Safe Streets and Roads for All

Safety Action Plan

Prepared by:
E.L. Robinson Engineering Co.
AECOM Technical Services, Inc.

Adopted February 2024

City of Bluefield WEST VIRGINIA

AECOM

E.L. ROBINSON ENGINEERING

Table of Contents

Table of Contents

List of Tables

List of Figures

List of Figures

List of Figures

Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
ADA	Americans with Disabilities Act
ATV	All-Terrain Vehicle
CPP	Community Participation Plan
DUI	Driving Under the Influence
EB	Eastbound
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
FSI	Fatal and Serious Injury
GIS	Geographic Information System
Mph	Miles per hour
NB	Northbound
NHTSA	National Highway Traffic Safety Administration
PROWAG	Public Right-of-Way Accessibility Guidelines
RTOR	Right Turn on Red
SB	Southbound
SS4A	Safe Streets and Roads for All
US	United States
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
WB	Westbound
WVDOH	West Virginia Division of Highways
WVDOT	West Virginia Department of Transportation

Appendices

Zero Fatalities by the Year *2050*

1.0 Introduction

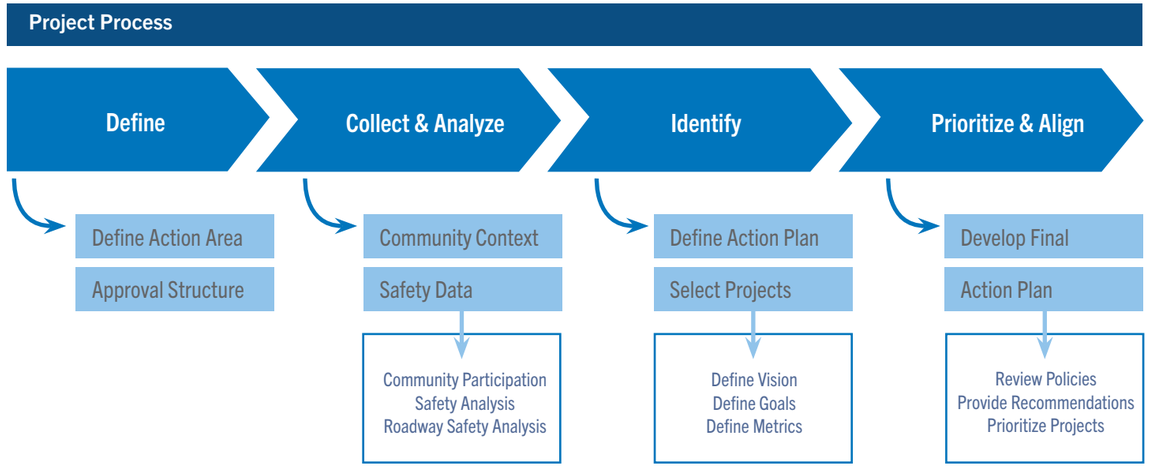
The City of Bluefield is located in Mercer County, West Virginia. In 2022, the City of Bluefield was awarded a United States Department of Transportation (USDOT) Safe Streets and Roads for All (SS4A) grant to complete this comprehensive safety Action Plan.

This Action Plan is in support of the 2022-2026 West Virginia Strategic Highway Safety Plan goal to reduce fatalities and serious injuries on West Virginia's roadways with the ultimate objective of zero fatalities by the year 2050.

1.1 Process

The focus of this Action Plan is to gather data and input from the community, identify areas of safety concerns, and identify countermeasures to address those safety concerns. The development of this Action Plan followed the process below:

1. Define the Action Area which the plan studies.
2. Define the approval structure for the Action Plan.
3. Understand the community context which contributes to the transportation infrastructure and safety concerns within the Action Area.
4. Collect and analyze safety data within the Action Area through:
    a. Community Participation
    b. Safety Analysis
    c. Roadway Safety Audits
5. Define the Action Plan Vision, Goals, and Metrics used to select and prioritize projects.
6. Select projects and applicable safety countermeasures.
7. Prioritize projects for implementation.
8. Review policies and provide recommendations.
9. Develop a plan for measuring the Action Plan's progress.



1.2 Action Area

Several considerations were used to define the Action Area's boundaries. In support of the objective of zero fatalities, the primary consideration was fatality locations within Bluefield.

Secondary considerations were the location of key roadways, as determined from West Virginia Division of Highways (WVDOH) Annual Average Daily Traffic (AADT)[1], and major travel destinations including downtown Bluefield; the City's public schools (High, Middle, Elementary, and Intermediate); Bluefield State University in West Virginia; Bluefield University in Virginia; associated facilities including Mitchell Stadium, Fitness Center, Herb Sims Wellness Center, and the Medical Education Center Residence Hall; City recreational facilities; and major retailers such as Cole Harley-Davidson and Tractor Supply.

In addition, the Action Area included the African American communities of "North Side" and "East End" located north of the railroad.

The Action Area differs slightly from political boundaries with the western end extending into Bluefield, Virginia to encompass Bluefield University, Lotito City Park, and Bowen Field. **Figure 1** presents the Action Area boundaries.

[1] https://gis.transportation.wv.gov/aadt/

Figure 1 *Action Area*

1.3 Decision Making

To guide development of the Action Plan, a Steering Committee was established to provide input at key project milestones. The Steering Committee was invited by the City and consisted of the following members:

- Cecil Marson, City of Bluefield, City Manager
- Peter Taylor, City of Bluefield, Board of Directors Member at-large
- Curtis French, City of Bluefield, Interim Engineering Services/Stormwater Director
- Ryland Musick, Ph.D., P.E, WVDOH, District 10 Engineer/Manager
- Keith Olson, Bluefield State University (WV), Vice President of University Development
- Joseph Beckett, Bluefield State University (WV), Chief of Staff
- Joshua Cline, Bluefield University (VA), Vice President of Institutional Advancement
- Dennis Dillow, City of Bluefield, Chief of Police

The Steering Committee met three times during Action Plan development, as well as independently reviewed the draft Action Plan. The Steering Committee will continue to play a critical role throughout the implementation and monitoring of the Action Plan. **Table 1** provides details on the key milestones discussed at each meeting.

Appendix A is the Community Participation Plan (CPP) which includes copies of Steering Committee meeting materials and summaries.

Table 1 *Steering Committee Meetings*

Meeting #	Key Milestones	Meeting Date
1	• Approve Action Area • Identify community changes that have created new transportation safety concerns • Identify stakeholder interviewees • Identify public meeting locations, target dates, and topics • Approve the social media data collection tool and distribute it to their constituencies • Identify data needs and sources	September 18, 2023
2	• Review public feedback from Stakeholder Interviews, Public Meeting #1, and social media data collection tool • Review crash data • Develop plan vision statement • Review and approve project goals and metrics • Familiarization with safety countermeasure concepts	October 19, 2023
3	• Review road safety audits data • Identify projects • Identify applicable safety countermeasures for the safety projects • Review and approve project prioritization methodology	November 9, 2023
Individually	• Review and comment on draft Action Plan	December 2023

The City of Bluefield Board of Directors was apprised of the Action Plan's development and completion at three Board meetings that were held in-person and livestreamed. On September 12, 2023, the Board was provided a presentation that familiarized them with the steps that would be completed to develop the Action Plan. On December 12, 2023, the Board was provided the Public Meeting #2 presentation that discussed safety countermeasures, projects identified, as well as how the safety countermeasures were proposed to be applied within the project boundaries. On February 1, 2024, the Board was provided the final Action Plan for review.

On February 27, 2024, the Board adopted this Action Plan, committing to the Vision Zero Goal. **Appendix A** is the CPP which includes copies of the Board presentations.

City of Bluefield Board Meeting, September 12, 2023

City of Bluefield Board Meeting, December 12, 2023

2.0 Community Context

Bluefield's current transportation infrastructure is inextricably linked to its terrain and history.

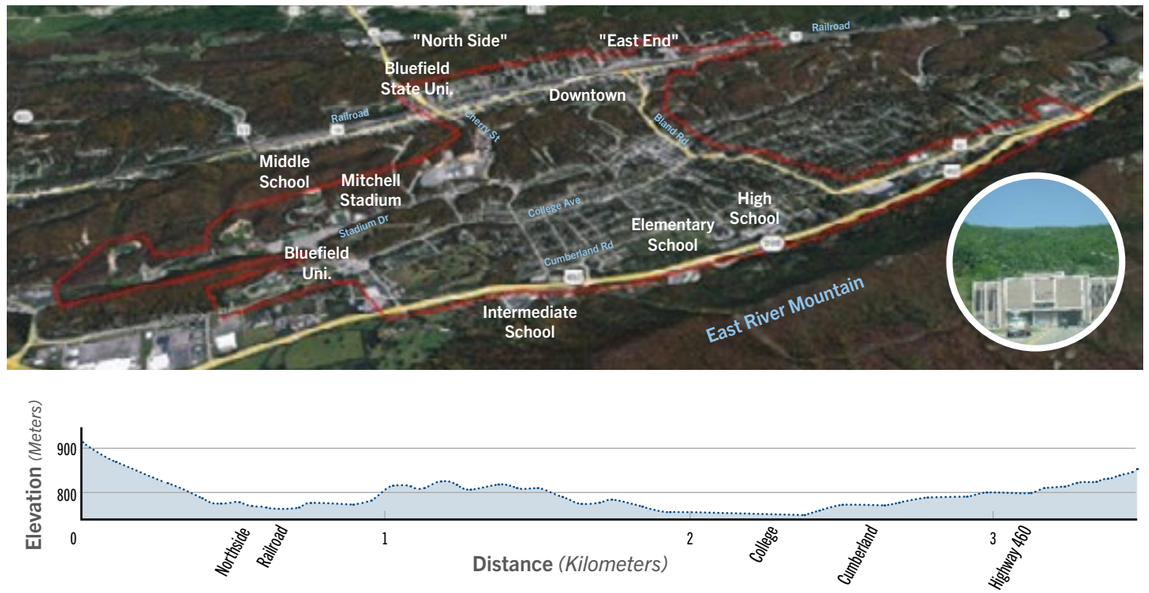
2.1 Terrain Conditions

The City lies along the northern edge of the Allegheny Front geologic formation that can be clearly seen in aerial photographs as a strip of folds in the landscape. The Allegheny Front creates a terrain of narrow valley bottoms divided by steep mountain ridges. **Figure 2** is an aerial photograph of the relevant part of the Allegheny Front.

Through Bluefield, the Allegheny Front runs east to west. The railroad and downtown Bluefield lie in the northern valley. The communities of "North Side" and "East End", with Bluefield State University, are on the south facing slopes north of the railroad. A ridgeline separates northern Bluefield from southern Bluefield. Cherry Street and Bland Street are the

Figure 2 *Allegheny Front Geological Formation*

Figure 3 *Bluefield Topography*



primary connecting roads between the northern valley and the wider southern valley. Cherry Street uses a narrow manmade cut to get through the ridgeline. Bland Street follows a narrow natural pass through the ridgeline. Stadium Drive and College Avenue follow natural east to west valleys. Highway 460 follows the same east to west pattern along the foot of the northern slope of East River Mountain. **Figure 3** presents a sideview aerial, as well as a cross section showing the topographic relief across Bluefield. The natural terrain of Bluefield influenced the transportation infrastructure towards narrow and steep roads. **Photographs 1-3** illustrate the terrain of Bluefield.

The Allegheny Front has historically restricted north to south movement of people and freight. The 1974 opening of the East River Mountain Tunnel on Interstate 77, just east of Bluefield, increased north-south movement of people and freight but bypassed Bluefield. **Figure 3** also includes a picture of the East River Mountain Tunnel. Prior to this, Bluefield's main transportation infrastructure was the railroad.

Photograph by:Andrew Turnbull

Photograph 2 *High Street off Bland Street showing steep roads.*

Photograph by:Jerry D. Martin

Photograph 1 *"East End" (Sussex Street; Hanover Street) showing narrow, steep roads and roadside parking.*

Photograph by:Jerry D. Martin

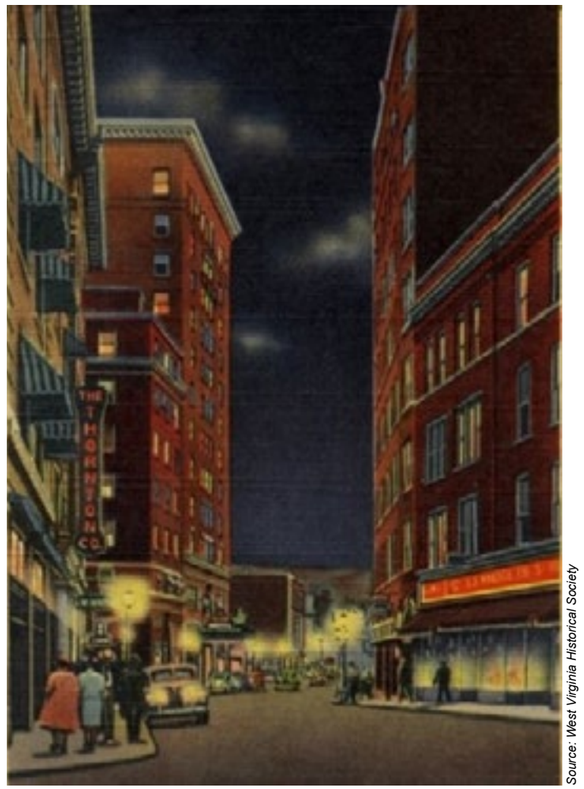
Photograph 3 *South Mercer Street and Randolph Terrace showing Bluefield terrain.*

2.2 History

Bluefield's history is intertwined with the industries that drove its development, including rail, coal, education, and tourism. Bluefield was founded in 1777 as a small mountain town. Around 1870, West Virginia's southern coal fields began to be opened. In 1882, Norfolk and Western Railroad selected Bluefield as the site for a repair center and major division headquarters to serve the recently discovered Pocahontas Coalfields. These coal deposits turned out to be the largest and richest deposit of bituminous coal, a soft burning coal preferred for fueling industrial machinery, in the world. This set off a coal rush that lasted from 1883 to 1960, with the Pocahontas Coalfields driving the entire Industrial Revolution in the US, fueling the US and British Navies during both World Wars, and fueling the post-World War II boom years in the US.

As such, Bluefield has historically been economically dependent on the railroad and coalfields. Bluefield was a primary "port-town" on the "river of commerce" that flowed along the railroad. Bluefield not only supplied workers to the railroad and coalfields, but the goods and services those workers needed for day-to-day living. This included serving the educational needs of the diaspora of southern African Americans who came to Bluefield to work on the railroad and in the coal fields. In 1895, the Historically Black University of Bluefield State College was founded. The education industry in Bluefield expanded in 1922 with the founding of Bluefield College, now Bluefield University, by the Baptist General Association of Virginia.

The railroad also opened Bluefield to the outside world, making it more accessible for tourism. Taking advantage of its natural climate before the advent of artificial air-conditioning, Bluefield became a destination for people escaping the summer heat of the lower elevations. Bluefield is known as "Nature's Air Conditioned City" **(Photograph 4)**, and in its heyday, Bluefield was known as "Little New York," with a bustling nightlife. In 1920, the twelve-story West Virginian Hotel was built as one of the first "skyscrapers" in the area and one of the tallest buildings in the world at the time.



Source: West Virginia Historical Society

Photograph 4 *Federal Street, circa 1930s*

Source: Bluefield State

Photograph 5 *Duke Ellington, circa 1966, Bluefield State*

The "East End" community was a center of African American culture. Numerous famous African American musicians, such as James Brown, Little Richard, Duke Ellington, Tina Turner, and Joseph Arrington (aka Joe Tex), performed for the Bluefield State College students **(Photograph 5)**. They stayed at the Hotel Thelma or Travelers' Inn in "East End", both of which were listed in the African American Green Book, a guide for African American travelers which identified restaurants and lodging that accepted African Americans.

In these early years, Bluefield's transportation infrastructure was centered on the railroad with freight and travelers moving in and out by train **(Photographs 6 and 7)**. The downtown streets were initially laid out to support horse, cart, and pedestrian traffic. From 1914 to 1937, the City even had a trolley system **(Photograph 8)**. As a compact, pedestrian-oriented City, coupled with the challenging terrain, many streets in Bluefield tended to be narrow and steep **(Photographs 1-3)**. In addition, many homes lacked driveways, leading to present day parking in the narrow streets **(Photograph 13)**. Furthermore, many streets and intersections were not designed with automobiles in mind **(Photograph 9)**.

Source: West Virginia Historical Society

Photograph 6 *Bluefield, circa 1912, showing horses and wagons moving freight from the railroad*

Source: West Virginia Historical Society

Photograph 8 *Trolley Car on Princeton Avenue, circa 1909*

Source: West Virginia Historical Society

Photograph 7 *Bluefield, circa 1950, showing passenger train*

Source: West Virginia Historical Society

Photograph 9 *400 Block of Bland Street, Downtown Bluefield, circa 1960*

2.3 Economic Decline

In the 1950s, the population of Bluefield peaked at 21,500 people. Today, the population is slightly less than 10,000 people. The 1950s is also when coal jobs began to wane with the advent of coal mining automation. Mercer County and Bluefield have been one of the hardest hit coal communities in the country. ***The Interagency Working Group On Coal and Power Plant Communities and Economic Revitalization*** April 2021 Initial Report, ranks Mercer County first in the nation for energy jobs loss. This job loss and declining population has resulted in many closed businesses in Bluefield (**Photographs 10 and 11)**. The declining population also resulted in the 2020 closure of the Bluefield Regional Medical Center hospital facility located along Cherry Street.

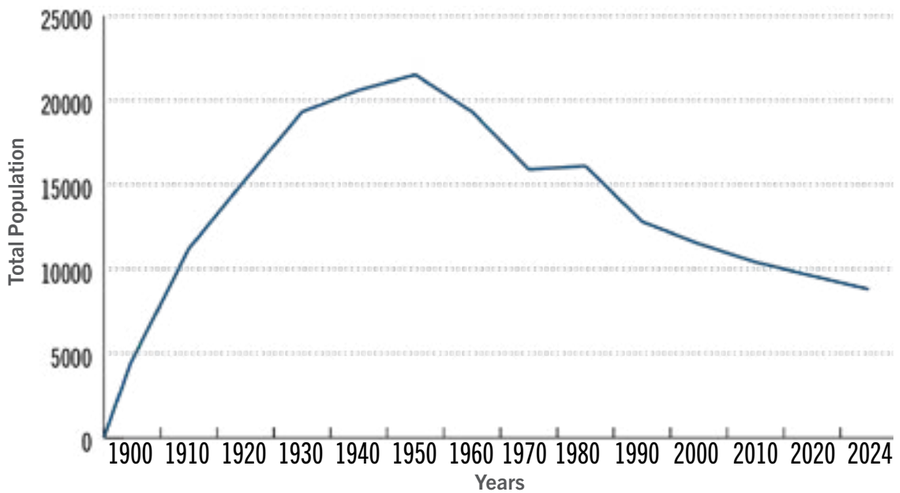
The changing coal market and a series of mergers also impacted the rail industry in the area. As shipments decreased and population declined, the railroad, now known as Norfolk Southern, reduced operations in Bluefield. These circumstances resulted in the division headquarters moving from Bluefield to Roanoke, Virginia in 2016. Also, in 1979, the railroad ceased passage operations and closed the Bluefield Amtrak station[2].

[2] *Final Report to Congress on the Amtrak Route System As Required by the Amtrak Reform Act of 1978*

[3] Bluefield WV Economic Development Authority

Educational opportunities in Bluefield also suffered setbacks with Bluefield State College's dorms closing in 1968, the football team disbanding in 1980, and the removal of two-year programs in 2003 to help create the community college system. The tourism industry suffered through a combination of the advent of artificial air conditioning and the loss of the passenger rail service. The 1974 opening of the Interstate Highway System through East River Mountain, five miles east of Bluefield, provided greater access for private vehicles and freight trucks while simultaneously making it easier for tourists and commerce to bypass the City.

With the loss of employment opportunities across these four primary economic sectors, Bluefield suffered a significant loss of population to 9,324 as of 2023[3]. A declining population and local economy have resulted in declining tax revenues. As recently as 2019, the City was forced into "survival mode" in which only essential City services could be maintained. This economic reality meant that over the past five decades, the City has been forced to make hard decisions between essential City services (e.g., public water and sewer or emergency response) and maintaining or improving key components of the transportation infrastructure – such as sidewalks and street lighting **(Photographs 12 and 13)**.



Photograph 10 *Closed shopping center on Cumberland Road*

Photograph 11 *Raleigh Street, downtown Bluefield showing vacant, boarded up buildings*

Photograph 12 *Ellis Street - "East End" - Showing narrow streets, deteriorated sidewalks, street parking (on the sidewalks)*

Photograph by: Jerry D. Martin

Photograph 13 *Henry Street, "East End", showing deteriorated sidewalks*

2.4 Equity Considerations

This City's economic downturn has been felt most acutely by the historic African American communities of "North Side" and "East End". During Bluefield's peak, these were vibrant African American communities composed of railroad and coal workers and the service businesses that supported them. These community's business districts also catered to college students who boarded at the Historically Black College and University (HBCU) of Bluefield State College. Whereas these communities have suffered the same railroad and coal job losses as the City, they have also experienced additional economic hardships.

The "North Side" and "East End" resident's property values were depressed by the practice of redlining experienced in many African American communities nationwide. In addition, the communities lost their connection with Bluefield State University through a combination of the 1968 closure of the college's dorms due to a racially motivated bombing incident and overall changing demographics of the college to be more white. The communities have also become more isolated from the City proper with the removal of two bridges across the intervening railroad tracks – the Allen Street Pedestrian Bridge in 2009 and the Belcher Bridge in 2010 – to accommodate double-stacked freight on Norfolk Southern's Heartland Corridor. These economic realities have resulted in even more pronounced transportation infrastructure decay and isolation which has contributed to transportation safety concerns for the residents in the "North Side" and "East End" communities.

Figure 4 presents a map of census blocks by percent minority population. Note the concentration of minority populations in the "North Side" and "East End" communities as well as along Bland Street (77% to 100%). The Steering Committee chose Mount Zion Pentecostal Church, located in the "North Side" community, as the location of the first public meeting to encourage the "North Side" and "East End" residents to provide meaningful input into identifying their safety concerns as well as infrastructure improvements.

Declining economic conditions have also yielded a high percentage of low-income residents throughout the City. **Figure 5** presents a map of census block groups by percent low-income populations. Note that lower income populations are more prevalent in the "North Side" and "East End" communities as well as along Bluefield Avenue (61% to 77%).

Reflective of this economic reality in Bluefield, all the Census Tracts that the Action Area overlaps with are identified by USDOT, as well as by the Climate and Economic Justice Screening Tool (Justice 40), as Historically Disadvantaged. In addition, Census Tract 19, which encompasses the "North Side" and "East End" communities, is identified as a USDOT Area of Persistent Poverty. **Figure 6** presents a map of the Census Tract boundaries.

The population decline has primarily been younger residents leaving for better economic opportunities. This has resulted in a high percentage of elderly residents 65 years of age and older. US census data for 2022 indicates the "East End" community as well as the downtown Census Tract (19) is 22.4% elderly. The Bland Street Census Tract (22) is 24.1% elderly. These Census Tracts have higher percentages of elderly than West Virginia (20.4%) and the United States (16.5%) as a whole. The "North Side" community Census Tract (20) is 17.2% elderly.

Figure 4 *Census Blocks by Percent Minority*

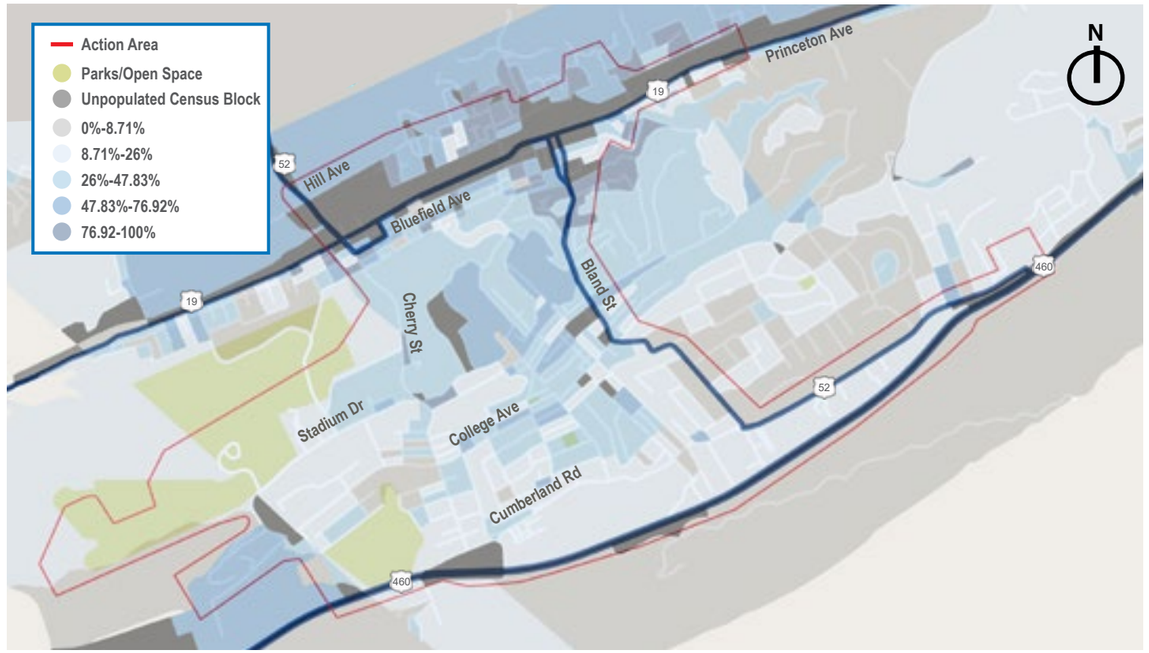
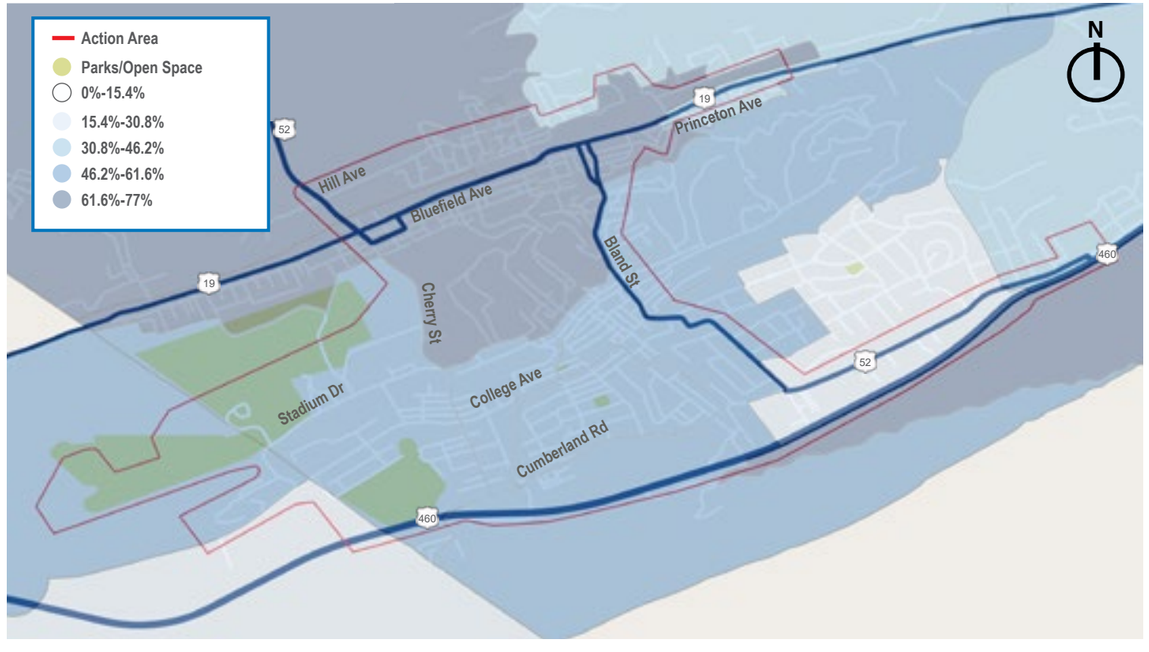


Figure 5 *Census Block Groups by Percent Low Income*



Low-income and elderly populations are more likely to have higher percentages of disability[4]. US census data for 2022 indicates the “East End” community as well as the downtown Census Tract (19) is 32.3% disabled. The “North Side” community Census Tract (20) is 30.2% disabled. The Bland Street Census Tract (22) is 24.9% disabled. These are higher percentages of disability than West Virginia (19.1%) and the United States (12.9%) as a whole.

