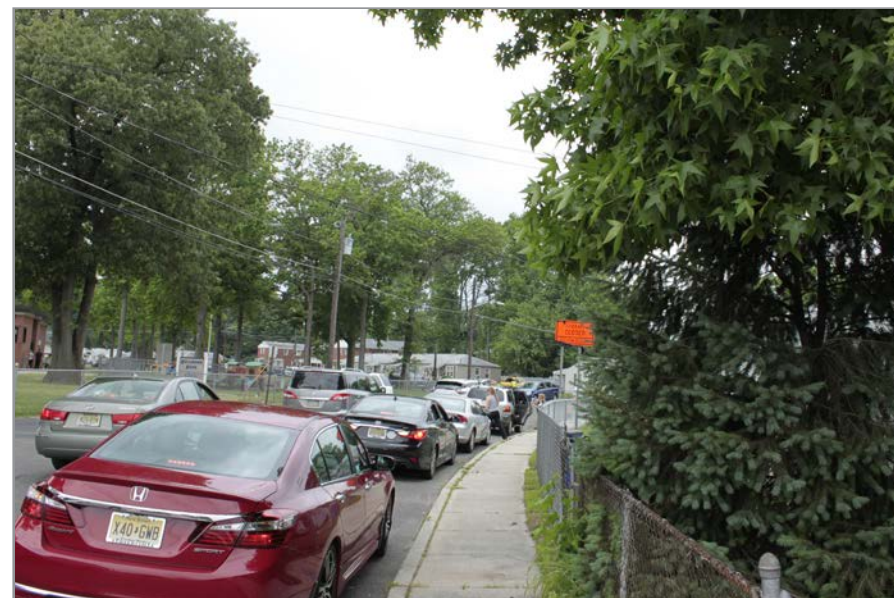
Efforts should be undertaken to increase the numbers of students walking to all three schools, especially among able-bodied students living within a 10 minute walking radius of the school. If a majority of these students living nearby walked to school, congestion would decrease. Bicycling should also be encouraged and made safer and more practical for Bell Oaks students. Bicycling as a viable mode choice can extend the range of students who can reach school by means other than the car.

Parent Survey Responses

Parents of students enrolled in Bellmawr's elementary schools were invited to participate in a survey regarding how their children travel to and from school and the transportation issues they encounter. This was done to get a firsthand perspective from those ultimately responsible for determining how students will travel to and from school. Survey responses helped identify the barriers preventing more students from walking and biking to school, as well as the conditions around the school during arrival and dismissal that impact every student, regardless of their mode of travel. A total of 193 surveys were received. Table 5 shows the number of surveys received from parents at each school.

Table 5: Parent Survey Participation per School

School	Count	% of Survey Respondents
Bell Oaks School	60	31%
Bellmawr Park School	41	21%
Burke School	40	21%
Bell Oaks School, Burke School	25	13%
Bell Oaks School, Bellmawr Park School	23	12%
Bellmawr Park School, Burke School	4	2%
Grand Total	193	100%



Congestion at Bellmawr Park Elementary during student dismissal



Traffic backing up at Browning and Bell Rd. to turn towards Bell Oaks Elementary

As Table 5 shows, parents from Bell Oaks submitted the most surveys, representing 60% of respondents. Bellmawr Park and Ethel M. Burke Elementary parents participated at even rates, both representing 21% of respondents. Parents that send children to multiple schools also participated, sharing the unique challenges associated with ensuring their children safely reach different locations. Parents with students at two schools represented 27% of survey respondents.

Parents were asked how far their home was from their child's school. On certain topics, this survey focused on responses from households that identified themselves as living within a half-mile from school. This is because these households are within a reasonable walking distance from the school. Maximizing the number of students walking to school from these households could have significant impacts on congestion and other associated issues around Bellmawr's schools. In total, 92 of survey respondents' homes were located within a half-mile from their child's school. This equates to 48% of surveys received. Table 6 shows the breakdown of these 92 responses by school and the share these households represent out of total survey responses from each individual school.

Table 6: Survey Households within a 1/2 Mile of School

School	Households with 1/2 mile	% of total responses from school
Bellmawr Park School	19	46%
Bell Oaks School	22	37%
Burke School	22	55%
Multiple schools	29	56%
Grand Total	92	-

Parents from households within a half-mile from school were asked if they would allow their child to walk to school, and if not, what concerns are preventing them from allowing their child to do so. Table 7 shows that parents from the two lower elementary schools are the most reluctant to

allow their child to walk to school, while Bell Oaks Upper Elementary parents were more likely to allow their child to walk to school.

Table 7: Will You Allow Your Child(ren) to Walk to School?

School	Yes	%	No	%
Bellmawr Park School	3	17%	15	83%
Burke School	7	32%	15	68%
Multiple schools	11	38%	18	62%
Bell Oaks School	13	59%	9	41%
Grand Total	34	37%	57	63%

Parents that are reluctant to allow their child to walk to school were asked to identify their specific concerns. Parents provided open-ended responses to the question asking them to identify their concerns. These open-ended responses were grouped into seven categories based on common themes identified in their answers. These categories are:

Age – Parents specifically cite that their child is too young to walk

Lack of supervision – Parents cite they do not want their child to walk alone, or without an adult, but do not specifically say their child is too young to walk

Stranger Danger – Parents cite threats from others, and not specifically age or their child's capabilities, as a limit to their ability to walk to school

Major Road Crossing – Parents specifically cite that crossing busy streets near the school is their greatest concern. The streets frequently mentioned were the Black Horse Pike, Browning Road and Creek Road

Traffic/Construction Safety – Parents cite more general traffic safety concerns, not limited to specific roadway, including the presence of construction sites

Medical/disability – Parents cite a medical condition or disability as a barrier to their child walking

Other – Parents cite reasons that did not follow any thematic trends

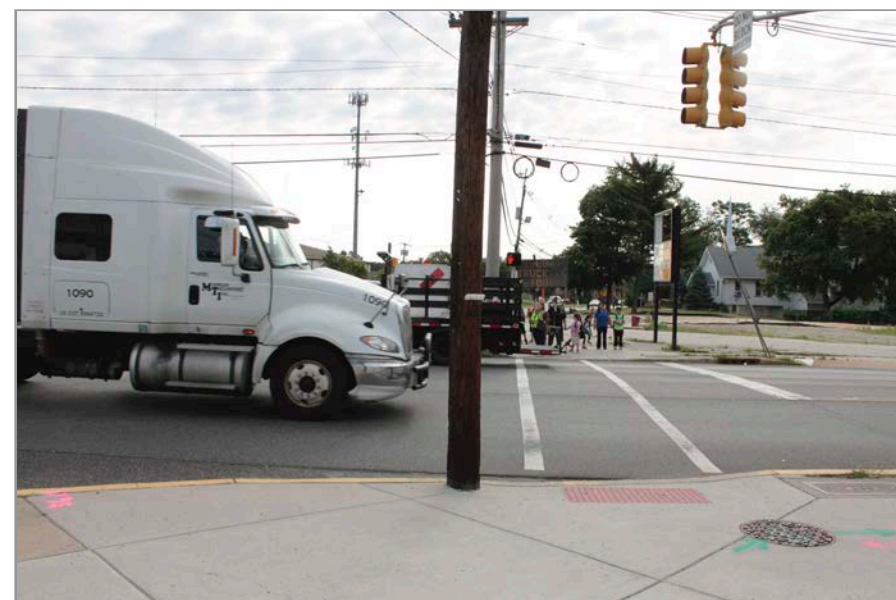
The frequency of which these common concerns were cited is summarized in Table 8.

Table 8: Parent Concerns Preventing Walking to School

Parent Concern	Count of 1/2 Mile Concerns	% of total responses
major road crossing	16	30%
age (too young)	15	28%
traffic/construction safety	10	19%
stranger danger	5	9%
lack of supervision	3	6%
other	2	4%
medical/disability	2	4%
Grand Total	53	100%

Crossing major streets was the most common concern cited by parents living within a half-mile from school that do not allow their child to walk. This concern was the most prevalent among parents at Bell Oaks and those with children in more than one school. General safety concerns related to traffic and construction sites was a theme found in the responses from parents at all schools. Not surprisingly, age and lack of supervision was a more common response from parents with children in Bellmawr Park and E.M. Burke, though some parents from Bell Oaks did indicate their children were too young to walk to school alone.

Concerns such as major road crossings, general traffic safety, and in some cases, granting more travel independence to students with disabilities can potentially be addressed through infrastructure improvements, which will be a topic in Chapters 3 and 4. With some parents citing concerns such as their child's age, lack of supervision and stranger danger, there are issues that infrastructure improvements may not be able to fully address. Programs, policies and practices that address these issues will be addressed in Chapter 5. Parent survey responses, including



The Black Horse Pike, with high traffic volumes and large trucks, is a parental concern



Frequent construction adds to the worries on major roads

their responses to additional questions, which were not given specific attention above, will be reflected throughout the remainder of this travel plan.

Bicycle and Pedestrian Crash History

There were 20 crashes involving pedestrians and 15 crashes involving bicyclists on Bellmawr Borough streets over a five year period between 2012 and 2016. Few crashes resulted in significant injury, with only one pedestrian crash resulting in “moderate” injury. In terms of time-of-day, 66% of bicycle and pedestrian crashes occurred during daylight hours, while 29% occurred at night and 5% occurred during dusk or dawn.

Crash Locations

The major roads cited in Parent Surveys are often the location pedestrian and bicycle crashes in Bellmawr Borough. Bicycle and pedestrian crash locations are detailed in Table 9 and shown on Map 6.

Table 9: Bellmawr Bicycle and Pedestrian Crash Locations (2012-2016)

Crash Location	# Pedestrian Crashes	# Bicycle Crashes	Total Crashes
Black Horse Pike (NJ 168)	4	5	9
Browning Road (CR 659)	7	6	13
Creek Road (CR 753)	3	1	4
I-295	2	0	2
Kings Highway (CR 551S)	4	2	6
Midway Lane	0	1	1
Bellmawr Total	20	15	35

Browning Road was the most frequent location for both bicycle and pedestrian crashes. Seven pedestrian crashes and six bicycle crashes occurred along Browning Road. Two of these pedestrian crashes were near its intersection with Bell Road, a common crossing location for Bell

Oaks students. Another occurred at Princeton Avenue, a block away from a popular crossing location for Bellmawr Park students.

The Black Horse Pike was also a common crash location, with four pedestrian crashes and five bicycle crashes. Two of these pedestrian crashes occurred at the intersection of the Black Horse Pike and Browning Road, a common crossing location for Ethel M. Burke students. Four total crashes occurred on Creek Road, with three pedestrian crashes and one bicycle crash. Two of these pedestrian crashes were near the Wawa, located four blocks to the west of Bell Road, where Bell Oaks students were frequently observed crossing.

Additional crash locations included Kings Highway, I-295 and Midway Lane. The bicycle crash on Midway Lane occurred near its intersection with Colonial Lane, not far from Bell Oaks Elementary. Kings Highway saw six crashes and is a cause for concern, but is not a common corridor for student travel. Therefore, Kings Highway will not be given much consideration in this travel plan. It falls well outside of a 10 minute walking distance from any school and forms the border with the neighboring municipality of Brooklawn, so students are not expected to be crossing it. Interstate 295 is also not given much consideration in this report since it also does not factor into student pedestrian and bicycle travel.

Concerns regarding pedestrian safety on Creek and Browning roads are further supported by DVRPC’s 2016-2017 Pedestrian Crash Corridor and Pedestrian Crash Intersection rankings. The rankings are based on crash frequency and severity and are dedicated towards prioritizing Federal Highway Safety Improvement Program (HSIP) funding towards areas of high concern. DVRPC ranked 219 Pedestrian Crash Corridors and 232 Pedestrian Crash Intersections in Camden County. A higher ranking illustrates a higher level of concern.

Some locations in Bellmawr revived high rankings and should qualify for federal grant money to fund pedestrian safety improvements. These corridors are shown on Map 6 and include areas where Bellmawr

School district students can be found walking along and crossing major roadways. HSIP eligible locations and their DVRPC rankings are as follows:

DVRPC HSIP Eligible Pedestrian Crash Corridors

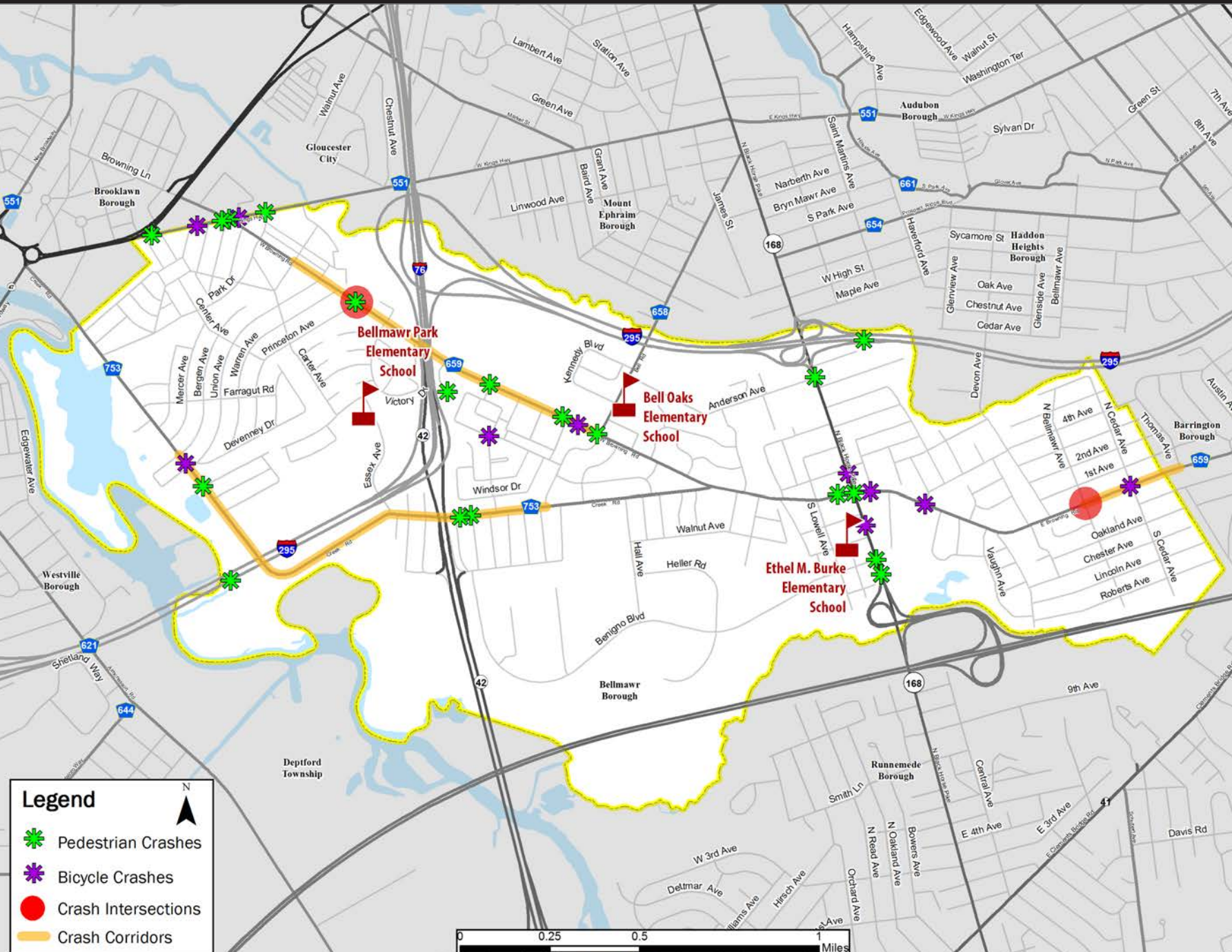
- Browning Road, between Bergen Avenue and Bell Road (20th in Camden County)
- Browning Road, between Bellmawr Ave and Thomas Ave (33rd in Camden County)
- Creek Road, between Bergen Avenue and Bell Road (69th in Camden County)

DVRPC HSIP Eligible Pedestrian Crash Intersections

- Browning and Bellmawr Avenue (17th in Camden County)
- Browning and Princeton Avenue (67th in Camden County)

Crash data was collected from Safety Voyager, a statewide database maintained by NJDOT. Police crash investigation reports are collected through a federally mandated process to create the database. This data may have limitations. It does not include unreported minor crashes that did not result in significant injury or damage. A crash is only reportable in New Jersey if it causes injury or property damage in excess of \$500. Also, no crash database could effectively capture the “near misses” that strongly affect an individual’s perception of safety. Cross County Connection heard from staff and parents on numerous occasions about near misses or general fear of an inevitable crash in certain locations. This crash data from NJDOT, coupled with DVRPC’s rankings, are nonetheless very effective in identifying areas where there are serious bicycle and pedestrian safety concerns that impact Bellmawr School District students.

