SALISBURY/WICOMICO
Metropolitan
Planning Organization

US Route 13 Business Pedestrian & Cyclist Safety and Connectivity Plan

December 16, 2022

Rossi

Contents

Appendices

I. Project Description and Purpose

The US Route 13 Business Pedestrian & Cyclist Safety and Connectivity Plan analyzes pedestrian and cyclist needs and identifies improvements to address safety concerns and opportunities to improve non-motorized connectivity within the study area (Figure 1). The Plan includes specific concept designs for sidewalks, signage, curb ramps, crosswalks, refuge islands, stop bars, and pedestrian and cyclist signals along the study area roadways and intersections to achieve the pedestrian and cyclist safety and connectivity goals and objectives. The Plan prioritizes short, mid, and long-term concept implementation and provides concept level construction cost estimates for each of the recommended improvements.

Specific objectives addressed in this Plan include:

a. Providing safe pedestrian and cyclist accommodations (connections and accessibility) for the general public, which are ADA compliant

b. Pedestrian and cyclist connections among nearby schools, retail, and residential areas

c. Safe and convenient non-motorized movement at designated and non-designated crossing points across and along US Route 13 Business and Wesley Drive

d. Safe and convenient pedestrian and cyclist connection to bus stops and nearby activity centers (commercial and residential)

e. Integration with City of Salisbury, Wicomico County, and Maryland Department of Transportation State Highway Administration planned mobility projects including but not limited to the 2018 Salisbury Rails with Trails Master Plan and 2017 Salisbury Bicycle Network Plan.

