KITTELSON & ASSOCIATES

THE SUPPLEMENTAL FAYETTEVILLE COMPREHENSIVE PEDESTRIAN PLAN

FAYETTEVILLE, NC

April 2025

Inside front cover

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The Supplemental Fayetteville Comprehensive Pedestrian Plan

Fayetteville, NC

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EXECUTIVE SUMMARY

OVERVIEW

As part of the 2025 Comprehensive Pedestrian Plan Update, the City of Fayetteville, North Carolina (the City) is pursuing pedestrian safety improvements around schools, where children are likely to be walking, biking, and travelling. It has included data analysis to prioritize schools for transportation safety improvements, engagement with school representatives and city staff, and the development of recommendations for the highest priority schools to address key safety challenges and expand multimodal access where it is most needed.

This document is intended to be a supplemental to the final report for the City of Fayetteville Comprehensive Pedestrian Plan Update, completed in 2025. As such, the recommendations in this document are intended to supplement those in the citywide Comprehensive Pedestrian Plan. This plan should be used to advance multimodal transportation safety improvements forward through the design and implementation process. Treatments can be carried out through various delivery methods, be it through existing projects, systemic improvements, smaller scale changes, or larger capital improvements. Overall, this is a key step in improving transportation safety in Fayetteville and expanding access where it is most needed. This report summarizes the tasks performed and the results that shall guide subsequent implementation activities.

SCHOOL NETWORK ANALYSIS

This effort included an examination and analysis of the infrastructure surrounding 64 K-12 public schools serving the City of Fayetteville to identify key priority locations for pedestrian transportation safety investment. The goal was to target improvements where they are needed most, such as where there are the highest vehicle speeds and volumes, where there are the most prevalent bicyclist and pedestrian crashes, and where there are most likely to be students walking and biking to school. Through an in-depth prioritization methodology, 26 of the 64 schools were moved forward to identify multimodal safety improvements. This methodology included identifying metrics, assigning scores, and weighting those scores. Multiple ranking methods were tested, including a percentile method, a z-score method, and a cluster analysis, to prioritize schools with the highest need. The top 26 schools were identified based on the schools that fell into the top 20 of at least one of those ranking analysis methods.

CUMBERLAND COUNTY SCHOOLS ENGAGEMENT

This effort has also included school engagement to verify that recommendations meet local goals and needs. City staff played a key role in discussing and reviewing each task and corresponding deliverables. Cumberland County Schools representatives were also consulted and given the opportunity to offer feedback throughout the project. Of the 26 high-priority schools, school representatives from 11 schools responded to requests for feedback on preliminary recommendations to address pedestrian infrastructure.

RECOMMENDATIONS

A toolkit of treatments was developed to expand safe, multimodal access for children walking and biking to school. The toolkit includes treatments that dedicate space to pedestrians and facilitate safer crossings. Those tools were then applied to the street network within one half-mile of the highest-ranking 26 schools, and feasibility-level recommendations were established. These proposed improvements are described herein and presented in attached maps and concept plans. Cost estimates and more detailed recommendations have been developed for 12 of the highest-prioritized schools, including the 11 schools that provided feedback as well as one additional school where pedestrian improvements are already

planned. The total cost of improvements at those 12 schools is approximately $27.9M. A series of concept drawings to support implementation of these improvements are attached to this report.

NEXT STEPS

As funding becomes available, this supplemental plan is intended to be used prioritize transportation investments. In follow up to this plan, it will be important to pursue funding sources for various project delivery paths, continue to engage the community and local partners, and move key, feasible projects into the design process, refining recommendations based on newly collected data and ongoing collaboration.

Section 2
Introduction

INTRODUCTION

Addressing transportation safety near schools is a tactical, systemic approach to reducing severe crash outcomes within the transportation network in the City of Fayetteville, especially among vulnerable populations. The National Center for Safe Routes to School has found that building improved multimodal infrastructure along routes to schools can increase the percentage of students taking more active modes of transportation[1]. This might contribute to positive public health outcomes and enhanced community building. The National Highway Traffic Safety Administration (NHSTA) also promotes comprehensive safety investment near schools, including a combination of engineering, education, and enforcement strategies[2].

At the state level, the North Carolina Department of Transportation (NCDOT) supports Safe Routes to Schools initiatives in local communities. NCDOT offers cost-reimbursement programs and education curriculums. NCDOT also organizes statewide Bike and Walk to School Days[3].

In Fayetteville, there were 70 bicyclist crashes and 231 pedestrian crashes within a half mile of a school between 2007 and 2022. Many city schools are located along wide, high-speed arterial roadways that feel unsafe to walk along and across. There are also some residential neighborhoods without connected, multimodal access to nearby schools, which may require some families to take a passenger car or bus to school over choosing more active transportation modes. Investing in pedestrian infrastructure near schools is an effective way for the City of Fayetteville to address safety, reduce severe crash outcomes, and expand access for students in the region.

This School Study is a supplemental effort to the City's ongoing Pedestrian Plan, which will make recommendations for broader pedestrian safety improvements throughout the City. These plans also complement the City's recently adopted Comprehensive Transportation Plan and other ongoing local projects and initiatives to expand safe, multimodal access in Fayetteville.

Image from ncdot.gov

[1] https://www.saferoutesinfo.org/

[2] https://www.nhtsa.gov/book/countermeasures-that-work/pedestrian-safety/countermeasures/other-strategies-behavior-change-2

[3] https://www.ncdot.gov/divisions/integrated-mobility/safety/Pages/safe-routes-school.aspx

SCOPE OF THE STUDY

The following key tasks were performed as part of the Fayetteville School Study:

1. **School network analysis:** including an examination of 64 K-12 public schools that service residents within the City of Fayetteville. These schools were evaluated and ranked based on a series of metrics to identify the top 26 schools most in need of surrounding transportation infrastructure investments.
2. **Coordination and engagement:** including close collaboration with City Public Services staff and seeking feedback from Cumberland County Schools representatives through meetings and emails.
3. **Toolkit and recommendations:** including developing solutions broadly for safer routes to school in Fayetteville and specifically for the highest-ranking schools. Recommendations are presented in planning-level maps and concept designs graphics. Costs and implementation steps have also been developed.

These tasks are summarized in more detail in subsequent sections of this report.

GOALS

Overall, the purpose of this study is to identify key infrastructure gaps in the transportation network near Fayetteville public schools and implement safety improvement solutions that best expand multimodal access and encourage active transportation modes.

The following key goals have guided this effort:

Address multimodal safety and access near schools where students are most likely to be walking and biking.

Prioritize investment where there is the greatest need in terms of safety, infrastructure, and demographics.

Identify implementable tools that address specific needs raised by the public, school representatives, and results of the school network analysis.

Section 3

School Network Analysis

SCHOOL NETWORK ANALYSIS

A total of 64 public schools (kindergarten through 12th grade) within the Fayetteville city limits and/or those that service the City population were examined as part of this School Study. For each school, a ½ mile walkshed was generated using the existing street and sidewalk network. These walksheds visually represent how far people can walk to and from each school using existing streets and trails. The calculation does not account for how accessible the pedestrian infrastructure is, and it includes streets without sidewalks or dedicated pedestrian paths. These walksheds were generated using Geographic Information System (GIS) mapping. Using data provided by the City, NCDOT, Cumberland County Schools, and other data available online, GIS has calculated and visualized the walkshed for each school. The purpose of visualizing this walkshed is to anticipate where students are most likely to walk or bike to school with the goal of prioritizing improvements where there is the most need for safety investment. A map of the evaluated schools and the corresponding walksheds is shown below in Figure 1.

Appendix A includes a spreadsheet of all data collected and/or calculated for each school. It also includes documentation related to the prioritization process performed. The data collection, analysis process, and school prioritization methodologies are all described below.