The combination of low-income, elderly, and disabled population results in Bluefield’s residents relying on alternative modes of transportation including walking, bicycles, mobility scooters, ride sharing with friends and family, and public transit (Bluefield Area Transit (BAT)). **Figure 7** illustrates this by presenting 2022 census data for no vehicles available. US Census data for 2022 indicates the “East End” community as well as the downtown Census Tract (19) has a 4.2% rate of no vehicle availability. The “North Side” community Census Tract (20) has a 5.4% rate no vehicle availability. The Bland Street Census Tract (22) has a rate of 7.15% no vehicle availability. These are higher percentages of no vehicle availability than West Virginia (2.7%), Mercer County (2.53%), or Bluefield (2.07%) as a whole.

Figure 8 presents 2022 census data for the percent population who walk to work. Note the higher concentrations of walk to work of 4.8% to 7.6% in the “East End” community as well as downtown, which is higher than the United States (2.4%) and West Virginia (2.7%) as a whole.

[4] https://health.gov/our-work/national-health-initiatives/healthy-aging/social-determinants-health-and-older-adults#:~:text=Older%20adults%20with%20lower%20incomes,have%20disabilities%20and%20die%20younger.

Figure 6 *Census Tract Boundaries*

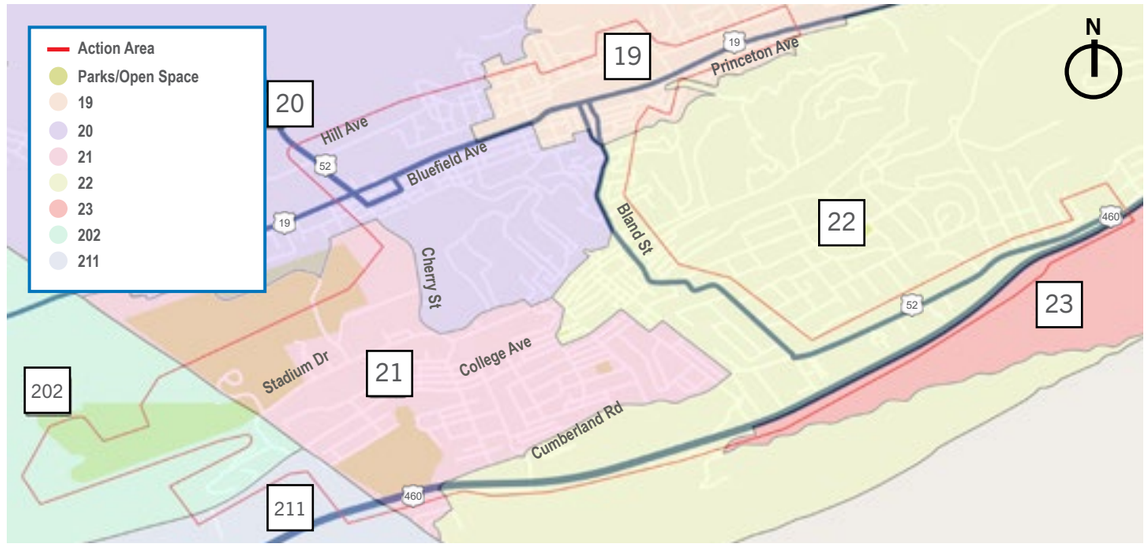


Figure 7 *Census Tracts by Percentage of Individuals with No Vehicle Access*

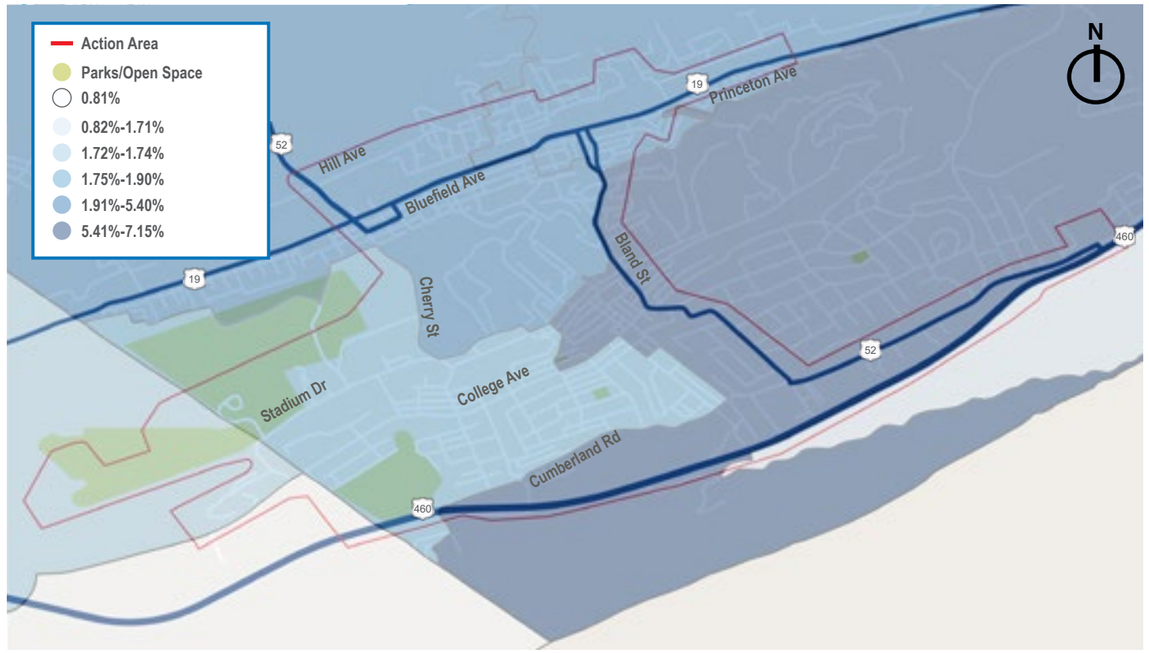
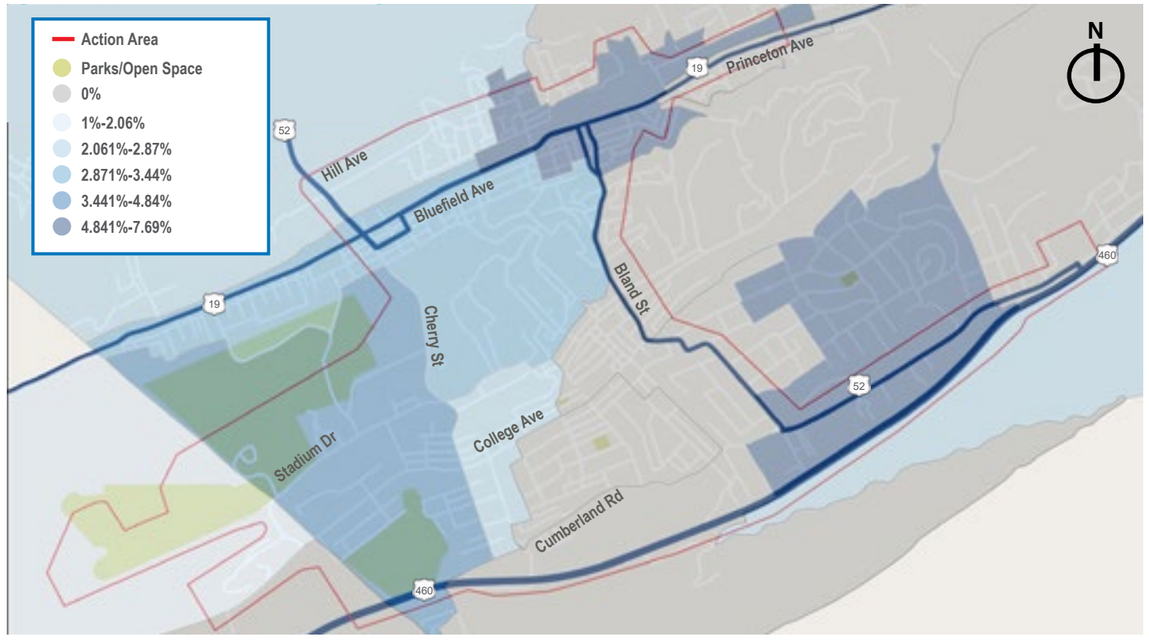


Figure 8 *Census Blocks by Percentage of Individuals Who Walked to Work*



2.5 Renaissance

Recently, Bluefield has begun to see an economic renaissance. In 2010, Norfolk and Southern Railroad completed the 500-mile Heartland Corridor Project, which accommodates double-stacked container freight trains on the railways that go through the heart of downtown Bluefield. Economic opportunities have also emerged with the Bluefield Economic Development Authority, attracting new manufacturing and technology industries. Recent additions have included the 2019 Commercialization Station **(Photograph 14)** along Bluefield Avenue, Intuit (2020) in downtown Bluefield **(Photograph 15)**; and X-MAT CCC (2021) manufacturing facility along Bluefield Avenue. John Nash Boulevard at Exit 1 on I-77 is the future home of Omnis Building Technologies, LLC and the anticipated future expansion of X-MAT, both of which will increase traffic in Bluefield. Omnis Building Technologies, as well as other manufacturers, are seeking access to the railroad via an intermodal facility to transport bulk goods, manufacturing materials, and finished products[5].

Education opportunities have likewise expanded. In 2021, Bluefield State College reinstated its football team and opened new dorms in the former hospital location. This has increased vehicular traffic along Stadium Drive and pedestrian traffic along Cherry Street. In addition, Bluefield State College was granted university status in 2022, expanding its research foothold in the region as well as availing other academic opportunities, including accreditation for a new Master of Business Administration program in 2023. Subsequently, the university has experienced a record 12.6% enrollment increase to 1,281 students. As a school with a large presence of commuter students, more people are traveling through the intersection of US 52 at Hill Avenue. In addition, more pedestrians are on Pulaski Street and Hardy Street as they are used by students walking to campus and for campus events.

Tourism opportunities have expanded with new restaurants and entertainment downtown **(Photograph 16)**, bed and breakfast lodgings along Jefferson Street, and All-Terrain Vehicle (ATV) trails and resorts just outside of town. Bluefield is also West Virginia's trademarked Christmas City, attracting over 40,000 visitors annually to the Holiday of Lights display at Lotito City Park.[6] In 2023, Bluefield was named one of the top "10 Beautiful Towns to Retire in the Blue Ridge Mountains"[7].

There is an interest in capitalizing on Bluefield's railroad history by developing a railroad walk which passes through downtown Bluefield and the "North Side" and "East End" communities due to their proximity and viewpoints over the railyard. There are conceptual plans for a new City park planned downtown in the 400 block of Bland Street, after the demolition of the existing deteriorated buildings[7]. In addition, there has been a renewed interest in "East End" African American history, as exhibited by the placement of historical signs at the Grant Street Bridge and restoration efforts at the Hotel Thelma.

This renaissance has both increased and redistributed demand on Bluefield's transportation infrastructure, resulting in transportation safety concerns that were previously not a concern.

[5] https://storymaps.arcgis.com/stories/91b2ab7fb5224b4eb69e76a12e5ba948

[6] West Virginia voted most festive state in the US; DC is voted least festive (msn.com)

[7] 10 Beautiful Towns To Retire In The Blue Ridge Mountains (thetravel.com)

Source: MyBluefield Economic Development

Photograph 14 *Bluefield Avenue, present day, Commercialization Station*

Source: Swartz Photography

Photograph 15 *Bland Street downtown showing new Intuit building*

Source: West Virginia Public Broadcasting

Photograph 16 *Commerce Street, Downtown Bluefield, present day showing Granada Theater*

Table 2 provides a list of key roadways and the changes they have experienced and the transportation impacts of those changes.

Table 2 *Changes in Destinations on Key Roadways*

Roadway	Change	Impact
Bluefield Avenue	• 2019, Commercialization Station opens (60,000-square-foot business incubator) • 2022, new BAT Transfer Station opens	• Increased commuter traffic • Increased bus and pedestrian traffic
Bland Street	• 1998, Cole Harley-Davidson opens • 2019 Baker Hill B&B opened • 2020, Intuit opens downtown (300 employees) • 2024, new downtown park (400 block)	• Increased motorcycle traffic • Increased pedestrian traffic • Increased commuter and pedestrian traffic
Cumberland Road	• 2021, New elementary school opens (next door to the existing high school)	• Increased vehicular, pedestrian, and bicycle traffic
Hill Avenue | Pulaski Street | Hardy Street | US 52 / Hill Avenue Intersection	• 2021, Bluefield State University increases student enrollment	• Increased commuter traffic on US 52 • Increased pedestrian traffic on Hill Avenue, Pulaski Street, and Hardy Street
Cherry Street	• 2021, Bluefield State University opens new dormitories at the converted former hospital building	• Increased pedestrian traffic along Cherry Street
Stadium Drive	• 2000, new Middle School opens • 2021, Bluefield State University reinstates football team • 2022, 26th year of Bluefield Holiday of Lights (40,000 visitors[8])	• Increased vehicular, pedestrian, and bicycle traffic • Increased vehicular and pedestrian traffic to Mitchell Stadium • Increased vehicular traffic to Lotito City Park
Jefferson Road	• 2019, Bluefield Inn B&B opens	• Increased pedestrian traffic to and from downtown
Downtown	• 2012, Granada Theater opens • 2014, The RailYard restaurant opens • 2020, The Vault restaurant opens • 2020, Alorica/Intuit opens • 2021, Granada reopened • 2023, Raleigh St. Cinemas reopened	• Increased vehicular and pedestrian traffic downtown

[8] https://issuu.com/thecollegiatetimes/docs/virginiatech_march212023

3.0 Community Participation

Community participation was critical to the development of this Action Plan. Input from individuals that use Bluefield's streets every day was fundamental to accounting for the safety concerns of residents and addressing them with appropriate countermeasures. As such, community participation encouraged transparent and open, two-way communication to allow the public to identify safety concerns and educate the public on the Action Plan.

Community participation also strengthened the relationships between the public, the stakeholders, and the City of Bluefield. This relationship building is vital to the Action Plan's future as the Action Plan requires commitment from the entire community to facilitate its successful implementation. The relationships established through this, and future community participation, will work to keep these groups committed to improving the safety of Bluefield and the successful implementation of the projects. The information gathered through community participation was used to inform the Roadway Safety Audits, as well as the identification of projects and safety countermeasures.

Community participation consisted of three primary components: a social media data collection tool, stakeholder interviews, and public meetings. In addition, all meeting materials included contact information where the public could send questions and comments.

All community participation materials and summaries are included in the CPP found in **Appendix A**. The CPP outlines the purpose and need for engagement, goals, specific audiences, messaging, and the outreach methods for the community participation that took place as part of this plan. The CPP contains all meeting presentations and summaries as well as interview summaries.

3.1 Social Media Data Collection Tool

To maximize the public's input about transportation safety concerns in Bluefield, a simple data collection tool was developed using ArcGIS Survey123. This tool allowed respondents to mark the specific location of their safety concern on an interactive map and then provide a brief description of that concern. The tool was publicly available from September 6, 2023, to December 4, 2023.

The tool was promoted via the City of Bluefield Facebook account, community based social media, through the Board of Directors meeting, by Steering Committee members distribution to their respective constituents, and in the Public Meeting #1 presentation and handout.

The tool collected 41 different responses identifying 58 areas of safety concerns. Common themes among the responses were poor sidewalk conditions, poor roadway conditions, speeding, lack of street lighting, street parking, general safety concerns, and traffic congestion.

The location of the marked concerns varied, but there was a noticeable grouping of marked concerns in the communities of "North Side" and "East End". **Figure 9** presents a map of the data collection tool results.

3.2 Stakeholder Interviews

Stakeholders were identified by the Steering Committee members based on their area of expertise and local knowledge of safety concerns within the Action Area. In addition, the stakeholders also identified additional interview candidates **(See Table 3 for list of interviewed stakeholders).**

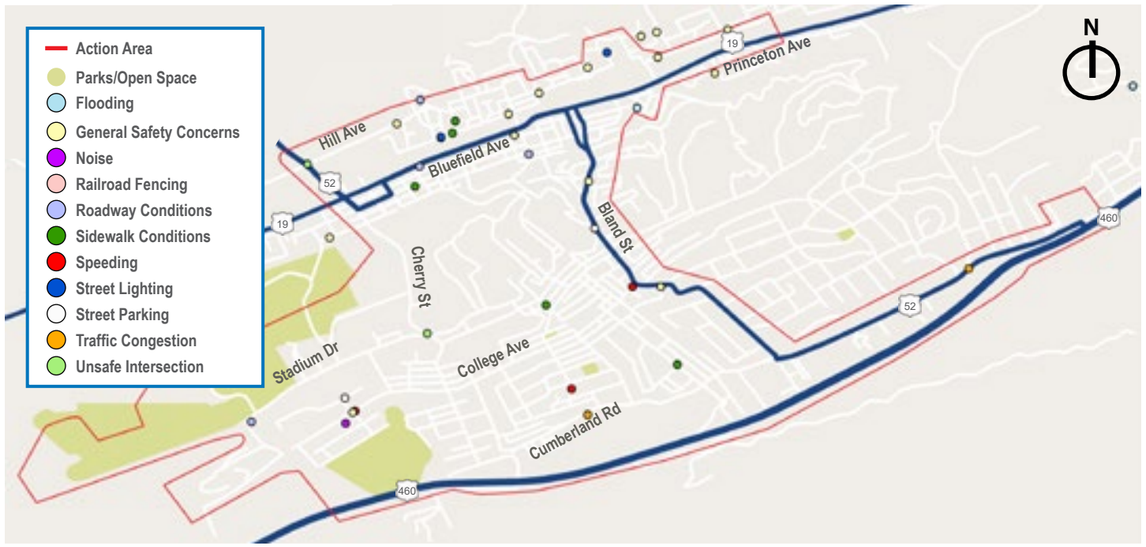
Interviews were conducted in groups, were predominantly in-person, and lasted approximately one hour. The interviews began with a brief explanation of the Safety Action Plan and then continued as an open discussion with maps of the Action Area being provided to help guide the discussion and mark areas of safety concern.

The stakeholder interviews provided important insight into the roadway safety concerns of Bluefield with many of the stakeholders reiterating similar areas of safety concerns and reasons for those concerns. Commonly reiterated areas among the stakeholders included Cherry Street, College Avenue, Princeton Avenue, Cumberland Road, the 5-way intersection at US 52 and Hill Avenue (at the entrance to Bluefield State University), Pulaski Street, Bland Street, and Stadium Drive.

The stakeholder interviews also gave insight into safety concerns that might not be illustrated through the crash data. For example, Bluefield State University recently converted the former hospital on Cherry Street into a dorm. This conversion has caused an increase in pedestrian traffic along Cherry Street, as students now use the street to walk to and from the school's main campus and the dorm. This poses an emerging safety concern as Cherry Street lacks sidewalks or street lighting, causing many students to walk in the street. Stakeholders expressed concern for the increased potential for pedestrian accidents along Cherry Street.

The information gathered from the stakeholders played a crucial role in understanding the safety concerns of Bluefield and developing potential projects that address those concerns. The interviews also gave the stakeholders the opportunity to learn about the Action Plan and their potential future role in implementing the plan.

Figure 9 *Data Collection Tool Results*



3.3 Public Meetings

Two public meetings were held for the development of this Action Plan. Both meetings were advertised well in advance through a variety of methods including social media, WVVA TV's Community Calendar, the Bluefield Daily Telegraph news articles, and flyers posted at local churches.

On October 18, 2023, Public Meeting #1 **(Photograph 17)** was held in the fellowship hall of the Mount Zion Pentecostal Church in the community of "North Side". The Steering Committee selected this location to encourage greater participation in the Action Plan's development from this community. Thirty-seven (37) people attended this meeting. During this meeting, the public was given an overview of the Action Plan components, the project's Action Area, the data collection process, the public engagement process, and a basic overview of safety countermeasures. Following the presentation, the public provided feedback through three different activities: a mapping exercise, a voting exercise on design preferences, and a general comment form. The mapping exercise gave the public the opportunity to mark areas of safety concern on large maps of the Action Area.

The results from this exercise indicated that residents of the "North Side" and "East End" communities face issues like narrow and steep roadways, poor paving conditions, poor sidewalk conditions, and lack of adequate street lighting. The voting exercise on design preference gave the public the opportunity to vote on their design preferences for crosswalks, intersections, wayfinding, bicycle facilities, and sidewalks. The comment form gave the public the opportunity to voice their opinions and questions on the Safety Action Plan and note any additional areas of safety concern. Most of the comments mentioned the poor condition of the sidewalks and streets in the "North Side" and "East End" communities.

On December 14, 2023, Public Meeting #2 **(Photograph 18)** was held in Bluefield City Hall. Nineteen (19) people attended this meeting. During the meeting, the public was provided with a presentation educating them on safety countermeasures. In addition, they were informed of the potential project areas and identified safety countermeasures to address safety concerns in those project areas. Immediately following the presentation, the public was invited to interact with the consulting team and City leaders to ask questions and provide their input on the project areas. To facilitate this interaction, the public was provided with a handout and large-scale maps for reference. Comment forms were also provided so that attendees could voice their opinions on the potential projects and their questions on the Action Plan in general.

Photograph 17 *Public Meeting #1*

Photograph 18 *Public Meeting #2*

The attendees asked about the feasibility of expanding the roads and sidewalks, due to the perceived narrow right-of-way and limited space in some of the project corridors, and how that would impact private property. The response provided explained that the project areas include countermeasures that are conceptual in nature and that as project areas are further evaluated, engineering details will identify specific project impacts.

Attendees expressed the need for street lighting on Hill Avenue, Pulaski Street, and Hardy Street as countermeasure for pedestrian visibility at night, as well as how important these streets were to the “North Side” and “East End” communities. One comment asked for improved public transit with additional transit shelters and routes.

The information gathered during these public meetings played a crucial role in understanding the safety concern Bluefield residents face. This information was used to develop the project areas that address those safety concerns. These meetings also allowed the public to be involved in the project development process, allowing their opinions and concerns to be appropriately reflected in this Action Plan.

Table 3 *Stakeholder Interviews*

Categories	Stakeholders
Utility Providers	• Appalachian Power Co. (Kristopher R. Howell) • Cardinal Natural Gas (Matt Hatfield) • Bluefield Sanitary Board (Chris Casey) • West Virginia American Water (Grant Blackburn) • City of Bluefield (Joey Rose)
Fire & Police Department	• Bluefield Fire Department (Shannon Akers & Chad Bailey) • Bluefield Police Department (Dennis Dillow)
Bluefield Area Transit **Bluefield Rescue Squad**	• Bluefield Area Transit (Cliff Riffe, Olivia Lawson, & John Reeves) • Bluefield Rescue Squad (Tracey Wright & Sean Cawtaell)
Non-profits	• Case WV (Kim Allen) • Wade Center (Betty Brainerd) • Bluefield Union Mission (Craig Hammond) • Recovery Point (Josh Farmer)
Downtown Businesses	• The RailYard (Emma Bailey) • The Vault (Bill Cole)
Public Schools	• Bluefield Middle School (Kim Miller) • Bluefield High School (Don Jones)
Universities	• Bluefield University (Hal Keene & Joshua Cline) • Bluefield State University (Joe Beckett, Tim Mckenzie, Ronnie Hypes, & Keith Olson)
Town of Bluefield, VA **VDOT**	• Town of Bluefield, VA (Andy Hanson) • VDOT (Jeff Buchanan)

PUBLIC MEETING SUMMARY

PUBLIC MEETING 1

37

TOTAL PARTICIPANTS ATTENDED MEETING

WHAT WE HEARD....

TOP COMMUNITY CONCERNS

POOR SIDEWALK CONDITIONS

LACK OF STREET LIGHTING

POOR PAVING CONDITIONS

TOP COUNTERMEASURE PREFERENCES

BUS SHELTERS

PEDESTRIAN LIGHTING

SIDEWALK RECONFIGURATION

CURB EXTENSIONS

PAINTED CROSSWALKS

PUBLIC MEETING 2

19

TOTAL PARTICIPANTS ATTENDED MEETING

PUBLIC MEETING HANDOUT

SUPPORTIVE OF RECOMMENDATIONS

MOST EXCITED ABOUT COUNTERMEASURES

STREET LIGHTING

IMPROVED PAVEMENT

IMPROVED SIDEWALKS

4.0 Safety Analysis

This section discusses crash history trends in Bluefield during the 5-year period from 2018 to 2022. The information was gathered from the local police department, the WVDOH, and the USDOT National Highway Traffic Safety Administration (NHTSA). The study period involved three fatalities. Although a year prior to the study period, a Driving Under the Influence (DUI)-related crash killed a Bluefield police officer in the line of duty on Princeton Avenue. The crash data analyzed is exclusive to those events which lie within the Action Area.

Statewide fatality trends for West Virginia were examined to provide a longer term understanding of fatality patterns across the state. The Bluefield fatality data is a small sample size from which to draw historical fatality trends. In general, across the state, fatalities have been on the decline looking at a longer-term horizon over the past twenty years but have been trending upwards in the past 5 years. A number of significant changes have occurred in the past 5 years, including the public response to COVID-19 which shifted where people live and work, and their transportation choices and behaviors.

Figure 10 *Fatality Rate (Per 100 Million VMT), West Virginia Statewide*

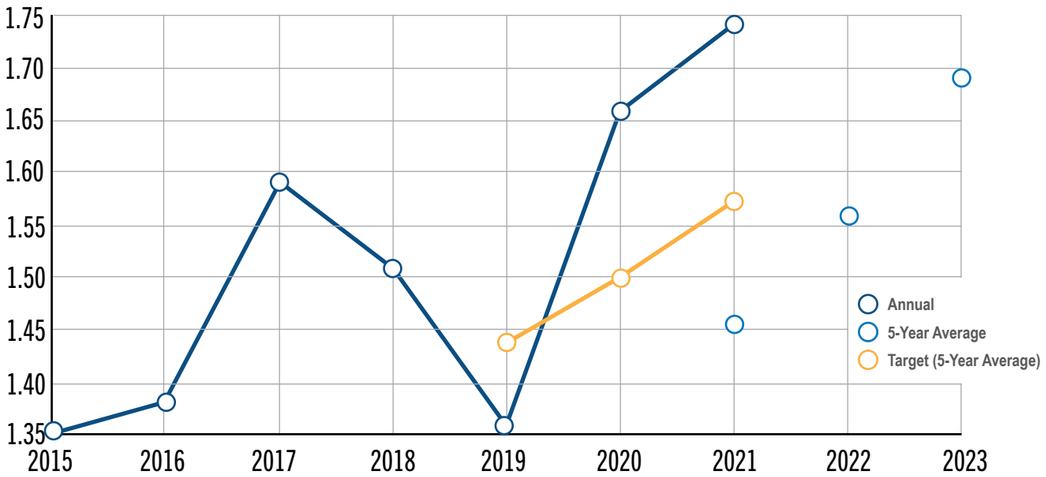


Figure Source: FHWA

Figure 11 *Fatality Trend Line Analysis, 2006-2020*

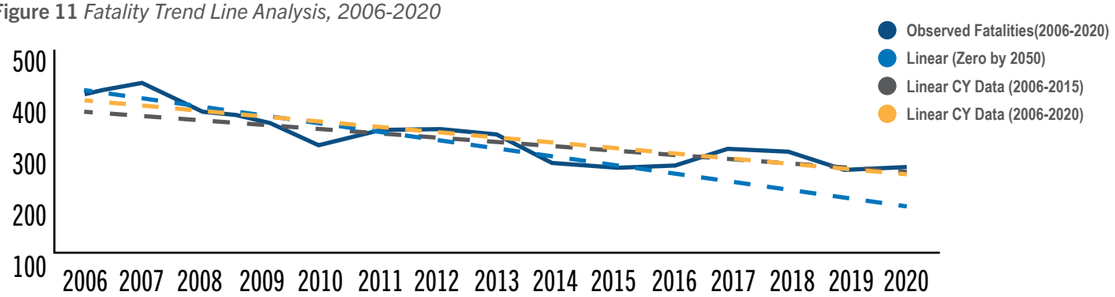


Figure Source: 2022-2026 West Virginia Strategic Highway Safety Plan

It is still to be seen if the fatality trends will return to the prior downward pattern; we must be vigilant to provide infrastructure that reduces serious injuries and fatal crashes.