MAP 6: BELLMAWR BOROUGH BICYCLE AND PEDESTRIAN CRASHES (2012-2016)



School Drop-off and Pick-up Policies

The school day for all Bellmawr Elementary schools is roughly the same. The School day begins around 8:30 AM and ends at 3:00 PM. Schools target preferred arrival times between five and fifteen minutes before the bell to begin the school day. Dismissal at each school is 3:00. Each school varies their arrival and dismissal procedures slightly (see Table 10). All three schools assign separate entrances/exits and in some cases student drop-off locations, based on grade levels. One school, Ethel M. Burke, staggers arrival times based on grade level to spread out student arrival, avoiding a single rush of drop-offs just before the opening bell. Reported congestion and safety issues varied per school, ranging from relatively minor to significant in some cases.

Table 10: School Arrival & Dismissal Procedures

School	Arrival Time	Dismissal Time	Special Practices
Bellmawr Park	8:20-8:35 AM	3:00 PM	Grade designated entrances/exits and drop-off locations; two crossing guards; student safety patrol
Ethel M. Burke	8:20-8:30 AM	3:00 PM	Grade designated entrances/exits; staggered arrival times; two crossing guards; student safety patrol
Bell Oaks	8:25 AM	3:00 PM	Grade designated entrances/exits and drop-off locations; one crossing guard

The following are a brief synopsis of each school's arrival and dismissal procedures and general feedback from school officials and staff on their effectiveness and associated issues.

Bellmawr Park Elementary

Bellmawr Park began a new student arrival and dismissal procedure for

its estimated 465 students at the beginning of the 2016-17 school year. The student drop-off period is 8:20 AM to 8:35 AM. Dismissal is at 3:00 PM. Bellmawr Park Elementary also houses pre-kindergarten in a separate building on the school grounds, which has separate drop-off and pick-up times. Other than this, the school does not stagger arrival or dismissal times.

Student drop-off and pick-up locations are designated by grade. There are three separate entrances/exits. The assigned location for grades pre-kindergarten, one and two is the parking lot in front of the school located on Victory Drive. Because the street comes to a dead-end just past the parking lot entrance, parents must enter and exit the lot using the same stretch of Victory Drive. Congestion has been cited as a significant concern in this drop-off and pick-up location. The assigned student pick-up and drop-off location for Grades three and four is the parking lot on the west side of the school, along Essex Avenue. Kindergarten's assigned drop-off and pick-up location is the parking lot behind the school. This lot is also accessed via Essex Avenue.

With the new arrival and dismissal procedures, school officials report congestion and safety concerns have decreased some, however they still remain an issue. Parents drop-off and pick-up students both in the assigned lots and curbside in various locations around the school. Congestion is a prevalent issue in the areas directly in front of the school on Peach Road and Victory Road. Illegal parking on the part of parents is a common problem, which exacerbates congestion and safety issues. Illegal parking also angers neighboring residents whose driveways are frequently blocked. School officials have reported parents frequently do not comply with safe practices and procedures, ignoring requests from crossing guards. Bellmawr Borough police are sometimes on-site to assist with student drop-off and pick-up, but department resources are too limited to provide daily assistance.

Parents crossing with students outside of designated crossing areas and from in between parked cars was also frequently cited as an issue. The

school has two crossing guards and uses student safety patrols to assist students who walk to school and direct them towards designated safe crossing locations. Often, these requests are ignored. These concerns are supported through parent survey responses.

Ethel M. Burke Elementary

Ethel M. Burke revised its student arrival and dismissal procedures approximately seven to eight years ago. School officials report that it took some time, but the process is currently working well in accommodating the school's approximate 280 students. Aspects of Ethel M. Burke's student arrival and pick-up policies and procedures may be worth replicating at the other two schools.

Burke Elementary converted the parking lot, located behind the school on Lowell Avenue, into a one-way loop for parents to drop-off and pick-up students. Parents enter the lot from Lowell Avenue and exit onto Walnut Avenue. Arrival times are staggered over a 15 minute period by grade. Grades three and four arrive at 8:20 AM. Grades one and two arrive five minutes later at 8:25. Kindergarten students arrive last at 8:30. The school day begins at 8:35. Students are asked to sit and read as they wait between their arrival time and the beginning of the school day. Students are given credit towards a reading program for cooperating during this time, providing an incentive for them to get to the school at their designated time. Dismissal for all grades is at 3:00 PM.

Ethel M Burke School staff report that there have been no significant issues with this arrival and dismissal procedure within the last few years. They sometimes have the assistance of Bellmawr police, but usually school staff handle the process. Prior to the revised procedure, Burke Elementary faced issues similar to Bellmawr Park. Parent cooperation was an issue. Communication between school staff and parents over the years has improved and issues have all but disappeared.

Parents, through survey responses, cited other parents crossing with students outside of designated crossing areas as an issue during arrival



A motorist blocking a crosswalk during Bellmawr Park student arrival



Ethel M. Burke's one way student drop-off loop

and dismissal. Many parents were concerned with the number of parents and students crossing between parked cars, where they are less visible to traffic. Burke Elementary also has two crossing guards and uses student safety patrols to assist students who walk to school and direct them towards designated safe crossing locations.

Bell Oaks Upper Elementary

Bell Oaks School day begins at 8:30 AM. All students are asked to arrive five minutes before the bell signaling the start to the school day. All four grades are assigned separate school entrances to use at arrival and dismissal. Congestion issues around the school were observed through fieldwork, and supported through parent survey responses. Areas of concern are Bell Road and Anderson Avenue.

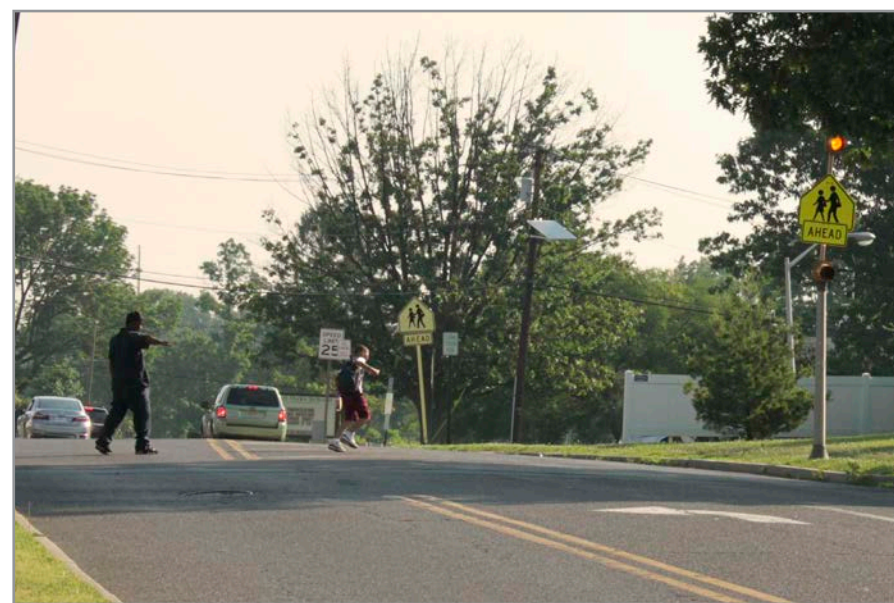
Illegal parking is also reported in these areas, with parents parking on narrow shoulders with restrictions on stopping or standing. Students crossing outside of designated crossing areas and from in between parked cars was also frequently cited as an issue. Bell Oaks Upper Elementary has two crossing guards to assist students who walk to school and direct them towards designated safe crossing locations.

District summary

Congestion during school arrival and dismissal is a significant issue at Bell Oaks and Bellmawr Park schools. E.M. Burke, previously faced congestion issues, but revised its arrival and dismissal procedures and have had success. It should be noted that E.M. Burke has a much smaller student body than the other two schools and this may have helped them with addressing congestion issues. However, E.M. Burke is also the only school that reported using staggered student arrival times, based on grade level. Bell Oaks and Bellmawr Park may want to consider a similar program to limit the amount of cars converging around the school building at one time.



Parents dropping off students in restricted areas



A parent crosses with a student outside of a crosswalk on Bell Rd near Bell Oak

3 AUDIT FINDINGS

Infrastructure conditions in Bellmawr Borough that impact school walking and bicycling safety, both positively and negatively, were identified during travel plan preparation. These conditions impact travel mode choice for parents and students, limiting their option to choose bicycle and walking as a practical everyday means to travel to and from school. These conditions were identified during a thorough process that included three separate walking audits at all three district elementary schools; arrival and dismissal observations at all three schools; discussions with school staff; parent survey responses; and a review of crash history and other available data.

Largely, the Bellmawr Borough exhibits the characteristics of a pedestrian friendly community with a well-connected compact street network with few sidewalk gaps. A connected network of calm residential streets also benefits young bicyclists. However, there are pervasive issues affecting bicycle and pedestrian safety throughout the Borough. These issues should be addressed in order to serve two purposes:

1. Improve the safety and comfort of students currently walking and biking to school;
2. Remove barriers to parents and students choosing to walk and bike to school.

Some general bicycle and pedestrian improvement strategies to address these issues will be identified in this chapter for further consideration. More detailed infrastructure issues, specific to each school, will be discussed in Chapter 4. Chapter 4 will also include more detailed



recommendations, which will include applications of the improvement strategies covered in this chapter.

Strengths

On the positive side Bellmawr Borough is compact and has a largely connected network of local streets. This allows a student walking to select multiple travel paths to schools and other destinations, with limited delay. In most instances, students can use a relatively direct path to each school. This is opposed to the situation found in many suburban contexts, where cul-de-sacs and disconnected streets require walking a great distance out of your way to make what would be a short trip, if a more linear route were available. Residential streets appear calm and largely exhibit traits that are bicycle friendly.

Pedestrian Safety Issues

Wide Streets

Bellmawr Borough has a number of wide and busy streets, which frequently feature fast moving traffic. Their large crossing distances expose pedestrians to motor vehicle traffic for extended periods of time. Studies have found that wide streets often encourage motorists to travel at higher speeds. A motorist becomes comfortable and focuses their driving on activity straight ahead, and less so on activity to their left or right. There is no visual cue that they should slow down and look for pedestrians. In the case of Bellmawr, this could be especially prevalent, since many of the roads cited as significant concerns have long uninterrupted stretches without signals or any need to stop.

The American Association of State Highway and Transportation Officials (AASHTO) states that collector and arterial roads should use lane widths between 10 or 12 feet, with lane widths of 12 feet only practical on higher speed, free flowing arterials. Since on-street parking is rare, many of Bellmawr's arterial and collector streets located near schools appear to have travel lane widths between 17 and 20 feet. Speed limits are set at



A typical calm residential street around a school in Bellmawr



Creek Road's wide travel lanes create a 34 foot crossing distance for students

25MPH, but speeding was reported in parent surveys and by school staff and crossing guards. Children are crossing up to 40 feet of roadway on streets that could be encouraging motorists to travel at rates of speed exceeding the posted speed limit. Wide streets with fast moving traffic are difficult to cross for a pedestrian of any age. Children are extremely vulnerable, since they may not have developed the cognitive abilities and experience necessary to properly assess risks while crossing.

The streets located in proximity to schools that featured the widest crossing distances, were state and county roads.

- Bell Road (County Route 658) – Approximately 32 to 34 feet wide. Comprised of two travel lanes between 16 and 17 feet wide. On-street parking allowed in some areas.
- Black Horse Pike (State Route 168) – Approximately 44 feet wide. Comprised of two 12 foot travel lanes; one 12 foot turning lane; and two four foot shoulders.
- Browning Road (County Route 659) – Approximately 40 to 42 feet wide. Comprised of two travel lanes between 20 and 21 feet wide. On-street parking allowed in some areas.
- Creek Road (County Route 753) – Approximately 34 feet wide. Comprised of two 17 foot travel lanes. On street parking allowed in some areas.

Lack of High Visibility Crosswalks

Many of the roads cited a significant concern through parent's survey responses and confirmed through field observations lack dedicated spaces for pedestrians to cross busy county roads. Map 7 points out the few crosswalks that span Browning and Creek Roads. There are only three locations where crosswalks are painted across Browning Road. These locations are more than a half-mile apart. This is roughly a 10 to 15 minute walk between crosswalks. Creek Road fares a little better, with three crossings between 750 and 1000 feet apart. Many of these crosswalks are badly worn. Some existing crosswalks are standard, two line crosswalks. Standard crosswalks are difficult to see on busy roads,



Browning Road's 40 foot width could allow two cars to fit side by side in one travel lane



A badly faded standard crosswalk spanning Creek Road at Bell Rd

even when not worn, where many factors compete for the motorist's eye.

Fortunately, many existing crosswalk locations are located near schools. However, students may find it necessary to cross at locations, outside of these few select areas. Students and parents crossing at locations with no crosswalks was frequently observed during field observations. Some of this behavior can be addressed through education, but in many cases it is common for pedestrians to cross at locations outside of crosswalks, if the nearest crosswalk is inconveniently located and adds significant travel time. Some additional locations may be worthy of crossing accommodation provided through crosswalks.

Sidewalk Network Gaps

Bellmawr's sidewalk network is well connected with just a few gaps. There are some missing sidewalks in close proximity to schools. Some of these are located along potential student travel corridors. FHWA guidance states that continuous sidewalks should be placed along both sides of local streets in urban and suburban areas.

Missing sidewalks are also shown in Map 7. There are approximately 1.25 miles of sidewalk network gaps in Bellmawr Borough. Roughly 75% of these missing sidewalks are located in the Bellmawr Park neighborhood, west of I-295 and I-76. These gaps could pose a significant barrier to children being able to safely walk to and from school. Children may have to unnecessarily cross a street to use an existing sidewalk, or may choose to walk in the street during part of their journey. The concentration of these missing sidewalks in one area intensifies these dangers and could prevent parents from allowing their children to walk in a neighborhood where many students live only a short distance from school.



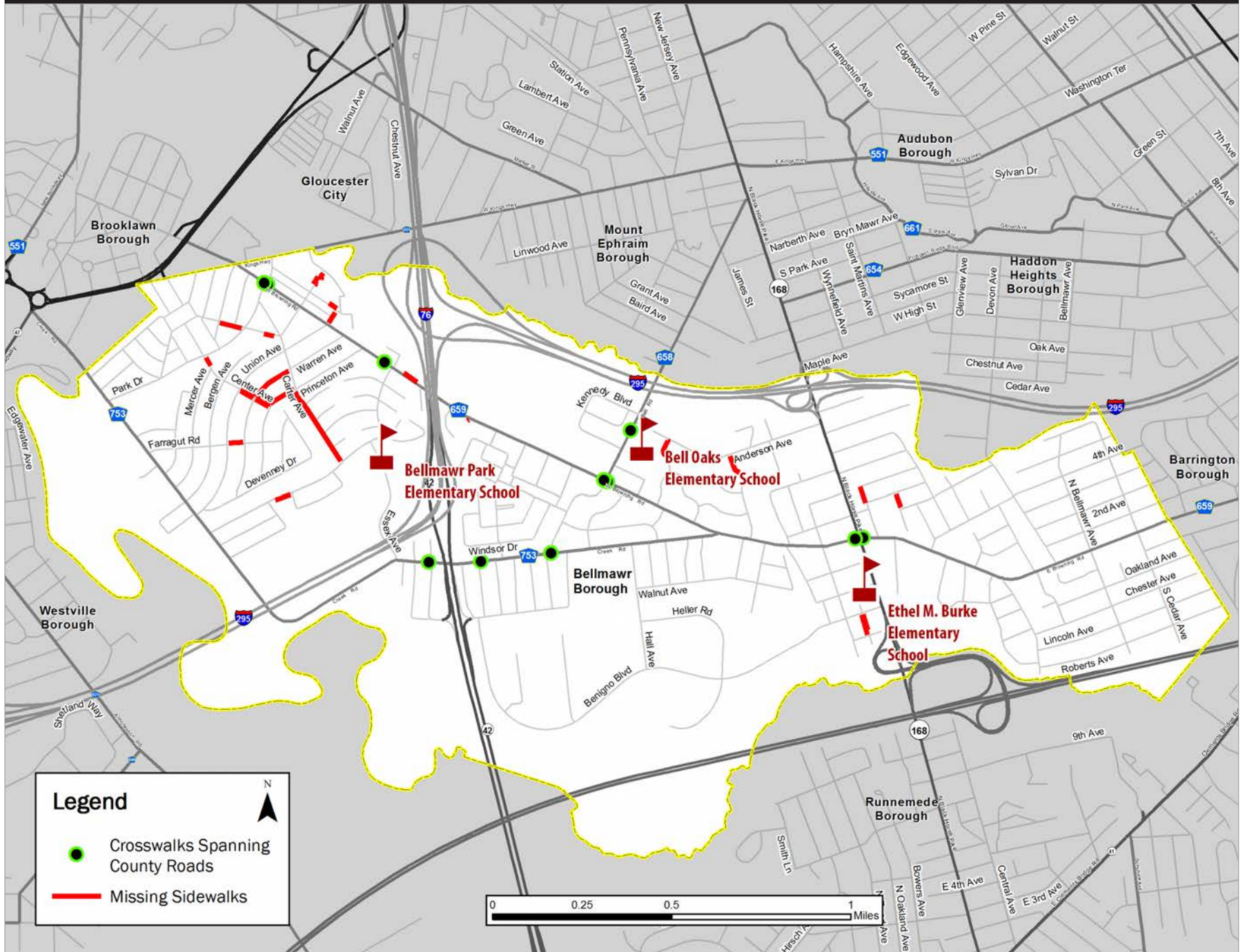
A student crosses Creek Road at an intersection where no crosswalk is provided



Missing sidewalks on Carter Ave near Bellmawr Park Elementary

Credit: Google

MAP 7: BELLMAWR BOROUGH PEDESTRIAN NETWORK ISSUES



Narrow Sidewalks

Sidewalks need to provide enough space to comfortably accommodate the anticipated volumes of pedestrian activity based on their location. A one size fits all approach does not work for sidewalks, much in the same way it does not for streets. In areas around schools, one should anticipate high volumes of activity at arrival and dismissal times. Based on observations, sidewalk widths along travel routes for students were sometimes narrow and did not provide enough space to accommodate the flow of children traveling to and from school. This was especially prevalent in areas immediately surrounding all three schools.