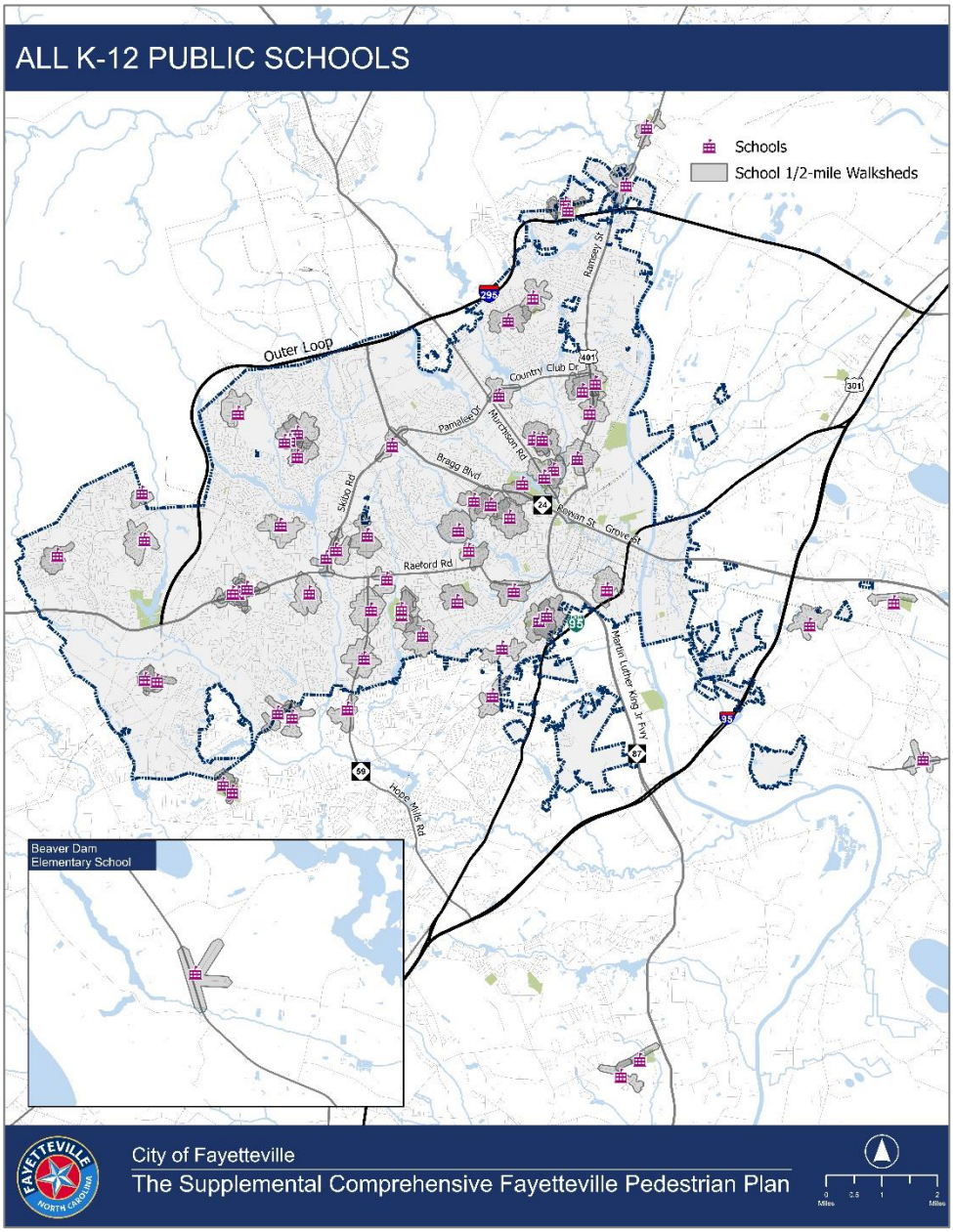


Figure 1: Map of 64 studied schools and corresponding walksheds

DATA COLLECTION AND PROCESSING

A comprehensive data collection process was undertaken to understand the schools and prioritize them for improvements. Data was collected and/or calculated from various sources, including local and state sources as well as US Census data. In some instances, the information was not used in the school prioritization process but provided qualitative information for differentiating the schools. Data was grouped into larger category buckets, including School Population, Safety, Infrastructure, Demographics, and Public/School Comments. A description of each data point, including how it was collected and used, is provided below.

A. SCHOOL POPULATION

The goal with collecting school population data was to better understand the needs and operations of each school. The following metrics were provided by Cumberland County Schools:

- **School Address/Grade Level:** the address of each school was used in mapping and to identify the infrastructure surrounding the schools. The grade level (such elementary, middle, or high school) was also documented, but not used as a metric in prioritization.
- **Student Enrollment:** this metric includes the total number of students enrolled at each school. Schools with a larger student population were assumed to have more students walking and biking and thus, were prioritized over smaller schools.
- **Students in Non-Transport Zone:** this data includes the number of students that are not bused to school due to close proximity to their assigned school. These children may be more likely to walk or bike to school and thus, schools with more students in the non-transport zone were prioritized for improvements.

B. SAFETY

Transportation safety data was evaluated to articulate where safety improvements are most needed. The following metrics were included:

- **Bicycle Crashes:** crashes involving bicyclists were documented within a ½ mile radius of each school. This data was collected from the NCDOT Non-Motorist Crash Map,[4] which is available online. This map includes crashes from January 2007 through December 2022. Schools with a greater number of nearby bicyclist crashes were prioritized for improvements.
- **Pedestrian Crashes:** crashes involving pedestrians were documented within a ½ mile radius of each school. This data was collected from the NCDOT Non-Motorist Crash Map, which is available online. This map includes crashes from January 2007 through December 2022. Schools with a greater number of nearby pedestrian crashes were prioritized for improvements.
- **Bicycle Level of Traffic Stress (BLTS):** this is a measure of how unsafe or stressful it feels to bike along a street. BLTS 1 indicates a biking environment that would feel safe and comfortable for most people. BLTS 4 indicates a facility that most people would feel unsafe to use. This metric was estimated using the method developed by the Mineta Institute[5]. BLTS was then averaged within each school walkshed area. Schools with a higher BLTS average were prioritized for improvements.
- **Pedestrian Level of Comfort (PLOC):** this is a measure of how unsafe or stressful it feels to walk along a street. PLOC 1 indicates a walking environment that would feel safe and comfortable for most people. PLOC 4 indicates a facility that most people would feel unsafe to use. This metric was calculated using the method described in Chapter 4 of the 2025 Fayetteville Pedestrian Plan

[4] https://www.arcgis.com/apps/mapviewer/index.html?webmap=b4fcdc266d054a1ca075b60715f88aef
[5] Low-Stress Bicycling and Network Connectivity | Mineta Transportation Institute

Update. PLOC was then averaged within each school walkshed area. Schools with a higher PLOC average were prioritized for improvements.

- **Posted Speed Limit:** vehicular traffic speed is an important factor in determining crash severity, especially in contributing to serious crash outcomes for people walking and biking. As such, the average posted speed limit was calculated within each school walkshed area. This data was collected from NCDOT maps and confirmed through Google Streetview, as well as field visits for selected school walksheds. Schools with higher average posted speed limits within the walkshed area were prioritized for improvements.

C. INFRASTRUCTURE

Multimodal infrastructure was reviewed to prioritize improvements where safe infrastructure is most lacking. The following metrics were included:

- **Annual Average Daily Traffic (AADT):** AADT represents vehicular traffic volumes on streets. Two AADT metrics were collected for each school, including 1) the maximum AADT in the school walkshed area and 2) the AADT on the street that the school is accessed by, fronting, or is closest to. This data was collected from an online NCDOT interactive map,[6] which was last updated in 2023, but includes data from various years. Schools with high AADT metrics were prioritized for improvements.
- **Sidewalk Infrastructure:** to assess existing sidewalk infrastructure, a percentage of streets with sidewalk on at least one side within each school walkshed was calculated to determine a sidewalk ratio metric. This data was collected from Google Earth aerial imagery and City of Fayetteville GIS information. Schools with less sidewalk near them were prioritized for improvements.
- **Crosswalk Infrastructure:** this metric is a calculation of the number of intersection legs that contain marked crosswalks within each school walkshed. This data was collected from Google Earth aerial imagery and City of Fayetteville GIS information. Schools with fewer marked crosswalks near them were prioritized for improvements.