According to the USDOT Federal Highway Administration (FHWA) State Highway Safety Report, the 5-year average of fatalities was reported to be 281.0 across the state for the 5-year period preceding 2021. This value correlates to an average 5-year crash rate of 1.500 per 100 million vehicle miles traveled (VMT). The 5-year average of serious injuries caused by crashes in 2021 was reported to be 909.4 across the state, with a 5-year average rate of 5.054 per 100 million VMT in the same 5-year period. Trends between 2015 to 2021 show fatality rates increasing in general **(Figure 10)** and serious injuries rates decreasing in general **(Figure 12)**.

Data from the 2022-2026 West Virginia Strategic Highway Safety Plan shows a more extended view of these trends over the past decade, which show that total fatalities have been generally decreasing over time **(Figure 11)**; similarly, serious injuries have been decreasing in the same time frame **(Figure 13)**.

Figure 12 *Serious Injuries Rate (Per 100 Million VMT), West Virginia Statewide*

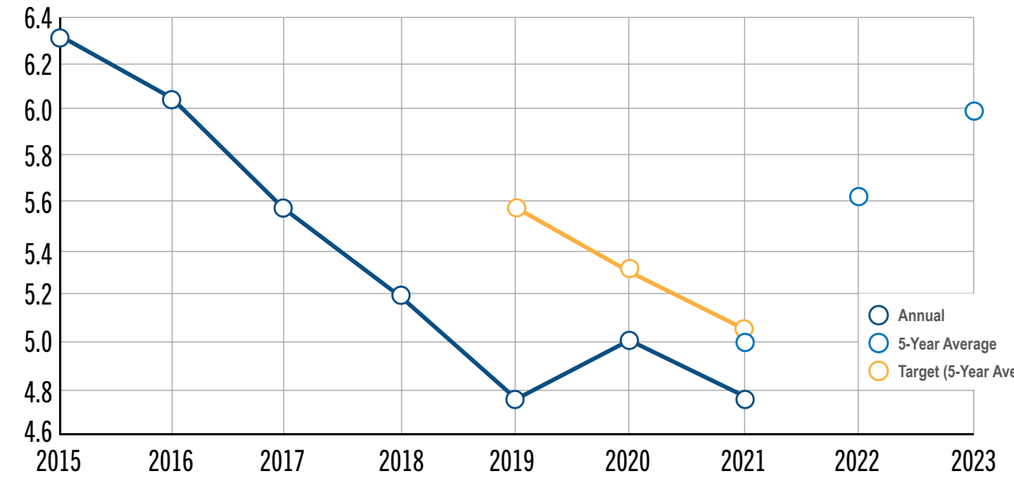


Figure Source: FHWA

Figure 13 *Serious Injuries Trendline Analysis, 2009-2020*

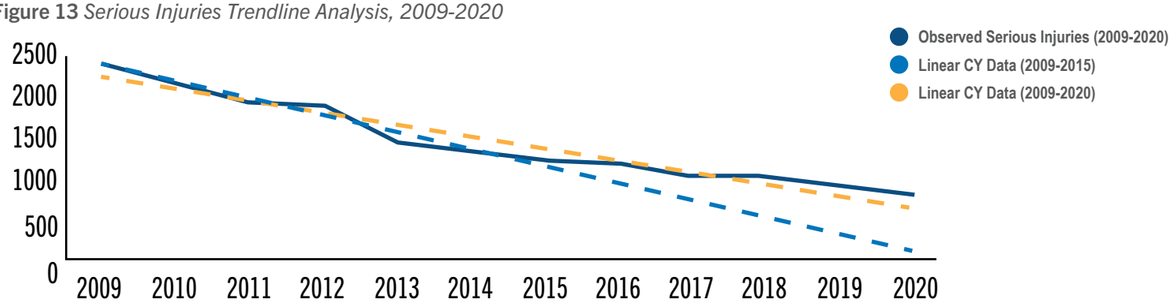


Figure Source: 2022-2026 West Virginia Strategic Highway Safety Plan

4.1 Safety Data Process

To examine specific crash locations, local crash data was obtained from the City of Bluefield's Police Department. Historical crash records from the previous 5 full years (2018 through 2022) were assessed. Using a full calendar year of data is the standard, as it provides a direct comparison to state and national averages over the same period. The crash records follow the ***State of West Virginia Uniform Traffic Crash Report***, and contain information including date, time, location, collision type, contributing factors, environmental factors, a crash diagram and narrative, vehicle and driver information with driver condition and contributing behaviors, and injury severity types for involved parties. Injury severity types follow West Virginia's KABCO scale **(Table 4)**. The records were geolocated into a sortable crash database with spatially located layer containing latitude and longitudes in Geographic Information System (GIS) software. This crash database was used for the crash analysis discussed in Sections 4.2 to 4.10 of this report.

There are limitations to a historical crash data analysis, namely in that historical data does not reflect recent changes to transportation, land use, or driver behavior. For example, the conversion of the former hospital into Bluefield State University dorms for the 2021-2022 school year has changed pedestrian travel patterns and presents an emerging concern area along Cherry Street. The beginning of the COVID-19 pandemic in 2020 changed how much people traveled. Long-term construction zones may also change travel patterns. The recent removal of a traffic signal and center turning lane on Bland Street, as well as the closure and reopening of the Grant Street bridge, will also show long-term changes in crash patterns along the corridor. Crash history also does not account for the increasing size of the average vehicle fleet, which is trending larger in general with more trucks and SUVs on the road, and heavier with more electric vehicles[9].

[9] https://www.iihs.org/news/detail/as-heavy-evs-proliferate-their-weight-may-be-a-drag-on-safety

Table 4 *Federal KABCO Injury Classification Scale*

Code	Description	Description
K	Killed	Fatality
A	Incapacitating Injury	Injury severe enough to require individual to be immediately transported from the scene. Injuries include bleeding wounds, distorted members, etc.
B	Non-Incapacitating Injury	Bruises, abrasions, swelling, limping, etc.
C	Possible Injury	No visible injury but individual complains of pain or momentary unconsciousness.
O	No Injury	No injury
M	Medical Condition Non-Crash Related Death or Injury	Medical condition unrelated to the crash.

Heavier vehicles are more likely to increase severity levels when a crash occurs with a vulnerable roadway user like a pedestrian. This database does not track non-reported crashes, which is when a police officer was not called to the scene to take a detailed report; or near-misses, where a vehicle almost collides with something and is also not documented. To get a full assessment of the safety of the transportation system, a multi-pronged approach was used which including community participation, field observations, and Road Safety Audits to supplement the historical crash analysis and locate areas of safety concern.

Even with these limitations, historical crash data can still be a powerful tool in determining where fatal and serious injury crashes have happened. The crash analysis in this report addresses reported crashes that occurred in Bluefield within the 5-year period beginning January 1, 2018, and ending December 31, 2022. There were 562 reported crashes within the study area **(Figure 14)**.

Heavier vehicles contribute to injury severity

Figure 14 *5-Year Crash History Map*

4.2 Crash Types

Crash types for collisions within the study area between the years of 2018 to 2022 were assessed **(Table 5)**. Single-vehicle crashes were the most common crash type every year, except in 2019 when rear-end collisions were more common. Rear-end collisions were the second leading crash type in most years, with right-angle crashes following closely after that.

It is also important to consider the correlation that exists between crash type and fatal and serious injury crashes. Within the study period, single vehicle crashes were the number one crash type causing fatalities and serious injuries, making up half of the fatal and serious injury causing crashes **(Table 6)**. Although rear-end crashes occurred more frequently than right-angle crashes, right-angle crashes caused more fatalities and serious injuries.

According to the FHWA, nationally more than 25% of fatal crashes are associated with a horizontal curve, and a vast majority of those crashes are roadway departures. Additionally, 75% of curve-related fatal crashes are single vehicle crashes with fixed objects (or overturning).[10] Rear-end and right-angle crashes can also be caused by horizontal curvature and alignment issues, but can also be due to poor visibility, limited sight distance, and poor quality or lack of advance warning signage.[11] Many of these crash types have causes that are correctable. To better understand the causes of vehicle collisions and roadway conditions, Road Safety Audits were conducted.

[10] https://safety.fhwa.dot.gov/roadway_dept/horicurves/

[11] https://highways.dot.gov/safety/local-rural/intersection-safety-manual-local-rural-road-owners/4-countermeasures

BLUEFIELD CRASH TYPE SUMMARY

159

TOTAL SINGLE VEHICLE CRASH TYPES FROM 2018-2022

129

TOTAL REAR END CRASH TYPES FROM 2018-2022

88

TOTAL RIGHT ANGLE CRASH TYPES FROM 2018-2022

Table 5 *Crash Type by Year, 2018-2022*

Crash Type	Year					
	2018	2019	2020	2021	2022	Total
Single Vehicle Crash	30	24	23	45	37	159
Rear End	25	30	20	30	24	129
Right Angle	16	7	20	24	21	88
Sideswipe, Same Direction	6	5	5	10	7	33
Head-On	4	0	9	10	9	32
Angle (Front to Side) Opposite Direction	8	5	7	5	6	31
Sideswipe, Opposite Direction	5	3	1	9	6	24
Angle (Front to Side) Same Direction	6	5	6	3	3	23
Rear-to-Side	3	0	3	3	5	14
Angle - Direction Not Specified	4	1	1	2	4	12
Rear-to-Rear	2	1	1	5	2	11
Not Reported	0	0	0	6	0	6
Total	**109**	**81**	**96**	**152**	**124**	**562**

Table 6 *Fatal and Serious Injuries by Crash Type, 2018-2022*

Crash Type	Fatal	Serious Injury	Total
Single Vehicle Crash	2	4	6
Right Angle	1	2	3
Head-On	0	1	1
Rear End	0	1	1
Angle, All Types	0	0	0
Sideswipe, All Types	0	0	0
Total	3	8	11

4.3 Crash Severity

When considering the safety of streets for roadway users, it is especially important to study and address the causes of crashes causing severe injuries and fatalities. There were 3 fatal crashes and 8 severe injury crashes recorded in the study period, for a total of 11 Fatal and Serious Injury (FSI) crashes **(Figure 16)**. Locations of FSI crashes are presented in **Figure 15**.

Additional contextual information about fatal crashes in Bluefield was found through the USDOT's Fatality Analysis Reporting Systems (FARS) and local newspapers. The FARS data details fatal crashes across the United States, and the three fatalities recorded within the study area were also found in this record.

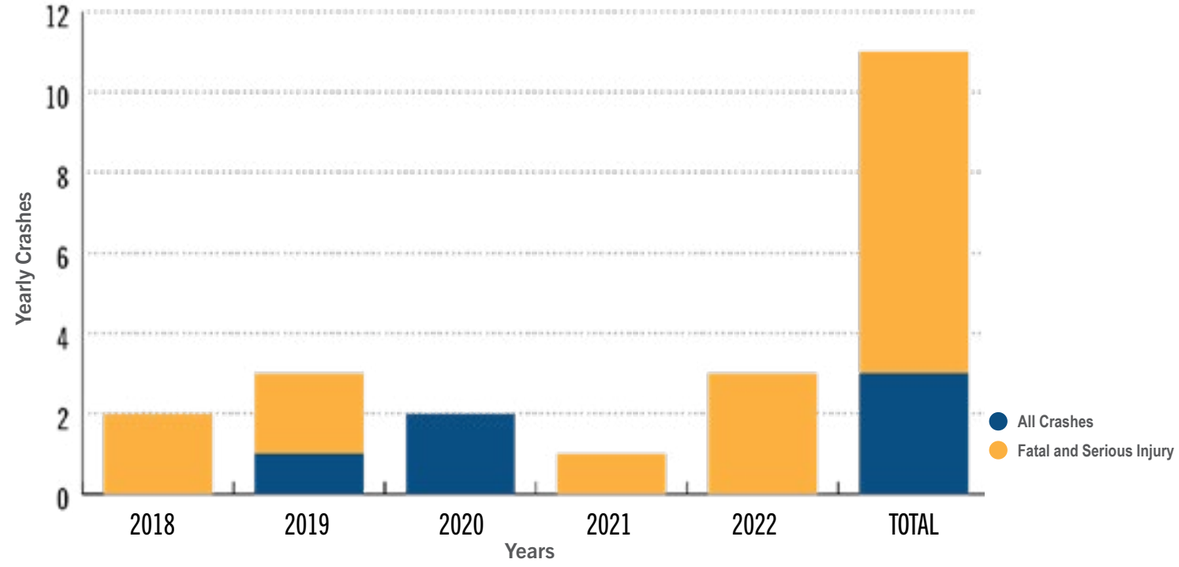
One collision, occurring on Saturday, April 4, 2020, involved a motorcycle travelling westbound on College Avenue. The motorcycle was struck by another vehicle turning on to College Avenue from Farmer Avenue heading eastbound. The crash occurred at 3:44 PM in daylight and in clear weather conditions.

A second fatal collision occurred on Tuesday, July 28, 2020; around 9:45 PM, a drunk driver struck a utility pole on Cumberland Road near its intersection with Orchard Street.

The third fatal collision occurred on October 18, 2019, at around 11:34 PM. A vehicle struck a pedestrian on the eastbound leg of US 460, east of Cherry Drive, where roads were dark and unlighted.

Figure 15 *FSI Crashes*

Figure 16 *Crash Severity by Year, 2018-2022*



BLUEFIELD CRASH SEVERITY SUMMARY

3

TOTAL FATAL CRASHES RECORDED IN THE STUDY PERIOD

11

TOTAL SEVERE INJURY CRASHES RECORDED IN THE STUDY PERIOD

4.4 Temporal Distribution

The temporal distribution of crashes can also show trends in behaviors and conditions that cause crashes. The monthly distribution shows that the highest number of crashes in the Bluefield study area occur in October and the least number of crashes occur in July **(Figure 17)**. This could be a result of weather and natural light changes as the seasons change. It is also likely related to the increased activity on the roadways related to students returning to class at schools and universities.

The FSI crashes do not follow this trend, but this could differ over a longer range, greater sample size, or larger study area. FSI crashes mostly occur in late spring and early fall, likely due to increased traffic volume and vehicle miles traveled in those months due to increased student and visitor travel. This follows national trends.

When weekly distributions are evaluated, Fridays have a significantly higher number of crashes compared to other days of the week **(Figure 18)**. The time-of-day distribution shows that most crashes occur mid-day, with a peak around 4PM **(Figure 19)**. This trend aligns with the evening peak hours, the times of the day during which there would be the most traffic using the road.

It is important to note the proportion of FSI crashes at night and the peak after 11 p.m. when fewer users are on the roadway. This may indicate that other factors, such as driver behaviors or lighting, are affecting crash rates.

Figure 17 *Crashes by Month, 2018-2022*

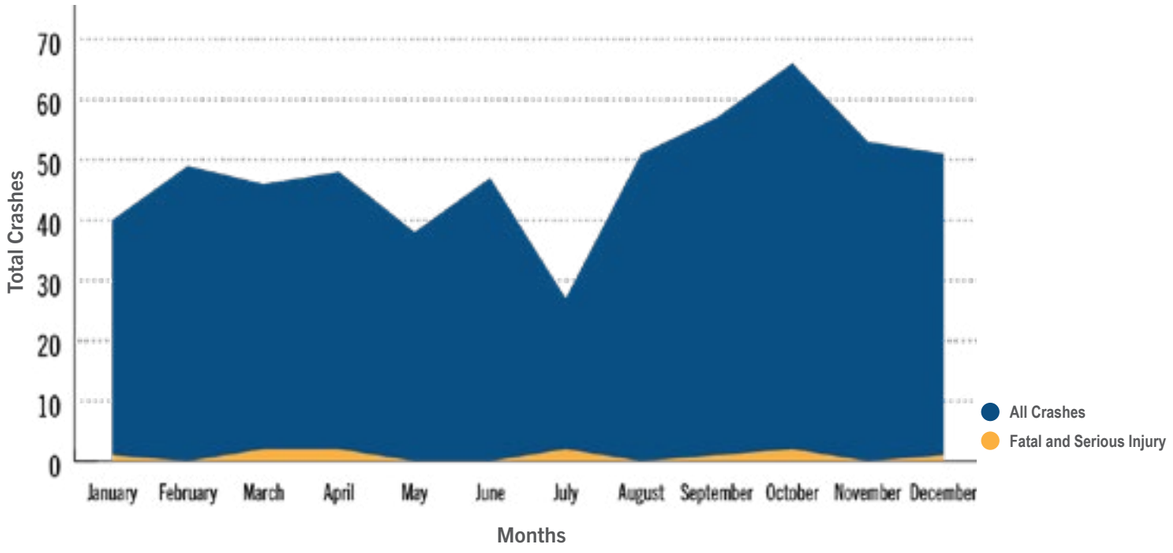


Figure 18 *Crashes by Day of Week, 2018-2022*

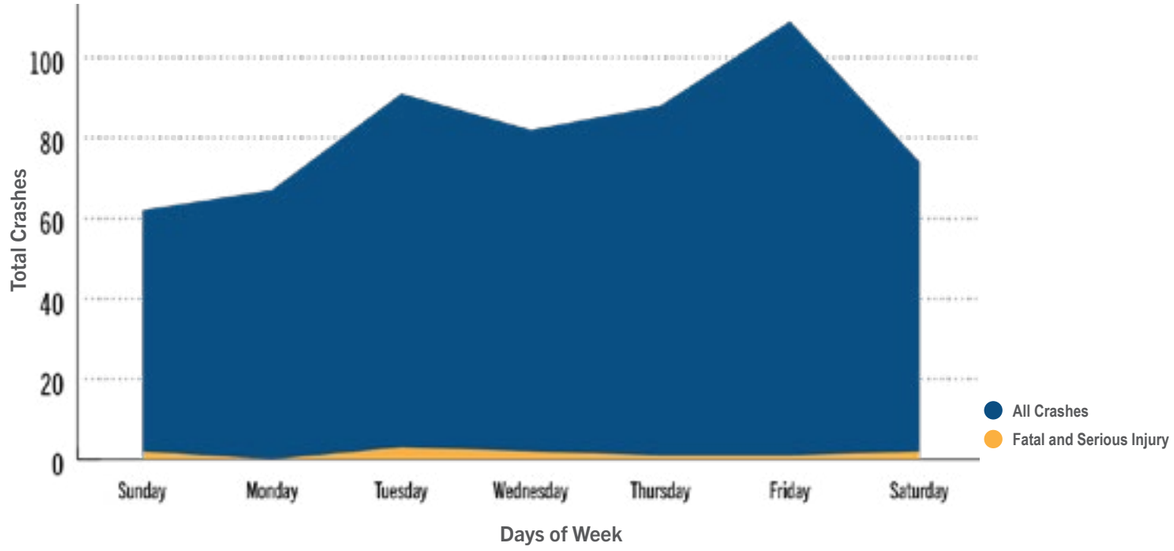
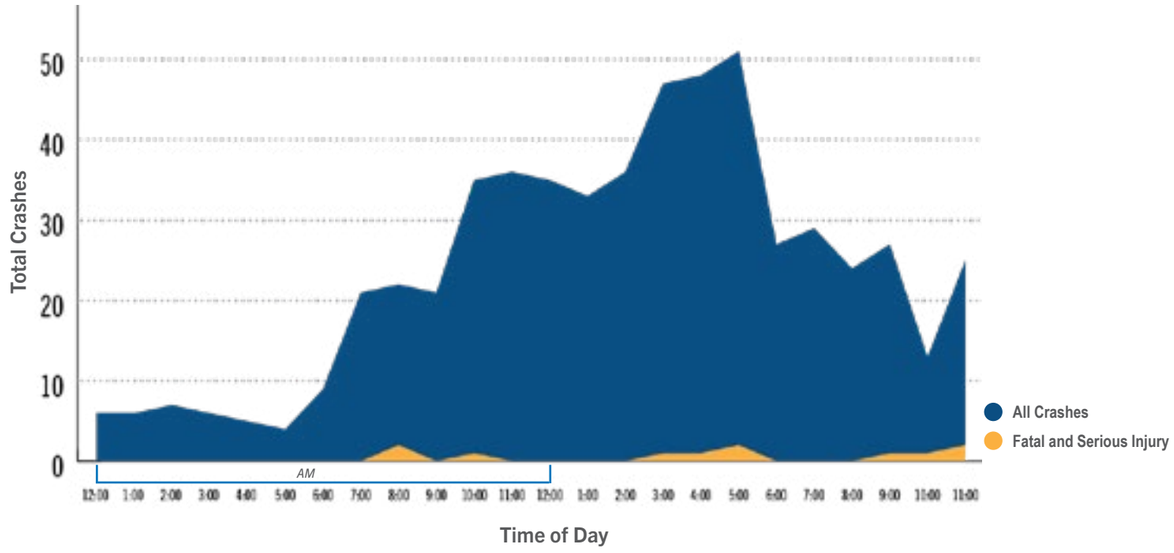


Figure 19 *Crashes by Time of Day, 2018-2022*



4.5 Contributing Environmental Factors

To enhance safety on roadways in the future, it is important to understand the environmental and behavioral factors that have contributed to crashes in the past. Three main categories of environmental factors were considered: lighting, roadway surface conditions, and weather conditions.

Most crashes occurred in daylight **(Table 7)**. Twenty-nine percent (29%) of all crashes in the Action Area occurred in dark, dawn, or dusk conditions **(Figure 20)**. Thirty-six percent (36%) of FSI crashes occurred in dark conditions **(Figure 21)**.

Most crashes occurred on dry roadway surface conditions **(Table 8)**. Twenty-six percent (26%) of crashes occurred in wet or non-dry conditions. Twenty-seven percent (27%) of crashes occurred in non-clear conditions.

Most crashes occurred during clear weather **(Table 9)**. Twenty-seven percent (27%) occurred during other weather conditions, anywhere from clear skies to wintery conditions such as hail or blowing snow. Seventy-three percent (73%) of all crashes in the Bluefield study area occurred in clear conditions **(Figure 22)**. Ten percent (10%) of fatal and serious injury crashes occurred in rainy conditions, while the remaining 90% occurred in clear conditions **(Figure 23)**.

Table 7 *Crashes by Lighting Type, 2018-2022*

Lighting	Year					
	2018	2019	2020	2021	2022	Total
Daylight	70	56	66	112	94	398
Dark - Lighted	20	14	21	14	19	88
Dark - Not Lighted	14	6	5	18	9	53
Dusk	2	3	3	4	2	14
Dawn	3	1	1	3	0	8
Not Reported	0	0	0	1	0	1
Other	0	1	0	0	0	1
Total	**109**	**81**	**96**	**152**	**124**	**562**

Figure 20
Percent Crashes by Lighting Conditions, 2018-2022

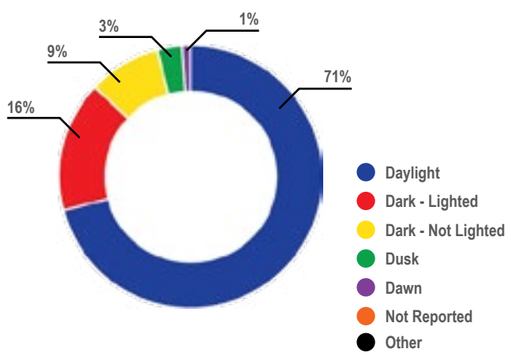


Figure 21
Percent FSI Crashes by Lighting Conditions, 2018-2022

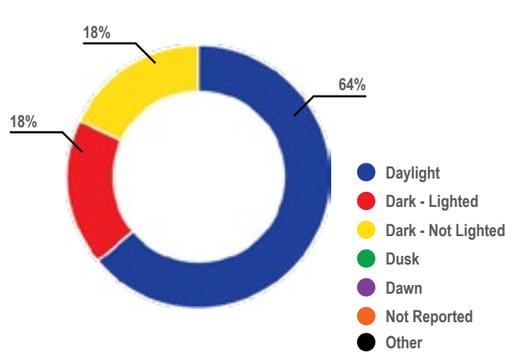


Table 8 *Crashes by Roadway Surface Conditions, 2018-2022*

Roadway Surface Conditions	Year					
	2018	2019	2020	2021	2022	Total
Dry	69	59	64	103	95	390
Wet	28	17	24	35	20	124
Not Reported	4	3	3	8	7	25
Snow	4	0	3	2	1	10
Ice/Frost	2	2	1	3	1	9
Slush	2	0	0	1	0	3
Mud, Dirt, Gravel, Sand	0	0	1	0	0	1
Total	**109**	**81**	**96**	**152**	**124**	**562**

Table 9 *Crashes by Weather Condition, 2018-2022*

Weather	Year					
	2018	2019	2020	2021	2022	Total
Clear	73	60	66	114	97	410
Rain	15	16	10	28	14	83
Cloudy	10	2	11	5	11	39
Snow	9	1	6	1	2	19
Sleet, Hail, or Freezing Rain	0	2	1	3	0	6
Other	1	0	1	0	0	2
Blowing Snow	1	0	0	0	0	1
Not Reported	0	0	0	1	0	1
Fog, Smog, Smoke	0	0	1	0	0	1
Total	**109**	**81**	**96**	**152**	**124**	**562**

Figure 22
Percent Crashes by Weather Conditions, 2018-2022

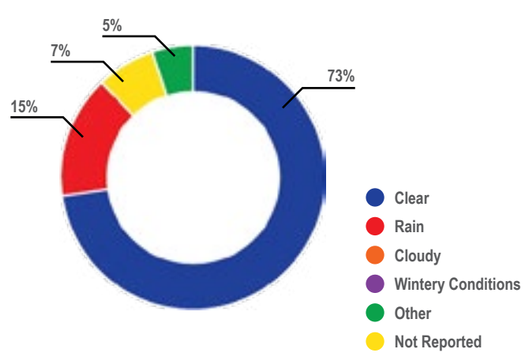
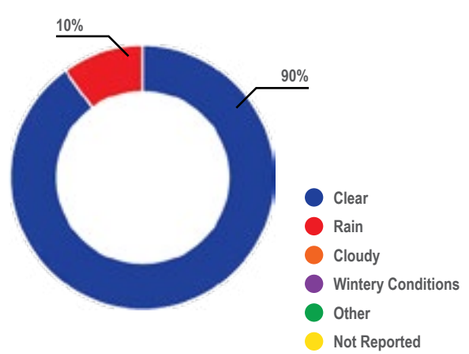


Figure 23
Percent FSI Crashes by Weather Conditions, 2018-2022



4.6 Contributing Behavioral Factors

Contributing factors on the driver side were also examined, including driver condition and contributing driver actions. The condition of the driver is a factor that includes driving under the influence and fatigue. Seven percent (7%) of crashes were caused by drivers under the influence of medication, alcohol, or drugs **(Table 10)**.

Risky driver behaviors tend to cause more serious crashes. More than 50% of crashes are caused by a driver behavior and some likely go unreported **(Table 11)**. Common driver behaviors include speeding and failing to yield right of way. Eighty percent (80%) of FSI crashes were due to unsafe driver behavior, with the leading causes being failing to yield right of way at 27% and running off the road, also at 27% **(Table 12, Figure 24)**.