In some cases, sidewalk widths fell below recommended minimum standards. FHWA's minimum recommended sidewalk width is five feet. The previous minimum width was four feet. Four feet was found to not provide enough clear space for two pedestrians to pass each other or walk side by side. In areas where you should expect to see significant pedestrian activity, such as priority walking routes to schools, sidewalks should extend beyond these minimum standards. Wider sidewalks allow groups of children to walk together and provides a buffer between the roadway edge, improving pedestrian safety and comfort.

Younger children, bicycling to and from school, may also find sidewalks to be the safest and most comfortable option. Many children were observed biking amongst pedestrians during arrival and dismissal times. Sidewalk widths should account for children bicycling and be wide enough to prevent collisions between students on bikes and those who are walking. Children biking on sidewalks should be taught to travel at slow speeds, watch out for pedestrians and stop before crossing a street, just as if they were walking. It should be noted that sidewalks are not appropriate places for older children, such as teenagers, to ride a bicycle, as their size and typical operating speed poses a threat to pedestrians. Riding on sidewalks also creates visibility issues with motorists at intersections that could lead to collisions. On-road bikeways are a better way to accommodate these older children's needs.



A narrow 3 foot sidewalk on Bell Rd alongside Bell Oaks Elementary



Students bicycling share a narrow sidewalk with pedestrians

Sidewalk Obstruction

The American with Disabilities Act (ADA) Accessibility Guidelines and the United States Access Board's Proposed Guidelines for Accessible Rights-of-Way (PROWAG) require a minimum of four feet of continuous clearance along sidewalks to allow wheel chairs to safely navigate. Sidewalk obstructions were observed during field observations that narrowed pedestrian clearance well below the required four feet. Obstructions included telephone poles, street signs and overgrown vegetation. Some of these obstructions were on already narrow sidewalks, making them very difficult to travel along, especially for those in a wheelchair or those transporting children with strollers. Sidewalk obstruction was most prevalent along Victory Drive, a popular travel corridor for students traveling to and from Bellmawr Park Elementary.

Missing ADA Compliant Curb-Ramps

Many intersections near schools are lacking curb ramps and some existing curb ramps are not ADA compliant. Curb ramps are mandated at all pedestrian crossing locations whether they are marked or unmarked per the FHWA. Curb ramps allow wheelchair access, and safely accommodate other individuals with mobility limitations such as the blind and the elderly. They also accommodate strollers and benefit children who may have difficulty negotiating high curb faces.

To be ADA compliant, curb ramps must have detectable warning surfaces (DWS) along the entirety of their edge, to warn individuals with sight impairments that they are entering the roadway. A DWS must be provided in the form of truncated domes. The most common method to provide a DWS at the ramp edge is through a plastic mat, in a color that provides significant contrast to the pavement surface, fitted with the domes. On concrete, yellow or red mats are preferred.

Missing curb ramps, or curb ramps that have not been updated to ADA standards, were most frequently observed in the Bellmawr Park neighborhood. Victory Drive had a number of missing curb ramps,



A pole on Victory Dr obstructs the path of travel for a mother walking with a stroller



Missing curb ramps on Victory Dr near the entrance to Bellmawr Park Elementary

which is of significant concern because it is a popular pedestrian corridor to reach Bellmawr Park Elementary.

Maintenance

Overall, sidewalks and crosswalks appear to be in good condition throughout Bellmawr Borough. However, some minor tree lift on sidewalks along student travel corridors was observed. Cracking in sidewalks and in crosswalks was also observed. Lifted sidewalks and cracks create tripping hazards, especially for smaller children. Bicycle, wheelchair, and stroller wheels can also get caught in cracks, especially those running parallel to the direction of travel. A crack in the crosswalk on Browning Road near Victory Drive was cited as a specific concern from those walking in the area.

Bicycle Safety Issues

Lack of Dedicated Bikeways

There are no bikeways in Bellmawr Borough. Most of the residential streets in the Borough appear to be comfortable for bicycle use, with low speeds and traffic volumes that should make sharing the road comfortable for most skill levels. However, county roads such as Browning and Creek and to a certain extent Bell Road, are much more unwelcoming. Traffic volume is heavy and motor vehicle speeds are higher. Dedicated facilities, that separate bicyclists from motor vehicle traffic, would provide a much higher level of safety and comfort.

Camden County, with the assistance of the Delaware Valley Regional Planning Commission (DVRPC), published the “Bicycling and Multi-Use Trails Plan” in 2015. Plan recommendations are shown in Map 8. The plan identified Creek Road and Browning Roads as two locations where providing bike lanes or buffered bike lanes should be considered. These types of facilities are detailed later in this chapter. Bell Road was identified as a roadway to consider designating a bicycle route, where pavement markings and signage increase bicyclists’ visibility.

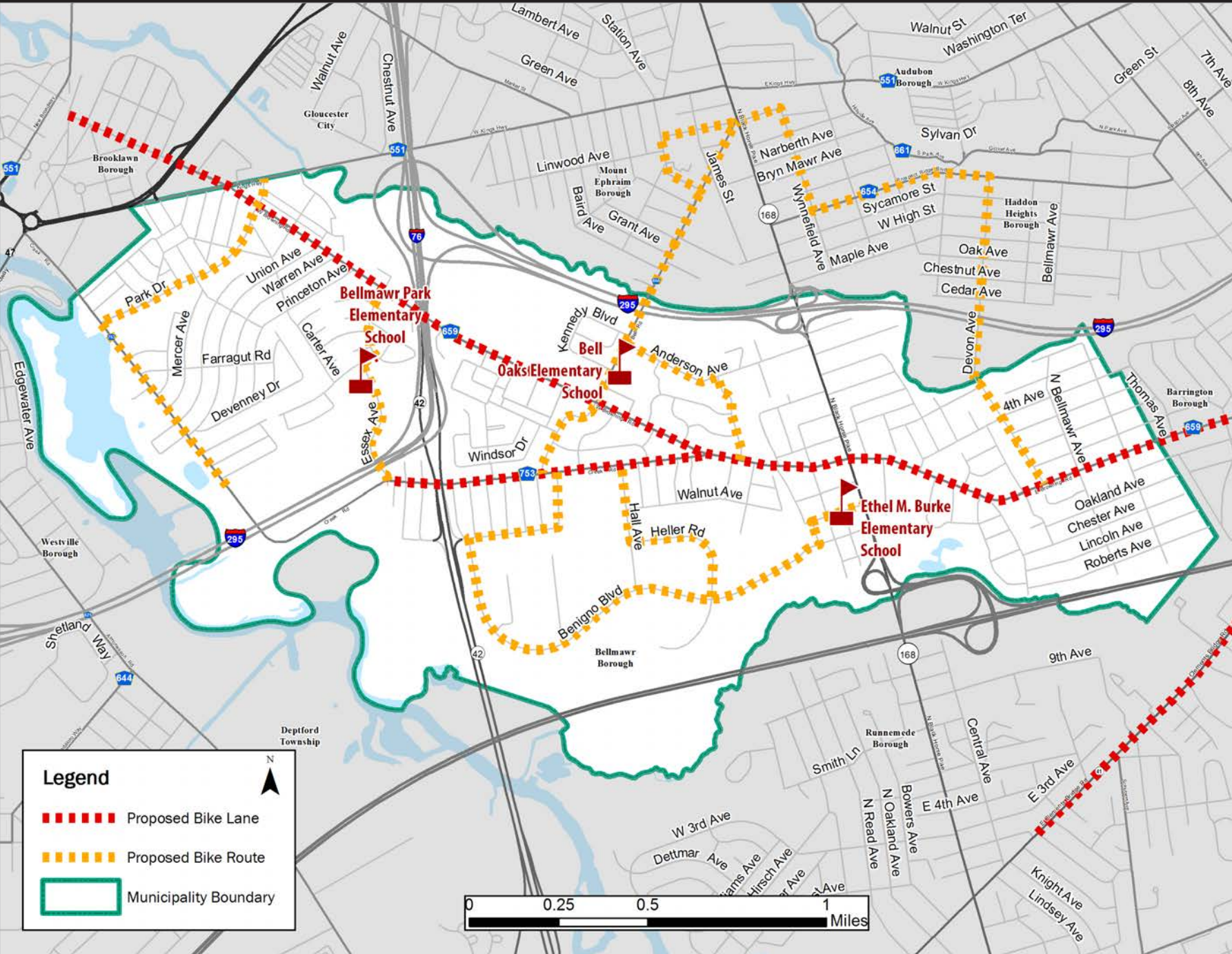


A crack in the crosswalk at Browning Road and Victory Drive



Students bike alongside Browning Road

MAP 8: CAMDEN COUNTY BICYCLING & MULTI-USE TRAIL PLAN RECOMMENDATIONS



Unsafe sewer grates

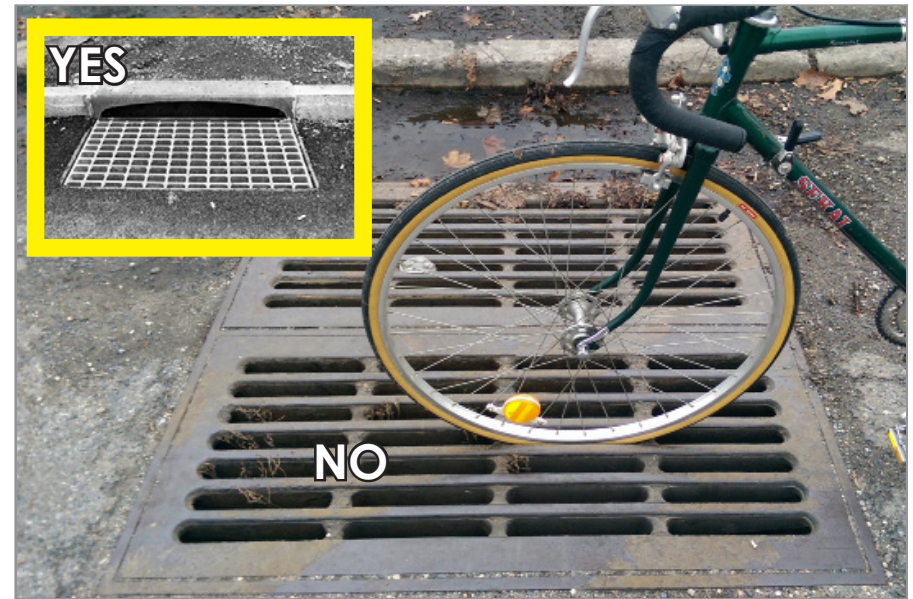
Some sewer grates on local and county roads were an older design, with openings that run parallel to the direction of travel. These can be dangerous because bicycle, wheelchair and stroller tires can get caught in these openings. Bicycle and wheelchair friendly grates were observed at other locations. When roadway projects are scheduled, these out-of-date grates should be replaced with bicycle friendly designs.

Bicycle Parking

Bicycle parking was observed at Bell Oaks School, but not at Ethel M. Burke or Bellmawr Park Elementary. Those student populations are young and may not be expected to bike to school, however some parents of 3rd or 4th graders may feel comfortable allowing their children to bike during special events such as bike or walk to school days.

The bike racks observed at Bell Oaks were “wave” style racks. These racks accommodate multiple bikes with one rack, but have deficiencies in terms of bike security and in properly stabilizing a bike to avoid damage. They also can become cramped when full, making access to bike locks difficult. The ideal bike rack solution is to stack multiple “U” style racks in close proximity to create a bicycle parking area. U-racks allow easier bike lock access to the frame of the bike, while also bracing the bike in two places, ensuring it does not tilt or fall and become damaged. Replacing the wave racks should not be considered a high priority, but if new racks are installed in the future, they should be the more secure “U” style.

The current bike rack locations at Bell Oaks Upper Elementary are conveniently located near the entrances of the school. They are also easily observed from inside the building. Bike racks should be located where people can see them, deterring would-be thieves. Bell Oaks interior courtyard would be an even more secure location. If students are using bikes to reach after school events that may end after dark, ensure that these locations are properly lit and safe.



Bike wheels get caught in older sewer grates. A bicycle safe grate is highlighted in yellow.



A group of U racks accommodate multiple bikes securely

Infrastructure Improvement Strategies

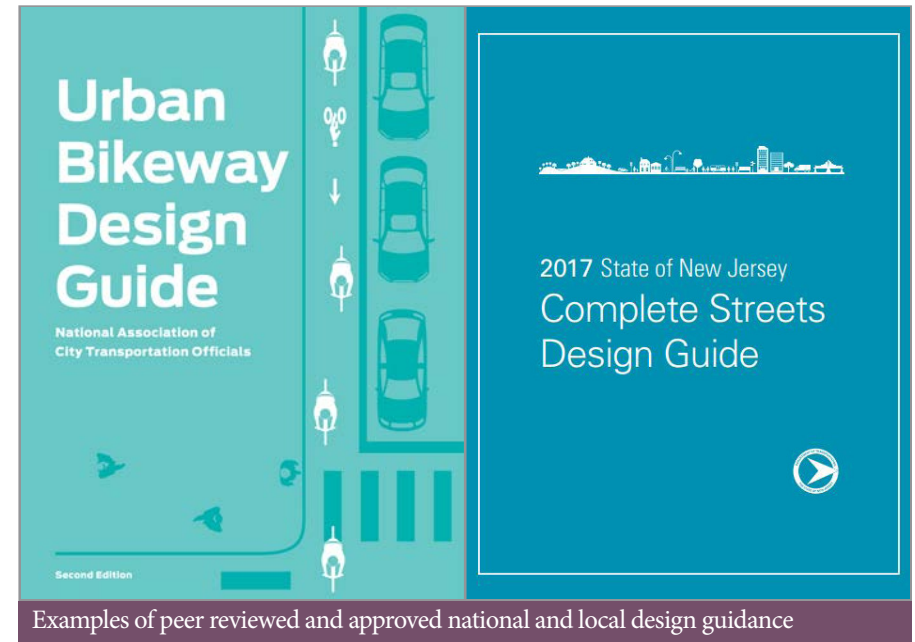
Communities can implement a variety of infrastructure improvements to enhance safety and facilitate convenient student travel to and from school. This section provides a brief overview of common pedestrian and bicycle facilities that can alleviate the concerns identified during the audit. This section is intended to familiarize readers with these design treatments, but does not provide an exhaustive list of potential infrastructure improvements. Some more specific recommendations that incorporate these types of treatments will follow in Chapter 4.

This chapter is not intended to serve as a design guide. Project designers and engineers should consult peer reviewed and approved guidance when designing and implementing these facilities. Guidance can be sought from NJDOT's School Zone Design Guide and Complete Streets Design Guides; the United State's Access Board's Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG); American Association of State Highway and Transportation Officials' (AASHTO) Guide for the Development of Bicycle Facilities; the National Association of City Transportation Officials' (NATCO) Urban Bikeway Design Guide, the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD), and others.

Pedestrian Improvements

Sidewalks

Sidewalks are travel lanes for pedestrians and individuals with disabilities. These facilities provide separation from motor vehicle traffic, which greatly increases safety and comfort. Sidewalks are often made of concrete, asphalt, or other materials. Sidewalk width should vary based on context and the anticipated volume of pedestrian traffic. The minimum sidewalk width is 5 feet. Sidewalks must ensure four feet of continuous clearance, free from any obstruction, per PROWAG guidelines.



Wide sidewalks along the Black Horse Pike provide comfortable separation from traffic

Marked Crosswalks

Crosswalks exist at every intersection, regardless of whether they are marked with paint. Marked crosswalks, however, indicate preferred locations for pedestrians to cross, and help alert motorists to pedestrian crossing locations. Marked crosswalks may also be used to indicate school walking routes, and may be desirable to install in locations where there is a high volume of pedestrians, such as near schools and streets with significant commercial activity.

There are a variety of marked crosswalks that are permitted by the Manual on Uniform Traffic Control Devices (MUTCD); however, the NJDOT School Zone Design Guide exclusively recommends the installation of bar style crosswalks (also known as piano key or continental type) due to their high visibility and durability. This type of high visibility crosswalk design should be the standard in crossings located within school zones in addition to crossings, outside of the defined school zone, that are commonly used by students on their travel to and from school.