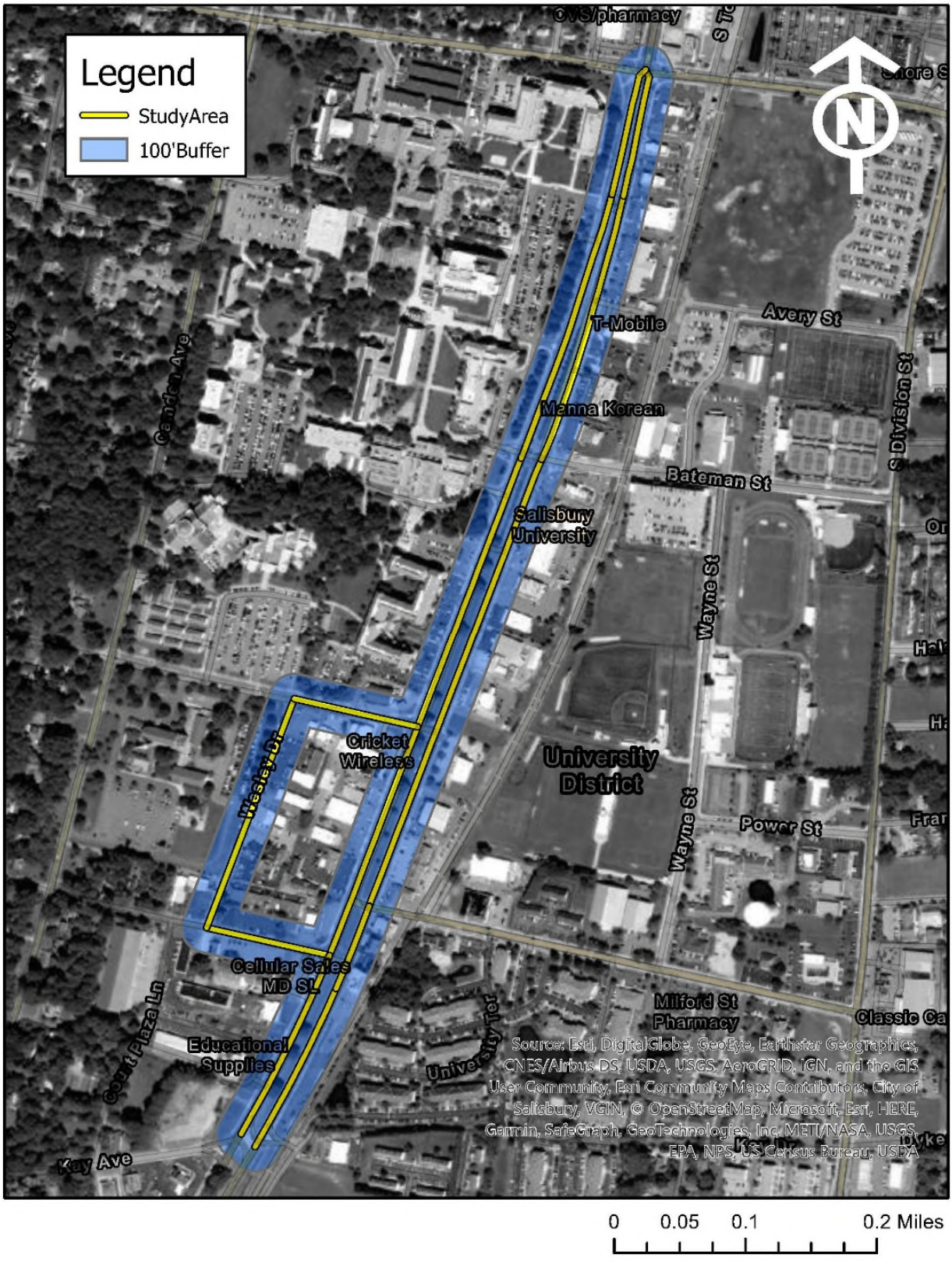


Figure 1: US Route 13 Business Pedestrian & Cyclist Safety and Connectivity Plan Study Area

II. Existing Conditions

A. Existing Roadway Conditions

The study area encompasses 0.87 miles of US Route 13 Business, Wesley Drive, approximately 510 feet of Dogwood Drive, approximately 315 feet of Bateman Street, and approximately 510 feet of Pine Bluff Road (Figure 1). US Route 13 Business has two thru lanes in each direction with continuous right turn lanes throughout the study area. It is classified as a principal arterial with an AADT of 18,080 vehicles per day and a posted speed limit of 35 MPH. There are multiple intersection roadways with US Route 13 Business in the study area, these are detailed below. AADT data was sourced from MDOT's Average Annual Daily Traffic (AADT) Locator, using 2021 volumes unless otherwise noted. Roadway classification was sourced from MDOT SHA's OpenData Highway Functional Classification Interactive Map.

W College Avenue

At this intersection (Figure 2), W College Ave is classified as a minor arterial with an annual average daily traffic (AADT) of 14,272 vehicles per day. This intersection has two channelizing islands on the south leg with crosswalks and pedestrian ramps along the east, north, and west legs. In addition, the two channelizing islands on the southeast and southwest corners serve as pedestrian refuges from the existing right turn lanes. There are pedestrian signal heads with push buttons on the northeast and northwest corners of the intersection. The intersection is signal controlled and operates in a split phase along W College Ave with lane use as noted below:

Northbound: 1 left-turn lane, 2 through lanes, 1 right-turn lane
Southbound: 1 left-turn lane, 1 through lane, 1 shared right-through lane
Eastbound: 1 left-turn lane, 1 through lane, 1 right-turn lane
Westbound: 1 left-turn lane, 1 shared left-through lane, 1 right-turn lane

The W College Ave cycle track is being constructed by the City of Salisbury and will provide a bicycle lane and crossing improvements along approximately 0.75-miles of W College Ave from Riverside Dr to just past Lorecrop Dr (Figure 3). The improvements include elevated concrete median protected bicycle lanes adjacent to Salisbury University from Camden Ave to Lorecrop Dr on the south side of W College Ave with two-opposite direction lanes for bicycle traffic. Green striped bicycle lanes and crossings are proposed for the remaining portions of W College Ave to provide delineation and safe crossing.

Source: Bing Aerial Imagery, Microsoft 2022

Figure 2: US Route 13 Business and W College Ave

Figure 3: W College Ave Cycle Track Construction

Bateman Street

At this intersection (Figure 4), Bateman St is classified as a local road, with no AADT data available. The west side of the intersection includes an entrance to a Salisbury University parking lot. This intersection includes pedestrian ramps on all four corners, with crosswalks on the east and west legs of the intersection. These do not have pedestrian signal heads or push buttons. There is a pedestrian tunnel beneath US Route 13 Business between Bateman St and the Salisbury University campus. The intersection is signal controlled with lane use as noted below:

Northbound: 1 left-turn lane, 2 through lanes, 1 continuous right-turn lane, and a bicycle lane
Southbound: 1 left-turn lane, 2 through lanes, 1 continuous right-turn lane, and a bicycle lane
Eastbound: 1 shared left-through lane, 1 right-turn lane
Westbound: 1 left-turn lane, 1 shared right-through lane