Speeding and aggressive driving are also a major contributor to the overall number of crashes in the area. Speeding and aggressive driving includes drivers who drove too fast for conditions, followed too closely, exceeded the posted speed limit, and/or operated the vehicle in an erratic, reckless, careless, or aggressive manner. They contributed to close to 9% of all vehicle crashes.

Table 11 *Contributing Driver Actions, Total, 2018-2022*

Driver Action	Total	Percentage
No Contributing Driver Actions	215	38%
Failed to Yield Right of Way	73	13%
Ran Off Road	56	10%
Not Reported	54	10%
Other Improper Action	29	5%
Failed to Keep in Proper Lane	25	4%
Improper Backing	21	4%
Ran Red Light	20	4%
Drove Too Fast For Conditions	19	3%
Followed Too Closely	16	3%
Operated Vehicle in Erratic, Reckless, or Careless Manner	11	2%
Improper Turn	5	1%
Disregarded Traffic Signs	4	1%
Wrong Side or Wrong Way	4	1%
Exceeded Posted Speed Limit	3	1%
Over Correcting / Over Steering	3	1%
Swerved or Avoided	2	0%
Improper Passing	1	0%
Operated Vehicle in Aggressive Manner	1	0%
Total	**562**	**100%**

Table 10 *Driver Condition at Time of Crash, All Crashes, 2018-2022*

Driver Condition	Total	Percentage
Apparently Normal	408	73%
Not Reported	61	11%
Under the Influence of Medication/Alcohol/Drugs	37	7%
Emotional	29	5%
Other	16	3%
Fell Asleep, Fainted, Fatigued	9	2%
Ill	2	0%
Total	**562**	**100%**

Table 12 *Contributing Driver Actions, FSI, 2018-2022*

Driver Actions Causing FSI Crashes	Total	Percentage
Failed to Yield Right of Way	3	28%
Ran Off Road	3	27%
None	2	18%
Not Reported	1	9%
Wrong Side or Wrong Way	1	9%
Ran Red Light	1	9%
Total	**11**	**100%**

BLUEFIELD BEHAVIORAL SUMMARY

80%

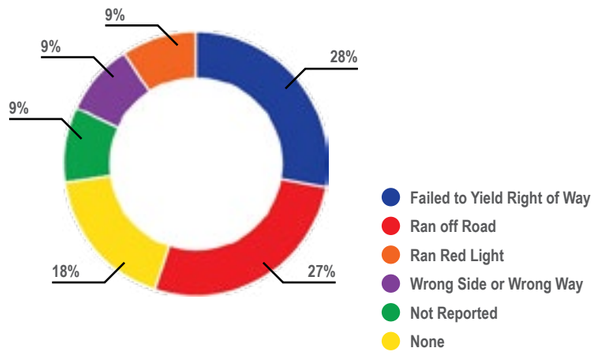
OF FSI CRASHES WERE DUE TO UNSAFE DRIVER BEHAVIOR

7%

OF CRASHES WERE CAUSED BY DRIVERS UNDER THE INFLUENCE OF MEDICATION, ALCOHOL, OR DRUGS

Figure 24

Proportion of Contributing Driver Actions, FSI Crashes, 2018-2022



4.7 Vulnerable Users

Vulnerable roadway users are those that are more likely to sustain severe injury when a collision occurs with an object, such as a motorized vehicle. Vulnerable users, especially pedestrians, are a statewide focus area within the West Virginia Strategic Highway Safety Plan. Vulnerable users include all age ranges and abilities, but of particular concern are the elderly, children, and those using mobility scooters or other mobility assistance devices. Vulnerable users in the Bluefield area include pedestrians, bicyclists, motorcyclists, or ATV riders. The transportation system in Bluefield is shared among all modes of transportation and all roadway users. Vulnerable users especially deserve safe roadways.

There are a number of pedestrian generators in the Action Area including: Bluefield State University; restaurants; the Central Business District; commercial shopping plazas; housing complexes like the West Virginia Manor, Tiffany Manor, and senior living facilities; rehabilitation centers; and residential areas including the “North Side” and “East End” communities of Bluefield. A key attraction for motorcyclists during warmer weather months is the Cole Harley-Davidson dealership on Bland Street.

ATV-users and trucks carrying ATVs on trailers are a common sight as they make their way to the regional destination of the Hatfield-McCoy trails in the area.

In terms of geographic distribution, crashes involving vulnerable users are distributed across the study area. In the study period there were eight reported pedestrian crashes and one reported crash involving a bicyclist. Of these pedestrian and bicycle crashes, one crash caused a serious injury. Two pedestrian crashes happened on private property. One occurred in a church parking lot and one occurred at a car dealership parking lot. One occurred on College Avenue **(Figure 25)**.

Total pedestrian and bicycle crashes steadily climbed from 2018 to 2021 with a reduction in 2022 **(Figure 26)** with roughly 2 reported crashes occurring per year. Sixty percent (60%) of crashes involved a motor vehicle in transport, 21% involved a fixed or non-fixed object, 14% involved a parked motor vehicle, 1% involved a pedestrian, and 1% were collisions with animals (Figure 27). Collisions with parked cars were common on narrow City-owned streets.

Figure 25 *Bicycle and Pedestrian Crashes*

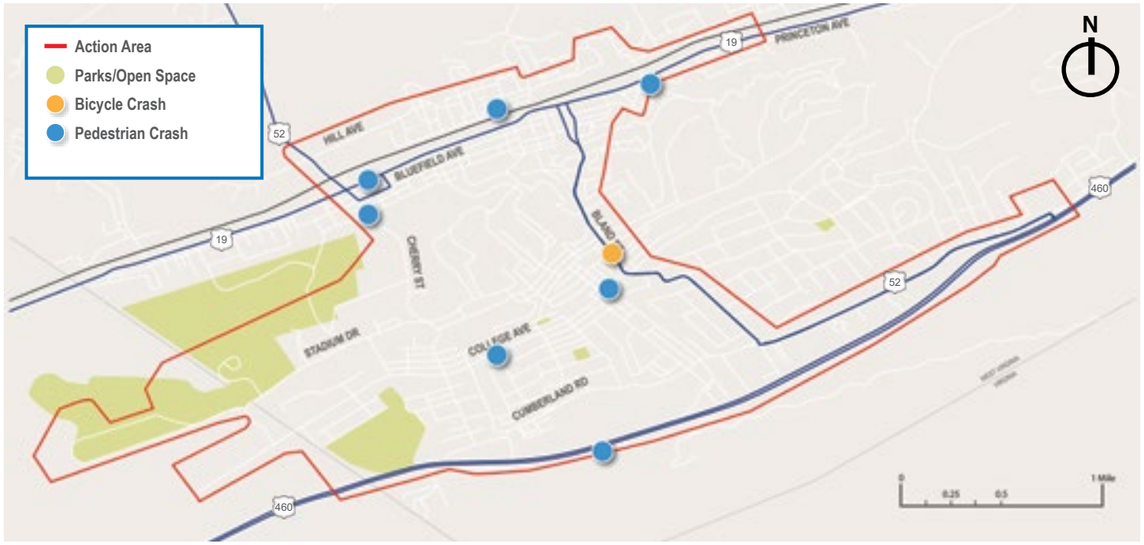
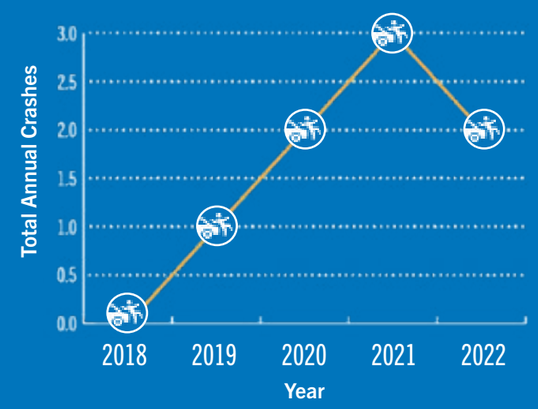


Figure 26 *Total Pedestrian Crash Trends, 2018-2022*



BLUEFIELD CRASH SUMMARY

60%

OF CRASHES INVOLVED A MOTOR VEHICLE IN TRANSPORT

18%

OF FSI CRASHES WERE PEDESTRIAN CRASHES

25%

OF PEDESTRIAN CRASHES OCCURED IN DARK CONDITIONS

Eighteen percent (18%) of FSI crashes were pedestrian crashes **(Figure 28).**

Twenty-five percent (25%) of pedestrian crashes occurred in dark conditions **(Figure 29)**.

Figure 27
All Crashes by Mode, 2018-2022

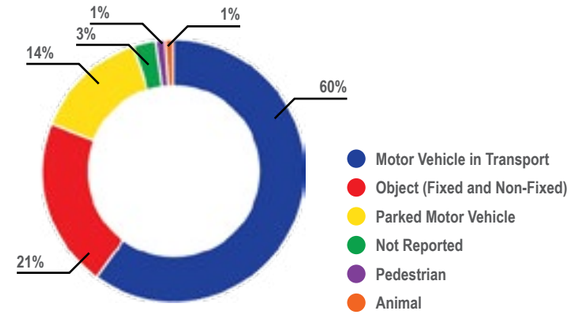


Figure 28
FSI Crashes by Mode, 2018-2022

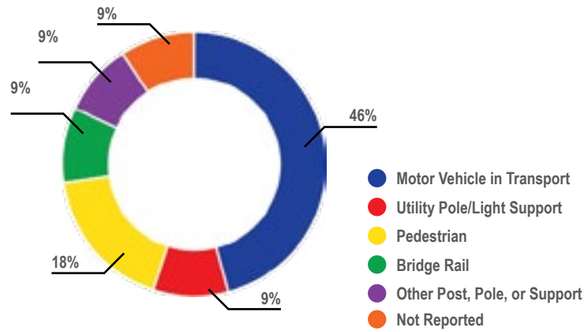
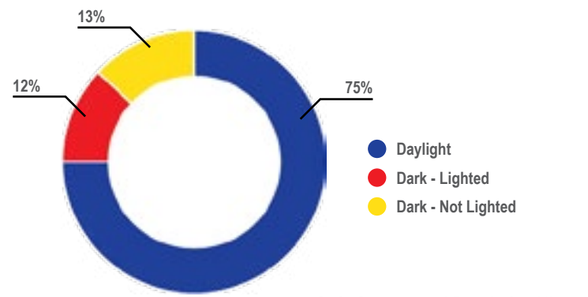


Figure 29
Percent Pedestrian-Involved Crashes by Lighting Conditions



4.8 Crash Buffer Analysis

The transportation network in Bluefield was assessed using an intersection crash cluster analysis and uniform segment crash analysis. Crash rate calculations rely on Annual Average Daily Traffic (AADT) volume data, historical crash data, and segment lengths. The segments generally follow locations where count data was available from WVDOT.

The roadway network was broken into intersections and segments at key locations to determine the high injury network. Major corridor segments change when traffic volumes change, and intersection clusters occur at the junction of two or more corridor segments.

A buffer analysis was conducted; a 250-foot buffer was extended from the center of each intersection to assign crashes to intersections within their area of influence, or to a neighboring segment. The crash data was then manually assessed to refine and assign crashes to segments or intersections. Seventy-seven percent (77%) of total crashes were captured by the buffer analysis. The remaining 23% of crashes are scattered throughout the transportation system, typically on smaller roads without AADT data where a crash rate could not be calculated. The buffer analysis captured all FSI crashes. **Figure 30** shows the intersection and segment buffers used in the analysis.

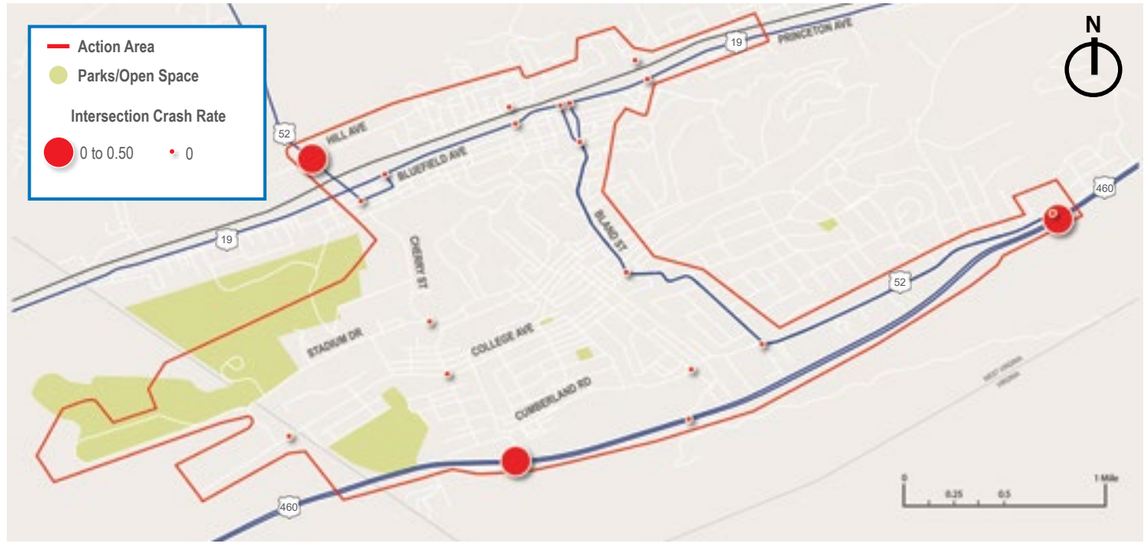
Figure 30 *Buffer Analysis Locations*

4.9 Intersection Analysis

Figure 31 shows the total intersection crash rates for the study area. **Figure 32** shows the FSI crash rates. Intersection crash rates are expressed in terms of 1 million vehicle miles entering.

Figure 31 *Intersection Crash Rate Total, 2018-2022*

Figure 32 *Intersection Crash Rate FSI, 2018-2022*



The three highest intersections for all crashes **(Table 13)** are:

1. Bluefield Avenue at Spruce Street (1.218 crashes per 1 million VMT)
2. College Avenue at Bland Street (1.187 crashes per 1 million VMT)
3. Maryland Avenue/Cherry Street at Stadium Drive (0.932 crashes per 1 million VMT)

College Avenue at Bland Street

Table 13 *Intersection Crash Clusters, All Crashes Ranked, 2018-2022*

Rank	From Street	To Street	Total Crashes	Crash Rate
1	Bluefield Ave	Spruce St	10	1.218
2	College Ave	Bland St	13	1.187
3	Maryland Ave/Cherry St	Stadium Dr	17	0.932
4	Wayne St	Grant St	1	0.913
5	US 460	21/1 Cumberland Rd Connector	28	0.807
6	Cumberland Rd	Bland Rd	7	0.767
7	Cumberland Rd	Washington St	6	0.765
8	Maryland Ave	College Ave	14	0.760
9	Federal St	Princeton Ave	10	0.637
10	Cherry St	Highland Ave	14	0.629
11	Pulaski St/Hardy St	Mercer St	4	0.609
12	Bluefield Ave	Mercer St	7	0.421
13	Hill Ave	US 52	11	0.419
14	Bland Rd/Federal St	High St	2	0.342
15	US 460	US 52 Connector/Cumberland Rd	7	0.274
16	US 460	598 Washington St	7	0.232
17	College Ave	Stadium Dr / Leatherwood Ln	5	0.221
18	Princeton Ave	Grant St	2	0.203
19	Bland Rd	Princeton Ave	1	0.072

The three highest intersections for FSI crashes **(Table 14)** are:

1. US 460 at US 52 Connector / Cumberland Road (0.039 crashes per 1 million VMT)
2. Hill Avenue at US 52 (0.038 crashes per 1 million VMT)
3. US 460 at Route 21/1 Cumberland Connector (0.029 crashes per 1 million VMT)

US 460 at US 52 Connector/Cumberland Road

Table 14 *Intersection Crash Clusters, FSI Crashes Ranked, 2018-2022*

Rank	From Street	To Street	FSI Crashes	FSI Crash Rate
1	US 460	US 52 Connector/Cumberland Rd	1	0.039
2	Hill Ave	US 52	1	0.038
3	US 460	21/1 Cumberland Rd Connector	1	0.029
4	Bluefield Ave	Spruce St	0	0.000
4	College Ave	Bland St	0	0.000
4	Maryland Ave/Cherry St	Stadium Dr	0	0.000
4	Wayne St	Grant St	0	0.000
4	Cumberland Rd	Bland Rd	0	0.000
4	Cumberland Rd	Washington St	0	0.000
4	Maryland Ave	College Ave	0	0.000
4	Federal St	Princeton Ave	0	0.000
4	Cherry St	Highland Ave	0	0.000
4	Pulaski St/Hardy St	Mercer St	0	0.000
4	Bluefield Ave	Mercer St	0	0.000
4	Bland Rd/Federal St	High St	0	0.000
4	US 460	598 Washington St	0	0.000
4	College Ave	Stadium Dr / Leatherwood Ln	0	0.000
4	Princeton Ave	Grant St	0	0.000
4	Bland Rd	Princeton Ave	0	0.000

4.10 Segment Analysis

Segment crash rates are expressed in terms of crashes per 100 million VMT.

The three highest road segments for all crashes **(Table 16)** are:

1. Hill Avenue Corridor, from Mercer Street to Grant Street (1727.8 crashes per 100 million VMT)
2. Hill Avenue Corridor, from US 52 to Mercer Street (1217.7 crashes per 100 million VMT)
3. Maryland Avenue/Cherry Street Corridor, from College Avenue to Frederick Street (1123.8 crashes per 100 million VMT)

Figure 33 shows the total segment crash rates.

Per FHWA, the West Virginia statewide FSI rate for the latest 5-year period 2017-2021 is 6.626 crashes per 100 million VMT **(Table 15)**. This is a useful statistic when examining how Bluefield segments stack up against the statewide average.

Table 15 *West Virginia Statewide FSI Rates, 2017-2011*

West Virginia Statewide 2017-2021 Crash Data	Crash Rate (per 100 million VMT)
Serious Injuries	5.054
Fatalities	1.572
Serious Injuries and Fatalities	6.626

Figure 33 *Segment Crash Rate Total (Per 100 MVMT), 2018-2022*

Table 16 *Segment Crashes, All Crashes Ranked, 2018-2022*

Rank	Corridor	From Street	To Street	AADT	Length (mi)	Total Crashes	Rate Total
1	Hill Ave	Mercer St	Grant St	300	0.74	7	1727.8
2	Hill Ave	US 52	Mercer St	300	0.90	6	1217.7
3	Maryland Ave/Cherry St	College Ave	Frederick St	4,900	0.13	13	1123.8
4	Bland St	High St	Princeton Ave (NB)	2,000	0.10	4	1063.7
5	Bland St	Princeton Ave	High St (SB)	2,000	0.11	2	517.56
6	College Ave	Maryland Ave	Bland St	4,400	0.79	31	488.67
7	Cumberland Rd	Bland Rd	US 460 Connector	3,200	1.24	34	469.51
8	Bland St	Cumberland Rd	College Ave	3,600	0.62	19	466.44
9	Bluefield Ave/Princeton Ave	Spruce St	Mercer St	4,300	0.48	17	451.03
10	Bland St	College Ave	High St	4,000	0.61	20	449.14
11	Hill Ave	Grant St	Carter St	300	0.48	1	380.52
12	Cumberland Rd	Washington St	Bland St	3,200	0.20	4	344.09
13	Washington St	US 460	Cumberland Rd	3,200	0.20	4	340.21
14	Stadium Dr	College Ave	Cherry St	5,300	0.94	26	286.32
15	Maryland Ave/Cherry St	Cumberland Rd	College Ave	4,900	0.41	10	272.75
16	Bluefield Ave/Princeton Ave	Bland St	Grant St	5,100	0.24	6	268.01
17	Cumberland Rd	460 Connector	Washington St	1,700	0.74	6	262.16
18	College Ave	Leatherwood Ln	Maryland Ave	5,900	0.56	14	231.85
19	Bluefield Ave/Princeton Ave	Grant St	Talbot St	5,100	0.47	8	182.88
20	Bluefield Ave/Princeton Ave	Beech St	Spruce St	4,300	0.19	2	134.14
21	Maryland Ave/Cherry St	Stadium Dr	Highland Ave	9,200	0.61	11	107.4
22	Bluefield Ave/Princeton Ave	Mercer St	Bland St	10,100	0.11	1	51.427
23	US 460	Maryland Ave	Washington St	16,300	0.63	5	26.68
24	Maryland Ave/Cherry St	Highland Ave	Hill Ave	14,200	0.16	1	23.609
25	US 460	Leatherwood Ln	Maryland Ave	16,300	0.69	4	19.488
26	US 460	Washington St	US 52 Connector	13,500	1.68	7	16.877

The three highest road segments for FSI crashes **(Table 17)** are:

1. Cumberland Road Corridor, from US 460 Connector to Washington Street (43.693 crashes per 100 million VMT)

2. College Avenue Corridor, from Maryland Avenue to Bland Street (31.527 crashes per 100 million VMT)

3. Bluefield Avenue/Princeton Avenue Corridor, from Spruce Street to Mercer Street (26.531 crashes per 1 million VMT)

Figure 34 shows the FSI segment crash rates.

Cumberland Road at Bland Street Signal

Figure 34 *Segment Crash Rate FSI (Per 100 MVMT), 2018-2022*

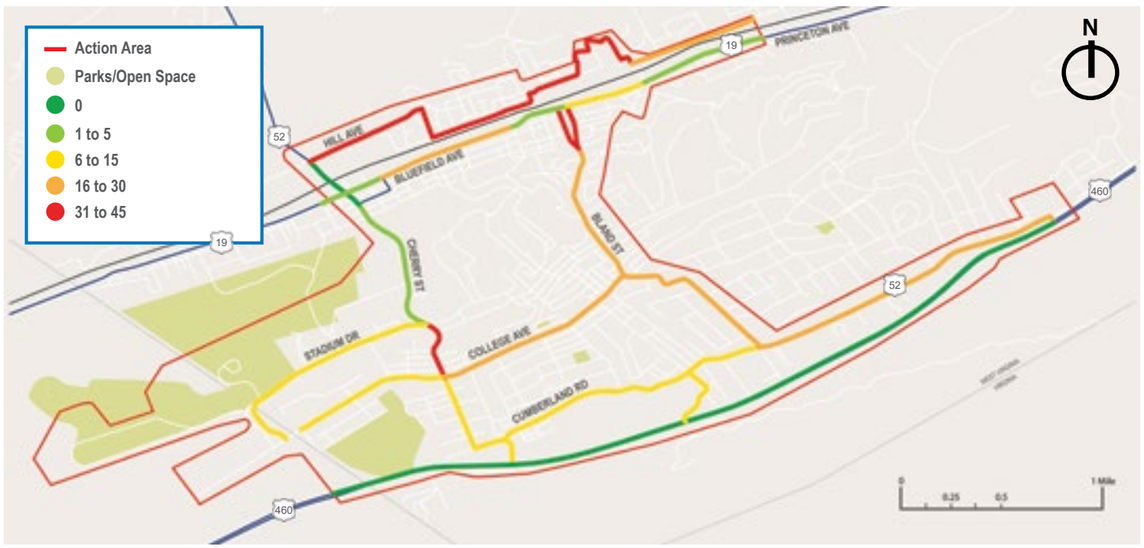


Table 17 *Segment Crashes, FSI Ranked, 2018-2022*

Rank	Corridor	From Street	To Street	AADT	Length (mi)	FSI Crashes	FSI Rate
1	Cumberland Rd	460 Connector	Washington St	1700	0.74	1	43.693
2	College Ave	Maryland Ave	Bland St	4400	0.79	2	31.527
3	Bluefield Ave/Princeton Ave	Spruce St	Mercer St	4300	0.48	1	26.531
4	Cumberland Rd	Bland Rd	US 460 Connector	3200	1.24	1	13.809
5	Maryland Ave/Cherry St	Stadium Dr	Highland Ave	9200	0.61	1	9.764
6	US 460	Maryland Ave	Washington St	16300	0.63	1	5.336
7	Hill Ave	Mercer St	Grant St	300	0.74	0	0.000
7	Hill Ave	US 52	Mercer St	300	0.90	0	0.000
7	Maryland Ave/Cherry St	College Ave	Frederick St	4900	0.13	0	0.000
7	Bland St	High St	Princeton Ave (NB)	2000	0.10	0	0.000
7	Bland St	Princeton Ave	High St (SB)	2000	0.11	0	0.000
7	Bland St	Cumberland Rd	College Ave	3600	0.62	0	0.000
7	Bland St	College Ave	High St	4000	0.61	0	0.000
7	Hill Ave	Grant St	Carter St	300	0.48	0	0.000
7	Cumberland Rd	Washington St	Bland St	3200	0.20	0	0.000
7	Washington St	US 460	Cumberland Rd	3200	0.20	0	0.000
7	Stadium Dr	College Ave	Cherry St	5300	0.94	0	0.000
7	Maryland Ave/Cherry St	Cumberland Rd	College Ave	4900	0.41	0	0.000
7	Bluefield Ave/Princeton Ave	Bland St	Grant St	5100	0.24	0	0.000
7	College Ave	Leatherwood Ln	Maryland Ave	5900	0.56	0	0.000
7	Bluefield Ave/Princeton Ave	Grant St	Talbot St	5100	0.47	0	0.000
7	Bluefield Ave/Princeton Ave	Beech St	Spruce St	4300	0.19	0	0.000
7	Bluefield Ave/Princeton Ave	Mercer St	Bland St	10100	0.11	0	0.000
7	Maryland Ave/Cherry St	Highland Ave	Hill Ave	14200	0.16	0	0.000
7	US 460	Leatherwood Ln	Maryland Ave	16300	0.69	0	0.000
7	US 460	Washington St	US 52 Connector	13500	1.68	0	0.000

5.0 Road Safety Audits

On October 25 and 26, 2023, a series of field views including Road Safety Audits, pedestrian and Americans with Disabilities Act (ADA) audit, and lighting assessment were conducted. Information from the stakeholder interviews and crash analysis were used to identify the key corridors to be audited.

The audit followed FHWA and PROWAG guidelines and evaluated metrics including but not limited to:

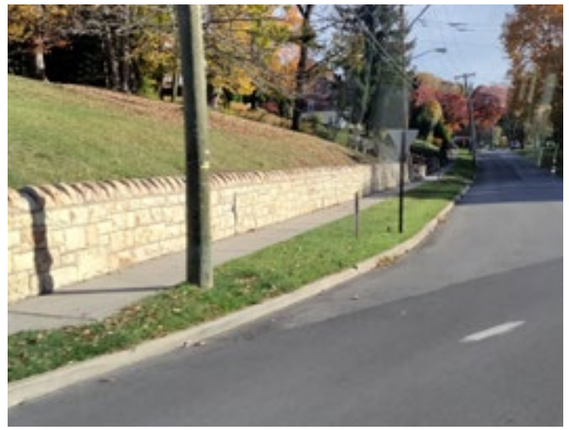
- Condition of pavement and markings
- Condition and visibility of signage and signal heads
- Condition of shoulders
- Evidence of flooding
- Roadway alignment issues
- Sight line and other visibility issues
- Horizontal and vertical curve issues
- On street parking
- Driving behavior
- Presence of traffic congestion
- Turning restrictions
- Access issues (especially for trucks)
- Damage to curbs or other things along the roadway
- Evidence of crashes (broken glass, car parts, etc.)
- Intersection crossing distances
- Pedestrian crossing aids and signage
- Presence and condition of:
  - Sidewalks
  - Bike amenities
  - Streetlights
  - ADA curb ramps and warning surfaces
  - Presence of school zones
  - Pedestrian generators
  - Presence of worn paths in the grass

Field View

The key corridors the roadway safety audits evaluated were:

- Bland Street / Federal Street (Northern Business District)
- Bland Street (Central Commercial District)
- Bland Street (Southern Residential)
- US 460
- Cumberland Road
- Maryland Avenue / Cherry Street / US 52
- Hill Avenue, Pulaski Street, Hardy Street, Wayne Street (“North Side” and “East End”)
- Grant Street Bridge
- Bluefield Avenue, Princeton Avenue, US 52
- College Avenue
- Jefferson Street

Safety Audit *Grant Street Bridge*



Safety Audit *Bland Street (Southern Residential)*

Safety Audit *Bland Street (Central Commercial District)*

Safety Audit *College / Maryland Avenue Intersection*

Bland Street
Bland Street / Federal Street (Northern Business District)

Location: From High Street to Princeton Avenue (US 52)

Observation Date: Wednesday, October 25th, 2023

Observation Time: 11:25 AM

Federal Street is the northbound branch of Bland Street where it becomes a one-way pair through the Central Business District of the City of Bluefield **(Figure 35)**. The corridor can generally be described as a downtown corridor lined with both small and large businesses. The primary land use served is commercial and there is future planned recreational use following the demolition of the 400 Bland Street buildings between the one-way pair.