Curb Extensions (bump-outs)

Curb extensions, also known as bump-outs or bulb-outs, extend the sidewalk or curb line into a parking lane, which reduces street width. This improves pedestrian crossings by reducing the distance required to cross the street. These facilities also increase visibility for pedestrians and clearly signal their intent to cross the street. As an added benefit, motorists are encouraged to slow down, as the narrowed street width sends a visual cue to motorists and increases their awareness of a pedestrian crossing location.

Curb extensions can be used at both intersections or mid-block pedestrian crossings. They are preferred where there is a parking lane and should be designed to accommodate bicyclists traveling outside the curb edge, if bike lanes are provided. Curb extensions should be considered at common student crossing locations including, but not limited to, Browning and Creek Roads.



A high visibility bar-style "continental" crosswalk



A curb extension at an intersection accommodating a bike lane

Pedestrian Crossing Islands

Pedestrian crossing islands, or pedestrian refuge islands, are raised islands located in the center of a roadway at an intersection or mid-block crosswalk. Installation of these facilities has been shown to decrease pedestrian-vehicle collisions. They can be used to narrow the roadway and reduce vehicle speeds. On multi-lane roadways, these facilities divide the crossing into two distinct phases. Pedestrians can more comfortably negotiate just one direction of vehicle travel at a time and have a safe space to wait for traffic heading in the other direction to clear. This is especially helpful to slower moving pedestrians, such as seniors, parents with young children and individuals with disabilities.

Pedestrian refuge islands should be a minimum of 6 feet wide per ADA guidelines to allow wheelchair and stroller users to safely wait on the island. Crossing islands are an effective means to both reduce pedestrian exposure to danger when crossing and slowing traffic at either intersection or mid-block crossing locations.

Signage

Signs and pavement markings may be used to complement crosswalks, and can be helpful in alerting motorists to busy crossing locations. Chapter 3 of the New Jersey School Zone Design Guide details standards and guidance for the use of school zone signage, pavement markings, and related devices. This signage includes traditional pedestrian crossing signs, school-specific crossing signs, and signs with flashing warning lights.

In-street signs can be installed at uncontrolled, mid-block pedestrian crossings to increase crosswalks visibility and encourage motorists to stop for pedestrians. These signs can only be installed at mid-block locations as they are prohibited by the 2009 MUTCD at signalized intersections. These signs can be permanently installed in the roadway or mounted on a portable base, which allows them to be easily taken in and out of the street. These signs must reflect the respective state law regarding



A pedestrian crossing island on a street with bike lanes



An in-street pedestrian crossing sign in a crosswalk

whether motorists are required to yield or stop for pedestrians in a crosswalk. New Jersey law requires pedestrians to stop and stay stopped for pedestrians crossing the roadway within any marked crosswalk.

Rectangular Rapid Flashing Beacons

Rectangular Rapid Flashing Beacons (RRFB) provide a more intense form of flashing light than a typical flashing warning sign. They are ideal for mid-block pedestrian crossing locations with a high-volume of pedestrian or motor vehicle traffic, a condition found at some student crossing locations near Bellmawr elementary schools. These types of signs are ideal in situations where the flashing lights would heighten pedestrian visibility and potentially improve compliance rates amongst vehicles required to stop for pedestrians attempting to cross.

RRFBs use an irregular amber colored flash pattern, similar to the pattern on a police vehicle. They are either activated by pedestrians manually through a push button, or they can be designed to detect pedestrians automatically. RRFBs may be installed on either two-lane or multi-lane roadways.

FHWA found that RRFBs located roadside increase motorists' rate of yielding significantly. A 2008 study found that going from a no-beacon arrangement to a four-beacon system (with two beacons on both the right and left side of the crossing) increased yielding from 18% to 88%.

Pavement Markings

School Zone pavement markings can be used as an additional warning where vehicle speeds are a concern. They should be placed close to school reduced speed zones or school speed limit sign assemblies. These markings are preferred on single lane local or collector streets, where they are visible from a distance and not obscured by heavy traffic. Currently, there are no school zones designated with pavement markings and signage near Bellmawr elementary schools.



A RRFB used at a pedestrian crossing island

Credit: FHWA



School zone pavement marking

Credit: DC Department of Transportation (DDOT)

Curb Ramps

Curb ramps provide access to sidewalks from the roadway, which is particularly important for people using wheelchairs, parents with strollers, or individuals that have difficulty negotiating curbs. Newly constructed or altered roadway projects are required to incorporate curb ramps in accordance with the Americans with Disabilities Act (ADA) design guidelines. ADA requirements also specify that curb ramps must be equipped with detectable warning surfaces (DWS) that provide a warning to visually impaired pedestrians.

Curb ramps should be provided at all crossings, whether they are mid-block or at an intersection. ADA Guidelines state that there should be two perpendicular curb ramps at every corner whenever possible, where each corner has two ramps installed perpendicular to the face of the curb. Two ramps also allow pedestrians, strollers, and wheelchairs to cross without being forced into the intersection, creating conflict with motor vehicle traffic. Sometimes a single diagonal ramp design is constructed to limit costs, or accommodate drainage concerns, but these significant safety drawbacks mentioned should be factored into any cost savings analysis.

Several intersections in Bellmawr exhibited good curb ramp design. The intersection of Lowell and Walnut Avenue, behind Ethel M. Burke Elementary sets a standard that should be followed in future projects throughout the Borough. The United State's Access Boards Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) is a resource for guidance on constructing ADA compliant curb ramps.



ADA complaint perpendicular curb ramps

Credit: City of San Francisco



A poorly designed diagonal curb ramp

Bicycle Improvements

Bicycle Routes

Bicycle routes are a type of on-road bikeway. These facilities designate preferred routes for bicycle travel and indicate that a roadway is a shared travel environment for bicyclists and motorists. Bicycle routes can be marked with signage, such as “bike route” or “share the road” signs. These facilities may also be marked with “sharrow” pavement markings. Sharrows are commonly paired with signs alerting motorists that “bicycles may use the full lane.” These markings inform motorists to expect bicyclists and show bicyclists where to ride. Bicycle route and share the road signs can also provide bicyclists with way-finding assistance. These treatments are preferable on low-speed, low-volume roadways. Shared travel lanes should rarely be designated on roads with posted speed limits above 25 MPH. Bell Road was identified as a potential candidate for bike route designation. Pavement markings such as sharrows paired with signage could improve conditions for students bicycling to Bell Oaks Upper Elementary.

Bicycle Lanes

Bicycle lanes designate space on a roadway for bicyclists with striping and pavement markings. These lanes, which are typically a minimum of five feet wide, are for the exclusive use of bicyclists and help to reduce conflicts between motorists and bicyclists.

Bicycle lanes are recommended on streets with a posted speed limit of 25 to 35 mph. According to NJDOT guidance on bike lanes, where additional space is available, buffered bicycle lanes should be considered. This is because standard bicycle lanes provide a minimal level of safety for cyclists. They often wedge a bicyclist between fast moving traffic and parked cars. To avoid conflicts with open car doors, bike lanes should be located outside the “door zone” of parked cars. A NACTO study showed that 60% percent of potential cyclists are not comfortable using a typical unprotected bicycle lane due to safety concerns.



A bike route designated with sharrows and a bikes "MAY USE FULL LANE" sign



A bike lane on Springdale Rd in Cherry Hill

Buffered Bicycle Lanes

The addition of a painted buffer enhances safety by increasing the space between motorists and bicyclists. Buffered bike lanes provide additional passing (or “shy”) distance between bicyclists and motor vehicles, contributing to an increased sense of security and less risk of encroaching into the adjacent travel lane or the “door zone.” Buffered bike lanes often increase the perception of safety and will encourage increased levels of bicycling. The minimum width of a buffered bike lane is 8 feet, featuring a five foot bike lane fitted with a three foot buffer. Where there is more space the bike lane can be wider, or an additional buffer between parked cars and the bike lane may be added. Browning and Creek roads are excellent candidates for buffered bike lanes, and were identified as such in the Camden County Bicycling and Multi-use Trails Plan.

Often, flexible plastic bollards are installed in these buffers as an inexpensive physical barrier to offer cyclists further protection from vehicle traffic and offer some of the benefits of a more substantial protected bike lane discussed below. Safe Routes to School programs have installed buffered bicycle lanes with plastic bollards for use by children traveling to school.

Protected (or Separated) Bike Lanes

Permanent physical protections, such as curbed medians, large concrete planters or modular curbs offer enhanced comfort and safety for bicyclists over painted buffers or plastic bollards. A lane of parked cars can also offer physical separation from moving vehicles. These facilities are often considered the most attractive by bicyclists, parents, and residents, and have been shown to increase the bottom line of nearby businesses. High-quality separated bikeways with connections to parks and other destinations can also encourage tourism and associated spending, which brings additional benefits to the local economy.

Separated bikeway design has advanced significantly in recent years, and comprehensive manuals exist including the NACTO Urban Bikeway



A buffered bike lane on Delaware Ave in Camden



Flex posts added to the buffer to create a protected bike lane Credit: Green Lane Project

Design Guide (also applicable for suburban and exurban jurisdictions) and FHWA Separated Bike Lane Planning and Design Guide, and most recently, NJDOT's New Jersey Complete Streets Design Guide. According to NJDOT's guide, protected bike lanes are the preferred treatment on roads with high traffic volumes or speeds. Frequent driveways or intersections could limit their feasibility. Browning and Creek Roads may also be candidates for a more substantial protected bike lane. A pilot project testing how buffered bike lanes, fitted with flexible plastic bollards, may be a first step towards testing their effectiveness.



A two way protected bike lane in Washington DC using curb stops and flex posts

4 SCHOOL AREA RECOMMENDATIONS

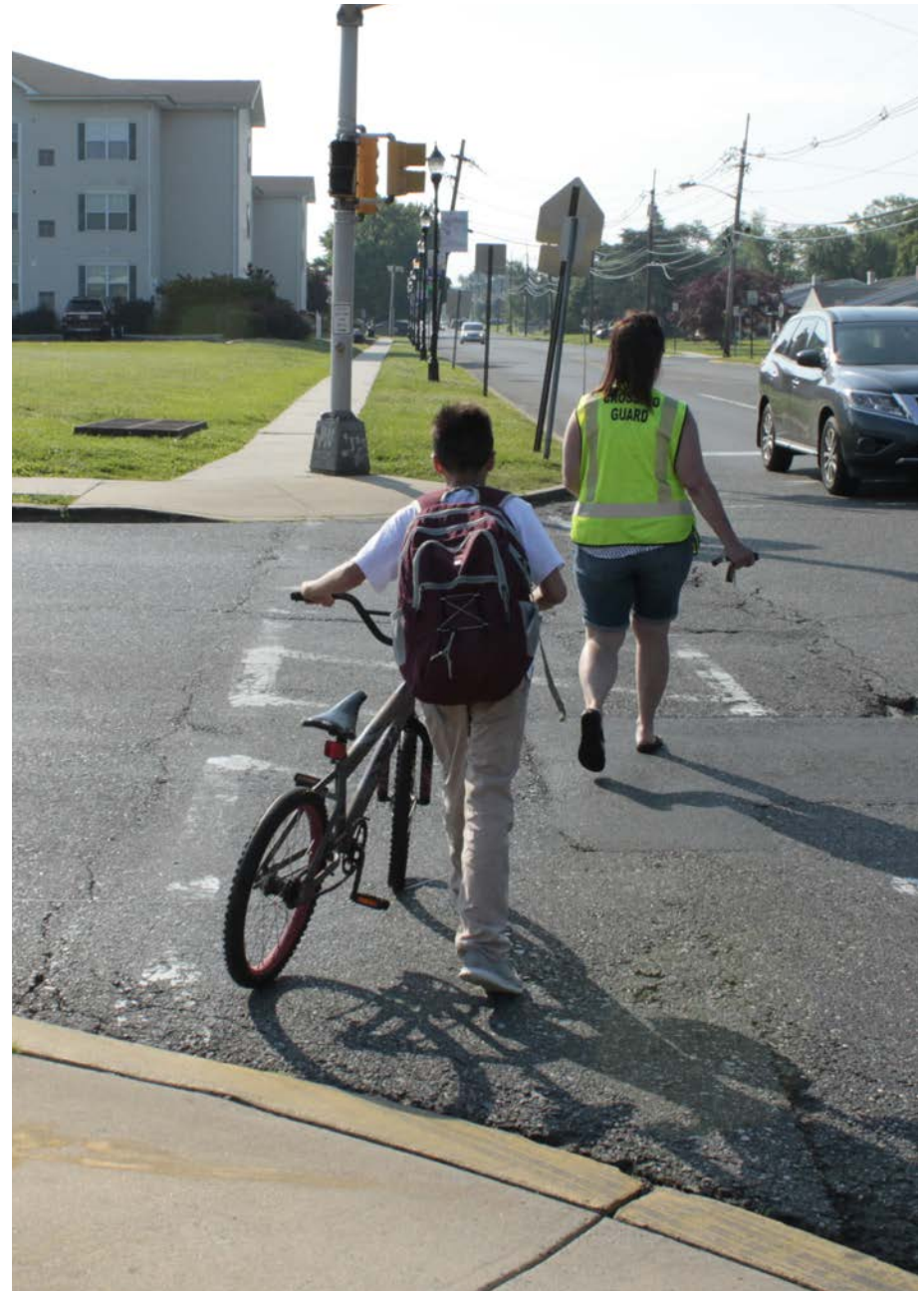
Chapter 3 provided a general overview of infrastructure conditions found throughout Bellmawr Borough. This chapter addresses more specific issues found in the immediate vicinity of each school that were observed during the three separate audits. Specific locations with issues are identified. Recommendations to address these issues are provided for Bellmawr Borough and the School District to consider.

Bell Oaks Elementary School

Bell Oaks Upper Elementary School hosts grades five through eight. It is north-centrally located in Bellmawr Borough. The school is located along Anderson Avenue and is surrounded by Bell Road to the west, W. Browning Road to the South and Harbor Road to the east. Student entrances are located on Bell Road, Anderson Avenue and in an internal courtyard fronting the staff parking lot off Bell Road. Primary corridors for student traveling to and from Bell Oaks include W Browning Road, Anderson Avenue and Bell Road.

Bell Oaks' student population of 461 students is distributed throughout Bellmawr Borough. Approximately 44% of these students live within a 20 minute walk from campus and 20% live within a 10 minute walking distance. Bicycling rates were much higher at Bell Oaks compared to the lower elementary school, where the younger students rarely bike to school.

Infrastructure recommendations for Bell Oaks Upper Elementary are shown on Map 9, found on Page 47.



Location: Bell Road & Kennedy Boulevard

Issue: Pedestrians Crossing Outside of Crosswalk

During the arrival and dismissal observations, many students were seen crossing Bell Road at this intersection. Technically, since this location is an intersection, it is considered an unmarked crosswalk, thus pedestrians may cross there. Oncoming traffic observed did yield and allow the children to cross during observations, however due to a lack of a crosswalk, motorists may not expect to see students crossing at this location, putting them in danger. Students crossing at this location was cited as a concern in the parent travel surveys.

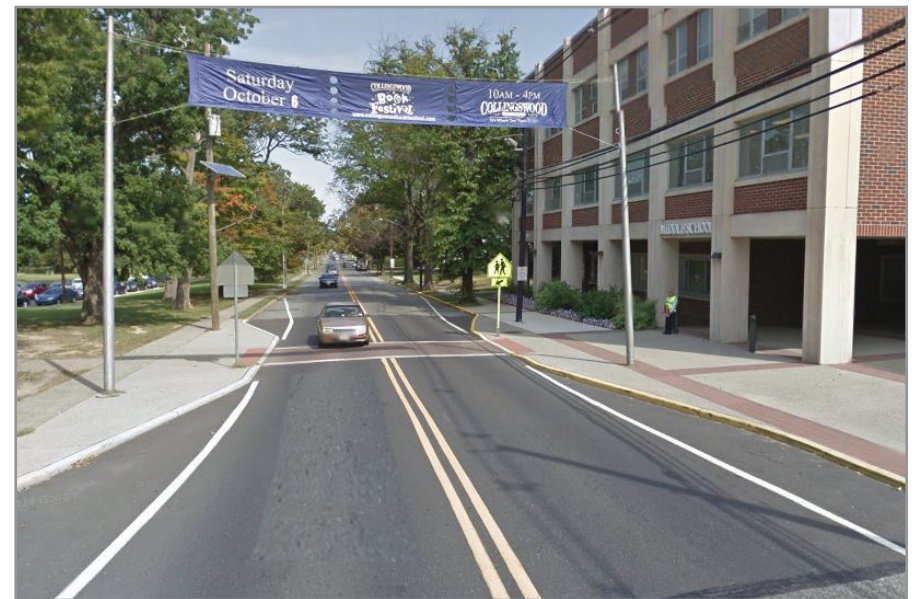
Recommendation

Bellmawr should request that Camden County consider installing a high visibility mid-block crosswalk across Bell Road, between Kennedy Boulevard and the shopping center delivery entrance. Ideally, this crossing should include curb extensions to maximize visibility, while minimizing crossing distance. Due to its location near two student entrances and exits, street crossings are expected to continue regardless of instruction to cross where a crossing guard is present. The nearest guard is stationed over 500 feet away at Browning Road. This crossing location is convenient for students living west of the school. This crossing would also benefit students whose parents drop them off at the shopping center to avoid congestion on Bell Road.