D. DEMOGRAPHICS

Demographic information was used to verify that safety investments are targeted where populations are most in need of them. The following metrics were included:

- **Residential Population:** this was determined within ½ mile of each school using US Census data. Schools within more densely populated residential areas were prioritized for improvements. Multimodal infrastructure in these areas is likely to benefit many people in addition to students.
- **Transportation Disadvantaged Index (TDI):** this environmental justice metric was developed by NCDOT. It specifies the relative transportation disadvantage in neighborhoods based on data related to race, income, ethnicity, vehicle access, age, disability, and language proficiency. The index maps neighborhoods with scores from 0 to 11, with a higher value representing a higher level of disadvantage. This data was collected from NCDOT online open data.[7] Schools within neighborhoods with a higher TDI were prioritized for improvements.
- **Zero Car Households:** the percentage of households without access to a vehicle was averaged within each school walkshed. This data was collected to understand where there may be more students needing to walk or bike to school. This data was collected from the US Census. Schools with more nearby zero-car households were prioritized for improvements.

[6] https://connect.ncdot.gov/resources/State-Mapping/pages/traffic-volume-maps.aspx
[7] https://ncdot.maps.arcgis.com/apps/instant/sidebar/index.html?appid=67947cc90c3f4d02a9dba19ce4203e0c

E. PUBLIC/SCHOOL COMMENTS

Lastly, any specific concerns or suggestions received from the public or from school representatives were also documented for each school. This information was not explicitly used in the initial school prioritization but was later used to identify specific projects for improvements at high-ranking schools.

ANALYSIS AND PRIORITIZATION

The next step in the School Study was to prioritize the schools based on the collected and calculated data with the goal of identifying areas where there is the most need for safety investment. The methodology for doing so is described below.

DEVELOPING SCORES

Three methodologies were tested to develop scores for prioritizing the schools for transportation safety investment. Consistent with the data mentioned above, the following performance measures were used to develop scores and rank the schools:

A. School Population Score
    a. Student Enrollment
    b. Students in Non-Transportation Zone
B. Safety Score
    a. Bicycle Crashes
    b. Pedestrian Crashes
    c. BLTS
    d. PLOC
    e. Posted Speed Limit
C. Infrastructure Score
    a. AADT in Walkshed
    b. AADT along Access Road
    c. Sidewalk Infrastructure
    d. Crosswalk Infrastructure
D. Demographics Score
    a. Residential Population
    b. TDI
    c. Zero Car Households

The various methods used to rank the schools are described below.

Percentile Method

The first scoring method considered was to rank the schools by using percentiles for each performance measure. This method involved calculating scores based on a ranking from 0 to 100 within each performance measure. The school with the value representing the most need received the highest score of 100, while the school with the value representing the least need was assigned the lowest score of 0. A score was then calculated for each school based on how its value for that performance measure compared to the highest and lowest values. Then, weights were applied to determine overall scores. Through discussions with City Staff, it was determined that safety and infrastructure metrics should be prioritized over student population and demographics metrics. The weights were assigned as follows:

A. School Population Score **– 20%**
    a. Student Enrollment – 5%
    b. Students in Non-Transportation Zone – 15%

B. Safety Score **– 35%**
    a. Bicycle Crashes – 10%
    b. Pedestrian Crashes – 10%
    c. BLTS – 5%
    d. PLOC – 5%
    e. Posted Speed Limit – 5%
C. Infrastructure Score **– 30%**
    a. AADT in Walkshed – 5%
    b. AADT along Access Road – 5%
    c. Sidewalk Infrastructure – 10%
    d. Crosswalk Infrastructure – 10%
D. Demographics Score **– 15%**
    a. Residential Population – 5%
    b. TDI – 5%
    c. Zero Car Households – 5%

The benefit of the percentile method is that it elevates locations with extreme need. For instance, one school had a much higher number of pedestrian crashes near it as compared to other schools. The percentile method gives significant weight to this school. The challenge with this method is that it focuses on how values compared to each other relatively rather than the pure magnitude of the value. If the data is not normally distributed or has outliers (like the high pedestrian crash school), the scores may be misrepresenting the magnitude of the metrics.

Z-Score Method

The next method that was tested used z-scores to rank the schools instead. Under this method, the z-scores were calculated, representing the number of standard deviations of a value above or below the mean value within each performance measure. This ensures that scores are developed based on the average value rather than the extreme values. Using this method, the values were then rescaled on a scale of 0 to 100 and the same weights as those listed above for the percentile method were applied. The challenge with the z-score method is that it still heavily depends on a relatively normal distribution of data.

Cluster Method

Lastly, the cluster method was tested. This method used a k-means cluster analysis to categorize the schools into four unequally sized groups, including:

1. High Crash, High Need
2. Low Crash, Poor Infrastructure
3. Low Crash, Some Infrastructure
4. Rural or Exurban

The idea was to identify a group of schools with data characteristics that indicate the highest number of crashes, and the highest infrastructure and population needs. The challenge with this method is that it requires pre-defining the number of clusters, which outliers may not appropriately fit into.

PRIORITIZED SCHOOLS

Ultimately, through discussions with City Staff, it was determined that a combination of the 3 methods should be used. There were 26 schools prioritized for transportation safety improvements given that they met at least one of the following criteria:

- Within the top 20 ranking using the Percentile Method
- Within the top 20 ranking using the Z-Score Method
- Within Cluster #1: "High Crash, High Need," which included 17 schools

The intention was to overcome the challenges and flaws of each analysis method by including the highest priority schools from each. Many schools ranked highly in all 3 lists. Only a handful of schools ranked highly using just one method. Given this process, the top-ranking schools are not prioritized themselves and should instead be accomplished as there is opportunity to do so.

Table 1 below shows the highest prioritized schools and whether they fell into the top 20 list using each of the methods described above. The highest prioritized schools are also mapped below in Figure 2. Refer to Appendix A for the spreadsheet files used to develop school prioritization.

Table 1: Schools Prioritized by Each Analysis Method

School	Top 20 Ranking		
	Percentile	Z-Score	Cluster
1. A.B. Wilkins High School	Yes	Yes	Yes
2. Anne Chestnutt Middle School	Yes	Yes	Yes
3. Brentwood Elementary School	Yes	Yes	Yes
4. College Lakes Elementary School	Yes	Yes	Yes
5. J.W. Coon Elementary School	Yes	Yes	Yes
6. Lewis Chapel Middle School	Yes	Yes	Yes
7. Loyd Auman Elementary School	Yes	Yes	Yes
8. Luther Jeralds Middle School	Yes	Yes	Yes
9. Mary McArthur Elementary School	Yes	Yes	Yes
10. Ramsey Street High School	Yes	Yes	Yes
11. Reid Ross Classical Middle/High School	Yes	Yes	Yes
12. Seventy-First High School	Yes	Yes	Yes
13. Sherwood Park Elementary School	Yes	Yes	Yes
14. Westarea Elementary School	Yes	Yes	Yes
15. William H. Owen Elementary School	Yes	Yes	Yes
16. Douglas Byrd High School	Yes	Yes	
17. Ponderosa Elementary School	Yes	Yes	
18. Cliffdale Elementary School	Yes		Yes
19. Ben Martin Elementary School	Yes		
20. Morganton Road Elementary School	Yes		
21. Cumberland International Early College High School		Yes	Yes
22. E.E. Miller Elementary School		Yes	
23. Walker-Spivey Elementary School		Yes	
24. Cumberland Mills Elementary School			Yes
25. Cumberland Road Elementary School			Yes
26. Seventy-First Classical Middle School			Yes