Figure 4: US Route 13 Business and Bateman Street

Dogwood Drive

At this intersection (Figure 5), Dogwood Dr is classified as a local road, with no AADT data available. There is an entrance to a commercial parking lot on the east side of the intersection. This intersection includes pedestrian ramps on all four corners of the intersection as well as a pedestrian refuge with ramps in the median on the north leg of the intersection. A marked crosswalk is provided along this leg of the intersection which includes pedestrian signal heads and push buttons. The intersection is signal controlled with lane use as noted below:

Northbound: 1 left-turn lane, 2 through lanes, 1 continuous right-turn lane
Southbound: 1 left-turn lane, 2 through lanes, 1 continuous right-turn lane, and a bicycle lane
Eastbound: 1 through lane, 1 right-turn lane
Westbound: 1 shared left-right-through lane

Source: Bing Aerial Imagery, Microsoft 2022

Figure 5: US Route 13 Business and Dogwood Drive

Milford Street

At this intersection (Figure 6), Milford St is classified as a minor collector, with an AADT of 5,144 vehicles per day. This intersection consists of a J-turn from US Route 13 Business southbound to Milford St, with right turns in and out of Milford St onto US Route 13 Business northbound. There are pedestrian ramps along the east leg with no marked pedestrian crossing or signals. The intersection has lane use as noted below:

Northbound: 2 through lanes, 1 continuous right-turn lane
Southbound: 1 left-turn, 2 through lanes, 1 continuous right-turn lane
Westbound: 1 right-turn lane

Source: Bing Aerial Imagery, Microsoft 2022

Figure 6: US Route 13 Business and Milford Street

Pine Bluff Road

At this intersection (Figure 7), Pine Bluff Rd is classified as a major collector, with an AADT of 1,832 vehicles per day. This intersection does not have designated crossings to cross US Route 13 Business. There are sidewalks on along US Route 13 Business on both sides, with pedestrian ramps to cross Pine Bluff Rd along US Route 13 Business. This intersection is signal controlled with lane use as noted below:

Northbound: 1 left-turn lane, 2 through lanes, 1 continuous right-turn lane
Southbound: 2 through lanes, 1 continuous right-turn lane
Eastbound: 1 left-turn lane, 1 shared through-right-turn lane

Source: Bing Aerial Imagery, Microsoft 2022

Figure 7: US Route 13 Business and Pine Bluff Road

Wesley Drive from Dogwood Drive to Pine Bluff Road

Wesley Drive (Figure 8) is a two-lane local roadway with no AADT data available. It is located west of US Route 13 Business and is approximately 37 feet wide with street parking along the west side of the roadway. The road is approximately 925 feet in length from Dogwood Dr to Pine Bluff Rd. There are no existing sidewalks or pedestrian ramps along Wesley Dr.

Source: Bing Aerial Imagery, Microsoft 2022

Figure 8: Wesley Drive

B. Traffic Data and Observations

MDOT SHA traffic and pedestrian count data for a 24-hour period from April 17, 2018, was utilized for US Route 13 Business at W College Ave. Salisbury-Wicomico Metropolitan Planning Organization (SWMPO) collected traffic and pedestrian count data on Thursday, April 28, 2022, between 7:00 a.m. to 7:00 p.m. for the following intersections:

1) Bateman Road (at Pedestrian Tunnel)
2) Dogwood Drive at US Route 13 Business
3) Milford Street at Railroad Tracks
4) Wesley Drive at Pine Bluff Road
5) Wesley Drive at Dogwood Drive

Generally, within the study area, pedestrian volumes peak in one or two midday hours (typically between 10 a.m. and 3 p.m.). This is likely the result of class changes and may align with the peak usage times for campus facilities. Pedestrian volumes in typical morning and evening hours are very low. A detailed summary of the traffic data and observations for the study area is presented below.

W College Avenue

Review of the 2018 traffic count data for this intersection indicates that the peak hours for pedestrian counts and vehicular turning movements were 11:00 a.m. – 12:00 p.m. and 4:00 p.m. – 5:00 p.m. Pedestrian and bicycle peak hour counts are depicted in Figure 9 and peak hour vehicle turning movements are depicted in Figure 10.