Points of interest and pedestrian generators include downtown businesses, such as cafes and restaurants, including the Blue Spoon Café, The Vault, Portabella Italian, antique stores, banks, and office buildings. There is a high-rise style apartment building on the corner of Federal and Scott Street, called West Virginia Manor, which primarily houses the elderly and disabled. The speed limit is 25 miles per hour (mph). Sight distance is generally good along the corridor, but a sight distance issue was noted at the intersection with Princeton Avenue due to a building in the southwest corner of the intersection that sits very close to the roadway. The traffic signal and No Right Turn on Red (RTOR) restriction alleviate this sight distance issue, though drivers were observed making turns on red. Level grades are generally present between gradual slopes.

Nighttime illumination levels are good **(Photographs 19 and 20)**; this is one of the most well-lit corridors in the City of Bluefield.

The route is heavily used as a public transportation route. The intersection at Scott Street is used as a bus stop **(Photographs 21 through 23)**, but it lacks sufficient transit amenities, such as benches or shelters.

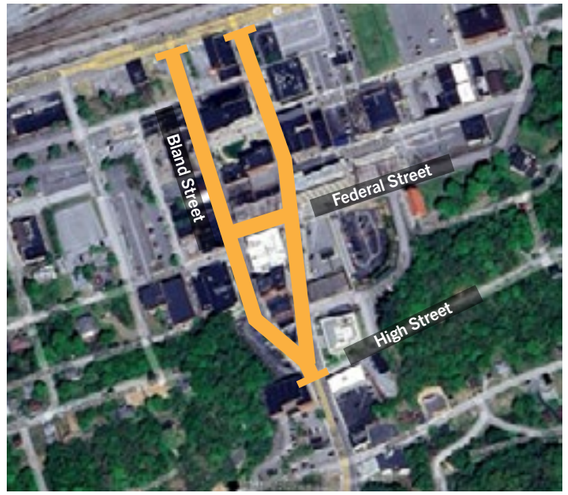
Intersection control along the corridor, except for the traffic signal with Princeton Avenue, is primarily all-way stop controlled. The road has an AADT from more than 2,000 to 4,000 vehicles per day according to WVDOT data, and this route is used as a commuter route and through route.

Lane widths are 8 to 16 feet wide, on-street parking is present along both sides of the street and pavement markings are in fair condition. Signage in the area includes regulatory signs, pedestrian crossing signs, and route markers; the condition of the signage is generally good and the visibility of the signs is fair.

Pedestrian amenities include crosswalks, sidewalks, curb ramps, and signage. Crosswalks are present at intersections and are in good condition. ADA compliant ramps are existent, in good condition, and have detectable warning surfaces. Pedestrian and non-motorized user activity in the area included motorized scooters and pedestrians using sidewalks, as well as pedestrians walking to and from the bus stop at Federal Street and Scott Street. According to locals, there are eight distinct bus stops in the area, but activity was mainly observed at the bus stop in front of West Virginia Manor. Overgrowth of tree roots was noted as a concern in this area, as they risked affecting the quality of surrounding sidewalks **(Photograph 24)**. Some parking spaces in the downtown area are very close to crosswalks, or are in the crosswalk, which limits the visibility of pedestrians in the crosswalk and limits visibility of oncoming traffic from the side-street stop bar.

Aggressive driver behaviors were not observed in the field. In general, areas of concern on the road include a lack of transit amenities, visibility of oncoming traffic from side street stop-bars due to on-street parking spots that are close to corners, lack of bikeability (e.g., bike lanes, marked shoulders, signage, etc.), and streetscaping.

Figure 35 *Bland Street / Federal Street (Northern Business District)*



Photograph 19 *Federal Street nighttime illumination*

Photograph 20 *Federal Street nighttime illumination*

Photograph 21 *Bus service at Federal Street and Scott Street outside West Virginia Manor*

Photograph 22 *Bus service at Federal Street and Scott Street outside West Virginia Manor*

Photograph 23 *A bus stop sign further north on Federal Street*

Photograph 24 *Overgrown tree roots damage sidewalk and root cage*

Bland Street (Central Commercial)

Location: From College Avenue to High Street

Observation Date: Thursday, October 26th, 2023

Observation Time: 1:15 PM

The corridor can generally be described as a connector between Downtown Bluefield and residential areas in the south end of Bluefield **(Figure 36)**. The primary land use served is commercial, and points of interest and pedestrian generators include the Maples Nursing Home, Cole Harley-Davidson, various auto repair and tire shops, Interior Motives furniture store, and salons. The posted speed limit is 25 mph. Sight distance is good along most of the corridor.

The sight distance at North Street when turning left onto Bland Street was noted as a potential issue due to a building on the corner of the intersection **(Photograph 25)**. Grades are rolling as it approaches downtown.

Nighttime illumination levels **(Photograph 26)** are good along this corridor.

This route is used as a transit route. One bus shelter with amenities, including a trash can and awning, can be seen outside of Maples Nursing Home **(Photograph 27)**. Maples Nursing Home also has on-street parking.

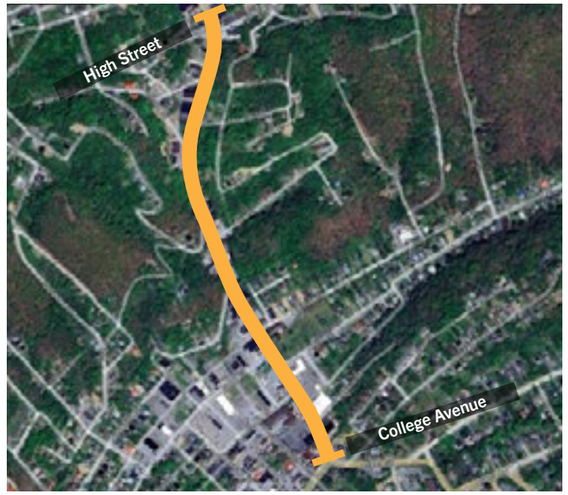
Intersection control along the corridor is primarily minor approach stop controlled. In 2021, a number of signals were removed along the Bland Street corridor in 2021 from North Street to Raleigh Street in the Central Business District. This included the signal at Bland Street and North Street, the signals at the Bland Street / Federal Street one-way pair with Scott Street, and the signals at the Bland Street / Federal Street one-way pair with Raleigh Street. At that time, the center turning lane on Bland Street was also removed. The road has an AADT from 2,000 to 4,000 vehicles per day according to WVDOT data, and this route is used as a commuter route, part of US 52, and a general neighborhood route connecting the residential areas to the downtown businesses and attractions.

Lane widths are between 10 to 16 feet wide, shoulder widths are around 9 feet (with some as designated street parking spots), and pavement markings are in good condition although lacking pedestrian crossings at frequent intervals. Signage in the area includes pedestrian crossing signs, regulatory signs, speed signs, and parking signs, and signage in the area is in fair condition. Some signage has limited visibility due to a combination of height, size, or placement, including the roadway name sign obelisks. This portion of the corridor has a few signs indicating the center turning lane that no longer exists.

Pedestrian amenities include sidewalks, curb ramps, and signage. A crosswalk is present to cross Bland Street only at North Street. ADA compliant ramps are mixed and in varying conditions; some have detectable warning surfaces. Sidewalks exist on both sides of Bland Street, are generally around 8 feet wide, and are in poor condition. Several obstructions were noted on the sidewalk path including overflow parking from auto repair services, broken and heaved sidewalk segments, and debris and litter. Vulnerable user activity in the area included pedestrians, cyclists on the road **(Photograph 28)**, and motorized scooters on the sidewalks. Designated pedestrian crossings are limited in this area and pedestrian crossing distances are wide due to the wide roadway. Pedestrians were observed crossing mid-block near Cole Harley-Davidson where Bland Street narrows.

Aggressive driver behaviors were not observed during the field review. In general, areas of concern include lack of walkability, lack of bikeability, sight distance issues at intersections, and lack of streetscaping, especially due to this corridor's position as a primary connector between downtown Bluefield and residential areas.

Figure 36 *Bland Street (Central Commercial)*



Photograph 26 *Bland Street (Central Commercial) nighttime illumination*

Bland Street (Central Commercial) daytime view

Photograph 25 *Sight distance issues at Bland Street and North Street due to building (Looking north towards Bland Street, travelling east along North Street)*

Photograph 27 *Bus shelter and pedestrian outside Maples Nursing Home*

Photograph 28 *Cyclist on the road on Bland Street*

Bland Street (Southern Residential)

Location: From Cumberland Road to College Avenue

Observation Date: Wednesday, October 25th, 2023

Observation Time: 1:00 PM

The corridor can generally be described as a main corridor connecting residential areas to downtown Bluefield **(Figure 37)**. The primary land uses served include commercial to the north and residential to the south. Points of interest and pedestrian generators include businesses such as Baker's Hill Inn, Little Caesar's Pizza, Bland Street Auto Center, a church, and a newly opened spa. Posted speed limits are 25 to 35 mph. Sight distance is fair at most locations except notably the intersection of Bland Street and College Avenue, where sight distance issues exist due to both vertical and horizontal curvature.

Vehicles at the intersection come up from a hill on the eastbound College Avenue and southbound Bland Street approaches. The skewed alignment of the roads and presence of business driveways interact to create conflict areas **(Photograph 29)**.

Sight distance is also restricted at the signalized intersection of Bland Street and Cumberland Road; within the southbound channelized right turn grassy area, there is an art installation that impedes sight distance of westbound traffic along Cumberland Road **(Photograph 30)**. Grades are rolling.

Nighttime illumination levels are poor **(Photographs 31 and 32)**. The segment of Bland Street between East Cumberland Road and Oakhurst Avenue is especially dark.

No transit amenities are seen in this portion of the Bland Street corridor, despite its heavy use as a transit route.

Intersection control along the corridor is primarily signalized or minor-leg stop-controlled. The road has an AADT from 2,000 to 4,000 vehicles per day according to WVDOT data, and this route is primarily used as a commuter route and neighborhood route connecting downtown Bluefield to the residential areas in south Bluefield.

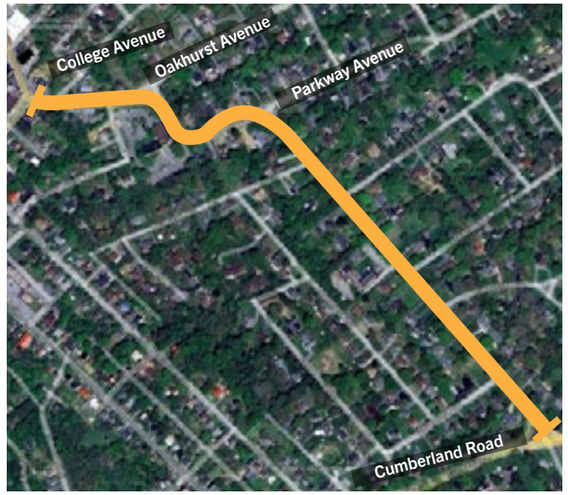
Lane widths are 10 to 14 feet, shoulder widths range from non-existent to 12 feet in some areas, and pavement markings are in good condition. Signage in the area includes regulatory signs and speed signs and the condition of the signage is generally fair. Some signage is mounted at a low height and would benefit from being raised higher for visibility.

Pedestrian amenities include sidewalks, ramps, and signage. Marked crosswalks are not present along the corridor, except at the signalized intersection of Bland Street and College Avenue. ADA compliant ramps exist at the signalized intersection with detectable warning surfaces in some areas but missing in the majority of the corridor. Sidewalks exist on both sides of the corridor, are in fair to good condition, and range from 5 to 6 feet in width. Pedestrian and non-motorized user activity in the area included pedestrians walking on and off sidewalks.

In terms of horizontal alignment, there are a series of almost 90-degree bends in the alignment of Bland Street where small traffic "triangles" are in place that lead to areas such as Oakhurst Avenue and Parkway Avenue. These traffic triangles contain small circular fountains that operate somewhat like a roundabout, with no provisions for pedestrian crossings; pedestrians were observed in the field **(Photographs 33 and 34)**. Curve warning signage and chevrons around these turns are lacking. There is also a passing zone along Bland Street to the south in a 35 mph residential neighborhood which does not fit the land use context.

Aggressive driver behaviors observed in the field included not yielding to pedestrians and speeding. In general, areas of concern on the road include lack of walkability, lack of bikeability, roadway issues, issues at intersections, and lack of transit amenities.

Figure 37 *Bland Street Roadway Alignment at College, Oakhurst, and Parkway Avenue*



Photograph 31 *Bland Street nighttime illumination*

Photograph 32 *Bland Street nighttime illumination*

Photograph 29 *Sight distance issues travelling east along College Avenue towards Bland Street difficulty seeing traffic from stop bar due to vertical curvature*

Photograph 30 *Art installation blocking sight distance for vehicles travelling south when turning right onto Cumberland Road from Bland Street*

Photograph 33 *Circular element at Bland Street and Parkway Avenue*

Photograph 34 *Circular element and fountain at Bland Street and Oakhurst Avenue*

US 460

Location: From US 52 Connector to Leatherwood Lane

Observation Date: Wednesday, October 25th, 2023

Observation Time: 8:00 AM; 2:20 PM

The corridor can generally be described as a major limited access highway **(Figure 38)**. The primary land uses served include commercial and industrial, and points of interest and pedestrian generators include Bluefield Intermediate School, Bluefield Primary School, and Bluefield High School to the north on Cumberland Road, Quality Hotel and Conference Center, a shopping plaza including businesses such as Gabe's, Tractor Supply Company, and Goodwill, and a few doctor's offices nearby. The posted speed is 55 mph, but prevailing speeds are around 65 mph. Sight distance is good at most locations.

Portions of the corridor are bifurcated, with the eastbound direction elevated above the westbound direction for some portions **(Photograph 35)**. Grades are rolling.

The intersection of US 460 and Southview Drive is an area which tends to back up during the school dismissal hour due to the number of parents waiting to pick up their children at the location of Bluefield Intermediate School on Southview Drive. The vehicle queue from the school extends down its own long driveway and into the eastbound direction along Southview Drive; vehicles were observed using the medical parking lot, further west, as a turnaround point in order to queue in the eastbound direction. It is assumed that this turnaround behavior avoids queueing in the westbound direction which can spill into cross-traffic on US 460 **(Photographs 36 and 37)**. The posted speed limit in the school zone around the Intermediate School is 15 mph **(Photograph 38)**.

Nighttime illumination levels are poor – most of the corridor has a limited number of luminaries between intersections **(Photographs 39 and 40)**.

This corridor was not observed as a fixed public transit route, but numerous school buses were observed in the area.

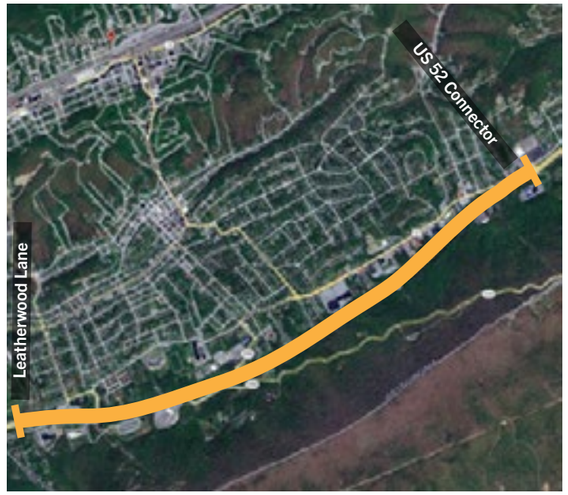
Intersection control along the corridor is primarily signalized, and minor-leg stop-controlled in some areas. The corridor has an AADT between 13,500 and 16,300 vehicles per day according to WVDOT data, and this route is mainly used as a freight route, commuter route, and regional through route.

Lane widths are 9 to12 feet, shoulder widths are 6 to 12 feet, pavement markings are present and in good condition, and edge treatments exist near the intersections. Signage in the area includes regulatory signs, lane use control signs, route markers, and guide signs, and the condition of the signage is generally good.

There are no pedestrian amenities along the corridor, and there are no pedestrian generators nearby except at the intersection with US 52 where there is a shopping plaza and hotel. Crosswalks are not present. ADA compliant ramps are non-existent. Pedestrian and non-motorized user activity in the area was neither/nor observed, although it has been noted that there is pedestrian activity at the intersection at US 52 and East Cumberland Road, which connects to this US 460 corridor.

Aggressive driver behaviors observed in the field include speeding and not clearly understanding how to navigate the intersection with US 52 by Gabe's. The back up of vehicles on Southview Drive from the Bluefield Intermediate School is also an area of concern; no shoulder exists in the area, which causes the queuing vehicles to block the roadway. In general, areas of concern on the road include speeding, queue management, poor lighting, and lack of advance warning signage.

Figure 38 *US 460 Corridor*



Photograph 39 *US 460 nighttime illumination*

Photograph 40 *Nighttime illumination around the intersection of US 460 and the connector to Cumberland Road*

Photograph 35 *Eastbound direction of the bifurcated roadway which is elevated above the westbound land (at left in image)*

Photograph 36 *Vehicles backed up on the Southview Drive around 2:23 PM during school dismissal (travelling west bound)*

Photograph 37 *Vehicles backed up on to Southview Drive around 2:26 PM (travelling east bound)*

Photograph 38 *Speed limit sign (15 mph) in school zone around Bluefield Intermediate School*

Cumberland Road

Location: From WV 21/1 Connector to Connector between US 52 & US 460

Observation Date: Wednesday, October 25th, 2023

Observation Time: 4:15 PM

The corridor can generally be described as a commuter route that connects many residential areas throughout Bluefield **(Figure 39)**. The primary land uses served include residential and commercial, and major pedestrian generators along the corridor include Bluefield Primary School, Bluefield High School, various businesses along the corridor such as Dollar General, Mountaineer Bowling Lanes, KFC, USPS, FedEx, a gas station, and the large plaza which includes Gabe's and Tractor Supply. The posted speed limit is 35 mph. Sight distance is good at most locations. Grades are mostly flat but are rolling in some areas.

Nighttime illumination levels are fair to good in most areas **(Photograph 41)**. This corridor is heavily serviced by Bluefield Area Transit but lacks transit amenities.

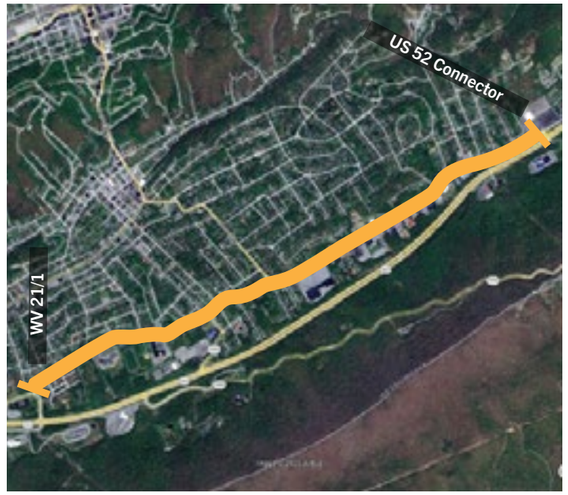
Intersection control along the corridor is primarily minor leg stop controlled with a signal at Washington Street and Bland Street. Driver confusion was noted at the closely spaced stop-controlled intersection near US 52 by the Gabe's shopping plaza. The corridor has an AADT of 1,600 to 3,200 vehicles per day, and this corridor is primarily used as a through route and commuter route, with a high proportion of traffic traveling to and from the two schools along the road.

Lane widths are about 12 feet wide, shoulder widths range from 5 feet to non-existent in some areas, and pavement markings are in good condition. Signage along the corridor includes regulatory signs and guide signs, especially near the connector to US 460, and the condition of the signage is fair.

Pedestrian amenities along the corridor include sidewalks and curb ramps in a limited number of areas. Sidewalks are not continuous along the corridor. Sidewalks are about 5 feet wide and are in poor condition. Crosswalks are not present. Pedestrian and non-motorized user activity in the area was observed between the school and parking lots. Pedestrians were observed crossing Cumberland Road near the bowling alley, walking on the sidewalks between plazas, and a motorized scooter was observed using the shoulder to travel westbound away from the Gabe's plaza. Cyclists using the shoulder were also observed **(Photograph 42)**. Deer crossings were observed at the western terminus of the corridor.

Aggressive driver behaviors observed along this corridor included speeding and not yielding to pedestrians. In general, areas of concern on the road include poor walkability, discontinuous sidewalks, poor bikeability, and lack of transit amenities.

Figure 39 *Cumberland Road*



Photograph 41 *Nighttime illumination along Cumberland Road is generally good in commercial areas*

Cumberland Road daytime view

Photograph 42 *Cyclists on the shoulder along Cumberland Road*

Maryland Avenue / Cherry Street / US 52

Location: From Cumberland Road to North of Hill Avenue

Observation Date: Wednesday, October 25th, 2023

Observation Time: 9:15AM

The corridor can generally be described as a commuter and through route that links many of Bluefield's major roadways, including US 460 and US 52, as well as the university campuses and dormitories for Bluefield State University **(Figure 40)**. The primary land uses served include commercial, residential, and institutional, including college students and medical facilities. Points of interest and pedestrian generators include the Bluefield State University campus and student dormitories, Super Clean Coin Laundry, a salon, and other businesses. The posted speed limit is 35 mph.

In 2021, a traffic signal at Maryland Avenue and Augusta Street was removed. Sight distance is poor along most of the corridor due to horizontal and vertical curvature, and especially poor at two intersections: Hill Avenue and Stadium Drive. Grades are rolling across the corridor, with a steep downhill approach from Maryland Avenue to College Avenue; a truck restriction is in place, which is not followed or enforced. A long downhill grade exists southbound on US-52 approaching Hill Avenue; these fast-moving southbound vehicles create difficulty for side street traffic to find gaps in traffic on the eastern leg of the intersection at Hill Avenue and the entrance to Bluefield State University. Advance warning signage was lacking.

Nighttime illumination levels are mostly poor along the corridor **(Photographs 43 and 44)**. The segment north of Highland Avenue/US-52 that includes the bridge over the railways is the only portion that is well-lit **(Photograph 45)**. This corridor is also used as a major transit route but lacks sufficient transit and pedestrian amenities.

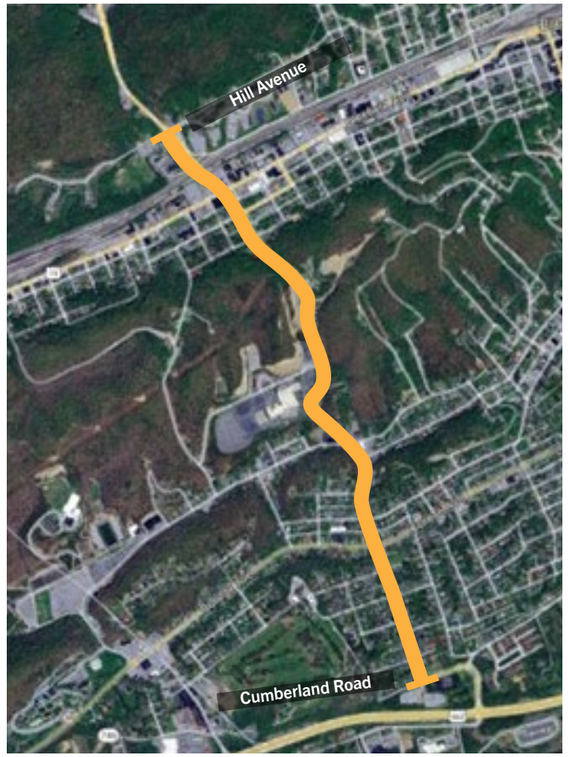
Intersection control along the corridor is primarily minor-leg stop-controlled or signalized. There are signals at College Avenue, Pinegrove Street, and Highland Avenue. The corridor has an AADT between 5,000 and 14,200 vehicles per day according to WVDOT data, and this route is used as a commuter, student, transit, and through route.

Lane widths are 10 to 12 feet, shoulder widths range from 13 feet to non-existent in some areas, and pavement markings are in good condition. Signage in the area includes regulatory signs, such as stop signs and speed limit signs, and the condition of the signage is generally fair. Placement of sign clusters affects the sight distance along the corridor, particularly at the intersection of Cherry Street and Stadium Drive.

Pedestrian amenities are sparse. There are a limited number of sidewalks and crosswalks near certain intersections. Crosswalks are present at the signalized intersection of Cherry Street and Highland Avenue on the east, west, and south legs. ADA compliant ramps are existent at that same intersection but not in other areas along the corridor. A sidewalk exists along the bridge over the Norfolk Southern railway from Hill Avenue to Highland Avenue, but not to the south. The sidewalks are about 6 feet wide and are in fair to poor condition. Pedestrian and non-motorized user activity in the area was seen frequently along the corridor. The local community has noted that the portion of Cherry Street connecting the Bluefield State University campus and its dormitories does not have sidewalks or shoulders, forcing pedestrians to walk along the street in a narrow area. In addition, this segment has poor night-time illumination and rock fall has been an issue in the past **(Photograph 46)**. This area has been referred to as the Cherry Street gap.

Aggressive driver behaviors observed in the field included speeding. In general, areas of concern on the road include poor walkability, poor bikeability, lack of transit amenities, poor illumination, and presence of natural hazards (rock fall).