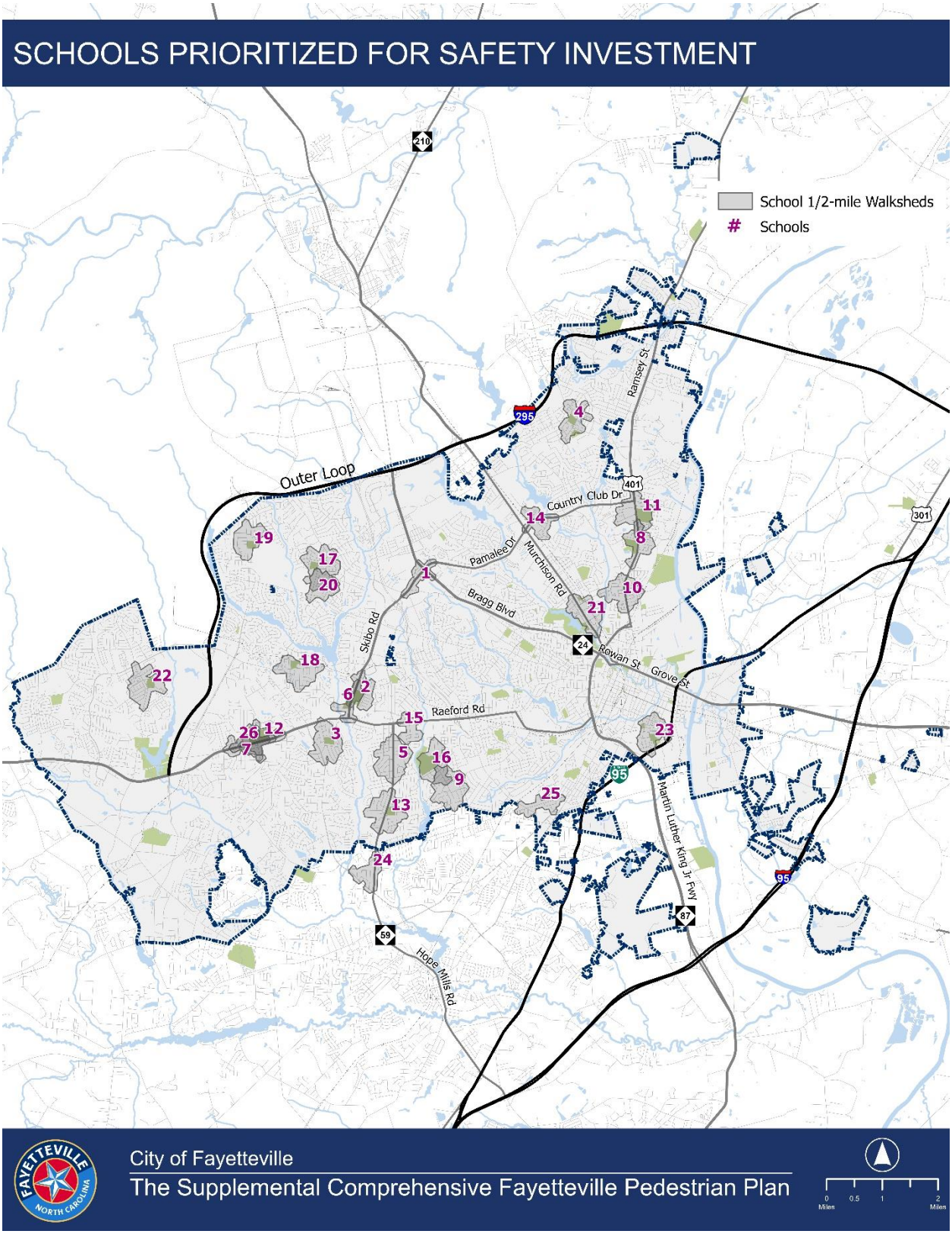


Figure 2: Map of high-priority schools

Section 4

Agency Coordination and Engagement

AGENCY COORDINATION AND ENGAGEMENT

This School Study has been developed in close collaboration with several partners, including City Staff and representatives from Fayetteville public schools. This continued engagement has been a core element in collecting data, ranking the schools, and developing context-sensitive recommendations.

STEERING COMMITTEE COORDINATION

As part of this effort, the project team worked closely with a steering committee comprised of City Public Services staff to collect data, develop performance metrics, and review recommendations. The project team also regularly provided updates to the City Manager's Office. Through bi-weekly progress meetings and periodic work sessions, the committee provided technical reviews and feedback at critical stages of the Study. They relayed local context, emphasized potential implementation obstacles, and provided information regarding ongoing infrastructure projects in the city. Other City Staff were also engaged at relevant points throughout the study to collect feedback and provide an overview of the project. This Study has also been developed in close coordination with the corresponding citywide Pedestrian Plan.

Key meeting notes and correspondence are included in Appendix B.

SCHOOL REPRESENTATIVE ENGAGEMENT

Cumberland County Schools staff, as well as individual school representatives such as principals participated throughout the life of the study. Emails were sent to representatives from each of the 26 highest ranking schools seeking initial ideas and feedback. Representatives from 11 of the 26 schools responded, including from:

1. Brentwood Elementary School
2. College Lakes Elementary School
3. J.W. Coon Elementary School
4. Loyd Auman Elementary School
5. Mary McArthur Elementary School
6. Ramsey Street High School
7. Ponderosa Elementary School
8. E.E. Miller Elementary School
9. Walker-Spivey Elementary School
10. Cumberland Mills Elementary School
11. Westarea Elementary School

Their specific responses are included in Appendix B. Overall, there was general interest and excitement over safety improvements. Several schools mentioned a need for non-infrastructure solutions, such as well-trained crossing guards[8]. This information was used to guide recommendations. City Staff decided to further prioritize those 11 schools for which responses were received for transportation safety improvements.

Key meeting notes and correspondence are included in Appendix B.

[8] In May 2024, Cumberland County announced they would no longer provide crossing guards and school resource officers due to staffing shortages. As a result, the City of Fayetteville announced in August 2024 that 60 school crossing guards at the Fayetteville Police Department completed training and will provide services at more than 50 schools in Fayetteville.

Section 5

Toolkit and Recommendations

TOOLKIT AND RECOMMENDATIONS

As part of this effort, recommendations have been developed for the top ranking 26 schools. Overall, pedestrian safety is a key focus. Students walking to school are the most vulnerable to being killed or seriously injured in a car crash. Pedestrian infrastructure often serves to improve bicyclist safety as well. Throughout this effort, it emerged that improved crossing infrastructure is especially needed. Many of the schools have mid-block and/or uncontrolled crossings that are not currently configured according to best practices. Students walking, biking, taking the bus, and being driven to school may be most vulnerable to a crash while crossing the street. Recommendations made herein include mostly infrastructure solutions. Non-infrastructure solutions are also relevant, especially in considering the system of transportation safety. These solutions are discussed at a high level subsequently herein.

SCHOOL TRANSPORTATION SAFETY TOOLKIT

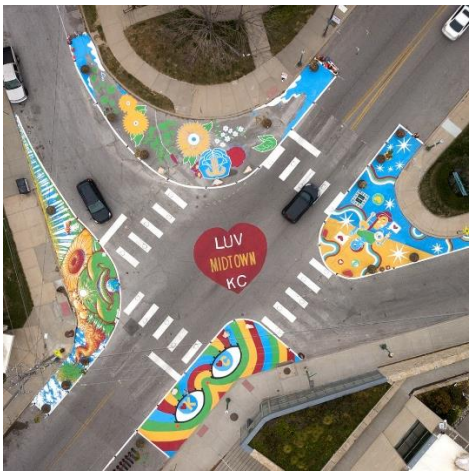
A toolkit of multimodal transportation safety treatments has been developed to expand access for students on their routes to school. Tools have been identified through engagement with school representatives, discussions with City Staff, understanding of current and ongoing projects, collaboration with the Pedestrian Plan recommendations, based on desktop review of existing infrastructure, and through understanding of national best practices.

Many of the highest priority schools are located along or near major arterials in Fayetteville. There is typically sidewalk along the school frontage, but in some cases, the sidewalk is narrow and close to fast-moving traffic. There are major intersection crossings located near schools in Fayetteville requiring enhanced pedestrian infrastructure. Some schools are bordered by neighborhood streets that would benefit from sidewalk and/or traffic calming. Connectivity between the schools and surrounding neighborhoods can also be achieved through shared use paths and trails. With this context, the following toolkit was developed.

Improved Crossings:		
Marked High Visibility Crosswalk	According to FHWA, "a high-visibility marked crosswalk can reduce pedestrian crashes up to 40%." They are especially important at crossings with many pedestrians such as those near bus stops and schools. High-visibility crosswalks include clear, reflective marking, pedestrian scale lighting, and advanced warning signs.	
Pedestrian Refuge Island	A pedestrian median refuge island provides added protection for people crossing the street. The refuge improves pedestrian visibility, reduces conflicts, and reduces crossing distance. Maintenance is an important consideration.	