The Federal Highway Administration (FHWA) provides various crosswalk recommendations depending on the road's classification. On roads with low volume and speeds of up to 30 mph, like Bell Road, mid-block crosswalks do not typically require signals or other traffic control devices. However, if the Borough wanted to create higher visibility for the crosswalk, an in-street "Stop for pedestrians" sign (shown on page 35) could be installed. There is a flashing crossing beacon a few hundred feet away already notifying motorists that students may cross in this location.



Students crossing Bell Rd at Kennedy Blvd near Bell Oaks entrance



A mid-block crossing with curb extensions at Collingswood Middle School Credit: Google

Location: Bell Road at W Browning Ave

Issue: Pedestrian Crossing Visibility

The intersection of Bell Road and W Browning Ave is a highly traveled crossing location for children walking to and from school. Bell Oaks' only crossing guard is stationed at this location. The crossing guard assists children crossing both Bell Road and Browning Avenue. Even with this precautionary measure, the crossing guard expressed potential danger in driver behavior. At times when a guard is not stationed, this intersection can be precarious. Outdated pedestrian signals in use at this intersection were dimly lit and barely visible during the day. Crosswalks at this intersection are also extremely worn and difficult to see.

Recommendation

The Borough should consider working with Camden County to replace the existing four pedestrian signals with updated designs that include, countdown timers and active push button actuation. Modern pedestrian signals also provide audible warning for individuals with sight impairment, making them ADA compliant. Updated signals provide clear direction to pedestrians that is especially important during those times when a crossing guard is not present. The Borough should also request that Camden County replace the existing crosswalks with high visibility bar style crosswalks. Both of these actions will help increase the pedestrian visibility and provide clear indication of when and where it is safe to cross to street.



Worn crosswalks and a broken outdated pedestrian signal at Browning and Bell



A modern countdown signal with push button actuation

Location: Creek Road at Bell Road

Issue: Pedestrian Crossing Visibility and No Curb Ramps

There is a single faded standard crosswalk across Creek Road at its intersection with Bell Road. This intersection has no traffic signals and no crossing guard is stationed there. Pedestrian crossing volumes are far lower than can be found at the intersection of Browning and Bell Roads, but are high enough to warrant concern for student safety. Students waking to Bell Oaks Elementary, must wait for a gap in traffic to safely cross. Crossing Creek Road can be intimidating. It is wide and sometimes features high traffic volumes, truck traffic and speeding. Students must traverse 34 feet curb to curb. The faded crosswalk provides little indication to motorists to expect students to cross there, reducing reaction time. Students were often observed crossing outside of the barely visible crosswalk. In addition, this location is lacking ADA compliant curb ramps.

Recommendation

Bellmawr should consider working with Camden County to install high visibility continental crosswalks. Crosswalk visibility would be heightened by signs in the centerline reminding motorists to stop for pedestrians. Curbside signs notifying motorists of a student crossing location would also increase pedestrian visibility. This crossing location could also be a candidate for curb extensions or a pedestrian refuge island due to Creek Road's excessive width. These traffic calming measures would narrow the crossing distance and slow traffic. ADA compliant curb ramps should be installed at all points of this crossing location.



Faded crosswalk at Bell and Creek Rd, a common student crossing location



A mid-block continental crosswalk with in-street and curbside signs Credit: FHWA

Location: Browning Road; Creek Road; Bell Road; Anderson Avenue and Rockville Drive

Issue: Lack of Bikeways

Bellmawr Borough is lacking dedicated bikeways. Since 40% of Bell Oaks students live within a mile from school and are at an age where parents may be comfortable letting their children bicycle alone, a lack of bikeways could be limiting potential bicycling activity and putting students who do currently bicycle at risk. Students were observed biking to school and some bicycling activity was captured in the student travel tallies. These students are currently biking on sidewalks, or in roadways with no accommodation provided. Bicyclists were observed along Browning, Creek and Bell Roads.

Recommendations

Camden County, with the assistance of the Delaware Valley Regional Planning Commission (DVRPC), published the “Bicycling and Multi-Use Trails Plan” in 2015. The plan identified Creek Road and Browning Road as two locations where providing a dedicated bikeway should be considered. The plan states that using a “higher level treatment” is desirable, meaning a facility that provides exclusive space for bicyclists. The plan specifically mentions conventional or buffered bike lanes, which are described in Chapter 3.

Due to the heavy traffic volume, protected bike lanes could also be considered. This type of on-road facility may provide the greatest level of comfort and security for young bicyclists. Browning and Creek Roads rarely have on street parking, providing ample width to consider a variety of bikeway types.

Bell Road, Anderson Avenue and Rockville Drive were identified as roadways to consider designating bicycle routes. Motor vehicles and bicycles share the same road space on a bike route. Bicycle routes use sharrow pavement markings and signage increases bicyclists’ visibility.



A Bell Oaks student biking on Creek Rd



Buffered bike lanes

Credit: NACTO

Location: Anderson Avenue

Issue: Speeding Traffic Conflicts with Students Crossing

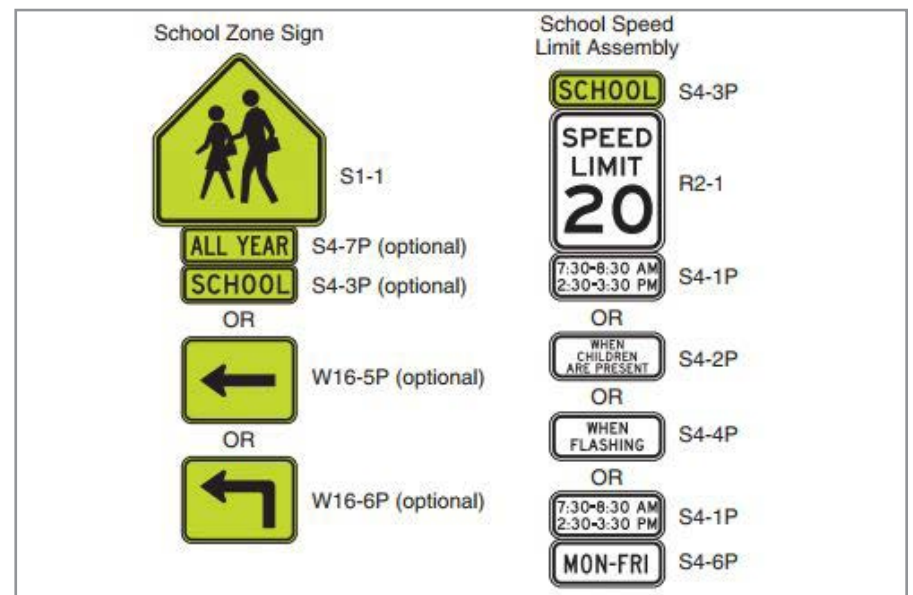
Both parents and Bell Oaks staff report that the student drop-off and pick-up area along Anderson Avenue appears to be dangerous. Many parents reported in the survey that they have witnessed near misses between students crossing the street and oncoming traffic. Parents also claim that motor vehicle traffic appears to be moving too quickly for an area around a school. Currently, these streets have some signage advising of student crossing locations, but additional steps to slow traffic and increase motorists awareness of school children may be warranted.

Recommendations

Designating Anderson Avenue as a school zone could lower speeds and improve student visibility as they cross the street. Pavement markings denoting a school zone should be considered at the approaches to the school drop-off and pick-up areas. Pavement marking should be paired with school zone area sign assemblies. These sign assemblies can be used to notify motorists of a reduced speed limit during arrival and dismissal hours. Currently, the speed limit on Anderson Avenue is 25 MPH, but reduced limits of 20 or 15 MPH are permitted in school zones per the MUTCD. A reduced speed limit should also be considered.

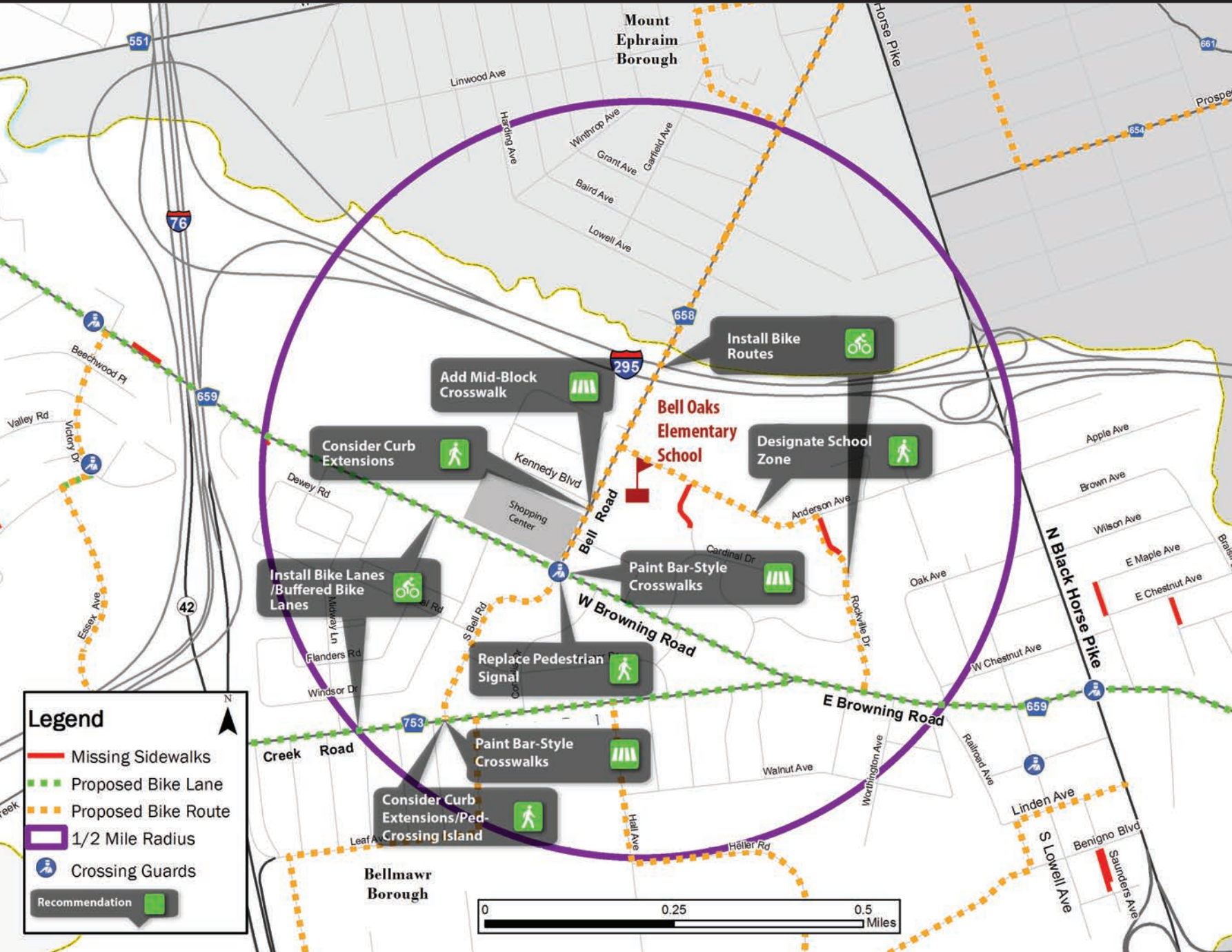


School zone pavement marking Credit: DC Department of Transportation (DDOT)



School zone sign assemblies Credit: FHWA MUTCD

MAP 9: BELL OAKS UPPER ELEMENTARY INFRASTRUCTURE RECOMMENDATIONS

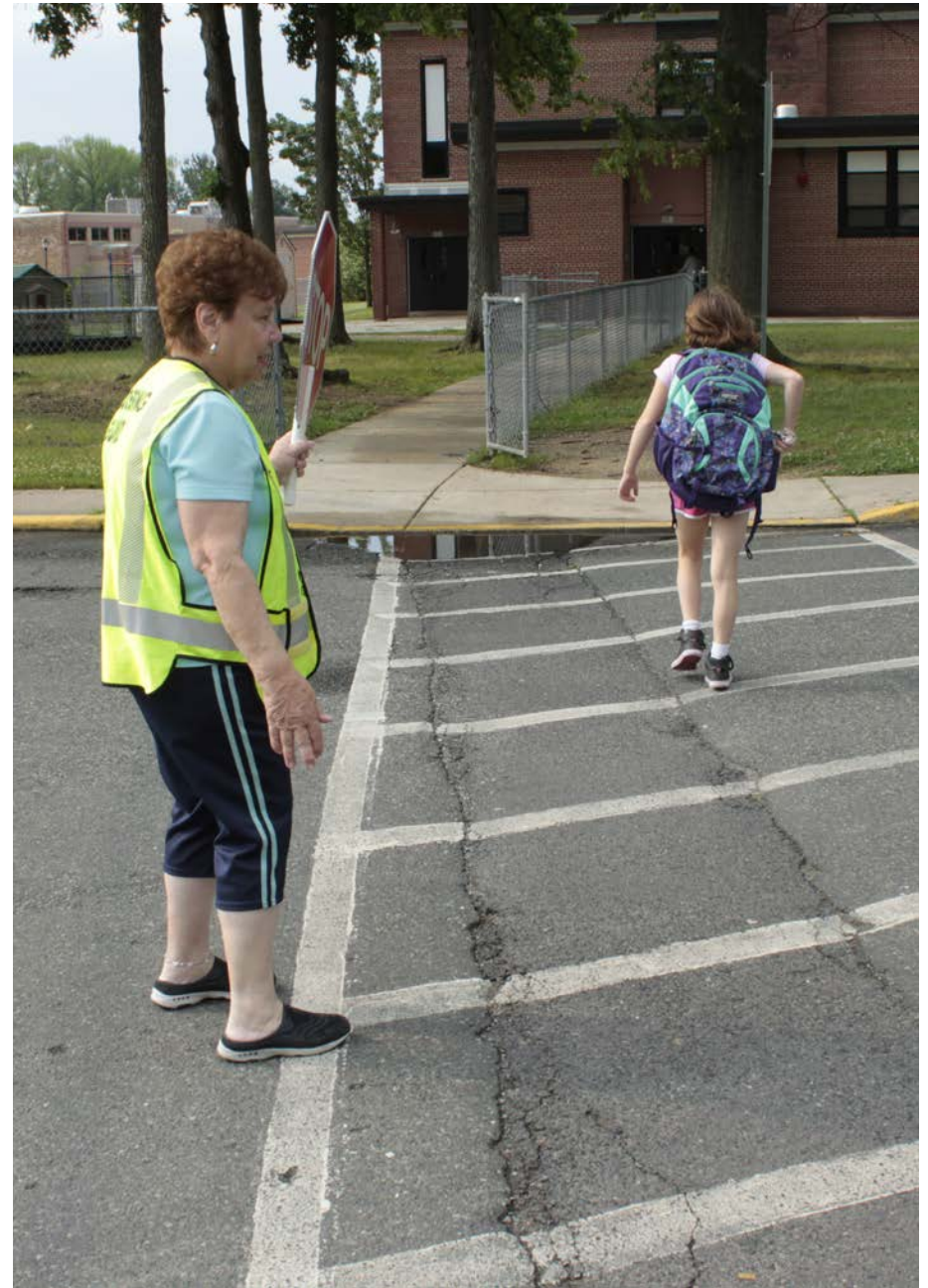


Bellmawr Park Elementary

Bellmawr Park Elementary School hosts grades pre-kindergarten through four. It is located on the west side of Bellmawr Borough. It is cut off from the rest of the Borough by I-295, I-76 and NJ 42. The school is located on Peach Road and is surrounded by Essex Avenue to the southwest and Victory Drive to the north and east. Its student entrances are located on Essex Avenue and Victory Drive. Primary corridors for students traveling to and from Bellmawr Park include Peach Road, Victory Drive, Carter Avenue and W. Browning Road.

Bellmawr Park is the largest school in the district. Its 465 students are distributed throughout the entire Borough, but a majority live nearby in the western half of the Borough. Approximately 77% of these students live within a 20 minute walk from campus and 21% live within a 10 minute walking distance. The Bellmawr Park neighborhood saw some of the more significant infrastructure and congestion concerns observed during the Bellmawr School District audit process.

Infrastructure recommendations for Bellmawr Park Elementary are shown on Map 10, found on Page 56, unless otherwise specified.



Location: Victory Drive

Issue: Missing Curb Ramps

Curb ramps are missing from a number of intersections, leaving individuals with disabilities, and parents walking with strollers, to navigate raised curb faces or walk in the street. Based on observations, this was most prevalent on Victory Drive, a common route for students residing north of Browning Road to reach school. However, this issue should be addressed in any location it occurs.

Recommendation

ADA Compliant Curb ramps, described in Chapter 3, should be installed at any intersection, or mid-block pedestrian crossing, where they do not already exist.