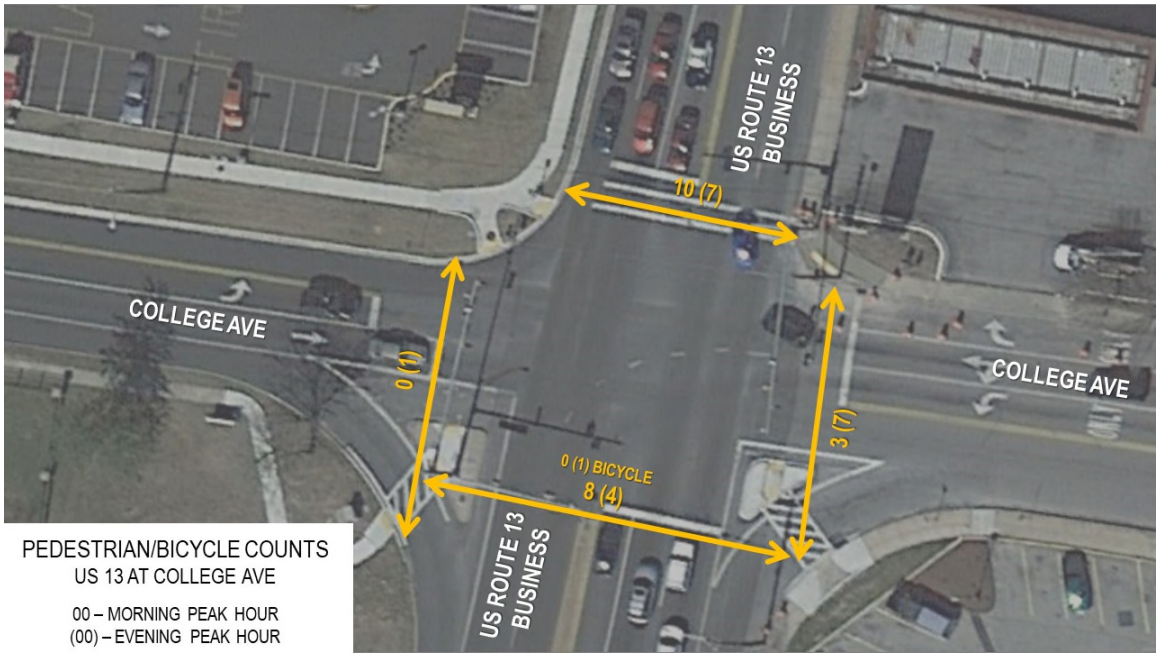


Figure 9: Pedestrian/Bicycle Counts, US 13 Business at W College Avenue

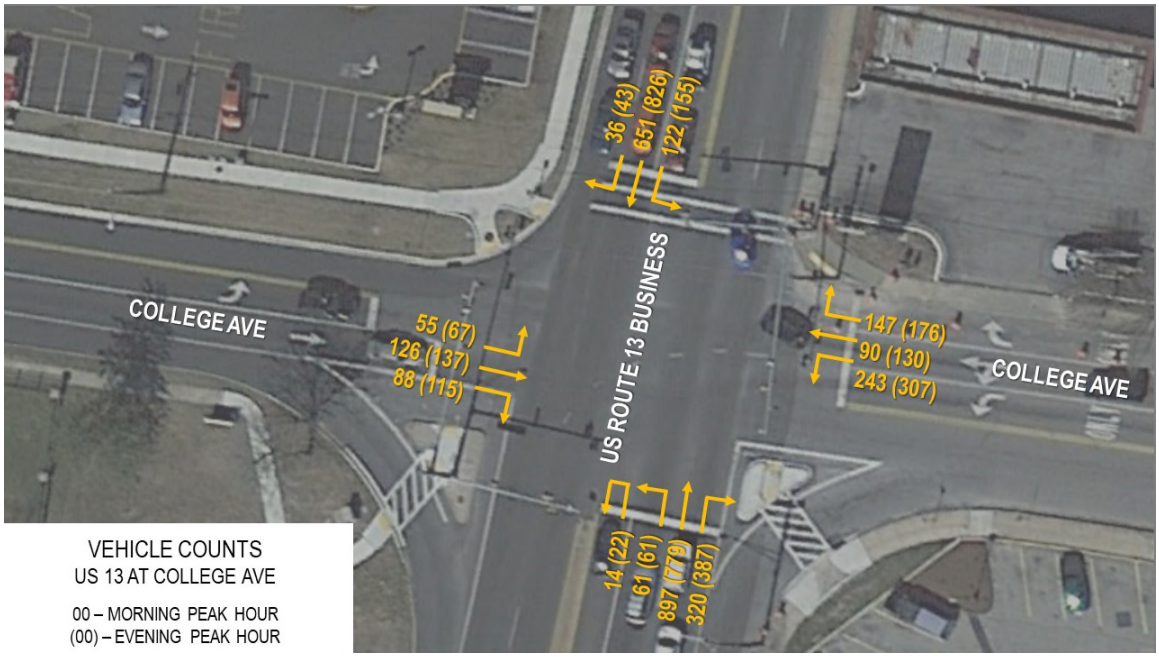


Figure 10: Vehicle Counts, US 13 Business at W College Avenue

Bateman Street (at Pedestrian Tunnel)

Review of the 2022 pedestrian and bicycle count data for this location indicates that the peak pedestrian volume hours were 10:45 a.m. – 11:45 a.m. and 2:45 p.m. – 3:45 p.m. At this location, pedestrians were observed primarily using the pedestrian tunnel. Peak hour pedestrian counts are depicted in Figure 11, no bicycles were observed during the peak volume hours.