Warning Signs	Signage and warning beacons can be used in advance of marked pedestrian crossings to increase driver yielding. School zones should be clearly demarcated to signal to drivers the need to drive slower and more diligently.	
Pedestrian Scale Lighting	Pedestrian-scale lighting improves pedestrian security and comfort, especially at crossings, key destinations, and bus stops. Street lighting also improves visibility for drivers.	
Raised Crosswalks or Intersections	Raised crossing infrastructure enhances the visibility of pedestrians. These treatments are not typically appropriate on higher speed and volume streets.	
Accessible Ramps	Accessible ramps provide access for pedestrians from the sidewalk to the roadway. It is critical that these be designed accessibly and according to national best practices in locations where people are walking.	

Flashing Beacons (RRFB)	A flashing pedestrian signal lets motorists know that pedestrians are crossing. These are especially applicable at crossings where there is not a signal or stop sign directing traffic.	
Pedestrian Push Buttons	A pedestrian countdown signal indicates remaining walk time. Fixed, rather than actuated, signals are most preferred in urban areas.	
Leading Pedestrian Intervals	A leading pedestrian interval (LPI) gives pedestrians advance signal time to begin crossing before cars start turning right. LPIs are especially helpful at wide, busy intersections	
No Turn on Red	Another signal modification tool is to prohibit right-turn-on-red. This ensures that pedestrians have more dedicated time to cross. Restrictions can be implemented at all times or at select times, such as during school arrival and dismissal.	

Signalize Pedestrian Crossings	On streets with high traffic speeds and volumes, a pedestrian hybrid beacon or full signalization may be needed to ensure yielding and facilitate safe crossings.	
Intersection Daylighting	Marking off areas near intersections using paint or other visual or physical elements shows where on-street parking is restricted. This process maintains visibility at driveways and intersections.	
Asphalt art	Asphalt art is used to delineate and revitalize spaces. This tool is often used as part of creating safer routes to schools, parks, or libraries, and must meet Federal and State guidelines.	
Improve Streets:		
Sidewalk (filling network gaps)	A complete and connected sidewalk network increases pedestrian access and safety. The sidewalk clear width should be at least 6 feet wide, or ideally wider, with a planting strip to provide separation from fast-moving traffic. New sidewalks must comply with the Americans with Disabilities Act (ADA).	

Shared Use Path or Trail	This path is shared between people biking and walking, providing the highest level of separation from motor vehicle traffic and the lowest level of traffic stress.	
Bicycle Facilities	A bicycle lane provides dedicated space for bicyclists in the street. Bike lanes are more appropriate on streets with lower speeds and volumes.	
Vertical and Horizontal Traffic Calming	Vertical traffic calming slows traffic speeds via raised roadway elements, such as speed humps. These are most applicable on neighborhood streets. Horizontal traffic calming introduces horizontal deflection in the roadway that causes drivers to slow down to respond to changing path patterns.	
Non-Infrastructure Solutions:		
Crossing Guards	Even when a crosswalk is designed according to best practices, crossing guards can further ensure yielding and safe driver behavior. It is important that cross guards are well trained.	
School Circulation Planning	Carefully planning routes to schools for buses, carpooling, walking, and biking can help delineate and separate space for various modes and reduce the potential for conflicts.	

Walking and Biking School Buses	A walking or biking school bus gathers students together to take active modes of transportation to school.	
Education Campaigns	Targeted campaigns remind drivers to look for more vulnerable people on the street. Police offices can be partners in educating drivers about yielding to pedestrians and bicyclists. Communities also host bicycling events that teach children how to bike on city streets. High School level education campaigns about distracted and impaired driving are especially key.	

IMPROVING MID-BLOCK CROSSINGS

One common safety challenge near schools in Fayetteville is that there are uncontrolled pedestrian crossings near school entrances that are not designed to best practices. These are likely key places where students and other people are crossing the street. On higher volume, higher speed, multi-lane streets, it is especially critical that crossing infrastructure be designed to ensure driver yielding and protect students where they are most vulnerable.

FHWA has developed a table[9] (shown in Figure 3) to articulate potential infrastructure needs at various uncontrolled pedestrian crossings given the roadway configuration and posted speed limit. Many of the uncontrolled pedestrian crossings in Fayetteville near schools would benefit from installing accessible ramps, marking high-visibility crosswalks, improving pedestrian-scale lighting, and installing advanced warning signage. In some instances, there is also space for a pedestrian refuge island. On wider, higher-volume and higher-speed streets, additional measures are likely needed. Further evaluation will be needed to determine whether a flashing beacon, a pedestrian hybrid beacon, or full

Roadway Configuration	Speed Limit ≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
2 lanes*	❶ 2 3 4 5 6	❶ ❸ 5 6 7	❶ ❸ 5 6 ❼	❶ 3 4 5 6	❶ ❸ 5 6 7	❶ ❸ 5 6 ❼	❶ 3 4 5 6 7	❶ ❸ 5 6 7	❶ ❸ 5 6 ❼
3 lanes with raised median*	❶ 2 3 4 5	❶ ❸ 5 7	❶ ❸ 5 ❼	❶ 3 4 5 7	❶ ❸ 5 ❼	❶ ❸ 5 ❼	❶ ❸ 4 5 7	❶ ❸ 5 ❼	❶ ❸ 5 ❼
3 lanes w/o raised median†	❶ 2 3 4 5 6 7	❶ ❸ 5 6 7	❶ ❸ 5 6 ❼	❶ 3 4 5 6 7	❶ ❸ 5 6 ❼	❶ ❸ 5 6 ❼	❶ ❸ 4 5 6 7	❶ ❸ 5 6 ❼	❶ ❸ 5 6 ❼
4+ lanes with raised median‡	❶ ❸ 5	❶ ❸ 5 7	❶ ❸ 5 ❼	❶ ❸ 5 7	❶ ❸ 5 ❼	❶ ❸ 5 ❼	❶ ❸ 5 7	❶ ❸ 5 ❼	❶ ❸ 5 ❼
4+ lanes w/o raised median‡	❶ ❸ 5 6 7 8	❶ ❸ 5 ❻ 7 8	❶ ❸ 5 ❻ ❼ 8	❶ ❸ 5 ❻ 7 8	❶ ❸ 5 ❻ ❼ 8	❶ ❸ 5 ❻ ❼ 8	❶ ❸ 5 ❻ ❼ 8	❶ ❸ 5 ❻ ❼ 8	❶ ❸ 5 ❻ ❼ 8

*One lane in each direction †One lane in each direction with two-way left-turn lane ‡Two or more lanes in each direction

Given the set of conditions in a cell,

❶ Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.

\# Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

1 High-visibility crosswalk markings, parking restriction on crosswalk approach, adequate nighttime lighting levels
2 Raised crosswalk
3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
4 In-Street Pedestrian Crossing sign
5 Curb extension
6 Pedestrian refuge island
7 Pedestrian Hybrid Beacon
8 Road Diet

This table was developed using information from: Zegeer, C. V., Stewart, J. R., Huang, H. H., Lagerwey, P. A., Feaganes, J., & Campbell, B. J. (2005), Safety effects of marked versus unmarked crosswalks at uncontrolled locations: Final report and recommended guidelines (No. FHWA-HRT-04-100); Manual on Uniform Traffic Control Devices, 2009 Edition, Chapter 4F. Pedestrian Hybrid Beacons; the Crash Modification Factors (CMF) Clearinghouse website (http://www.cmfclearinghouse.org/); and the Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE) website (http://www.pedbikesafe.org/PEDSAFE/).

Figure 3: Table from FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations

[9] https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/docs/STEP-guide-improving-ped-safety.pdf

signalization of the crossing is needed. It is expected that this evaluation will occur during design. Two general examples are provided below for improving the uncontrolled crossings near Fayetteville's schools.

The first example, shown in Figure 4 below, is a lower-volume, lower-speed, more neighborhood-oriented street. Improvements here should include providing high-visibility crosswalk markings, upgrading accessible ramps, and enhancing warning signage and pedestrian-scale lighting. In this context, there is also space to implement a pedestrian refuge island, likely with limited impacts to traffic flow. Additionally, the crosswalk can be raised in this instance, to slow traffic through the crossing and improve the visibility of young students crossing from their neighborhood to their school.