Location: Peach Road; Carter Avenue; Center Avenue; Princeton Avenue; and Victory Drive

Issue: Existing Curb Ramps not ADA Compliant

Many existing curb ramps along student travel corridors are not brought up to current ADA standards. This includes ramps on Peach Road, immediately in front of Bellmawr Park Elementary, and the crosswalk near Browning and Victory Drive. Many of these existing curb ramps lacked detectable warning surfaces (DWS). A large number of ramps also sloped diagonally towards the middle of the intersection, directing individuals into areas that are most prone to conflicts with motor vehicle traffic, rather than providing a shorter direct path across the street.

Recommendation

Existing curb ramps must be updated to reflect current ADA requirements, complete with detectable warning surfaces, such as the red mats fitted with truncated domes seen elsewhere in Bellmawr Borough. At intersections, two perpendicular curb ramps should be provided at each corner, whenever possible.



Missing curb ramps on Victory Dr



ADA compliant curb ramps on Lowell Ave, near E.M. Burke Elementary

Location: Victory Drive

Issue: Obstructed Sidewalks

Utility poles frequently obstruct the sidewalks located on the western side of Victory Drive. Sidewalk clearance was measured as low as 18 inches, far below the 48 inches of continuous clearance PROWAG requires to be ADA compliant. This adds another barrier, in addition to the missing curb ramps, to safe travel for pedestrians and individuals with disabilities on Victory Drive. Several parents, walking with students and their younger siblings in strollers, were observed struggling to navigate these obstructions, often having to squeeze through small gaps between the utility pole and fences located at the residential property line. According to school staff and crossing guards stationed near Bellmawr Park, this is a common occurrence.

Recommendation

The existing four feet sidewalk on the western side of Victory Drive should be widened an additional three feet or more. This widening will provide the 48 inches of continuous clearance required. Victory Drive is 30 feet wide and features few parked vehicles curbside, outside of the immediate area surrounding the school at arrival and dismissal times. According to NACTO, where on-street parking is fairly uncommon, roadways can function effectively between 24 to 28 feet wide and still accommodate street-parking on both sides. Expanding the sidewalk a few feet on the western side of the roadway should still provide adequate width to accommodate two lanes of traffic and the occasional situation where parked vehicles are on both sides of street. Narrowing the roadway is not suggested on Victory Drive south of Pine Terrace, due to high volumes of parked vehicles associated with school activities.



An obstructed sidewalk on Victory Dr



A utility pole properly located outside of the pedestrian right-of-way on Princeton Ave

Location: Carter Avenue; Center Avenue; Princeton Avenue; and Warren Avenue

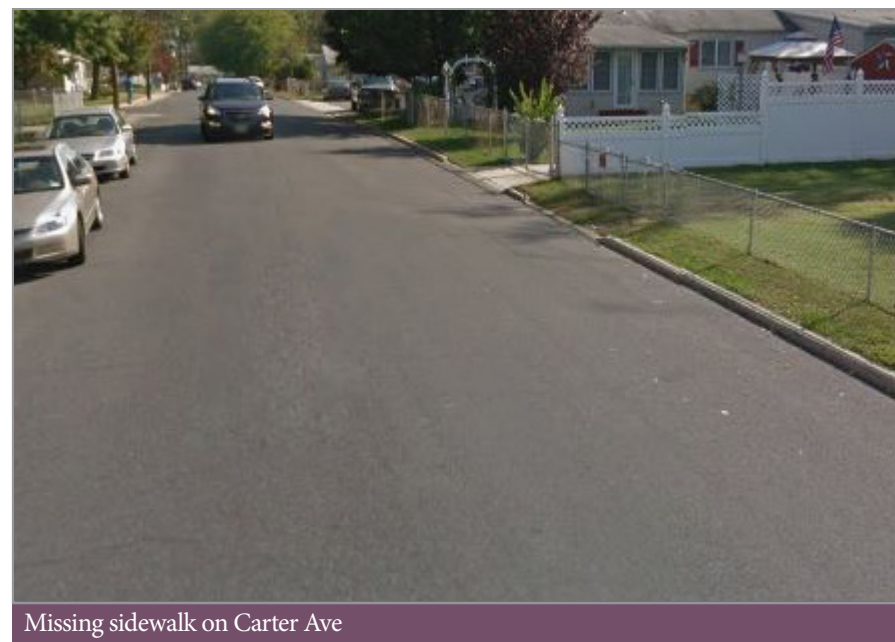
Issue: Missing Sidewalks

Center and Carter Avenues are ideally situated to act as travel corridors for a number of students traveling to and from Bellmawr Park Elementary. Center Avenue is missing sidewalks on both sides of the street between Princeton and Union Avenues. Carter Avenue is missing a sidewalk on its west-side, between Princeton Avenue and Peach Road. The intersection of Carter and Princeton Avenues was a remote drop-off point for Bellmawr Park Elementary's Walk to School Day. It will most likely be used again for similar events and could be used as a key point along a walking bus route, discussed further in Chapter 5, making a heightened level of pedestrian safety improvements appropriate.

Recommendation

In a fairly dense built out suburb, such as Bellmawr, ideally all residential streets should be equipped with sidewalks on both sides of the street. These sidewalks should be at least five feet wide, though six feet is preferred. Placing sidewalks on just one side of the street may force students to walk in the street or cross a street twice in some instances.

If providing sidewalks on both sides of the street is not feasible, a less ideal solution is to complete small sections of sidewalk to provide a continuous path to school. This treatment is detailed in Figure 1. Complete the sidewalk on the north-side (ballfields side) of Center Avenue. Use high visibility crosswalks to direct students toward the existing sidewalks on the south-side of Princeton Avenue and again to link these sidewalks to the existing sidewalks on the east-side of Carter Avenue. All crosswalks could be fitted with in-road "stop for pedestrians" signs to increase visibility.



Missing sidewalk on Carter Ave

FIGURE 1



Alternative Sidewalk Plan for Bellmawr Park Neighborhood

Location: Intersection of Browning Road and Victory Drive

Issue: Wide Crossing Distance and Dangerous Motorist Behavior

Students cross Browning Road at a mid-block location that is 40 feet curb-to-curb. They are assisted by a crossing guard. Browning Road's posted speed limit is 25 MPH, but traffic was observed traveling at speeds that appeared to be higher. Traffic volume is heavy on Browning Road. A 2015 NJDOT traffic count saw over 10,000 vehicles using the road on an average day. A typical residential street with a posted 25 MPH speed limit in Bellmawr would see less than 1,000.

Pedestrian visibility is difficult in a location with these characteristics. During arrival and dismissal observations, Cross County Connection staff witnessed a number of motorists fail to notice the crossing guard until they were standing well into the street. In some cases, vehicles would slam their brakes to avoid rear-ending the vehicle in front of them that stopped. Also, due to the width of Browning Road, there is room to create two travel lanes in each direction, when only one is designated. This can lead to illegal passing. The crossing guard reported that on a few occasions, vehicles will pull out from behind stopped traffic and illegally pass on the right, while he is walking with children in the crosswalk.

Recommendation

A traffic calming measure that shortens the crossing distance and narrows the travel lane to slow traffic should be considered at this location. Potential options include curb extensions or a pedestrian refuge island. Either treatment could be paired with a rectangular rapid flashing beacon (RRFB) to provide heightened visibility when pedestrians are crossing. Either option will require the cooperation of Camden County, since Browning Road falls under their jurisdiction. It is worth noting that during field work, construction activity near Browning and Victory Drive narrowed the roadway, much like a curb extension, and visibly slowed traffic. In the short-term, the crack in the pavement, identified on page 30, should be filled in to reduce tripping hazards.



A near miss captured at Browning and Victory Dr during fieldwork



Construction just a down Browning acts like a traffic calming device, slowing traffic

Option 1 – Curb Extensions

Curb extensions paired with a rectangular rapid flashing beacon (RRFB) is a potential solution to solve the issues present at Browning Road and Victory Drive. An extension of the curb would both narrow the travel lane to slow speeds and also prevent vehicles from illegally passing traffic stopping for pedestrians. Travel lanes could be narrowed to 10 or 11 feet, leaving 18 to 20 feet of space to work with. If bike lanes, either conventional or buffered, were to be implemented on Browning Road, curb extensions should be designed to accommodate them.

According to FHWA, curb extensions should typically be used where there is a parking lane. Parking is restricted along the north-side of Browning Road. However, Camden County has shown a willingness to provide curb extensions where parking is prohibited, such as the entrance to Collingswood High School on Collings Avenue, shown in Bell Oaks Elementary's recommendation on page 42. In the alternative, allowing on-street parking could be reconsidered.

Another design consideration for curb extensions would be the location of the exit of a parking apron provided for residential parking. Vehicles park on a paved apron, which is approximately 20 to 22 feet wide and located between the curb and sidewalk. The exit of this apron is located next to the crosswalk. This exit would most likely have to be relocated to accommodate curb extensions.

In the alternative, the parking apron could also be removed to encourage on-street parking. On-street parking slows traffic by narrowing the roadway. When Browning Road transitions from on-street to apron parking, it widens significantly, creating the appearance of a street that allows higher speeds. If parking is moved to the street, the apron could be re-purposed. Its width provides ample opportunity to accommodate wider sidewalks and a large landscaped buffer with street trees to provide a more comfortable pedestrian environment. Existing driveways appear to be spaced far enough apart, where they can still be accommodated and built into the design.



Curb extension paired with a RRFB

Credit: City of Kenmore, WA



The wide parking apron located near Browning and Victory Dr

Option 2 – Pedestrian Crossing Island

If curb extensions are not feasible, then a pedestrian crossing island could be used to narrow travel lanes and divide the Browning Road crossing into two smaller sections. The crossing island would have to be incorporated into a raised curbed median. According to FHWA, pedestrian crossing islands have been shown to both lower vehicle speeds and improve pedestrian visibility at signalized crossing locations. As with curb extension, there is approximately 18 to 20 feet of space to work within to accommodate the crossing island and provide a bikeway. Haddon Avenue in Collingswood provides an example of Camden County incorporating a pedestrian refuge island into a raised median.

Option 3 – Pedestrian Crossing Island and Curb Extensions

Camden County has shown a willingness to provide more than one traffic calming measure where it is needed. Ellis Street in Haddonfield provides an example where curb extensions are paired with a raised median to slow traffic and narrow pedestrian crossing distance. Perhaps Camden County would be willing to consider taking a similar approach on Browning Road.



Pedestrian crossing island on Haddon Ave in Collingswood



Curb extensions paired with a median on Ellis St in Haddonfield

Credit: Google

Location: Victory Drive and Essex Avenue

Issue: Lack of Bikeways

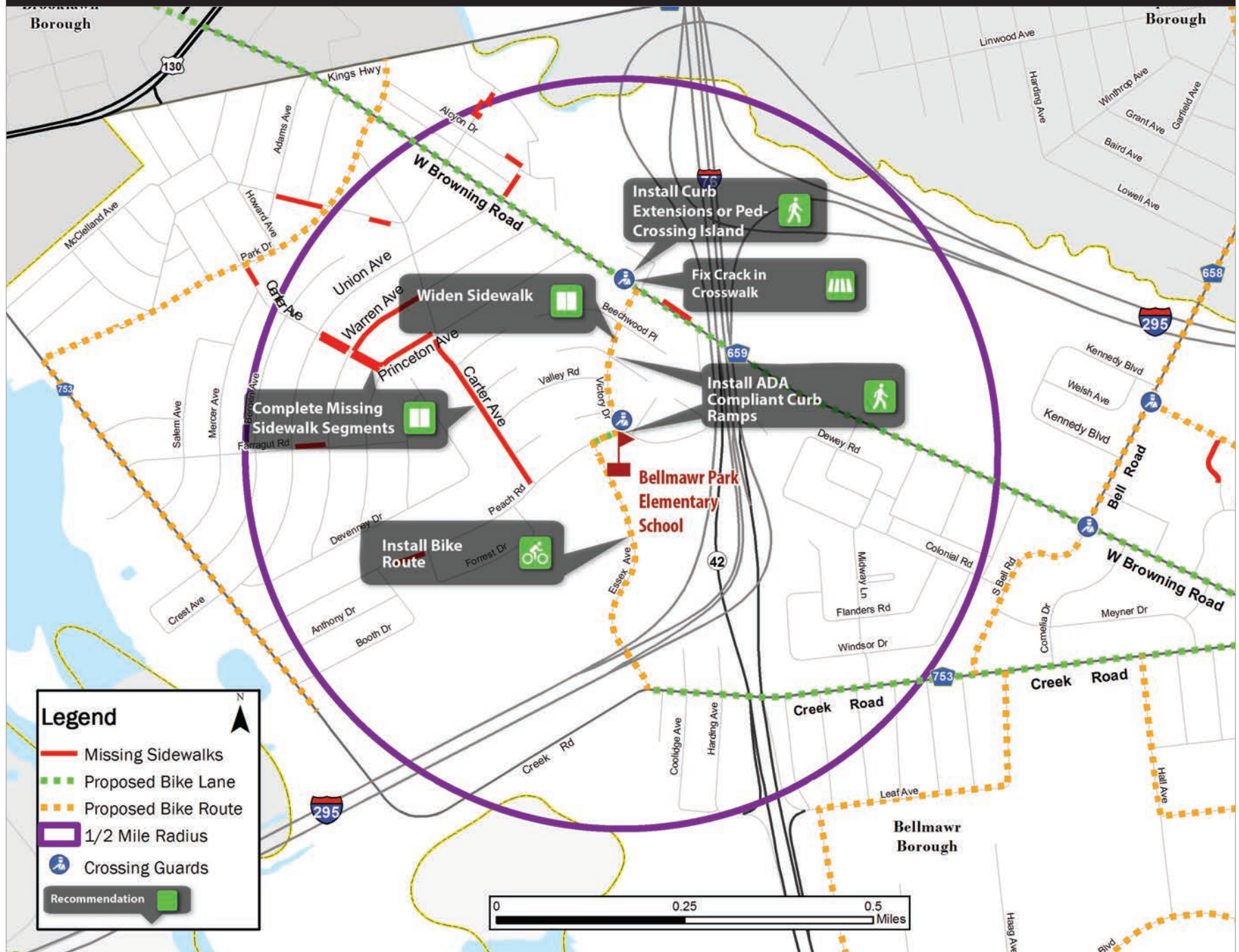
Bellmawr Borough lacks dedicated bikeways. The Camden County Bicycling and Multi-Use Trails Plan proposed a bike route on Victory Drive and Essex Avenue. Few students bike to Bellmawr Park, but a bike route may encourage more bicycling, while also benefiting the older Bell Oaks students that live near Bellmawr Park and bike to school.

Recommendation

Bellmawr Borough should consider constructing a bike route on Victory Drive and Essex Avenue, where sharrows pavement markings and signage are used to increase bicyclists' visibility.



MAP 10: BELLMAWR PARK ELEMENTARY INFRASTRUCTURE RECOMMENDATIONS



Ethel M. Burke Elementary

Ethel M. Burke Elementary School hosts grades kindergarten through four. It is located on the east-side of Bellmawr Borough. The school is located along the Black Horse Pike. It is bordered by Walnut Avenue to the north, Lowell Avenue to the west and Linden Avenue to the south. The student entrances are located along Lowell and Linden Avenues. Primary corridors for students traveling to and from E.M. Burke include W Browning Road, E Browning Road, the Black Horse Pike, Lowell Avenue and Linden Avenue.

Burke is the smallest school in the district, with 286 students. Approximately 88% of these students live within a 20 minute walk from campus and 43% live within a 10 minute walking distance. Ethel M. Burke has had success with encouraging students to walk to school. They also revamped their arrival and dismissal procedures within the last few years. This has led to less congestion around the school and reduced stress for both parents and staff. Crossing the Black Horse Pike and Browning Road was often cited as a reason parents were concerned with letting their child walk to school and presents a significant limiting factor for students living to the east of the school.

Infrastructure recommendations for Ethel M. Burke Elementary are shown on Map 11, found on Page 61.



Location: Intersection of the Black Horse Pike and Browning Road

Issue: Faded Crosswalks at the Intersection of the Black Horse Pike

Crosswalks at the intersection of the Black Horse Pike and Browning Road were beginning to wear down and fade. The existing crosswalks are also standard two line crosswalks, which can be difficult for motorists to discern in such a busy intersection. The Black Horse Pike is a major road, providing access to I-295 and the NJ Turnpike. It also acts as Bellmawr's primary commercial corridor, handling traffic visiting local businesses. Traffic volumes are in excess of 25,000 vehicles per day. Crosswalks are a vital to improving the visibility of pedestrians crossing the Black Horse Pike.

Recommendation

Replace the standard two line crosswalks with high visibility bar style crosswalks. Adding a high visibility crosswalk, will provide additional white surface that may take longer to wear down. In addition, continental crosswalks, can be designed so the painted bars fall outside of the tread-path of through traffic, potentially further improving their durability. As mentioned in Chapter 3, the NJDOT School Zone Design Guide exclusively recommends the installation of bar style crosswalks (also known as piano key or continental type) due to their high visibility and durability in crossing areas near schools. Any improvements will have to be coordinated with NJDOT, who has jurisdiction over the roadway.