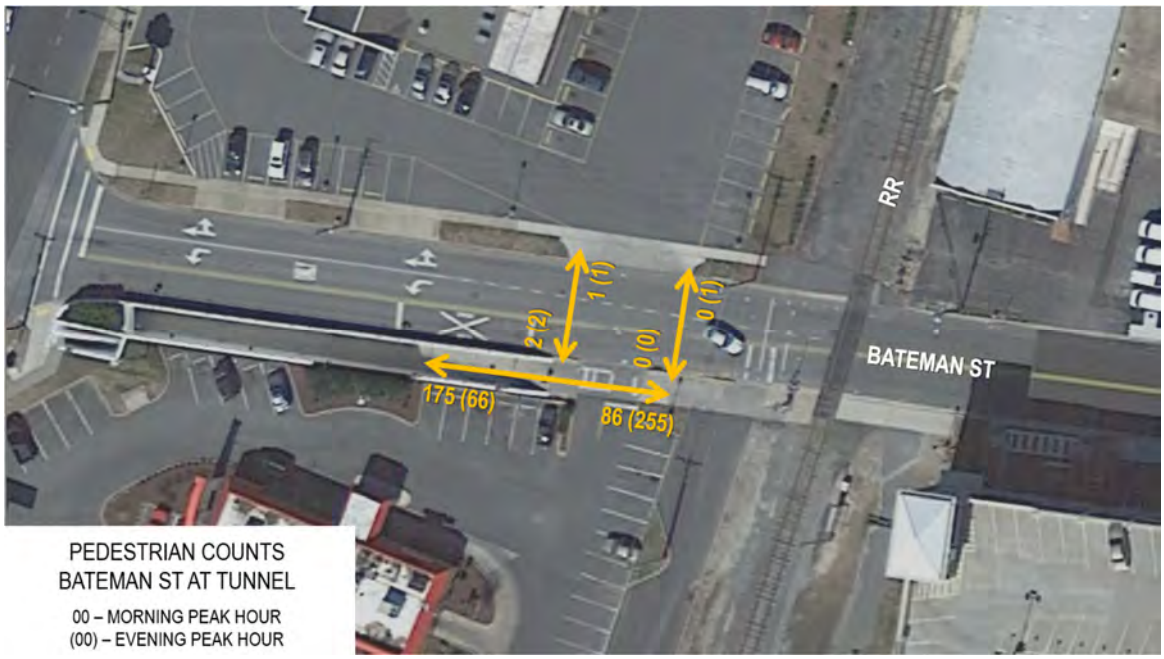


Figure 11: Pedestrian Counts, Bateman Street at Pedestrian Tunnel

Review of the 2022 vehicle traffic count data for this location identified the peak hour times for vehicle turning movements between 8:45 a.m. – 9:45 a.m. for the morning peak and 1:30 p.m. – 2:30 p.m. for the evening peak. At this location, most vehicles are traveling through Bateman St. Few vehicles were observed turning, resulting in minimal critical turning conflicts for pedestrians. Peak hour vehicle volume counts are depicted in Figure 12.