Figure 4: Example for improving uncontrolled pedestrian crossings on lower-speed, neighborhood streets
(image source: Google Maps)

In the second example, shown below in Figure 5, the roadway context is different. Crossing pedestrians are contending with multiple lanes of fast-moving traffic. In this example, it will be important to evaluate the crossing for improvements like a flashing beacon, pedestrian hybrid beacon, or a full signal to facilitate a safe crossing. In many cases, these streets are operated and maintained by NCDOT and thus, treatments will need to be vetted and approved at the State level. This evaluation will require an examination of traffic speeds and volumes and should be done during the design phase of the project.

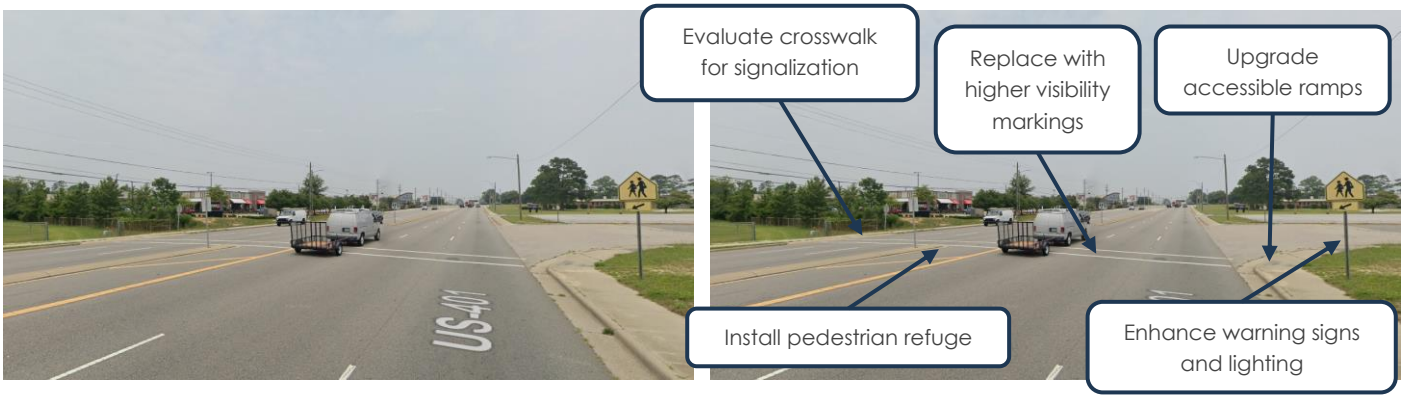


Figure 5: Example for improving uncontrolled pedestrian crossings on higher-speed arterials
(image source: Google Maps)

RECOMMENDATIONS

The multimodal toolkit for safer routes to schools has been applied to the highest-ranking schools. Spot specific recommendations are identified for implementation. A series of maps are included in Appendix C that provide a high-level overview of the recommendations for each school. Concept plans are also included for some of the schools in Appendix C, illustrating the application of treatments with more detail and specificity over aerial imagery.

A brief description of the recommendations made for each school is provided below. As indicated in the materials in Appendix C, it is recommended near many of the schools that pedestrian scale lighting be improved and new accessible ramps installed. Pedestrian safety improvements will also provide safer access to nearby bus stops. As outlined in the toolkit, non-infrastructure solutions are also relevant to improving school safety and should be considered further for each school.

A.B. Wilkins High School

A.B. Wilkins High School is located along Skibo Road. The nearby intersections along Skibo Road, including Skibo Road / Legend Avenue and Skibo Road / Swain Street, need to be enhanced to improve pedestrian safety and multimodal access around the school. It would also be beneficial to widen the sidewalk in front of the school and separate it from traffic with a landscape buffer. There is a planned trail project that will provide additional multimodal access in this area in the future (EB-6030). Sidewalk is recommended along south / east side of Swain Street.

Anne Chestnutt Middle School

Anne Chestnutt Middle School is located along Skibo Road. Improvements are recommended to nearby intersections along Skibo Road, including Skibo Road / Chason Ridge Drive and Skibo Road / Richwood Court. The uncontrolled crossing of Skibo Road needs to be improved to meet best practices for the given speeds and volumes. It is also recommended that the sidewalks along Skibo Road be widened and separated from traffic along the arterial. There is a sidewalk construction project planned (EB-6030) in this area. It is recommended that trail connections be made to nearby neighborhoods.

Brentwood Elementary School

Brentwood Elementary School is located along Bingham Drive between Raeford Road and Bunce Road. The school is surrounded by residential neighborhoods. The recommendations to improve safety around this school include building sidewalk or shared use path along Bingham Drive, including along the school frontage, and constructing sidewalk along key, connecting neighborhood streets, such as Tiree Drive, McDougal Drive, and Revere Street. Pedestrian crossing enhancements are needed where Bingham Drive intersects with Raeford Road and with Bunce Road. Uncontrolled crossings of Bingham Drive in front of the school should also be improved to meet best practices. Sidewalk construction is already planned along Bunce Road as part of an existing project (BL-0138).

College Lakes Elementary School

This elementary school is located near the intersection of Rosehill Road and McArthur Road. Improvements include filling gaps in the sidewalk network and improving nearby pedestrian crossings. Sidewalks are proposed along McArthur Road, Mulranny Drive, and Rosehill Road. Pedestrian crossing improvements are proposed at Rosehill Road / Mulranny Drive and at McArthur Road / Rosehill Road. There is a planned project (HS-2006V) to improve the intersection of Rosehill Road and McArthur Road. Uncontrolled pedestrian crossing treatments are recommended where Mulranny Drive intersects with Rosehill Road to improve safety for students and bus riders.

J.W. Coon Elementary School

This school is located along Hope Mills Road. There are existing sidewalks along both sides of Hope Mills Road. It is recommended that sidewalks be constructed along key, connected neighborhood streets, including Birch Road, Ponderosa Drive, Poplar Drive, Cypress Road, and Cottonwood Drive. Uncontrolled crossings in front of the school need to be improved to meet best practices. It would also be beneficial to improve nearby intersections for pedestrian safety and accessibility, including Hope Mills Road / Redwood Drive and Hope Mills Road / Walnut Drive.

Lewis Chapel Middle School

This school is located along Skibo Road, across from Anne Chestnut Middle School. It is recommended that sidewalk gaps be filled along Skibo Road and Louse Street. Similar to other schools located along this corridor, intersection improvements are needed for pedestrian safety and accessibility, including at Skibo Road / Richwood Court, Skibo Road / Louise Street, and Skibo Road / Raeford Road. The uncontrolled crossing of Skibo Road needs to be improved according to best practices for the traffic speeds and volumes along this arterial. Sidewalk construction (U-4405) is planned along Raeford Road near Lewis Chapel Middle School.

Loyd Auman Elementary School

Loyd Auman Elementary School is located along Raeford Road, near Seventy-First Classical Middle School and Seventy-First High School. There is a sidewalk planned for construction along Raeford Road as part of an existing NCDOT project (U-4405). Recommendations to improve safety include building sidewalks along Graham Road and improving the intersection of Raeford Road / Graham Road for pedestrian accessibility. The uncontrolled crossing of Raeford Road in front of the school should be redesigned according to best practices given the traffic speeds and volumes here.

Luther Jeralds Middle School

This middle school is located along Ramsey Street at the intersection of Walstone Road / Ramsey Street. There are existing sidewalks along both sides of Ramsey Street. It is recommended that the sidewalk gap along Walstone Road be filled. Pedestrian improvements should be made to the Eastwood Avenue intersection and at the cemetery entrance intersection. The uncontrolled crossing of Ramsey Street needs to be improved to meet best practices for the given traffic speeds and volumes. Trail connectivity is also recommended between the school and nearby neighborhoods. There is sidewalk planned along Eastwood Avenue as part of another project.

Mary McArthur Elementary School

This elementary school is located at the corner of Village Drive and Ireland Drive. There are existing sidewalks along these streets. Recommendations include improving nearby intersections for pedestrian safety and accessibility, including Village Drive / Ireland Drive, Village Drive / Wayne Lane, Village Drive / Roxie Avenue, Ireland Drive / Brentwood Drive, and Ireland Drive / Madison Avenue / Glenridge Road. It is recommended that sidewalks be constructed along key, connected neighborhood streets, including Roxie Avenue, Wyatt Street, Glenridge Avenue, and Madison Avenue.