A standard crosswalk begins to wear down on the Black Horse Pike



A high visibility continental crosswalk

Credit: NACTO

Location: Intersection of Browning Road and Lowell Avenue

Issue: Lack of Crosswalks across Browning Road

As reported in Chapter 3, the lack of designated crossings across major roadways is an issue found throughout Bellmawr. During observations, the intersection of Browning Road and Lowell Avenue was mentioned as a location where students cross outside of a crosswalk. This is to be expected because Lowell Avenue is a primary access point to the E.M. Burke's student entrances. The nearest crosswalk across Browning Road is over 500 feet to the east at the Black Horse Pike. The nearest crosswalk to the west is over a half-mile away at Bell Road.

Recommendation

High visibility crosswalks should be considered for installation across Browning Road at its intersection with Lowell Avenue. There is a slight bend in the roadway that could impact the location of a crosswalk and pedestrian visibility. Flashing beacons could be placed in advance of the crosswalk to notify drivers that a school crossing is approaching. An example can be found on Bell Road, near Bell Oaks Elementary. An RRFB may also be effective type of beacon if a high level of pedestrian activity is expected. Any improvements will have to be coordinated with Camden County, who has jurisdiction over the roadway. Due to the age of E.M. Burke students, any student crossing location along Browning Road may require adding an additional crossing guard.



No crossing provided at Browning and Lowell Ave



A continental crosswalk and a flashing beacon on Bell Road near Bell Oaks School

Location: Linden Avenue

Issue: Lack of Bikeways

The Camden County Bicycling and Multi-Use Trails Plan proposed a bike route on Linden Avenue. No students were observed biking to E.M. Burke, but a bike route may encourage more bicycling, while also benefiting Bell Oaks students that bike to school from this area.

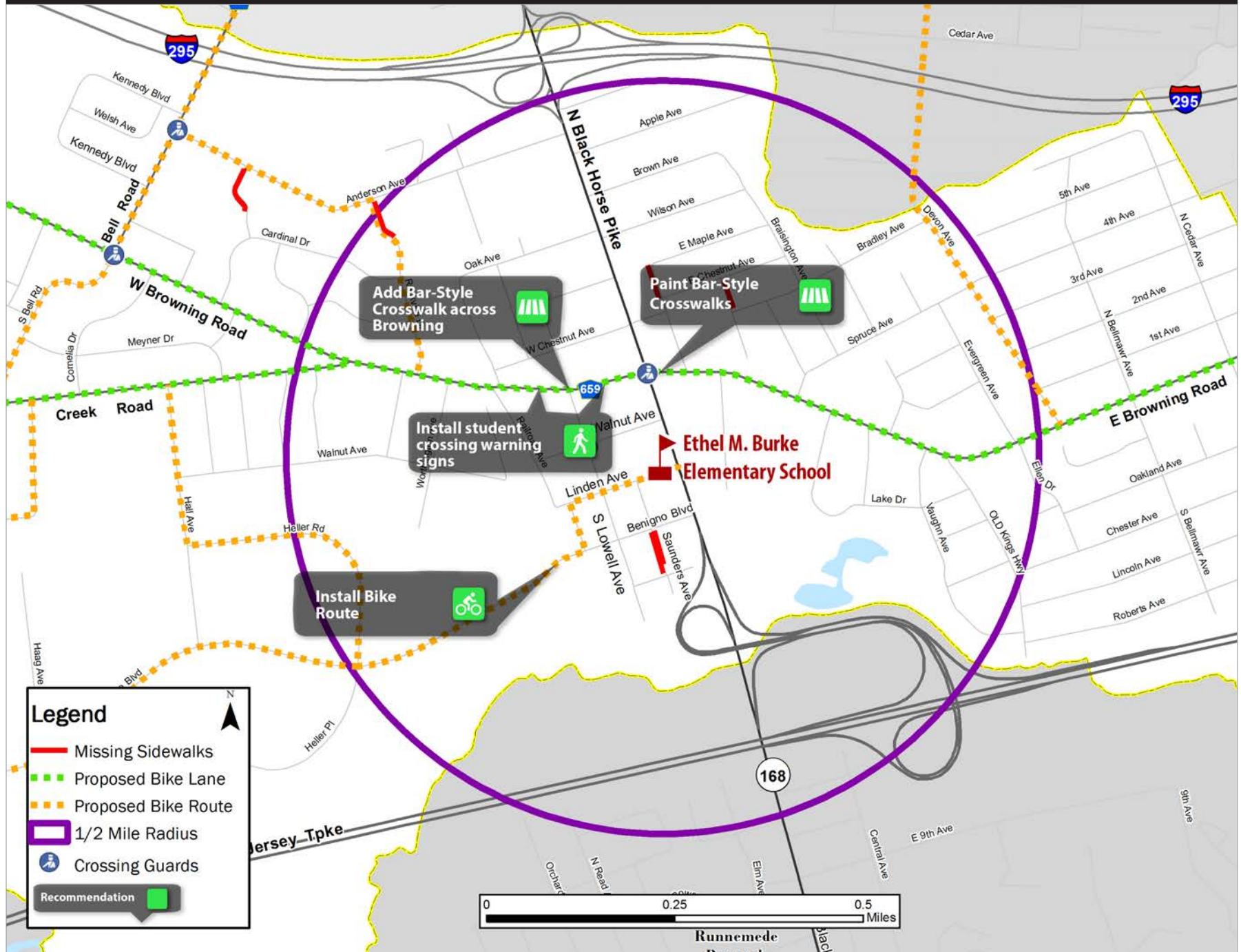
Recommendation

Bellmawr Borough should consider constructing a bike route on Linden Avenue, where sharrows pavement markings and signage are used to increase bicyclists' visibility.



A bike route designated with sharrows and signage

MAP 11: ETHEL M. BURKE ELEMENTARY INFRASTRUCTURE RECOMMENDATIONS



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5 NON-INFRASTRUCTURE RECOMMENDATIONS

The following are the recommended non-infrastructure actions suggested to achieve the goals of the Bellmawr District Travel Plan by addressing the remaining 4 E's of Safe Routes to School: Education, Encouragement, Enforcement, and Evaluation. The 5th E, Engineering has been discussed in detail in Chapters 3 and 4. When necessary, these actions should be developed to accommodate the needs of students who are unable to regularly walk or bike to school. These include students with disabilities and the more than 175 students enrolled in the District's CARE before- and after-school program.

Additional programs and policies that fall outside the typical SRTS program will also be discussed. These include an anti-idling program and staggered arrival and dismissal times.

Education

Education efforts are an important component in developing a sustainable Safe Routes to School Program and to relieve pedestrian and bicycle travel issues. These actions can help change a community's perception of how children should travel to and from school safely. They will also ensure that children receive proper instruction on walking and bicycling while raising community awareness of the benefits of walking and biking.

Table 11 details the recommended Education Actions. The Bellmawr School District has conducted many of these, hosting multiple walk to school events and pedestrian safety presentations.



Table 11: SRTS Education Actions

Education Actions	Responsibility	Time Frame
Creation and distribution of educational materials to students, parents/guardians and community members	Bellmawr School District/ Cross County Connection TMA/ NJSRTS Program	Ongoing
In-class education on safe walking practices, along with health and environmental benefits	Bellmawr School District /Cross County Connection TMA/ The Brain Injury Alliance of New Jersey	Annually
Poster Contest	Bellmawr School District	Annually
Inclusion of SRTS elements in Teacher and Student Handbooks	Bellmawr School District	Annually
Participate in New Jersey's SRTS Webinar Program	Bellmawr School District	Ongoing

Cross County Connection and the Alan M. Voorhees Transportation Center will provide safety education and outreach materials for distribution to students, parents and school staff. These materials may be circulated at parent-teacher meetings, school walking events, in-class, or included with municipal information. Pedestrian and bicycling safety education should also be addressed at parent-teacher meetings as well as safe driving habits. Inclusion of parents in educational programming is a good way to reinforce safety education at home.

Pedestrian Safety Presentation by Cross County Connection

Students in third and fourth grades are taught the do's and don'ts of properly crossing a street using a mock streetscape including a road and crosswalk. Students are taught sign recognition and other important pedestrian skills to use when walking to and from school.

Through active participation, students will learn about the benefits of walking, ways to avoid potential hazards while walking, how to properly understand and obey pedestrian signals, cross roadways safely, and understand traffic flow. Many schools in southern New Jersey use the Pedestrian Safety Program as a building block for their SRTS programs.

Bellmawr School District should continue to take advantage of Cross County Connection's 3rd-4th Grade Pedestrian Safety Program on an annual basis. Additional information about the Pedestrian Safety Program is available on Cross County Connection TMA's website: (<http://driveless.com/TransportationPlanning/SafeRoutes.html>).

To supplement Cross County Connection's 3rd-4th Grade Pedestrian Safety Program, it would be beneficial to the health and well-being of students from Bellmawr School District to also take advantage of other programs available to schools, which teach children safe bicycling and walking, such as the Brain Injury Alliance of New Jersey (<http://bianj.org/>).

Poster Contest by Cross County Connection

The Poster Contest is held after conducting the Pedestrian Safety Presentation. The purpose of the contest is to reinforce the safety lessons taught to 3rd and 4th grade students that participated in the Pedestrian Safety Program.

Encouragement

Encouragement actions promote walking and biking to school through programs such as walking school buses, satellite walking events, a Golden Sneaker Award, and other activities that generate excitement about walking and biking. These programs are essential to building the momentum necessary to significantly change school travel habits. Bellmawr School District should hold a walk to school event at least once a month to encourage more students to walk and bike to school.

Bellmawr School District has coordinated walk to school events through

their SRTS Program in the past and should continue conducting walk to school events within the Borough to encourage students and parents to walk and bike to school more. Bellmawr School District should consider holding a Bike Rodeo for children within the community to help teach the fundamentals of safe bicycling to and from school and also within the community this spring. Some of the programs and events that could be held include the following list in Table 12.

Below are events and presentations Bellmawr School District has conducted in the past and events that they should conduct to further their Safe Routes to School program.

Table 12: SRTS Encouragement Actions

Encouragement Actions	Responsibility	Time Frame
Walk to School Event	Bellmawr School District	Monthly
Participation in International Walk to School Day	Bellmawr School District	Annually in October
Participation in International Bike to School Day	Bellmawr School District	Annually in May
Walking School Bus (WSB) Pilot Program	Bellmawr School District/ Cross County Connection TMA	Began in Fall 2016; continue
Bicycle Rodeo	Bellmawr School District/ Cross County Connection TMA	Annually in Spring

Walk and Bike to School Days

To further promote walking and bicycling, Bellmawr School District should continue to participate in International Walk to School Day and International Bike to School Day, which are held in the months of October and May, respectively. Bell Oaks, Bellmawr Park and E.M. Burke all held Walk to School Days in October 2017. School events may be registered

on-line by visiting www.walkbiketoschool.org. Bellmawr School District should hold a walk to school event in April which is New Jersey's Walk and Bike to School Month to continue their program. International Walk to School Day in October can act as the official annual kick off to the schools' SRTS Programs.

Walk to School Day could be inclusive by offering earlier and later times for students enrolled in before- and after-school programs or walking students to the designated drop-off and pick-up points so they can walk with their classmates. Special education professionals should be included in the planning of these events as well to ensure the needs of students with disabilities are accommodated.

Walking School Bus

A walking school bus is a group of children walking to school along a fixed route with one or more adults. It is suggested that Bellmawr School District develop a pilot program during the school year. By doing so, younger students will be given the opportunity to learn about safe pedestrian practices, while familiarizing themselves with their neighborhoods. Walking school buses provide an opportunity for parents to get to know one another and alleviate some concerns about their child walking to school unsupervised. This type of program could be very effective in Bellmawr, where many students live within a short walking distance to school, but parents are apprehensive about letting their children walk, due to unsafe traffic conditions or concerns about strangers in the neighborhood.

When setting up a walking school bus, organizers should be mindful that not all parents can participate as chaperons due to scheduling conflicts. Those parents should be included in planning routes to allow opportunities to provide input and meet other parents who may act as chaperons. In addition, working parents with students enrolled in before- and after-school programs should be consulted to gauge interest in forming a walking school bus route for hours outside of typical arrival

and dismissal. With rotating volunteer schedules, a parent may be able to set aside some time to walk with their child and supervise other children with working parents. As with Walk and Bike to School Days, special education professionals should be included in the planning of these events as well to ensure the needs of students with disabilities are accommodated.

Satellite Student Drop-off and Pick-up Locations

A common component of Walk to School Days and walking school buses is a satellite drop-off point. Satellite drop-off points were utilized by Bellmawr Elementary school during their previous Walk to School Day events. These satellite locations can be utilized outside the narrow context of Walk to School Days as an effective means to reduce congestion around the school building on their own, while allowing any student the opportunity to walk regularly, even if for just a short distance.

Bellmawr Park Elementary and Bell Oaks Upper Elementary have reported significant congestion issues during student arrival and dismissal times. This congestion is due to the size of the student body, the high rate of students being driven to school and the limited space around the school building to accommodate traffic. While every effort should be made to encourage more students to regularly walk and bike to school as a means to reduce congestion, for some students this will be impossible. These students could be dropped off at satellite locations a few blocks from the school building as a means to relieve congestion.

Both Bellmawr Park and Bell Oaks should consider a pilot program where a single location is selected to test a satellite drop-off and pick-up program's success. These locations take advantage of existing crossing guards and the suggested infrastructure improvements included in Chapter 4. A potential satellite location for Bellmawr Park, shown in Figure 2, is the parking lot for the vacant Annunciation Catholic School. A potential Bell Oaks satellite location is the shopping center parking lot, shown in Figure 3. Many students were observed using the Fulton



Potential Bellmawr Park Elementary Satellite Student Drop-Off /Pick-Up Location



Potential Bell Oaks Upper Elementary Satellite Student Drop-Off /Pick-Up Location

Bank lot, located at the intersection of Browning and Bell Roads, as a pick-up point during observations. Making this an official policy would require approval from the property owner.

Participation in the satellite drop-off and pick-up program could be assigned or voluntary. Parents may appreciate the option to avoid congestion around the school and relieve some stress associated with their work commute. These locations should be employed both during arrival and dismissal to be most effective. Staff or volunteers would be required to walk the students to these locations. If the program is successful it can be expanded to additional sites, including additional sites used during Walk to School Day.

Bicycle Rodeo

Cross County Connection can assist the school in the planning of a bicycle rodeo on school grounds. Bicycle rodeos are used to teach a large group of schoolchildren safe bicycling practices, such as how to fit a helmet, signal for turns, and come to quick stops.

Golden Sneaker Award

A Golden Sneaker Award Program is an incentivized contest that can be run in various ways. Some schools tally each student that walks or bikes to school daily and at the end of each month the homeroom with the most walking/bicycling students will earn the “Golden Sneaker.” A Golden Sneaker Award can be created by spray painting an old running shoe gold and mounting it on top of a trophy stand. Incentive programs are a good way to keep the momentum going with SRTS programs.

Enforcement

Enforcement of safe and lawful travel behavior around schools, on all travel corridors and throughout the Borough is important to ensuring a safe walking environment for children. Table 13 shows enforcement actions that can be conducted to increase pedestrian and bicycle safety

around the school.

Table 13: Enforcement Actions

Enforcement Actions	Responsibility	Time Frame
Speed Enforcement	Bellmawr Borough Police	Targeted + Ongoing
Pedestrian decoy program to enforce motorists stopping for pedestrians in crosswalks	Bellmawr Borough Police	Targeted + Ongoing
Jay-walking midblock	Bellmawr Borough Police	Ongoing
Parking Enforcement	Bellmawr Borough Police	Ongoing
Clear debris from sidewalks and obstructed road signs	Bellmawr Borough Public Works; and property owners once educated on need	Ongoing

Evaluation

Determining participation in walking and bicycling programs and identifying parent concerns are an important part of the SRTS program. Evaluating these factors allows school staff to determine the success of their SRTS activities and how they might prioritize and modify their efforts to encourage more children to walk and bike to school. Table 14, on the next page, shows evaluation actions that will help Bellmawr School District to assess the success of their Safe Routes to School program and determine if changes are needed.

Table 14: Evaluation Actions

Evaluation Actions	Responsibility	Time Frame
Student Travel Tally	Bellmawr School District	Quarterly during school year
Parent Survey	Bellmawr School District/ Cross County Connection TMA/ Voorhees Transportation Center	Beginning of every school year

Bellmawr School District conducted student travel tallies in the fall of 2016. Student travel tallies are held in-class by school staff to determine how children arrived at school that day. Tallies should be held at regular intervals to determine the impact of SRTS activities in student travel choices (usually held week long to gain accurate data). Tallies should also be compared quarterly to measure success. Parent surveys may be sent home with children or distributed to parents electronically to determine parent attitudes and concerns about children walking or biking to school.

Additional Programs and Policies

Some programs and policies not typical to SRTS travel plans are included to address some significant issues present at Bellmawr schools related to motor vehicle congestion, air quality and student respiratory health.

Anti-Idling

Poor air quality can negatively effect the health of students and staff. Due to traffic volumes during student arrival and dismissal and Bellmawr's location within a major regional travel corridor, Bellmawr Borough and School District are encouraged to partner to establish a compressive anti-idling program at all of its schools. An anti-idling program is distinct from SRTS programming, but involves many of the same key elements of education, enforcement and encouragement.