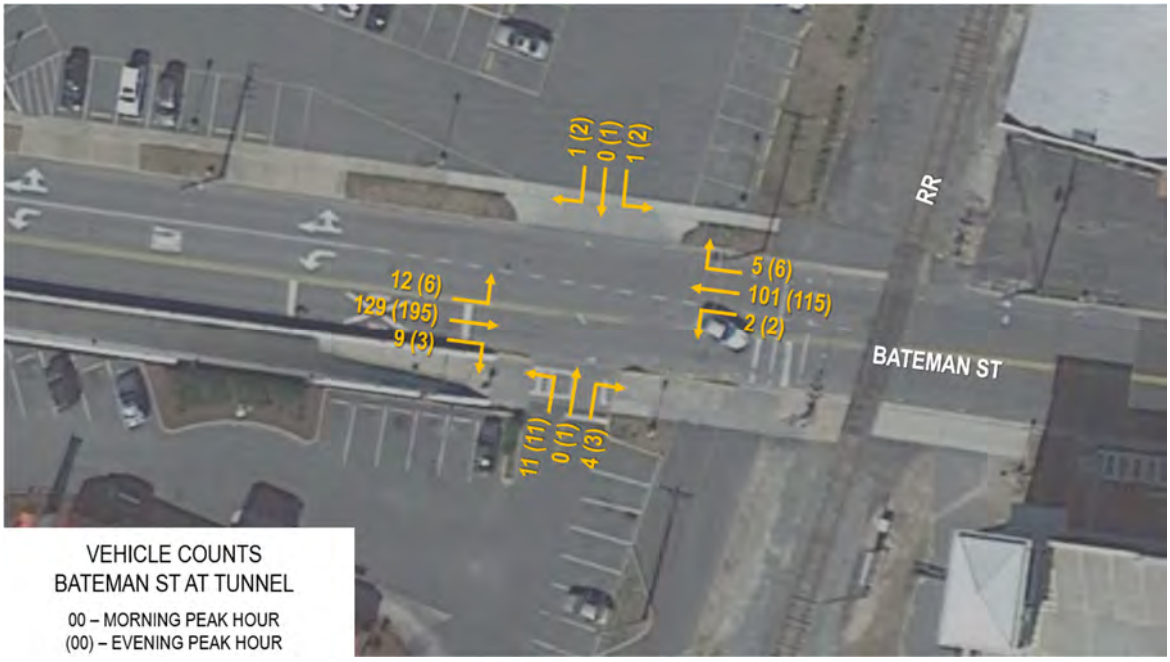


Figure 12: Vehicle Counts, Bateman Street at Pedestrian Tunnel

Dogwood Drive

Review of the 2022 pedestrian and bicycle count data for this location indicates that the peak pedestrian volume hours were from 10:30 a.m. – 11:30 a.m. and 3:15 p.m. – 4:15 p.m. At this location, pedestrians were observed utilizing the existing crosswalk with pedestrian refuge rather than crossing midblock on the south side of the intersection. Peak hour pedestrian volume counts are depicted in Figure 13.