Ramsey Street High School

Ramsey Street High School is located near Ramsey Street along Quincy Street. The intersections along Ramsey Street should be improved for pedestrian safety and accessibility, including Ramsey Street / Hillsboro Street, Ramsey Street / Brookwood Avenue, Ramsey Street / Langdon Street, and Ramsey Street / Rosehill Road. Uncontrolled pedestrian crossings of Ramsey Street should be designed according to best practices for the given traffic speeds and volumes. It is recommended that the sidewalk gap along Ramsey Street, south of Brookwood Avenue be filled.

Reid Ross Classical Middle/High School

This school is located along Ramsey Street. There are existing sidewalks along Ramsey Street. It is recommended that a sidewalk be constructed along the north side of Country Club Road and that crossings of Ramsey Street be enhanced for pedestrian safety and accessibility, including Ramsey Street / Country Club Road, Ramsey Street / Hillview Avenue, and Ramsey Street / Eastwood Avenue. Uncontrolled crossings need to meet best practices for the traffic speeds and volumes along Ramsey Street. Trail connectivity is also recommended between the school and nearby neighborhoods.

Seventy-First High School

This high school is located at the intersection of Raeford Road, School Road, and Graham Road. Similar to recommendations made for nearby schools, it is recommended that sidewalks be constructed along Graham Road and School Road. A sidewalk is planned for construction along Raeford Road as part of an existing project (U-4405). Improvements are recommended to enhance pedestrian safety at Raeford Road / Graham Road. Uncontrolled crossings should be improved to meet best practices. A trail is recommended to connect the school to the neighborhoods to the north.

Sherwood Park Elementary School

Sherwood Park Elementary School is located along Hope Mills Road. There are existing sidewalks along Hope Mills Road. Sidewalks are recommended along Friar Avenue and Wingate Road. A trail connection is recommended between the school and nearby residential neighborhoods. Nearby pedestrian crossings are also recommended for safety and accessibility improvements, including at Hope Mills Road / Poplar Drive and at Hope Mills Road / Butternut Drive.

Westarea Elementary School

This school is located along Pamalee Drive near where it becomes Country Club Drive. Sidewalks are recommended along Lakecrest Drive. Nearby pedestrian safety enhancements are recommended across Pamalee Drive / Country Club Drive, including at the Murchison Road and Distribution Drive intersections. Uncontrolled crossings need to be designed according to best practices for the given traffic speeds and volumes.

William H. Owen Elementary School

This school is located at the corner of Raeford Road and Scotland Drive. There is an existing project that will build sidewalks along Scotland Drive and Raeford Road (U-4405). It is recommended that any remaining sidewalk gaps be filled near the school. Crossing improvements are recommended at the intersections of Raeford Road /Brighton Road and at Raeford Road / Montclair Road. It is also proposed that the uncontrolled crossing of Scotland Drive be improved.

Douglas Byrd High School

Douglas Byrd High School is located near the intersection of Ireland Drive and Coventry Road, next to Douglas Byrd Middle School and Fayetteville Christian School. It is recommended that sidewalks be constructed along Coventry Road and along the east side of Ireland Drive. Crossings of Coventry Road and Ireland Drive should be improved for pedestrian safety and access, including at Ireland Drive / Lenoir Street, Ireland Drive / Coventry Road, and Coventry Road / Faison Avenue.

Ponderosa Elementary School

Ponderosa Elementary School is located along Bonanza Drive near the intersection of Bonanza Drive and Santa Fe Drive. It is recommended that sidewalks be constructed along Santa Fe Drive and Bronco Road. An existing project (BL-0137) plans to construct sidewalks along Bonanza Drive, north of the school.

Pedestrian safety enhancements should be made at nearby intersections, including at Bonanza Drive / Glen Canyon Drive and at Bonanza Drive / Santa Fe Drive.

Cliffdale Elementary School

This school is located along Cliffdale Road, which has existing sidewalks along both sides of the street. Sidewalks along Offing Drive and Pritchett Road are recommended. Trail connectivity is also proposed between the school and nearby residential neighborhoods. Pedestrian crossings at Cliffdale Road / Bassman Land and at Cliffdale Road / Pritchett Road should be improved according to best practices.

Benjamin Martin Elementary School

This school is located along Reilly Road. There are existing sidewalks along Reilly Road. It is recommended that a sidewalk be constructed along Paxton Drive. A trail is also recommended between the school and nearby residential neighborhoods. Crossings of Reilly Road, such as at Paxton Drive and at Amberly Way, should be improved to meet best practices.

Morganton Road Elementary School

Morganton Road Elementary School is located at the intersection of Bonanza Drive and Morganton Road. Many of the streets in this neighborhood have a sidewalk on at least one side of the street. A sidewalk on the south side of Foxfire Street is recommended. The intersections of Bonanza Drive / Morganton Road and Bonanza Drive / Glenn Canyon Drive should be enhanced for pedestrian safety. A trail is also recommended between the school and a nearby cul-de-sac.

Cumberland International Early College High School

This school is located along Murchison Road. The sidewalk network is predominantly built out in this area. Pedestrian safety improvements should be made at the intersection of Murchison Road / Langdon Street. Additional trail connectivity could be achieved between the school and nearby neighborhoods.

E.E. Miller Elementary School

This school is located along Rim Road. It is recommended that sidewalk gaps be filled along Rim Road. Nearby pedestrian crossings should also be improved, including the intersection of Rim Road / Cliffdale Road, Rim Road / Olted Road, and Rim Road / English Saddle Drive. It would also be beneficial to connect nearby neighborhoods to the school via a trail network.

Walker-Spivey Elementary School

This school is located along Old Wilmington Road and Fisher Street. Many of the streets in this area have existing sidewalks. It is recommended that the sidewalk gap along Old Wilmington Road be filled. It is also recommended that nearby intersections be improved for pedestrian safety and accessibility, including Old Wilmington Road / Fisher Street and Fisher Street / Holt Williams Street. The uncontrolled crossing in front of the school should be improved according to best practices. It is recommended that the intersection of Old Wilmington Road and Campbell Avenue be evaluated for all-way stop control.

Cumberland Mills Elementary School

Cumberland Mills Elementary School is located at the intersection of Hope Mills Road and Sim Cotton Road. Sidewalks are recommended along the west side of Hope Mills Road and along Sim Cotton Road. Pedestrian enhancements are needed at nearby intersections, including at Hope Mills Road / Sim Cotton Road and at Hope Mills Road / Cumberland Road. It is also recommended that a trail be constructed to connect Sim Cotton Road to Cumberland Road. If an uncontrolled crossing of Cumberland Road could be

safely achieved here, it would provide improved access for nearby neighborhoods. The uncontrolled crossing of Sim Cotton Road in front of the school should also be improved to meet best practices.

Cumberland Road Elementary School

Cumberland Road Elementary School is located along Cumberland Road, which lacks sidewalks. It is recommended that wide sidewalks or shared use paths be constructed along Cumberland Road, including along the school frontage. Trail connectivity is also recommended between the school and the neighborhood to the north. Nearby intersections, including Cumberland Road / Owen Drive and Cumberland Road / Lone Pine Drive, should be improved for pedestrian safety and accessibility.

Seventy-First Classical Middle School

This school is located between Lloyd Auman Elementary School and Seventy-First High School. As proposed for those schools, sidewalks should be constructed along Graham Road and Seventy-First School Road. Pedestrian safety enhancements are needed at the intersection of Raeford Road and Graham Road. Uncontrolled pedestrian crossings should be improved according to best practices for the given traffic speeds and volumes. A trail connection is also proposed between the schools and the residential neighborhood to the north.

COST ESTIMATES

As noted in the previous section, 11 of the 26 prioritized schools provided feedback and positive support for the recommended improvements. At the direction of City staff, these schools were moved forward for more detailed project development, including preparation of concept drawings and cost estimates to support implementation. Concepts and costs were also developed for one additional school, A. B. Wilkins High School, where there are existing pedestrian improvements being made. Kittelson staff visited these schools on December 13, 2024, to verify the presence of sidewalk, trail, and crosswalk facilities within each walkshed and identify additional needs or tweaks to existing recommendations.