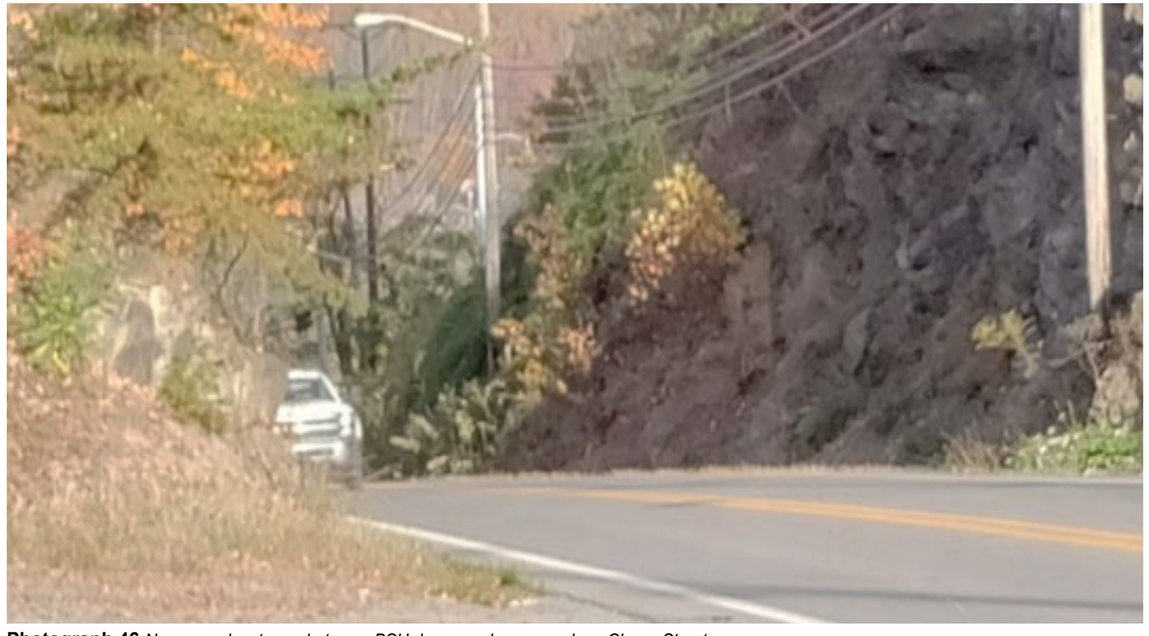
Figure 40 *Maryland Avenue / Cherry Street / US 52 Corridor*



Photograph 43 *Poor lighting along Maryland Avenue / Cherry Street*

Photograph 44 *Poor lighting along Maryland Avenue / Cherry Street*

Photograph 45 *Portion of US 52 north of Cherry Steet (well lit)*



Photograph 46 *Narrow rock cut area between BSU dorms and campus along Cherry Street*

Hill Avenue / Pulaski Street / Hardy Street / Wayne Street ("North Side" & "East End")

Location: From Tiffany Manor to Hotel Thelma

Observation Date: Wednesday, October 25th, 2023

Observation Time: 10:30 AM

The corridor can generally be described as a winding and rolling corridor through the "North Side" and "East End" neighborhoods of Bluefield **(Figure 41)**. The primary land uses served include residential and industrial, and points of interest and pedestrian generators include residential areas; parks, such as Bedford Park and Wayne Street Park; and important historical sites, such as Hotel Thelma. The posted speed limit is 15 mph. There are sight distance issues at multiple locations due to the narrow lane widths, cars parked in the street, and winding nature of the corridor. Sight distance is especially poor at the intersection of Roanoke and Hardy Street due to a building that sits on the corner limiting the sight distance at the intersection; there is evidence of damage to the building corner. Due to the area's geography, roadway grades are extremely steep in some areas, with grades over 10% mostly in the north-south direction and generally level in the east-west direction.

Nighttime illumination levels are very poor **(Photograph 47)**. Luminaries do not exist in long spans of this corridor. In other places, luminaries exist but are not lit. In particular, Orange Street **(Photograph 48)** and sections of Wayne Street past the Grant Street bridge lack sufficient lighting.

The roadway south of Orange Street also includes a deteriorating slope retainment system **(Photograph 49)**, and damaged barriers **(Photograph 50)**. Public transit vans service this area, yet no public transit amenities, such as shelters, benches, or signage, are available.

Intersection control along the corridor is primarily unsignalized and minor-leg stop-controlled. The AADT in this area is between 200 and 300 vehicles per day and this route is used as a local neighborhood route. Points to cross the wide Norfolk Southern railyard are currently limited; crossing points are limited to US 52 and Mercer Avenue, and the Grant Street bridge, which re-opened in December 2023 after a multi-year closure.

Lane widths along the corridor range from 6 feet to 9 feet, shoulders do not exist, and pavement markings are fair in some areas and non-existent or worn in others. Signage in the area includes speed limit signs and regulatory signs such as stop signs, but signage in the area is generally limited and in fair to poor condition. Some signage in the area is undersized, and the area could benefit from more wayfinding signage.

Pedestrian amenities are scattered and not maintained in the area, except near the new Grant Street Bridge. Some sidewalks exist but are in poor condition and range from 3 to 6 feet in width. Pedestrian and non-motorized user activity in the area included pedestrian and cyclist activity in streets in residential areas. There are also reports of mobility scooters riding in the street due to the deteriorated sidewalk network. The pedestrian activity in the area will likely increase with the re-opening of the Grant Street bridge.

Aggressive driving behavior was observed in the area, including proceeding around curves without adequate caution, speeding, and not yielding to pedestrians. In general, areas of concern on the road include poor walkability, poor bikeability, sight distance issues, lack of transit amenities, and lack of wayfinding.

Figure 41 *Hill Avenue / Hardy Street / Wayne Street Corridor*

Photograph 47 *"East End" illumination is poor*

Photograph 48 *Orange Street lack of lighting and sidewalks*

Photograph 49 *Deteriorating retaining wall along Orange Street*

Photograph 50 *Damaged barriers along Hardy Street to Orange Street*

Grant Street Bridge

Location: From Princeton Avenue to Wayne Street

Observation Date: Wednesday, October 25th, 2023

Observation Time: 11:10 AM

This bridge connects the “North Side” and “East End” communities to Princeton Avenue and the downtown areas **(Figure 42)**. The primary land uses served include residential and industrial, and points of interest and pedestrian generators include residential areas, parks (such as Wayne Street Park), and important historical sites (such as Hotel Thelma). Posted speed limits are 40 mph to the south and 15 mph to the north of the bridge. Prevailing speeds are unknown as the bridge was not yet open to traffic at the time of the field review.

Sight distance may be poor at the southern approach to the bridge due to obstructions including a fenced-in utility box in the sight triangle to the east of the bridge. With vehicles travelling at high speeds along Princeton Avenue, it is possible that advance warning signage is needed to warn drivers of slow traffic **(Photographs 51 and 52)**. Grades are level.

Nighttime illumination levels are good on the bridge itself, but poor in surrounding areas. Some additional wayfinding could be used in the area to attract vehicle and foot traffic to the notable sites in the “East End” community.

Intersection control is minor leg stop controlled. The AADT in this area is around 200 vehicles per day and the route connects Princeton Avenue (a commuter and freight route) to the “East End” community, which is made up of local neighborhood routes. Note that during the roadway safety audits, the bridge was closed for construction.

Lane widths are around 10 feet, shoulders of 6 to 8 feet exist on the eastern side of the bridge, and pavement markings are new. Signage in the area includes informational signage about the history of the area **(Photograph 53)** and regulatory signs, such as stop signs. Signs on this bridge are new.

Pedestrian amenities include crosswalks, sidewalks, ramps, and signage. Crosswalks are not present to cross Princeton Avenue. ADA compliant ramps are existent with detectable warning surfaces, and 6-foot-wide sidewalks exist on the east side of the bridge span. There are no ADA compliant ramps, crosswalks, or pedestrian signs south of Princeton Avenue. Pedestrian and non-motorized user activity was not observed in the area as the bridge was closed at the time of the field audit; however, the lack of pedestrian amenities connecting the bridge to nearby streets was observed.

Aggressive driver behaviors were observed in this area, notably speeding on Princeton Avenue at the bridge. In general, areas of concern on the road include poor walkability, poor bikeability, lack of transit amenities, and sight distance issues at the southern intersection. (Note that the Grant Street Bridge re-opened in December 2023.)

Figure 42 *Grant Street Bridge*

Photograph 51 *Approach on south end of Grant Street Bridge*

Photograph 52 *Approach on south end of Grant Street Bridge*

Photograph 53 *Informational signage on north approach to Grant Street Bridge*

Bluefield Avenue / Princeton Avenue / US 52

Location: From Beech Street to Grant Street

Observation Date: Thursday, October 26th, 2023

Observation Time: 9:05 AM

The corridor can generally be described as a through route and a commuter route **(Figure 43)**. The primary land uses served includes commercial and industrial, and points of interest and pedestrian generators include downtown businesses; fast food restaurants, such as Hardee's and McDonald's; O'Reilly Auto Parts; Case WV Head Start & Pre-K; Wade Youth Center; and the Bluefield Area Transit transfer station. Posted speed limits are 35 mph, but prevailing speeds are higher than 40 mph, likely due to the wide-open nature of the corridor. Sight distance is poor at the southwest corner of Princeton Avenue and Federal Street. Grades are level and the corridor generally follows the east-west oriented Norfolk Southern railway.

Nighttime illumination levels are good **(Photographs 54 and 55)**. This area is heavily traversed by both Bluefield Area Transit and Graham Transit (operated out of Bluefield, Virginia). The Bluefield Area Transit facility is located along this corridor. The remainder of the corridor lacks transit amenities.

Intersection control along the corridor is primarily signalized with signals at Spruce Street, Mercer Street, and Federal Street. This corridor has an AADT between 4,200 and 10,200 vehicles per day, and this route is used as a commuter route, freight route and through route.

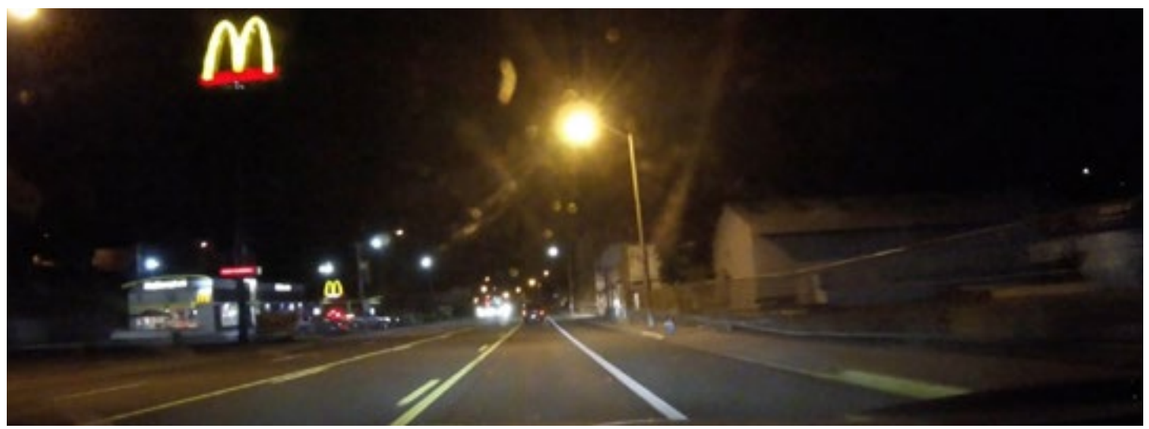
Lane widths are 13 to 14 feet, shoulder widths are 10 feet for most of the corridor, and 5 feet west of Spruce Street. Pavement markings are in fair condition. Signage in the area includes regulatory signs and guide signs, and the condition of the signage is fair. There is a truck restriction sign to attempt to deter large trucks from taking the Mercer Street bridge to end up in the narrow streets of the "North Side" community, but it has historically been ignored. Some of the signage along the corridor is undersized for prevailing speeds and/or mounted too low for truck visibility. Street name and directional wayfinding signage is lacking, with obelisks marking street names at low heights. There are a significant number of commercial driveways along the corridor. Some driveways are too close to intersections or their placement conflicts with driveways in the opposing direction, where conflicting vehicles are using the center turning lane to access driveways. The addition of the second eastbound travel lane at Spruce Street, along with numerous driveways close to the intersection, creates driver confusion and conflict points.

Pedestrian amenities include crosswalks, sidewalks, curb ramps, and some signage. Crosswalks are present at Spruce Street, Mercer Street bridge, and Bland / Federal Street. ADA compliant ramps are existent and have detectable warning surfaces at Mercer Street and Cherry Street, as well as at the Bluefield Area Transit transfer center. Sidewalks exist along both sides of the street for most of the corridor, are in fair to poor condition, and range from 4 to 6 feet wide. Pedestrian and non-motorized user activity in the area included numerous pedestrians and motorized scooters using the sidewalks, and cyclists using both sidewalks and the center turning lane. The corridor in general lacks sufficient designated pedestrian crossings and has long crossing distances. The corridor may be a good candidate for study of a road diet due to excess capacity and a wide cartway, including two eastbound lanes, one westbound lane, and a center turning lane, which is approximately 60 feet curb-to-curb.

Aggressive driving behaviors observed in the field included speeding. This route is also heavily used by freight vehicles and vehicles with trailers towing ATVs. In general, areas of concern include poor walkability, poor bikeability, access management issues, lack of streetscaping, and poor quality of roadway features, such as signage.

Figure 43 *Bluefield Avenue / Princeton Avenue*

Photograph 54 *Bluefield Avenue nighttime illumination is good*



Photograph 55 *Bluefield Avenue nighttime illumination is good*

Stadium Drive

Location: From College Avenue to Cherry Street/Maryland Avenue

Observation Date: Wednesday, October 25th, 2023

Observation Time: 10:30 AM

The corridor can generally be described as a route connecting residential areas to many of the recreational amenities in Bluefield **(Figure 44)**. The portion of this corridor that is west of Buccaneer Drive lies within the political bounds of the State of Virginia. The primary land uses served include recreational and institutional (related to Bluefield University and nearby schools), as well as commercial. Points of interest and pedestrian generators include Mitchell Stadium, Bowen Field, Lotito City Park, tennis courts, other sports facilities, and Bluefield Middle School. Posted speed limits are 35 mph. Sight distance is generally good along the corridor but very poor at the intersection of Cherry Street and Stadium Drive due to horizontal and vertical curvature and sign clutter. Grades are level.

Nighttime illumination levels are fair during home football games, due to the stadium lights, but were mentioned to be an area of concern for residents **(Photograph 56)**. This area is serviced by Bluefield Area Transit but lacks transit amenities.

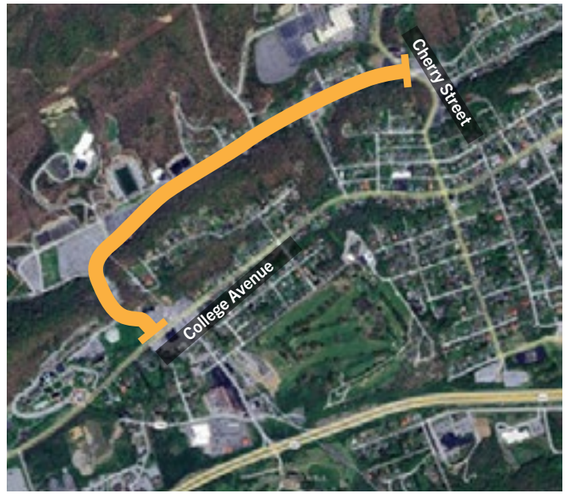
Intersection control along the corridor is primarily minor-leg stop-controlled. The AADT on this corridor is over 5,300 vehicles per day, and this route is used as a commuter route and through route.

Lanes are about 10 feet wide; shoulders are about 5 to 6 feet along both sides of the corridor, and pavement markings are in good condition. The road was recently repaved on the West Virginia side and was in the process of being paved during the field view. Signage in the area includes regulatory signs, such as stop signs, and the condition of the signage is fair.

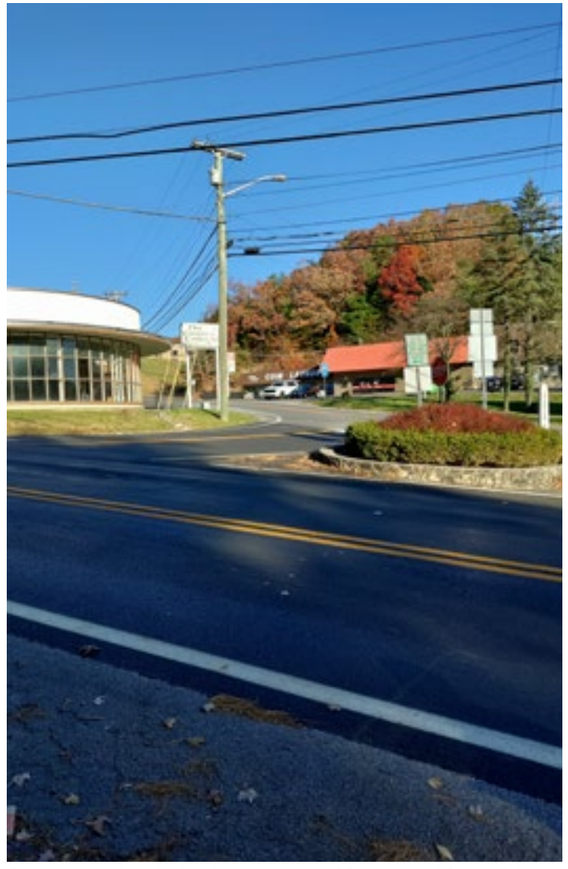
Pedestrian amenities include sidewalks, which are discontinuous and do not connect to major points of interest. ADA compliant ramps are non-existent. Sidewalks exist along the northern side of the corridor near the residential area, are in fair to poor condition, and range from 4 to 6 feet wide. Pedestrian and non-motorized user activity in the area included numerous pedestrians walking to the park and other recreational facilities, and often these pedestrians were walking through parking lots and roads where sidewalks were not available. Pedestrians were observed walking around the perimeter of the parking lot during the daytime for exercise. Students were also observed crossing at the intersection of Stadium Drive and College Avenue where no crosswalks are present.

Aggressive driving behaviors observed in the field include speeding and cutting across parking lots. In general, areas of concern include poor walkability, poor bikeability, and sight distance issues at intersections.

Figure 44 *Stadium Drive*



Photograph 56 *Nighttime illumination on Stadium Drive is fair*



Sight distance is limited at the intersection of Stadium and Cherry Drive due to horizontal and vertical curvature

Pedestrian crossing at College Avenue and Stadium Drive

Pedestrian amenities are lacking

College Avenue

Location: From Stadium Drive to Bland Street

Observation Date: Wednesday, October 25th, 2023

Observation Time: 10:00 AM

The corridor can generally be described as a commuter and a major east-west through route connecting residential areas to the universities to the west and the businesses to the east along Bland Street **(Figure 45)**. The portion of this corridor that is west of Leatherwood Lane lies within the political bounds of the State of Virginia. The primary land uses served include residential, commercial, and institutional related to Bluefield University and nearby schools. Points of interest and pedestrian generators include the Bluefield Fitness and Recreation Center, Bluefield University, businesses such as Domino's Pizza, a gas station, Subway, and Cole Auto Outlet on the west end, as well as Little Caesar's, Cole Harley-Davidson and other businesses on the east end. Posted speed limits are 25 mph. Sight distance is good along the corridor. Grades are mostly level, except at the approach to the intersection at Bland Street, which creates a sight distance issue.

Nighttime illumination levels are poor along most of the corridor **(Photograph 57)**, but good in commercial areas such as the intersection at Stadium Drive **(Photograph 58)**.

This area is heavily travelled by Bluefield Area Transit but lacks transit amenities.

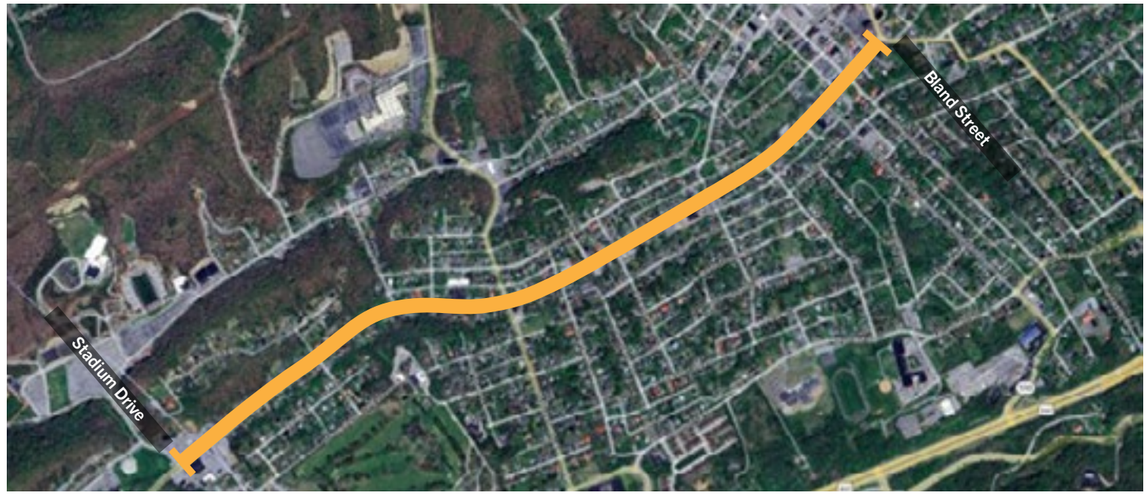
Intersection control along the corridor is primarily minor-leg stop-controlled, with signalized intersections at Leatherwood Avenue, Maryland Avenue, and Bland Street. The AADT in this area is between 4,400 and 6,000 vehicles per day, and this route is used as a residential route and through route.

Lanes are about 10 to 12 feet wide; shoulders are non-existent in some areas and up to 6 feet wide in other areas, and pavement markings are in fair to poor condition. Signage in the area includes regulatory signs, such as stop signs and speed limit signs, and the condition of the signage is fair. Signage, including speed limit signs, is undersized.

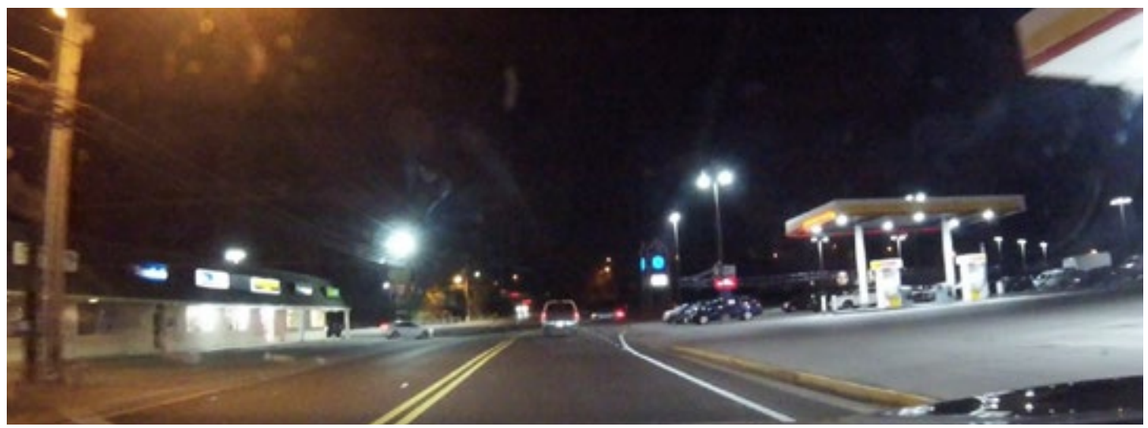
Pedestrian amenities include sidewalks, crosswalks, and curb ramps. ADA compliant ramps exist in a few areas but are mostly lacking. Sidewalks near the residential area along the corridor are in fair to poor condition and range from 4 to 10 feet wide. Pedestrian and non-motorized user activity in the area included pedestrians and bike traffic all along the corridor.

Aggressive driving behaviors observed in the field include speeding and pulling into and out of open curb cut driveways. In general, areas of concern include poor walkability, poor bikeability, lack of transit amenities, access management, and issues at intersections.

Figure 45 *College Avenue Corridor*



Photograph 57 *Nighttime illumination along College Avenue is poor throughout most of the corridor*



Photograph 55 *Nighttime illumination is good along some portions of College Avenue, such as at this intersection with Stadium Drive*

Jefferson Street

Location: From Cumberland Road to North Street

Observation Date: Thursday, October 26th, 2023

Observation Time: 1:05 PM

The corridor can generally be described as a residential street, with a commercial section north of College Avenue that has been attracting more local tourist-related businesses **(Figure 46)**. The primary land uses served include residential and commercial, and points of interest and pedestrian generators Hometown Grocery, Bible Baptist Church, Deskins Candies, Bluefield Dental Care, Bluefield Dance Theatre, and other emerging businesses along the corridor and at the nearby College Avenue and Bland Street intersection. Posted speed limits are 25 mph.

Sight distance is good north of College Avenue, but poor south of College Avenue due to steep hills. Grades are level north of College Avenue and steep south of College Avenue **(Photograph 59)**.

Lane widths range between 9 to 14 feet, no shoulders are present, and pavement markings are not present. Signage in the area includes a “No Thru Traffic Sign” and speed limit signs; most signs have poor visibility due to low sign height and the condition of the signage is generally poor **(Photograph 60)**.

Nighttime illumination levels are poor, with the southern leg of the corridor having worse coverage as the surrounding land uses transition from a brighter commercial area **(Photograph 61)** to a darker residential area **(Photograph 62).**

Intersection control along the corridor is primarily minor leg stop controlled. The AADT data for this corridor was unavailable, but traffic along this corridor was observed to be relatively low. This route is primarily used as a local neighborhood route.

Pedestrian amenities include sidewalks in some portions of the corridor. Curbs are notably damaged. Crosswalks are not present. ADA compliant ramps do not exist. Sidewalks exist along both the east and west sides of the corridor until Elwood Street but do not exist south of that, are in poor condition where present, and range from 5 to 7 feet wide. Pedestrian activity was observed near Jefferson Street and College Avenue.

Aggressive driver behaviors observed in the field include speeding. In general, areas of concern on the road include poor walkability, poor night-time illumination, and lack of streetscaping.

Figure 46 *Jefferson Street*

Photograph 61 *Jefferson Street north of College Avenue (brighter)*

Photograph 62 *Jefferson Street south of College Avenue (darker residential areas)*

Photograph 59 *Steep hill south of College Avenue on Jefferson Street*

Photograph 60 *Low mounted speed limit signage of Jefferson Street*

6.0 Project Area Selection

Project selection entailed using the information developed from the community participation, safety analysis, roadway safety audits, and vision and goals to identify projects and safety countermeasures. The projects were then prioritized.

Vision

Bluefield has developed the following comprehensive Vision Statement:

> ***Prevent roadway fatalities and serious injuries encompassing the Bluefield area, for users of all modes, in a manner that promotes diverse economic development and equitable outcomes throughout.***

6.1 Vision, Goals, and Metrics

The vision, goals, and metrics were developed using information derived from the community context and input from the Steering Committee. Through this process the City identified the following considerations to guide the development of the safety action plan vision, goals and metrics:

- Bluefield fully supports the goal to reduce fatalities and serious injuries on West Virginia's roadways with the ultimate objective of zero fatalities by the year 2050.
- Bluefield desires to re-tool the City's transportation network from one focused on moving shrinking quantities of coal through town faster, to one that provides safe accommodation for Bluefield's emerging tourism, office, educational, and service economy, as well as existing residents and businesses.
- Bluefield has historically struggled with economic issues that have reduced tax revenue needed to adequately maintain and improve the existing transportation infrastructure.
- Bluefield has historically been remiss in not equitably distributing transportation maintenance and improvements or considering all users and transportation modes.

Goals and Metrics

The City has developed the following goals and metrics to support the Vision Statement.

Reduce fatalities and serious injuries for users of all modes through designing infrastructure that implements safety countermeasures

Bluefield's transportation infrastructure includes state and local public facilities (streets, paths, sidewalks, transit, bicycle facilities, signs, lights, traffic signals, interchanges, barriers, and guard-rail, etc.) and other transportation assets.

The design of these facilities influences how people interact with and use the transportation system. People driving, riding, walking, bicycling, and using micro transport (mobility scooters, wheelchairs, etc.) navigate the transportation system using visual cues, signage, regulations, and their personal expectations about how other people will use the transportation system. Infrastructure for all travelers needs to be planned, designed, constructed, operated, and maintained to correctly signal travel speed and behavior consistent with the surrounding land uses and anticipated users, and to carefully manage interactions and expectations across multiple modes of travel.

Transportation infrastructure can be constructed or retrofitted to reduce fatal and serious injury crashes. Opportunities include implementing safety countermeasures on roadways and at intersections. Transportation infrastructure should be planned, designed, built, operated, and maintained to reduce crash severity.

Achieving the goal of promoting equitable outcomes can be measured with the following metrics:

- ↓ Decrease in the five-year average for fatalities and serious injuries.
- ↑ Number of intersections and/or streets improved
- ↑ Square footage of new location sidewalks and crosswalks constructed
- ↑ Square footage of deteriorated sidewalks and crosswalks rehabilitated or replaced
- ↑ Number of new location streetlights installed
- ↑ Number of unmaintained streetlights repaired or replaced

Implement transportation safety solutions in a manner that promotes equitable outcomes for underserved and vulnerable populations.

Transportation equity refers to safe, accessible, affordable, reliable, comfortable, healthy, and sustainable mobility and access that facilitates social and economic opportunities and meets the needs of all community members—particularly those identified as underserved, disadvantaged, and overburdened.