Safe Routes to School Students Arrival and Departure Tally Sheet											
+ CAPITAL LETTERS ONLY – BLUE OR BLACK INK ONLY +											
School Name: <u>Petitt Oaks</u>						Teacher's First Name: <u></u>			Teacher's Last Name: <u></u>		
Grade: (PK,K,1,2,3,...) <u>02</u>						Monday's Date (Week count was conducted) <u>01 23 2017</u>			Number of Students Enrolled in Class: <u>09</u>		
<p>• Please conduct these counts on two of the following three days Tuesday, Wednesday, or Thursday. (Three days would provide better data if counted)</p> <p>• Please do not conduct these counts on Mondays or Fridays.</p> <p>• Before asking your students to raise their hands, please read through all possible answer choices so they will know their choices. Each Student may only answer once.</p> <p>• Ask your students as a group the question "How did you arrive at school today?"</p> <p>• Then, reread each answer choice and record the number of students that raised their hands for each. Place just one character or number in each box.</p> <p>• Follow the same procedure for the question "How do you plan to leave for home after school?"</p> <p>• You can conduct the counts once per day but during the count please ask students both the school arrival and departure questions.</p> <p>• Please conduct this count regardless of weather conditions (i.e., ask these questions on rainy days, too).</p>											
<p>Step 1. Fill in the weather conditions and number of students in each class</p> <p>Step 2. AM – "How did you arrive at school today?" Record the number of hands for each answer. PM – "How do you plan to leave for home after school?" Record the number of hands for each answer.</p>											
Key	Weather	Student Tally	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other		
	S= sunny R= rainy O= overcast SN=snow	Number in class when count made				Only with Children from your family	Riding with children from other families	City bus, subway, etc.	Skate-board, scooter, etc.		
Sample AM	S H	2 0	2	3	8	3		3	1		
Sample PM	R	1 9	3	3	8	1	2	2			
Tues. AM	R	09	01			05	03				
Tues. PM	R	09				04	05				
Wed. AM	S	09	01			05	03				
Wed. PM	S	09	01			04	04				
Thurs. AM	R	09	01			05	03				
Thurs. PM	S	09				05	04				
Please list any disruptions to these counts or any unusual travel conditions to/from the school on the days of the tally.											
+ +											

In-class student travel tally form

It is estimated that each school has between 200 and 300 vehicles dropping off and picking up students at each Bellmawr elementary school during each arrival and dismissal period. Many of these cars were observed idling, especially when parents waited for students to be dismissed. New Jersey state law prohibits vehicles from idling more than three minutes.

Idling vehicles at Bellmawr schools contribute additional harmful emissions on top of the estimated 800 pounds of carbon monoxide generated by school based car trips. According to the New Jersey Department of Environmental Protection (NJDEP), an idling vehicle emits 20 times more pollution than when it is traveling at 30 MPH. This is especially problematic in areas around schools. Children breathe up to 50% more air per pound of body weight than adults. This makes them especially vulnerable to the negative health issues caused by poor air quality, such as asthma.

Setting up an anti-idling program is inexpensive and requires just a few steps. Cross County Connection can assist the Borough and School District with setting up a program. Many of the resources required can be found at <http://www.nj.gov/dep/stophthesoot>. The most important steps to set up a program are:

1. Pass an anti-idling resolution. A resolution will describe the harm idling vehicles can cause and the reasons limiting this activity is important for the health of the community. A sample resolution can be found at <http://www.nj.gov/dep/stophthesoot/Model%20Idling%20Resolution%206-08.pdf>
2. Create an enforcement plan that maps the specific locations where an anti-idling program will be carried out. This plan could provide instruction to local police explaining what the law is, how to enforce it, and why it is important to enforce it.
3. Post anti-idling signs in locations around schools. Signs are available on NJDEP's website at a cost of \$14.50 per sign.

MODEL RESOLUTION

No Idling Resolution for Municipalities in New Jersey

WHEREAS, emissions from gasoline and diesel-powered vehicles contribute significantly to air pollution, including greenhouse gases, ozone formation, fine particulates; and

WHEREAS, numerous scientific studies have found links between exposure to fine particles and health effects including premature death, and increased incidents of asthma, allergies, and other breathing disorders; and

WHEREAS, the United States Environmental Protection Agency has classified diesel exhaust as likely to be carcinogenic to humans; and

WHEREAS, vehicle idling occurs in locations (e.g. school grounds, parking lots, distribution centers, strip malls, construction sites, business centers, etc.) where New Jerseyans can be exposed to concentrated sources of air pollutant emissions; and

WHEREAS, asthma is a significant public health concern in New Jersey, especially among children (up to 25% of New Jersey's school-age children are asthmatic) and the elderly; and

WHEREAS, the reduction of fine-particle emissions from diesel engines could also prevent 16,000 new asthma cases annually and save \$770 million to \$10 billion in health care and related costs in the State; and

WHEREAS, for every gallon of gasoline used, the average car produces about 20 pounds of carbon dioxide (CO₂), the largest contributor to greenhouse climate change, with one-third of greenhouse gas emissions coming from the transportation sector; and

WHEREAS, petroleum-based gasoline and diesel fuel are nonrenewable fuels and should be used wisely and not wasted; and

WHEREAS, idling is not generally beneficial to a vehicle's engine because it wears engine parts; and

WHEREAS, idling more than 10 seconds uses more fuel and emits more pollutants than turning an engine off and on again; and

WHEREAS, current state law prohibits the idling of vehicles for more than three minutes and studies have shown that an anti-idling policy will save fuel, prolong engine life, and improve air quality.

An anti-idling resolution

Credit: NJDEP

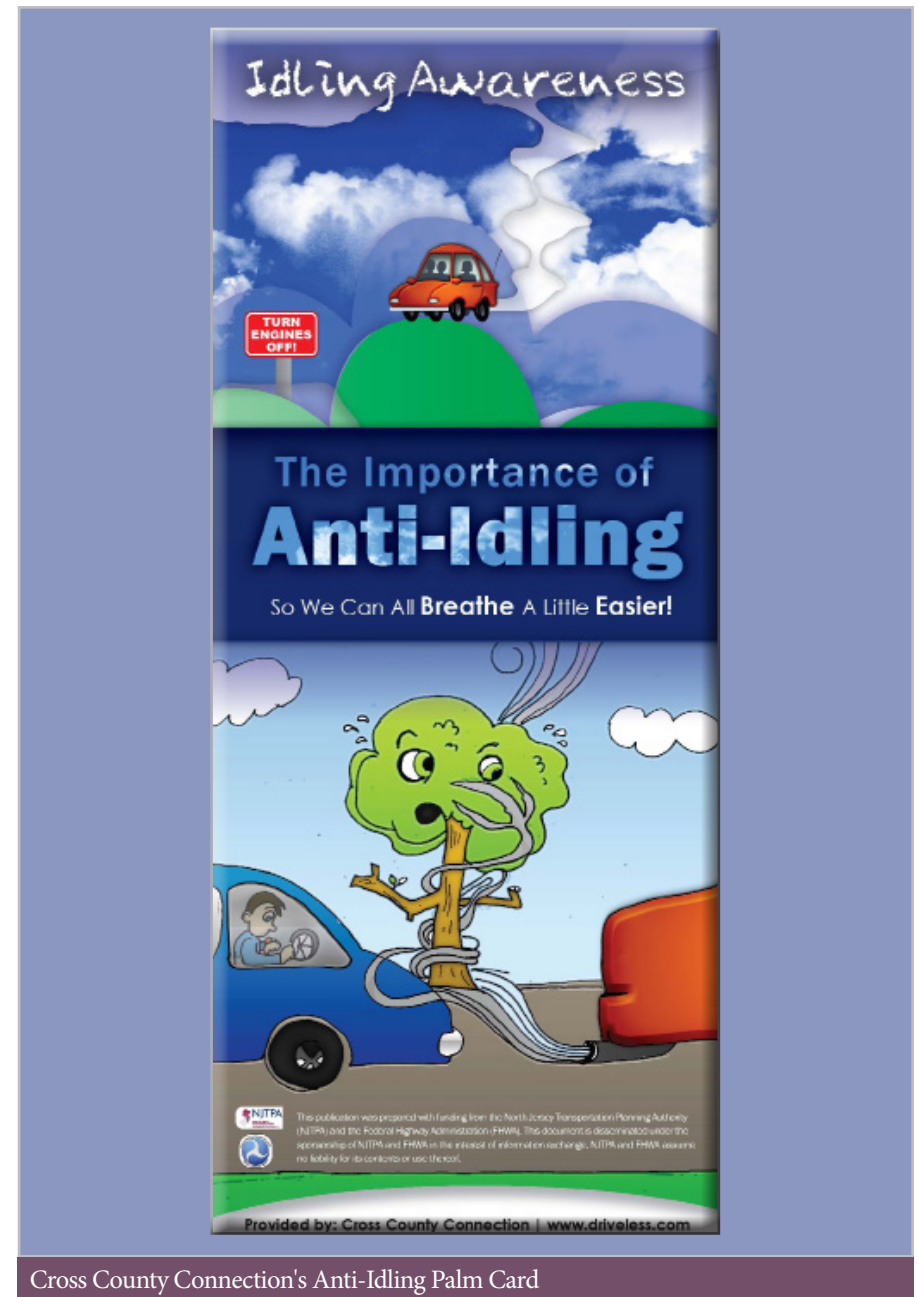
4. Create an education program that informs students and parents why an anti-idling program is beneficial. Materials should demonstrate the harmful effects of idling, which may appear harmless, but negatively impacts their children's health. The program could entail distributing Cross County Connection's Anti-Idling Palm Card and activities that involve the students, such as an anti-idling awareness poster contest.

In addition, Bellmawr Borough participates in the Sustainable Jersey Program. Creating an anti-idling program receives 10 points on Sustainable Jersey Certification applications.

Staggered Arrival and Dismissal Times

E.M. Burke Elementary has had success employing a staggered arrival time policy. Arrival times are staggered over a 15 minute period by grade. Grades three and four arrive at 8:20 AM. Grades one and two arrive five minutes later at 8:25. Kindergarten students arrive last at 8:30. The school day begins at 8:35. Students are asked to read as they wait for the school day to begin. Students are given credit towards a reading program for cooperating during this time, providing an incentive to arrive to the school at their designated time.

Similar program should be explored at Bellmawr Park Elementary and Bell Oaks Upper Elementary. Due to the size of the student population, a similar policy may have to be employed at Bellmawr Park and Bell Oaks during dismissal as well. E.M. Burke has had no issues dismissing all students at 3:00 PM, but they have a much smaller student population and are located in an area with a well connected street grid that is capable of quickly diffusing traffic congestion. Areas around the other two schools are more constrained.



6 CONCLUSION

Bellmawr School District is committed to increasing the number of children walking and biking to school through its participation in the Safe Routes to School program. The school district's current SRTS program addresses student's walking safety through education and encouragement activities. The district has sought to build upon this foundation and encourage more students to walk and bike to school. To that end, they have partnered with Cross County Connection to develop the Bellmawr School District Travel Plan. This travel plan addresses existing and potential pedestrian and bicycle safety issues. It also provides guidance on methods to expand upon the school district's current programs and policies related to student bicycling and walking. The goal is to improve the physical and environmental health of Bellmawr's students and the community as a whole.

Next Steps

Implementation of the Bellmawr School District Travel Plan and the sustained success of any effort to increase walking and bicycling to school will require a continued partnership among local and regional organizations. Infrastructure improvements must be employed alongside hands-on education and encouragement programs to maintain and improve momentum towards achieving the goals set forth by the SRTS Team. The following entities should undertake the actions listed below.

Bellmawr Borough:

- Partner with Camden County to address the safety issues identified



on county roads, including Browning Road, Creek Road and Bell Road.

- Partner with Camden County and NJDOT to address the safety issues identified on the Black Horse Pike.
- Pursue SRTS Infrastructure grants and other grants administered by NJDOT and the Delaware Valley Regional Planning Commission (DVRPC) to implement recommendations identified in Chapter 4, such as repainting crosswalks, installing additional high-visibility continental crosswalks, pedestrian signage, installing sidewalks where feasible to do so, and other pedestrian and bicycle safety improvements.
- Continue enforcement efforts and consider participating in the pedestrian safety decoy program to increase compliance with New Jersey's "Stop and Stay Stopped" law.

Bellmawr School District:

- Work with Cross County Connection to continue administering pedestrian and bicycle safety education and encouragement activities.
- Work with Cross County Connection and the Voorhees Transportation Center to continue evaluation efforts, such as conducting student travel tallies and parent surveys, in order to modify the SRTS program, where necessary.

Through continued partnerships, the expertise of the various partners will create a strong Safe Routes to School program that will ultimately improve walking and bicycle safety for the students and the community.

Funding Resources

Implementation of engineering improvements can be expensive. Fortunately, there are funding programs at the state and federal level dedicated to assisting with the implementation of projects that would improve the safety of Bellmawr School District students walking and bicycling to school. These funding programs are competitive, have

deadlines and the application process requires time to complete. The programs listed below receive far more funding requests than can be obligated. Cross County Connection is available to provide guidance on appropriate funding sources and assistance with preparing grant applications.

The funding programs listed below are provided as a general guide, and are not an exhaustive list of available funding sources. For more information on a specific program, please contact the granting agency or refer to the grant program guidelines found on the program websites as programs can change frequently.

SAFE ROUTES TO SCHOOL (SRTS) INFRASTRUCTURE PROGRAM

Federal funding is available for SRTS projects that improve the safety of children walking or biking to school. The program is administered through NJDOT. Eligible projects may include the design, construction or installation of sidewalks, crosswalks, signals, traffic-calming and bicycle facilities within two miles of an elementary or middle school (K-8). Local and regional governments, school districts and individual schools are eligible to apply and receive direct funding.

SURFACE TRANSPORTATION PROGRAM (STP) SET-ASIDE

This federal funding is set aside to foster more livable communities and promote alternative modes of transportation such as biking and walking. Eligible activities include bikeway construction, acquisition of right-of-way for bikeways and many other projects. Activities funded by the Surface Transportation Program (STP) Set-aside were previously funded by the Transportation Alternatives Program (TAP) and the Transportation Enhancements (TE) Program in previous federal transportation bills. A key feature of the STP Set-aside Program in the current federal transportation bill (FAST Act) is the funding eligibility for projects dedicated to the design and construction of infrastructure projects that provide "safe routes for non-drivers" which includes children, seniors and disabled persons. While NJDOT has historically provided the 20%

match required under federal transportation legislation, their level of participation is not guaranteed. Eligible project sponsors for STP set-aside funds include local and regional governments, transit agencies, school districts and individual schools.

MUNICIPAL AID PROGRAM

Municipal Aid is a state-funded program administered by NJDOT for roadway and bridge improvements, which may include the installation of bicycle and pedestrian facilities. Each county is appropriated funds for their constituent municipalities based on a formula. Municipalities must submit applications detailing a potential project to their local NJDOT District Office.

School districts and individual schools are not eligible to apply for these funds directly, but they should encourage their municipal government to apply for these funds and direct them towards improving the bicycle and pedestrian safety around their schools.

For more information regarding these three funding programs contact:

New Jersey Department of Transportation (NJDOT)
District Manager, NJDOT
1 Executive Campus
Route 70 West, 3rd Floor Cherry Hill, NJ 08002
Phone: 856-486-6618
Fax: 856-486-6771
Website: www.state.nj.us/transportation/business/localaid/

SUSTAINABLE JERSEY PROGRAM

The Sustainable Jersey program identifies resources to help municipalities and/or schools develop a comprehensive sustainable community program. This includes financial resources in the form of grants and incentives, and technical support through trainings, access to support organizations, and guidance material.

Through Sustainable Jersey for Schools, actions such as adopting a

Safe Routes to School District policy, creating a school travel plan and pedestrian and bicycle safety and promotion initiatives can help schools and school districts earn points to move up in Sustainable Jersey certification. Funding and grants are available for schools and school districts that are recognized through the Sustainable Jersey Certification program.

For more information regarding this funding program contact:

Sustainable Jersey Small Grants Program
Email: grants@sustainablejersey.com
Phone: (609) 771-2836
Fax: (609) 637-5162
Website: www.sustainablejersey.com

Summary

The Bellmawr School District Travel Plan was created through the collaborative efforts of the Bellmawr Safe Routes to School Working Group and Cross County Connection TMA. The travel plan addresses the Bellmawr School District's interest in improving pedestrian infrastructure to create a safer walking and bicycling environment for students to get to and from school. The Bellmawr School District Travel Plan outlines the potential safety issues and concerns regarding pedestrian infrastructure within close proximity to its three elementary schools and offers recommendations to address these areas of concern.

The sustained success of any effort to increase walking and bicycling to school will require continued partnership among local and regional organizations. Infrastructure improvements must coincide with education and encouragement programs to maintain momentum towards achieving goals set forth by the Safe Routes to School program. Through current and past efforts, the Bellmawr School District and Bellmawr Borough have demonstrated that they are committed to creating a community that promotes healthy and active lifestyles for students, as well as providing a safe environment for walking and bicycling.