Planning-level cost estimates were prepared for a series of projects identified for these 12 schools to provide implementation context. These were estimated based on general value of construction and labor with no adjustment for inflation. Estimated costs are provided below in Table 2.

Table 2: Estimated Costs

School	Recommendations	Total Cost
1. A. B. Wilkins High School	Shared use paths, sidewalks, pedestrian ramps, crosswalks, signal modifications, bus stop improvements, signs, and pavement markings	$2.8M
2. Brentwood Elementary School	Shared use paths, sidewalks, pedestrian ramps, crosswalks, signal modifications, signs, and pavement markings	$3.6M
3. College Lakes Elementary School	Sidewalks, pedestrian ramps, crosswalks, signal modifications, pedestrian refuge, crossing control, signs, and pavement markings	$2.9M
4. J.W. Coon Elementary School	Shared use paths, sidewalks, pedestrian ramps, crosswalks, signal modifications, crossing control, signs, and pavement markings	$2.5M
5. Loyd Auman Elementary School	Shared use paths, sidewalks, pedestrian ramps, crosswalks, signal modifications, pedestrian refuge, crossing control, signs, and pavement markings	$2.0M
6. Mary McArthur Elementary School	Sidewalks, pedestrian ramps, crosswalks, signal modifications, crossing control, signs, and pavement markings	$2.5M
7. Ramsey Street High School	Sidewalks, pedestrian ramps, crosswalks, signal modifications, pedestrian refuge, crossing control, signs, and pavement markings	$2.0M
8. Ponderosa Elementary School	Sidewalks, pedestrian ramps, crosswalks, signal modifications, crossing control, signs, and pavement markings	$2.6M
9. E.E. Miller Elementary School	Shared use paths, sidewalks, pedestrian ramps, crosswalks, signal modifications, pedestrian refuge, crossing control, signs, and pavement markings	$2.5M
10. Walker-Spivey Elementary School	Sidewalks, pedestrian ramps, crosswalks, stop control, signs, and pavement markings	$0.9M
11. Cumberland Mills Elementary School	Shared use paths, sidewalks, pedestrian ramps, crosswalks, signal modifications, pedestrian refuge, crossing control, signs, and pavement markings	$2.0M
12. Westarea Elementary School	Sidewalks, pedestrian ramps, crosswalks, pedestrian refuge, signs, and pavement markings	$1.6M
	Total Cost:	**$27.9M**

IMPLEMENTATION

The improvements proposed herein range in scope and scale. To implement these projects, it will be important to identify potential funding sources, assign project partners and campions, consider priorities, and develop design, construction, and maintenance plans.

Funding Sources

There are several funding sources that the City of Fayetteville can consider for funding infrastructure improvements and non-infrastructure solutions near schools.

At the city level, these improvements could be incorporated into a capital improvement project. Some projects, like painting higher visibility crosswalks and improving lighting and signage, could be achieved through existing street maintenance schedules. Sidewalk or trail construction can also be achieved through private development. The City might consider funding quicker-build projects with community-based fundraising and business partnerships.

At the state level, NCDOT has a Safe Routes to School program that offers federal funding to communities, including projects that span 1 to 3 years in amounts ranging from $50,000 to $500,000. The State also has a non-infrastructure grant program with cost reimbursement structure. These applications are competitive and may require a local match.[10]

The State also offers funding for bicycle and pedestrian projects, administering a Multimodal Planning Grant Program.[11] The North Carolina Highway Safety Improvement Program (HSIP) provides funding to address safety concerns throughout the state[12] and the State Transportation Improvement Program[13] is another state-level funding mechanism.

At the federal level, there is Safe Streets and Roads for All (SS4A) funding that may be applicable for the projects recommended herein.[14] There is also Transportation Alternatives funding[15], Better Utilizing Investments to Leverage Development (BUILD) grants[16], and the Thrive Communities Program.[17]

Each of these funding sources involves different eligibility requirements and application needs. Federal funding and grant programs may be evolving under the current administration. It will be important for the City to take advantage of a variety of funding sources to tackle these projects in different ways.

Project Partners

Implementation will hinge upon having strong project partners. These partners are expected to influence the design process and champion project progress. It is anticipated that several departments at the City of Fayetteville will be involved in moving these projects forward. This collaboration might include Public Works, Fire, and Police. It will continue to involve close coordination with the City Manager's Office. Local community organizations and businesses may also serve as project partners.

Cumberland County Schools and staff representing the schools will continue to be key partners. They serve as liaisons with school staff, parents, and students, with the most nuanced understanding of safety challenges near schools and how school operations may be impacted by improvements.

[10] https://connect.ncdot.gov/projects/BikePed/Pages/Non-Infrastructure-Alternatives-Program.aspx
[11] https://connect.ncdot.gov/municipalities/PlanningGrants/IMD-Multimodal-Planning-Program/Pages/default.aspx
[12] https://connect.ncdot.gov/resources/safety/pages/nc-highway-safety-program-and-projects.aspx
[13] https://www.ncdot.gov/initiatives-policies/Transportation/stip/Pages/default.aspx
[14] https://www.transportation.gov/grants/SS4A
[15] https://www.fhwa.dot.gov/environment/transportation_alternatives/
[16] https://www.transportation.gov/rural/grant-toolkit/better-utilizing-investments-leverage-development-build-grants
[17] https://www.transportation.gov/grants/thriving-communities

NCDOT will be a key partner given that many of the streets mentioned herein are owned, maintained, and operated by the state. Multimodal improvements will need to meet NCDOT requirements and will involve thorough review and collaboration with NCDOT staff.

Fayetteville Area System of Transit (FAST) should be consulted. In several instances, multimodal improvements for students will also benefit bus riders in the City. FAST can be a partner in better connecting bus stops near schools and enhancing amenities, providing review and feedback on how various treatments might impact bus operations.

Prioritization

Overall, the final list of highly ranked schools is not prioritized for improvements given that different analysis methods produced different ranking lists. There are clear safety and accessibility challenges at each of these schools that need implemented solutions. Still, priority may be established over time based on the feasibility of funding, design, and construction. Projects that are more likely to be funded may be realized sooner. The City might also consider prioritizing school where there are strong partnerships to achieve project outcomes and/or where public concerns are being raised most. If prioritization is necessary, this should be done according to the performance measures established herein: School Population, Safety, Infrastructure, Demographics, and Public/School Comments.

Design, Construction, and Maintenance

Following the planning process, school safety improvement projects will undergo design and construction. Improvements must then be operated and maintained as part of the transportation system. The design process will involve a thorough review of how treatments correspond with utilities, stormwater systems, and traffic flow. The design process should include continued engagement with school communities, including staff and nearby residents. Parents, families, and students should play an active role in the design process to be sure local needs are met. Given the educational component of this effort, these projects are a great opportunity to teach families about transportation safety and to engage children in developing art or landscaping for the infrastructure in their communities.

It is important to adequately maintain pavement markings, signs, lighting, and landscaping near schools to ensure visibility and the effectiveness of the treatments. Some implemented treatments may require extra thinking around waste collection, emergency access, street cleaning, leaf collection, mail delivery, and bus service operations. It is anticipated that impacts or changes will be minimal. Early consideration and ongoing coordination will be key to successful project outcomes that improve safety around schools.

Section 6

Conclusions and Next Steps

CONCLUSIONS AND NEXT STEPS

In total, $27.9M worth of improvements are recommended to improve safety and accessibility near 12 schools in Fayetteville, particularly for people walking, biking, and taking the bus. These improvements focus on connecting neighborhoods to schools, slowing traffic speeds, and providing dedicated, separated space for pedestrians walking along and across streets. Investing in multimodal infrastructure near schools is a key strategy that is part of the city's overall pedestrian planning effort and pursuit of eliminating severe crashes on the transportation network. Beyond these 12 schools, the remaining 14 of the top 26 highest-priority schools can continue to be engaged to identify additional improvements as funding becomes available.

NEXT STEPS

This Study should serve as a framework for strategically identifying funding sources and championing infrastructure projects near the schools where improvements are most needed. A few key next steps include:

- Pursue funding sources for various project delivery paths
- Continue to engage the community and local partners
- Move key, feasible projects into the design process, refining recommendations based on newly collected data and ongoing collaboration