Vulnerable road users can be characterized by the amount of protection they have when using the transportation system - pedestrians, bicyclists, people using a mobility scooter and wheelchair are more exposed than people in cars, making them more susceptible to injury in the event of a crash. Aging drivers and pedestrians are inherently more vulnerable to severe injuries in the event of a crash. Low-income populations and people of color experience a higher rate of pedestrian fatalities and serious injuries per capita.[12] Poorer outcomes from these disparate pedestrian injuries are due to disproportionate use of walking and transit in these communities, more dangerous environments, and typically less than desirable medical treatment due to delayed response times and access to affordable, quality healthcare.

Bluefield will focus on the low-income and minority communities that comprise a quarter of the City's population, yet have historically been under-represented in transportation infrastructure decisions.

[12] https://www.smartcitiesdive.com/news/pedestrian-deaths-traffic-safety-walkable-cities/698352/#:~:text=Low%2Dincome%20neighborhoods%20experience%20more,be%20killed%20as%20White%20pedestrians

Achieving the goal of promoting equitable outcomes can be measured with the following metrics:

- ↓ Decrease in 5-year average crash rate in minority census blocks and low-income census block groups
- ↑ Number of intersections and/or streets improved in minority census blocks and low-income census block groups
- ↑ Square footage of new location sidewalks and crosswalks constructed in minority census blocks and low-income census block groups
- ↑ Square footage of deteriorated sidewalks and crosswalks replaced in minority census blocks and low-income census block groups
- ↑ Number of new location streetlights installed in minority census blocks and low-income census block groups
- ↑ Number of unmaintained streetlights repaired or replaced in minority census blocks and low-income census block groups
- ↑ Number of ADA-compliant crosswalks and ramps improved or installed

Transform public attitudes and organizational culture to recognize that all transportation system users have a responsibility for other people's safety in addition to their own.

Developing and sustaining a strong safety culture, where transportation safety is integrated into everyday decision-making, is key to reducing unnecessary deaths and serious injuries related to transportation. Cultural change involves educating those who plan, design, construct, maintain, and operate the system along with all road users. Each person has a basic responsibility to consider the safety of themselves and others as part of their job functions and daily activities. For those who address transportation and/or safety in their jobs, especially the City Board of Directors, City officials, emergency responders, law enforcement, health services providers, transit providers, nonprofit organizations, private contractors, and other organizations, the cultural shifts will be seen when safety is prioritized as a core value. A strong safety culture means that City leadership and employees at all levels are encouraged and rewarded for prioritizing safety and identifying safety concerns and solutions while carrying out their City's missions and their individual job responsibilities.

Inspiring a strong safety culture among City residents can be implemented in a number of ways. Good public information and education on the rules of the road and changes in regulations, broadly available and up-to-date automobile driver and motorcycle rider training, clear communication of the benefits of transportation law enforcement in changing social norms to expect slower speeds, respect and responsibility for other users, and community engagement in transportation safety plans and programs can all contribute to higher awareness of how individual choices influence the safety of all system users. This can be achieved through public service announcements, educational events (e.g., educational booth at local events), and driver training.

Effective traffic law enforcement is an important tool for reducing dangerous behavior and reinforcing safety culture. In addition, timely response by law enforcement and emergency medical responders can lead to decreases in transportation-related fatalities and serious injuries. With appropriate resources, more emergency medical responders can be trained and made available to respond to crashes in a timely manner and law enforcement can target dangerous behaviors such as speed and impaired driving and implement proven approaches and programs for protecting public safety.

Achieving the goal of improving safety culture will be measured with the following metrics:

- ↑ Number of annual safety education programs at local schools and colleges
- ↑ Number of annual public outreach transportation safety education campaigns and public participation
- ↓ Reduction in DUIs
- ↓ Reduction in distracted driving crashes
- ↑ Number of City employees and emergency responders that attend annual safety training
- ↓ Decrease in emergency response times

Implement transportation safety solutions in a manner that promotes economic development through improved quality of life.

Transportation safety has a direct impact on economic development for an area. Per FHWA, “Improving safety not only saves lives, but also produces other societal, environmental, and monetary benefits, such as greater mobility, **increased economic development, and improved quality of life**." [13]

Economic development is attracted to areas that have safe, well-maintained, and visually appealing transportation systems, as well as efficient emergency response systems in the event of crashes or incidents. In addition, crashes causing deaths or life-changing injuries are a major public health concern. A 2011 AAA study states, “for small urban areas, crashes are nearly six times more costly than congestion”.[14]

Achieving the goal of promoting economic development will be measured with the following metrics:

- ↑ Increased walk scores as provided by walkscore.com or USEPA’s National Walkability Index
- ↑ Increased comfort of bicycling or walking environments (public survey)
- ↑ Number of wayfinding or gateway signage installed
- ↑ Miles of streetscape improvements installed

[13] https://highways.dot.gov/safety/hsip/spm/primer-safety-performance-measures-transportation-planning-process/introduction

[14] https://exchange.aaa.com/wp-content/uploads/2012/07/AAA-Crashes-vs-Congestion-2011.pdf

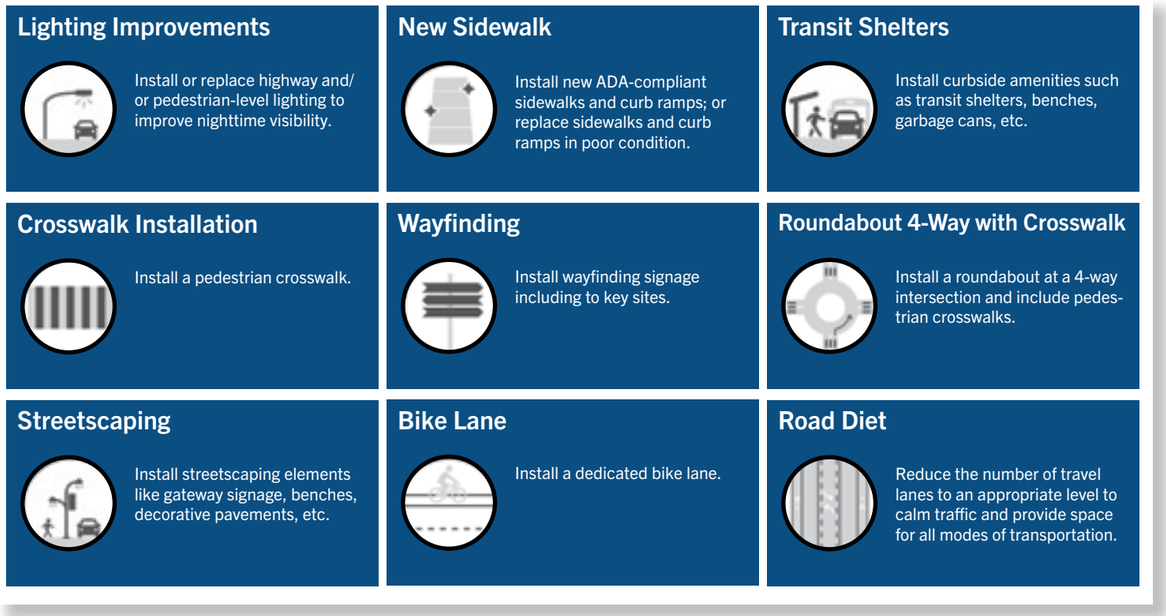
6.2 Safety Countermeasures

A safety countermeasure is a street or roadway treatment that is shown to improve specific safety concerns. Each countermeasure has an expected safety benefit and countermeasures can be combined for added safety.

Some categories with proven countermeasures include those for vulnerable users, intersection improvements, and roadway and roadside measures. Pedestrian and bicycle enhancements may include sidewalk installation or replacement, high visibility crosswalks, street lighting, or bike lanes. Road diets may include intersection improvements to install, retime, or remove a traffic signal, or install a roundabout to reduce crash severity. They may also include low-cost alternatives such as high visibility pavement markings and signage, rumble strips, and road diets. Streetscaping may include lighting, driveway conflict point access management, speed management, and transit improvements, including bus shelters or signage.

Figure 47 provides a graphic and photo collage which describes potential crash countermeasures that may be applicable to projects throughout Bluefield, along with conceptual renderings showing examples of multimodal safety treatments.

Figure 47 *Safety Improvement Key and Examples*



Visual Preference Results for Safety Countermeasures

6.3 Project Areas

Based on community participation, crash data analysis, field views, and Road Safety Audits, areas with correctable crash patterns were identified that would benefit from countermeasures. This resulted in a list of project areas paired with applicable safety countermeasures to reduce the severity and/or frequency of crashes.

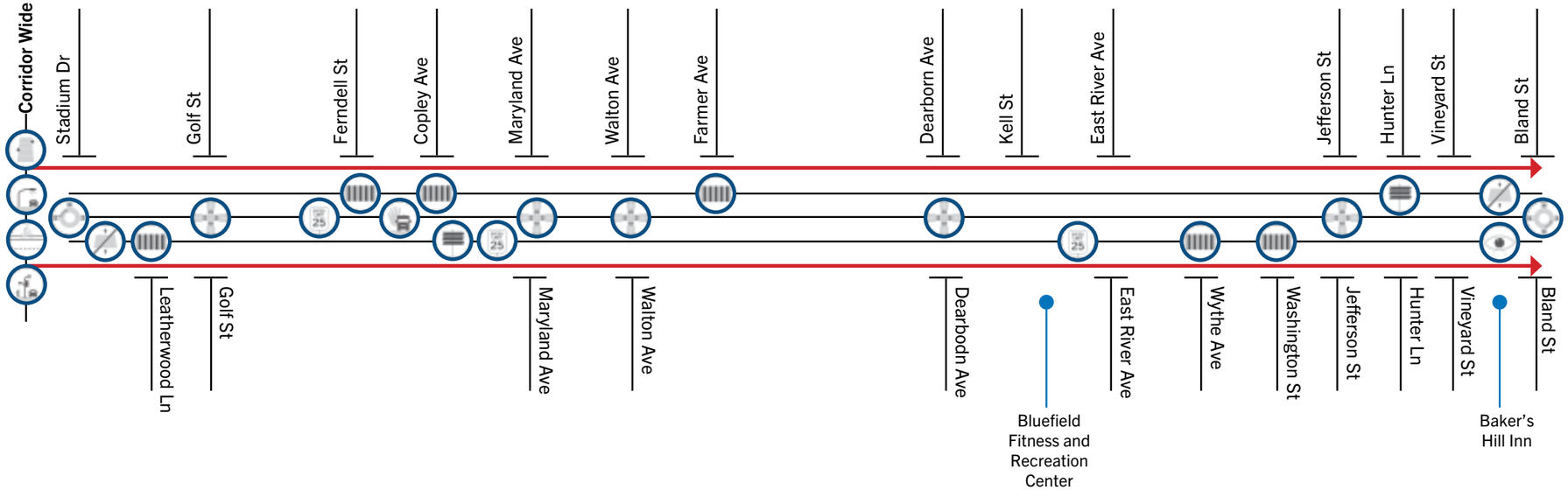
Figure 48 presents a project location map. **Figures 49 to 57** present the safety countermeasures proposed for each location. The safety countermeasures presented are conceptual and are not detailed design evaluations.

The projects evaluated for safety countermeasures were, in no particular order:

- College Avenue
- Stadium Drive
- Maryland Avenue
- Cherry Street 'Gap'
- Jefferson Street 'Spur'
- Bluefield Avenue /Princeton Avenue
- Hill Avenue / Pulaski/Hardy Street (including the US 52/Hill Avenue intersection)
- Bland Street
- Cumberland Road

Figure 48 *Project Location Map*

Figure 49 *Project College Avenue*



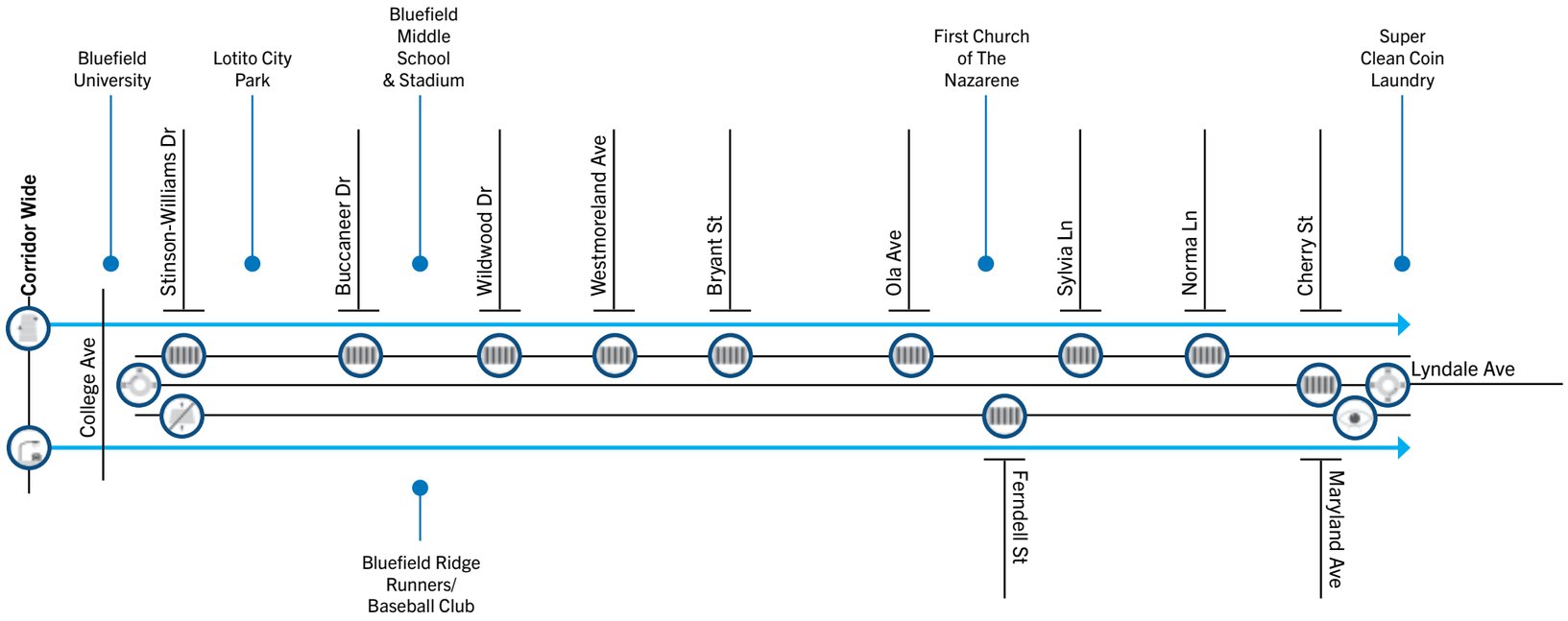
Applicable Safety Countermeasures

- Sidewalk Improvement
- Pedestrian Crosswalk
- Wayfinding Installation
- Intersection (4-Way Ped Crossing)
- Roundabout (4-Way Intersection)
- Remove Obstructions for Sightlines
- Truck Restriction Implementation
- Lighting Improvement
- Bike Lane Installation
- Streetscaping Installation
- Roundabout (3-Way Intersection)
- Access Management
- Signage Improvement

Corridor Statistics

Corridor Length	Approx. 7,700 Feet
New/Replaced Sidewalk	Approx. 15,400 Feet (Includes Both Sides)
Recommended Sidewalk Widths	5 Feet (Min. 4 Feet)
Proposed Pedestrian Crosswalk & ADA Ramps	Approx. 6 Crossings
Proposed Lighting	Approx. 15,400 Feet (Includes Both Sides)
Proposed Intersection Treatments	College Ave & Stadium Dr (Roundabout)
	College Ave & Bland St (Rounadbout)
	Golf, Maryland, Walton, Dearborn, Jefferson (4-Way Ped Cross)
Existing Typical Section Widths	R.O.W. 50 to 60 Feet
Existing Typical Paving Widths	32 Feet

Figure 50 *Project Stadium Drive*



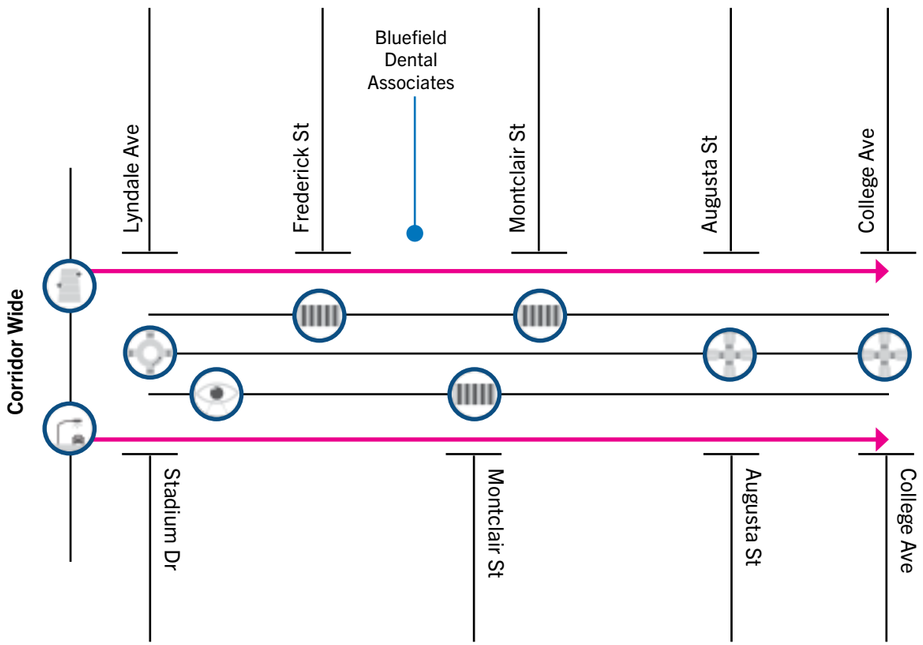
Applicable Safety Countermeasures

- Sidewalk Improvement
- Pedestrian Crosswalk
- Roundabout (4-Way Intersection)
- Remove Obstructions for Sightlines
- Lighting Improvement
- Roundabout (3-Way Intersection)
- Access Management

Corridor Statistics

Corridor Length	Approx. 5,000 Feet
New/Replaced Sidewalk	Approx. 10,000 Feet (Includes Both Sides)
Recommended Sidewalk Widths	5 Feet (Min. 4 Feet)
Proposed Pedestrian Crosswalk & ADA Ramps	Approx. 10 Crossings
Proposed Lighting	Approx. 10,070 Feet (Includes Both Sides)
Proposed Intersection Treatments	Stadium Dr & College Dr (Roundabout) Stadium Dr & Maryland Ave (Rounadbout)
Existing Typical Section Widths	R.O.W. 60 Feet
Existing Typical Paving Widths	20 Feet

Figure 51 *Project Maryland Avenue*



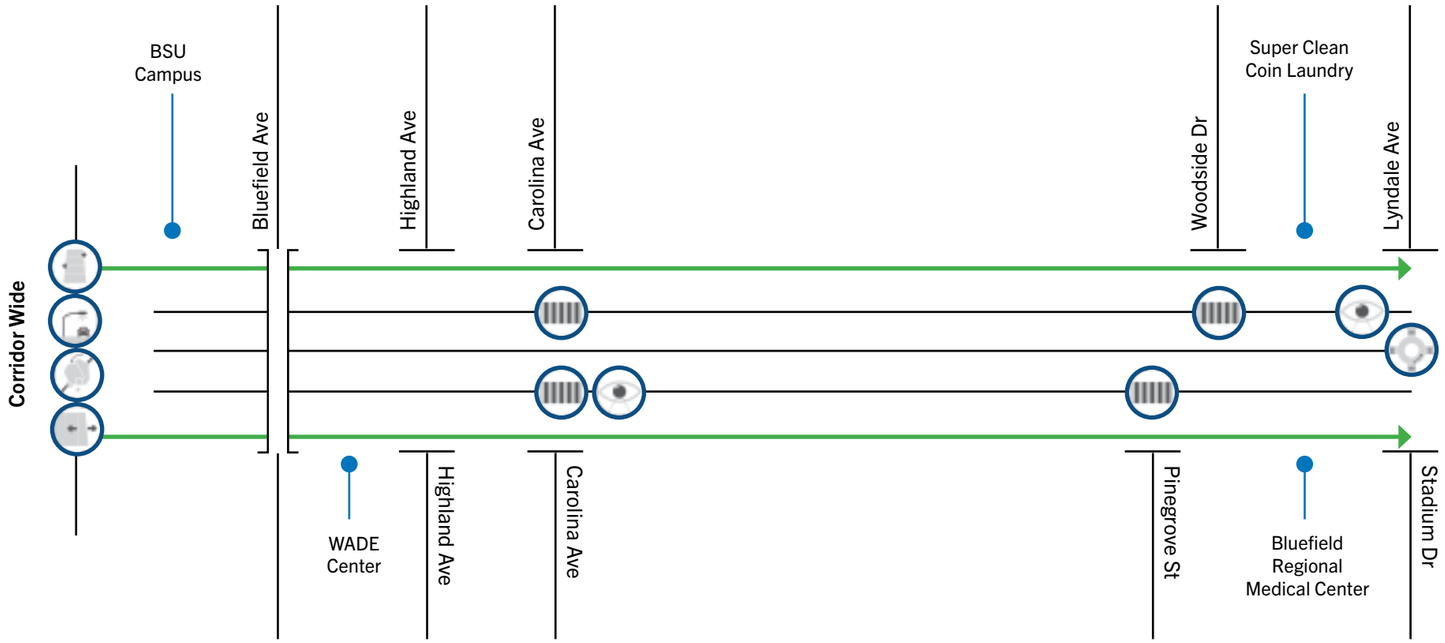
Applicable Safety Countermeasures

- Sidewalk Improvement
- Pedestrian Crosswalk
- Intersection (4-Way Pedestrian Crossing)
- Lighting Improvement
- Roundabout (4-Way Intersection)
- Remove Obstructions for Sightlines

Corridor Statistics

Corridor Length	Approx. 1,600 Feet
New/Replaced Sidewalk	Approx. 3,200 Feet (Includes Both Sides)
Recommended Sidewalk Widths	5 Feet (Min. 4 Feet)
Proposed Pedestrian Crosswalk & ADA Ramps	Approx. 3 Crossings
Proposed Lighting	Approx. 3,200 Feet (Includes Both Sides)
Proposed Intersection Treatments	Cherry St & Stadium Dr (Roundabout)
	Augusta St & College Ave (4-Way Pedestrian Crossing)
Existing Typical Section Widths	R.O.W. 50 Feet
Existing Typical Paving Widths	22 Feet

Figure 52 *Project Cherry Street 'Gap'*



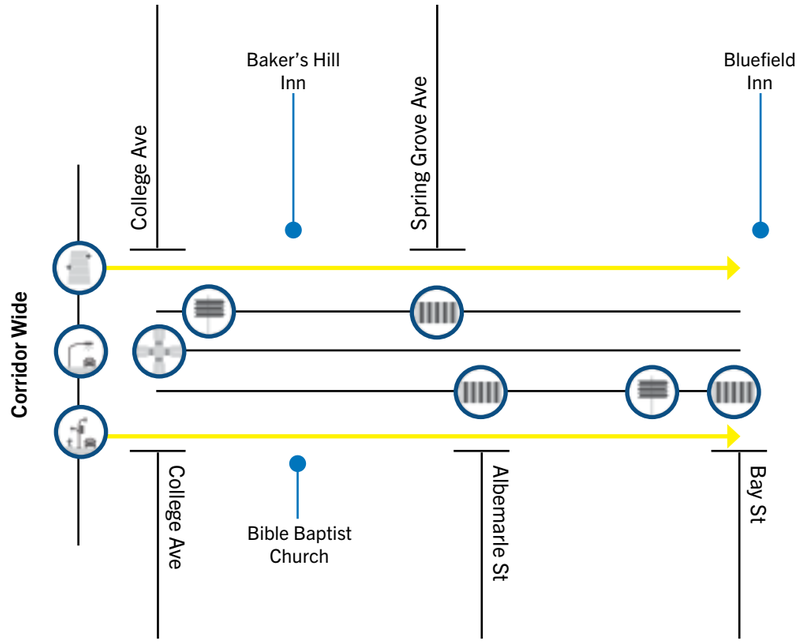
Applicable Safety Countermeasures

- Sidewalk Improvement
- Pedestrian Crosswalk
- Remove Obstructions for Sightlines
- Lighting Improvement
- Roundabout (4-Way Intersection)
- Rockslide Projection Installation

Corridor Statistics

Corridor Length	Approx. 4,400 Feet
New/Replaced Sidewalk	Approx. 8,800 Feet (Includes Both Sides)
Recommended Sidewalk Widths	5 Feet (Min. 4 Feet)
Proposed Pedestrian Crosswalk & ADA Ramps	Approx. 4 Crossings
Proposed Lighting	Approx. 8,800 Feet (Includes Both Sides)
Proposed Intersection Treatments	Cherry St & Stadium Dr (Roundabout)
Existing Typical Section Widths	R.O.W. 70 Feet
Existing Typical Paving Widths	22 Feet

Figure 53 *Project Jefferson Street 'Spur'*



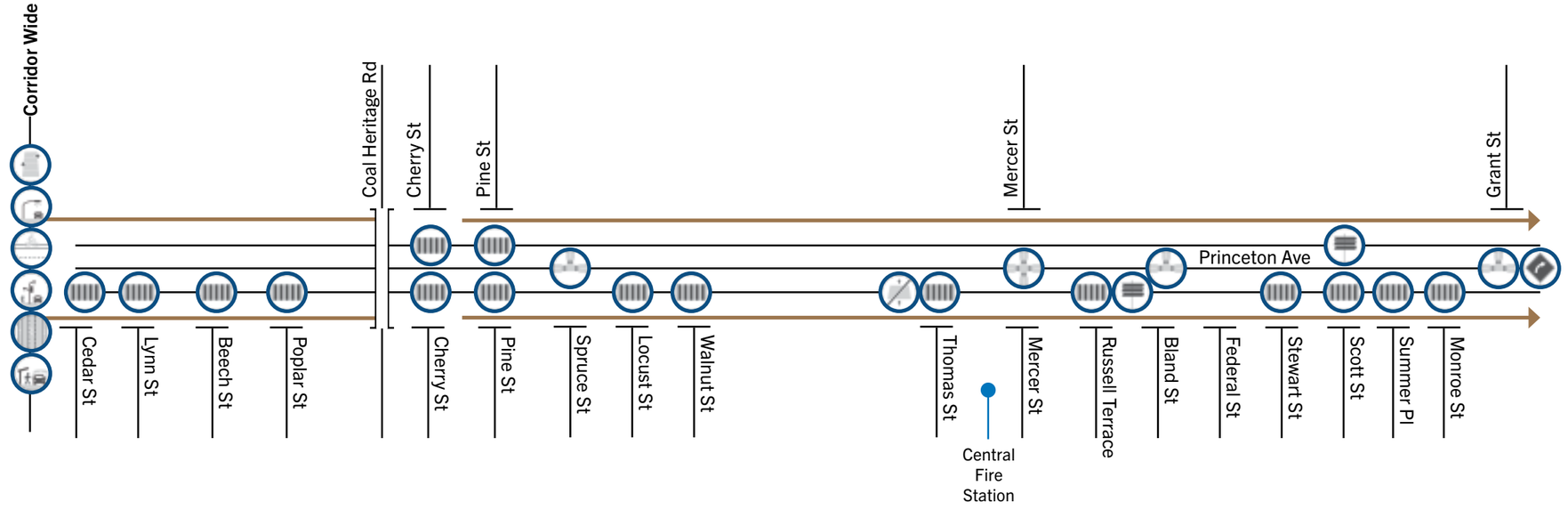
Applicable Safety Countermeasures

- Sidewalk Improvement
- Pedestrian Crosswalk
- Streetscaping Installation
- Lighting Improvement
- Wayfinding Installation
- Intersection (4-Way Pedestrian Crossing)

Corridor Statistics

Corridor Length	Approx. 1,100 Feet
New/Replaced Sidewalk	Approx. 2,200 Feet (Includes Both Sides)
Recommended Sidewalk Widths	5 Feet (Min. 4 Feet)
Proposed Pedestrian Crosswalk & ADA Ramps	Approx. 3 Crossings
Proposed Lighting	Approx. 2,200 Feet (Includes Both Sides)
Proposed Intersection Treatments	Jefferson St & College Ave (4-Way Pedestrian Crossing)
Existing Typical Section Widths	R.O.W. 40 Feet
Existing Typical Paving Widths	20 Feet

Figure 54 *Project Bluefield Avenue / Princeton Avenue*



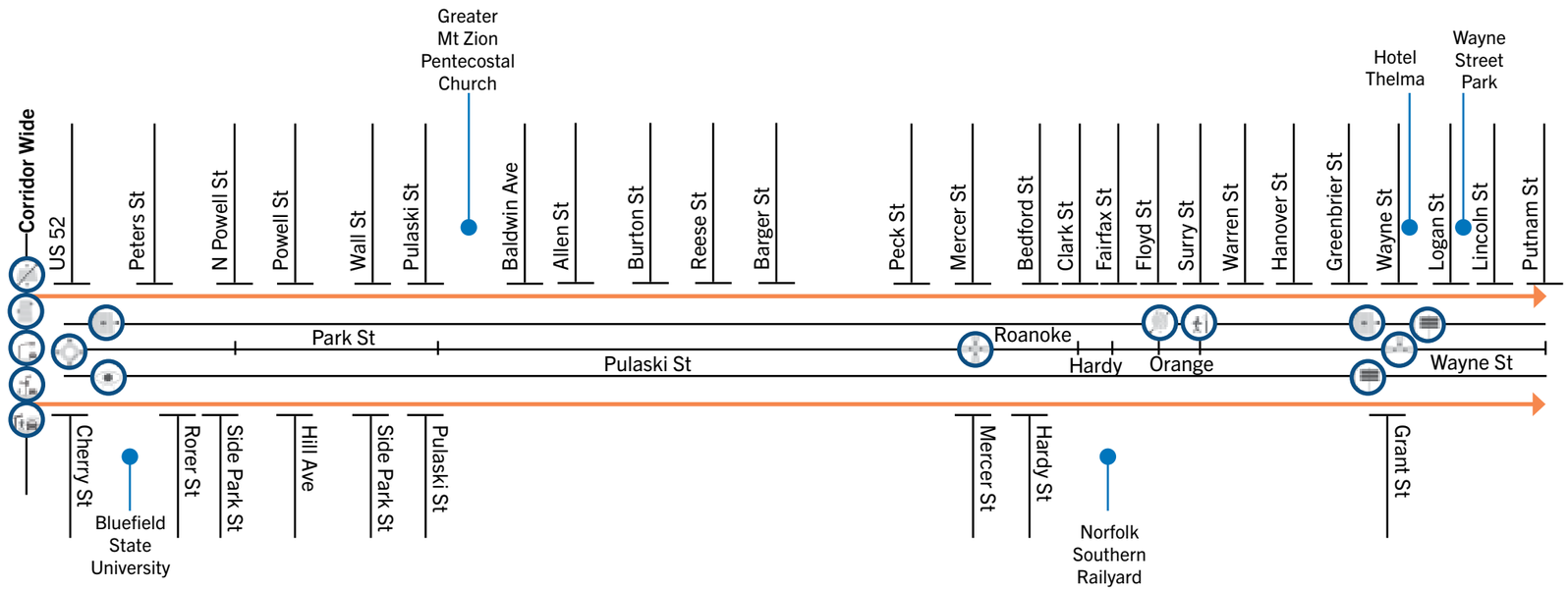
Applicable Safety Countermeasures

- Sidewalk Improvement
- Pedestrian Crosswalk
- Wayfinding Installation
- Transit Shelters
- Intersection (3-Way Pedestrian Crossing)
- Roadway Diet
- Advance Warning Signage
- Lighting Improvement
- Bike Lane Installation
- Streetscaping Installation
- Intersection (4-Way Pedestrian Crossing)
- Mid Block Crossing
- Access Management

Corridor Statistics

Corridor Length	Approx. 9,400 Feet
New/Replaced Sidewalk	Approx. 18,800 Feet (Includes Both Sides)
Recommended Sidewalk Widths	5 Feet (Min. 4 Feet)
Proposed Pedestrian Crosswalk & ADA Ramps	Approx. 16 Crossings
Proposed Lighting	Approx. 18,800 Feet (Includes Both Sides)
Proposed Intersection Treatments	Bluefield Ave & Mercer St (4-Way Pedestrian Crossing)
	Spruce, Bland, Grant St (3-Way Pedestrian Crossing)
Existing Typical Section Widths	Bluefield R.O.W. 60-73 Feet
	Princeton R.O.W. 50-70 Feet
Existing Typical Paving Widths	Bluefield 59 Feet
	Princeton 35-50 Feet

Figure 55 *Project Hill Avenue / Pulaski Street / Hardy Street*



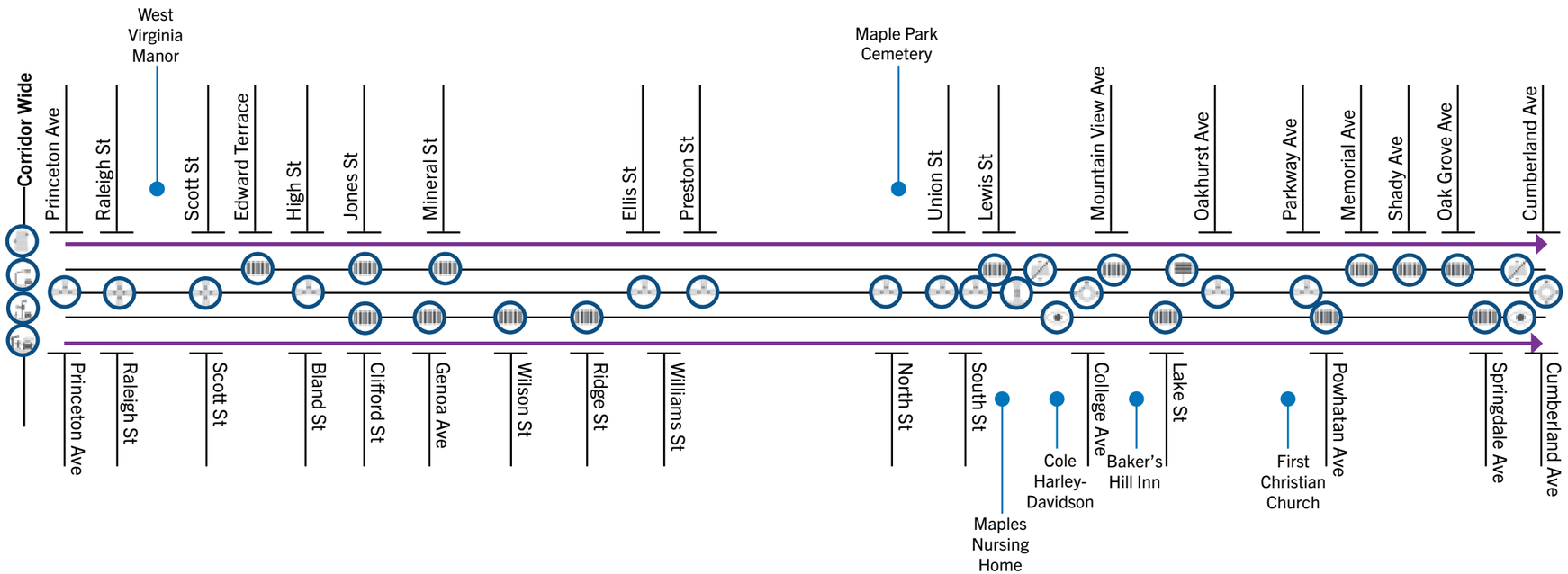
Applicable Safety Countermeasures

- Sidewalk Improvement
- Wayfinding Installation
- Transit Shelters
- Intersection (3-Way Pedestrian Crossing)
- Roundabout (4-Way Intersection)
- Access Management
- Lighting Improvement
- Streetscaping Installation
- Rockslide Projection Installation
- Intersection (4-Way Pedestrian Crossing)
- Roadway Shoulder Improvement
- Remove Obstructions for Sightlines

Corridor Statistics

Corridor Length	Approx. 13,200 Feet
New/Replaced Sidewalk	Approx. 26,400 Feet (Includes Both Sides)
Recommended Sidewalk Widths	5 Feet (Min. 4 Feet)
Proposed Pedestrian Crosswalk & ADA Ramps	Approx. 0 Crossings
Proposed Lighting	Approx. 26,400 Feet (Includes Both Sides)
Proposed Intersection Treatments	US 52 (Roundabout) Wayne St & Hill Ave (3-Way Pedestrian Crossing)
Existing Typical Section Widths	Hill & Hardy R.O.W. 40 Feet Pulaski R.O.W. 30 Feet
Existing Typical Paving Widths	Hill & Hardy 20 Feet Pulaski 20 Feet

Figure 56 *Project Bland Street*



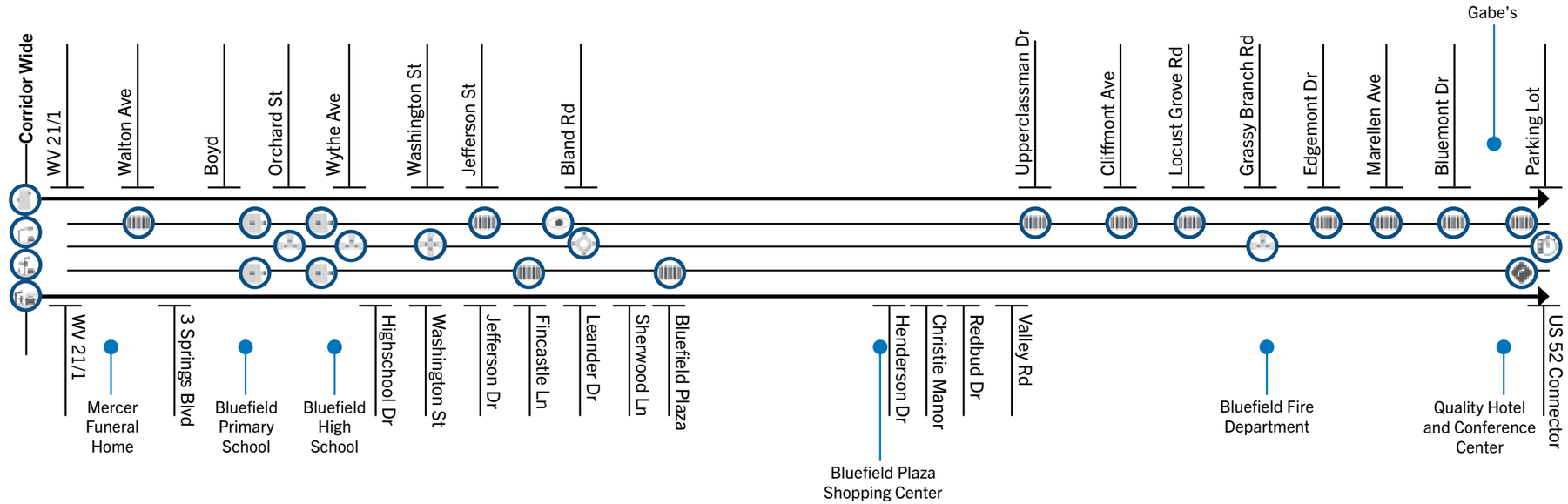
Applicable Safety Countermeasures

- Sidewalk Improvement
- Pedestrian Crosswalk
- Streetscaping Installation
- Intersection (3-Way Pedestrian Crossing)
- Roundabout (3-Way Intersection)
- Mid Block Crossing
- Remove Obstructions for Sightlines
- Lighting Improvement
- Wayfinding Installation
- Transit Shelters
- Intersection (4-Way Pedestrian Crossing)
- Roundabout (4-Way Intersection)
- Access Management

Corridor Statistics

Corridor Length	Approx. 9,100 Feet
New/Replaced Sidewalk	Approx. 18,200 Feet (Includes Both Sides)
Recommended Sidewalk Widths	5 Feet (Min. 4 Feet)
Proposed Pedestrian Crosswalk & ADA Ramps	Approx. 15 Crossings
Proposed Lighting	Approx. 18,200 Feet (Includes Both Sides)
Proposed Intersection Treatments	Bland St & College Ave (Roundabout) Bland St & Cumberland Ave (Roundabout) Raleigh, Scorr St (4-Way Intersection) Princeton, High, Ellis, North, Union, Lewis St (3-Way Intersection)
Existing Typical Section Widths	R.O.W. 40 Feet
Existing Typical Paving Widths	30 to 50 Feet

Figure 57 *Project Cumberland Road*



Applicable Safety Countermeasures

- Sidewalk Improvement
- Pedestrian Crosswalk
- Transit Shelters
- Intersection (4-Way Pedestrian Crossing)
- Access Management
- Remove Obstructions for Sightlines
- Lighting Improvement
- Streetscaping Installation
- Intersection (3-Way Pedestrian Crossing)
- Roundabout (4-Way Intersection)
- Roadway Shoulder Improvement
- Advance Warning Signage

Corridor Statistics

Corridor Length	Approx. 13,200 Feet
New/Replaced Sidewalk	Approx. 26,400 Feet (Includes Both Sides)
Recommended Sidewalk Widths	5 Feet (Min. 4 Feet)
Proposed Pedestrian Crosswalk & ADA Ramps	Approx. 11 Crossings
Proposed Lighting	Approx. 26,400 Feet (Includes Both Sides)
Proposed Intersection Treatments	Wythe Ave (4-Way Intersection) Orchard, Wythe, Grassy (3-Way Intersection) Cumberland Rd & Bland Rd (Roundabout)
Existing Typical Section Widths	R.O.W. 50 to 60 Feet
Existing Typical Paving Widths	25 Feet

6.4 Project Prioritization

To prioritize the identified project areas for implementation, a scoring system was developed using four criteria that align with the Action Plan's vision statement and goals.

The four criteria scored were safety, equity, community participation, and economic development potential. This section describes how the scores were derived for each criterion.

Safety

This criterion ranks the level of safety by crash injury status code and roadway safety audits observations. **Table 18** presents the safety scoring matrix.

Table 18 *Safety Scoring Matrix*

Number of Areas of Observed Safety Concerns Noted During Roadway Safety Audits	Recorded Crash Injury Status Code		
	K (Killed) or A (Incapacitating Injury)[1]	B (Non-Incapacitating Injury)[2]	C (Possible Injury) or O (No Injury)[3]
5 to 6	3	3	2
3 to 4	3	2	1
1 to 2	3	1	1

[1] An Incapacitating Injury is defined as an "Injury severe enough to require an individual to be immediately transported from the scene. Injuries include bleeding wounds, distorted members, etc."

[2] A Non-Incapacitating Injury is defined as injuries like "Bruises, Abrasions, Swelling, Limping, etc."

[3] A Possible Injury is defined as "No visible injury but an individual complains of pain or momentary unconsciousness."

Table 19 *Federal Equity Tools and Thresholds*

Federal Equity Tool	Threshold
USDOT Area of Persistent Poverty	Yes
USDOT Historically Disadvantaged	Yes
Justice 40 Historically Disadvantaged	Yes
USDOT Equitable Transportation Community Explorer: Climate & Disaster Risk	>61.3%
USDOT Equitable Transportation Community Explorer: Environmental Burden	>68.5%
USDOT Equitable Transportation Community Explorer: Health Vulnerability	>89.3%
USDOT Equitable Transportation Community Explorer: Social Vulnerability	>71.1%
USDOT Equitable Transportation Community Explorer: Transportation Insecurity	>38.1%
EPA Environmental Justice Screener: Traffic Proximity	>65.2%
EPA Environmental Justice Screener: People of Color	>54.4%
EPA Environmental Justice Screener: Low Income	>87.9%
EPA EnviroATLAS: Households Below the Quality of Life Threshold Income	>79.3%
CDC Social Vulnerability Index	>78.2%
Smart Location Index	<84.2%
Walkability Index	<7.1

Equity

This criterion ranks equity consideration by evaluating the project location Census Tract(s) against fifteen Federal equity tools. For each Federal equity tool, a threshold was established using the average Federal equity tool score across the ten projects. **Table 19** presents the Federal equity tools and their thresholds.

For the equity matrix score, the number of Federal equity tool thresholds exceeded was used. **Table 20** presents the equity matrix scores.

Table 20 *Equity Scoring Matrix*

Number of Federal Equity Tool Thresholds Exceeded	Matrix Score
11 to 15	3
6 to 10	2
1 to 5	1

Community Participation

This criterion ranks community concern by number of individuals who mentioned a project corridor or need during community participation activities, such as the social media data collection tool, stakeholder interviews, and public meetings. **Table 21** presents the community participation scoring matrix.

Table 21 *Community Participation Scoring Matrix*

Number of Individuals	Matrix Score
20+	3
10 to 19	2
1 to 9	1

Economic Development Potential

This criterion ranks economic development potential of the project by considering if the project location is within an area zoned for businesses, has existing businesses, or within an area that drives education or tourism.

As previously discussed, education and tourism are two of the four historical economic pillars of Bluefield – the other two being railroad and coal. The project location would receive one point for each of these factors it meets. **Table 22** presents the economic development potential scoring matrix.

Table 22 *Economic Development Potential Scoring Matrix*

Zoning, Existing Businesses, Education, or Tourism	Matrix Score
3+	3
2	2
1	1

Prioritization Matrix

The criterion scores were brought together in the prioritization matrix shown in **Table 23**.

Table 23 *Project Prioritization Scoring Matrix*

Project	Safety	Equity	Community Participation	Economic	Score
Hill Ave | Pulaski St | Hardy St (US 52 / Hill Ave Intersection)	3	3	3	2	11
Stadium Dr	3	2	3	2	10
Cumberland Rd	3	2	2	3	10
Cherry St 'Gap'	3	2	3	1	9
Bluefield Ave | Princeton Ave	3	2	1	3	9
Bland St	3	2	1	3	9
Maryland Ave	3	1	2	2	8
College Ave	3	1	2	1	7
Jefferson St 'Spur'	2	2	1	1	6

6.5 Project Implementation Time Range

The Action Plan supports the goal of reaching zero fatalities by 2050. As of the 2024 publication of this Action Plan, that leaves 26 years to complete implementation of recommended countermeasures with the project areas. With its current municipal budget, Bluefield is constrained fiscally with many competing infrastructure and maintenance needs. As such, competitive funding will be important to secure and obtain; otherwise, Bluefield cannot implement all these countermeasure improvements with their limited budget and staffing within 26 years.

Two overarching implementation categories **(see Table 24)** have been identified with the first focused on securing the necessary funding, completing the required NEPA documentation, completing roadway designs, completing bidding, and awarding the construction contract. The second is the proposed time range in which to initiate and complete construction.

It is important to note that these project areas may be combined into corridor level projects for funding opportunities. Bluefield will continue to work with funding agencies, including WVDOT and USDOT, to identify funding opportunities to advance implementation of the recommended safety improvements throughout the Action Area.

Table 24 *Project Implementation Time Range*

Project	Priority	Time Range	
		Funding, NEPA, Design, Contract	Complete Construction
Hill Ave | Pulaski St | Hardy St (US 52/ Hill Ave Intersection)	High	3-5 years	5-10 years
Stadium Dr	High		
Cumberland Rd	High		
Cherry St 'Gap'	Medium	5-10 years	10-15 years
Bluefield Ave | Princeton Ave	Medium		
Bland St	Medium		
Maryland Ave	Low	10-15 years	15-20 years
College Ave	Low		
Jefferson St 'Spur'	Low		

7.0 Policy Review

A review of safety plans and policies from peer municipalities, metropolitan planning organizations, and state and national transportation agencies was conducted. Policies are suggested for safety concerns that are more broadly focused, programmatic, or behavioral in nature.

Policies, while not new infrastructure projects, can lay the governmental framework and foundation for future safety enhancements. These enhancements range from appropriate street design for all modes of transportation, maintenance and improvement of the existing transportation system, intergovernmental and agency cooperation, public and private partnerships, and some cross-cutting safety policies that have overlapping interests with tourism and economic development.

Table 25 *Policy Recommendations*

Concern	Recommendation
At various locations throughout the City, speed advisory and turn restriction signage is undersized or mounted at a non-standard lower height. Wayfinding street name obelisks are low to the ground, difficult to maintain, and challenging to see.	**Create Signage Strategy:** Perform a Citywide sign inventory, using the Manual of Uniform Traffic Control Devices (MUTCD) as a guide, identify undersized or outdated signage, adopt a sign replacement strategy. Partner with WVDOH to assess state-owned signage in the City of Bluefield. Replace all signs to include post-mounted signs with breakaway posts for safety, or mount street name signs on traffic signal span wires.
There are locations with wide, unmarked pedestrian crossings and a lack of dedicated and maintained facilities for vulnerable users including senior citizens, people in mobility scooters, transit riders, cyclists, etc.	**Adopt a Complete Streets Policy:** Adopt a Complete Streets policy that accommodates all modes of transportation, with a special emphasis on providing safe accommodations for non-motorized modes. Refer to Public Right of Way Access Guidelines (PROWAG) for the latest recommended and minimum widths for pedestrian and cyclist amenities and Americans with Disabilities Act (ADA) compliant curb ramps. While all streets have different uses and contexts, consideration should be given to improvements such as sidewalks, ramps, crosswalks, curb bump outs, bicycle lanes, green infrastructure and stormwater retention, pedestrian-level lighting, and transit pull-offs, benches, and shelters.
Departments that deal with all aspects of safety from first responders to the police officers writing the crash reports to the health system and crash after-care are often siloed. There is an opportunity to better coordinate on safety data and safe behaviors.	**Appoint a Vision Zero or SS4A Technical Committee:** Appoint a committee of interested parties that are responsible with carrying out the Safety Action Plan (SAP) and a committee leader; their activities would include standardizing the crash reports and digitizing the prior year's crash data in a manner that is accessible and plotted into Geographic Information System (GIS) software. This committee would be responsible for a yearly status update, monitoring changes in land use and transportation, discussing emerging safety issues, and tracking progress. The committee could meet quarterly to review SAP action items.
Vehicles queueing onto the roadways during school dismissals is a concern at many school district locations.	**Implement a School Audit for Safe Routes to School:** Work with one school per year to examine the pick-up policies, layout of the parking lot and entrance points, and school dismissal times with a lens of efficiency to reduce the traffic queue. Consider implementing a multi-lane pickup, staggering times, or altering the internal parking lot configuration with pavement markings to reduce queuing, especially where vehicles queue back onto high-speed roadways like US 460.
There is a lack of evening and weekend bus service which may lead to people walking, rolling, or cycling in the dark to reach their destinations.	**Expand Transit Service Hours:** Work with the transit agency to examine options for expansion of transit service to evenings and weekends, initially piloting an on-demand service.
Many of the sidewalks are in poor condition, or there are gaps in the sidewalk network, so walkers, runners, and people in mobility scooters and wheelchairs use the road instead.	**Pursue a Sidewalk Replacement Program:** Perform a sidewalk inventory to identify locations with poor, fair, good, excellent sidewalk and curb ramp conditions. Identify gaps in the sidewalk network. Identify priorities and begin to replace sidewalk year-by-year. Develop a policy for landowners to install sidewalks on their properties as part of any redevelopment to decrease the amount of sidewalk gaps, particularly on Cumberland Road. Market and educate the public about the City's Sidewalk Replacement Program to notify them of the availability of interest free loans.
There is not a clear multimodal network to access key sites in the City without a vehicle. Multimodal connections would increase recreational opportunities and quality of life.	**Develop Bicycle and Pedestrian Master Plan and Multimodal Path System:** Develop a network of safe multimodal connections to key pedestrian generators, grocery stores, parks, colleges, the Central Business District, and current and future tourist sites with clearly marked signage, lighting, and dedicated crossings to major destinations. Compare Bluefield's local and regional recreation destinations against easements and parcels owned by the City to identify potential trails. Advertise and promote these multimodal connections as part of a new tourism draw in the City.
Road user behavior for all modes in the area is currently unpredictable.	**Develop a Road User Safety Advocacy Program:** Establish a Vision Zero or SS4A Safety Advocacy Committee. This committee would engage with the public to develop a safety advocacy campaign that may include: encourage motorist's awareness of bicycles and laws pertaining to passing cyclists, checking twice for motorcycles, best practices in boarding and alighting from a school bus or transit bus; launch a pedestrian and bicyclist safety campaign to educate school-aged children, college students, and adults to encourage good pedestrian and cyclist behavior and discourage road crossings in locations with poor lighting or poor sight distance. Advocate to motorists to look twice for pedestrians, and for the public to wear bright reflective clothing and cross at designated crosswalks to reduce their risk of crashes.
Aggressive driver behavior in the area includes not yielding to pedestrians.	**Include Pedestrian Friendly Traffic Signal Phasing:** Reprogram signals to include a minimum 3-second Lead Pedestrian Interval (LPI) upon actuation at all signals to allow pedestrians time to get into the intersection and be more visible to turning traffic. Consider No Turn on Red restrictions. Assess Walk, Flashing Don't Walk, and Don't Walk times to allow time for slower moving pedestrians to cross the road. Assess Yellow and All-Red signal clearance intervals with consideration of prevailing speeds.
Aggressive driver behavior includes speeding.	**Implement Neighborhood Traffic Calming Policy:** Implement neighborhood-level improvements to calm traffic, including elements such as curb bump-outs, mini-roundabouts, and road diets. Evaluate speed limits across the City and consider Safer Speeds as part of the Safe Systems Approach. Consider "20 is plenty" on neighborhood streets.
Signage is lacking for deer crossings.	**Install Animal Crossing Signage:** Evaluate animal vehicle collision crash history and local knowledge of deer crossing areas and install warning signage.
Concurrent construction projects are not always coordinated to include incremental improvements to transportation safety.	**Perform Pre-Project Meetings and Walking Tours with Safety in Mind:** Create a checklist and perform a Road Safety Audit before beginning any new project that requires replacing infrastructure. Require a meeting with interested parties and a walk-through on planned projects to assess multimodal safety needs and include amenities as feasible, to improve safety incrementally and systematically with minimal disruptions to the public.
There are recurring nuisance flooding and stormwater drainage issues.	**Implement a Stormwater Maintenance Program:** Develop a program to inventory stormwater inlets and maintain yearly, or after large storms. Replace degraded stormwater infrastructure. Decrease pervious surfaces, such as asphalt parking lots, with rain gardens, bio-retention swales, and permeable pavements where feasible.
There are some signals with low traffic volumes and signals are expensive to maintain.	**Perform Signal Warrant Assessment:** Perform a signal warrant assessment and pursue a signal removal program replacing signals with roundabouts or all-way stop control.

8.0 Measuring Progress

The Steering Committee will oversee the implementation and evaluation of the Action Plan's progress. The following strategies are recommended with respect to the implementation and evaluation stage of this plan:

- This Steering Committee should meet at least once per year to review the latest crash data dashboard information, community participation information, and discuss shifting community needs, lessons learned, opportunities, and emerging technologies. The Steering Committee would provide input on an annual report.
- The Steering Committee will evaluate the metrics identified in Section 6.1.2 to determine the overall best ones to track based on the criteria of being feasible, relevant, available, and understandable.
- Create a crash data dashboard that can be used to track the City's performance with respect to performance measures over the next five years and beyond.
- Conduct pedestrian counts in perceived high activity areas, including bicycle rack counts or travel surveys at schools, at least once per year to facilitate planning and prioritization of nonmotorized system improvements.
- Conduct annual community participation (online survey) to solicit public input on progress and continued needs.
- Publish an annual report summarizing implemented strategies and projects—including engineering, education, and enforcement measures—from this Action Plan and system performance with respect to expectations.

9.0 Public Posting

The Action Plan will be publicly available on the City of Bluefield's webpage.

https://www.bluefieldwv.gov/