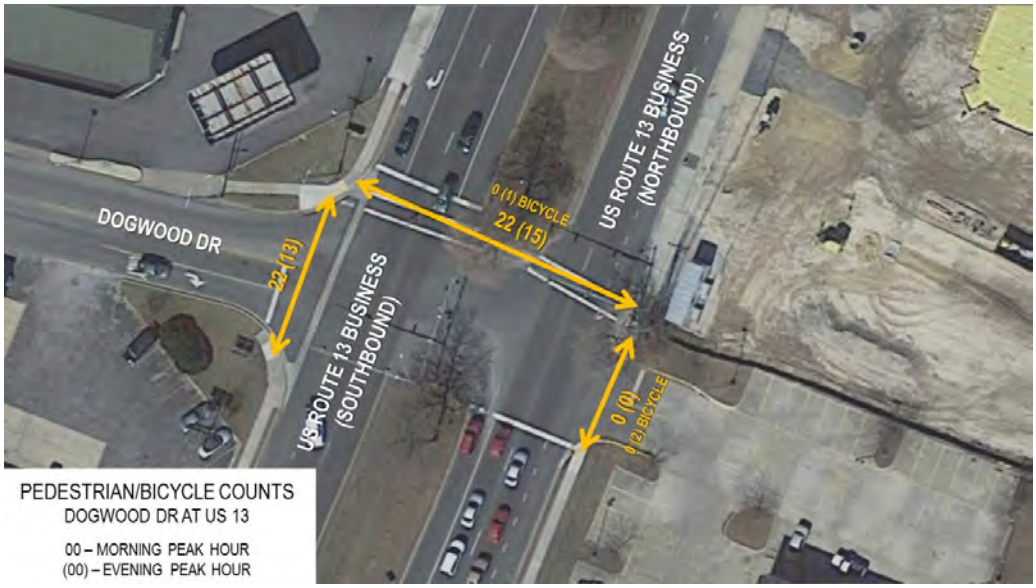


Figure 13: Pedestrian/Bicycle Counts, Dogwood Drive at US Route 13 Business

Review of the 2022 vehicle traffic count data for this location identified the peak hour times for vehicle turning movements between 10:30 a.m. – 11:30 a.m. and 3:15 p.m. – 4:15 p.m. Peak hour vehicle counts are depicted in Figure 14.

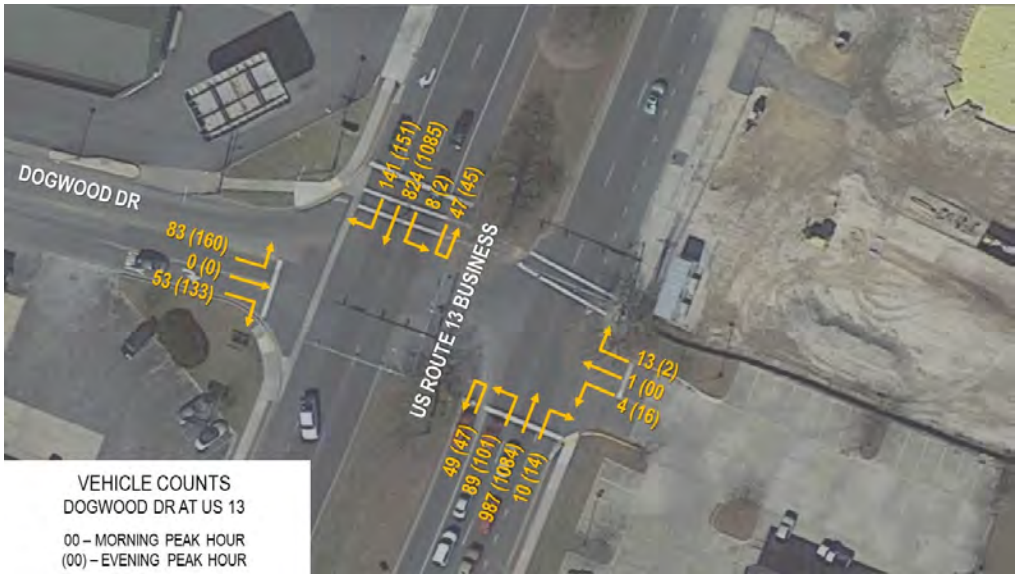


Figure 14: Vehicle Counts, Dogwood Dr at US Route 13 Business

Milford Street

Pedestrian, bicycle, and vehicular counts were conducted for Milford St at the intersection with the Norfolk Southern railroad tracks. Review of the 2022 pedestrian and bicycle count data for this location indicates that the peak pedestrian volume hours were 11:00 a.m. – 12:00 p.m. and 12:00 p.m. – 1:00 p.m. At this location, most pedestrians are observed crossing Milford St following the path of the railroad tracks. Peak hour pedestrian counts are depicted in Figure 15.

Figure 15: Pedestrian/Bicycle Counts, Milford Street

Review of the 2022 vehicle traffic count data for this location identified the peak hour times for vehicle turning movements between 11:00 a.m. – 12:00 p.m. and 12:00 p.m. – 1:00 p.m. At this location, vehicles continue along Milford St, rather than turning along the existing railroad line, resulting in minimal critical turning conflicts for pedestrians. Peak hour vehicle volume counts are depicted in Figure 16.

Figure 16: Vehicle Counts, Milford Street

Pine Bluff Road

The intersection of Pine Bluff Rd at US Route 13 Business does not currently have existing pedestrian facilities crossing US Route 13 Business so counts were not conducted at this location as there are no critical turning conflicts that would need to be reviewed.

Wesley Drive at Pine Bluff Road

Review of 2022 pedestrian and bicycle count data for this location indicates that the peak pedestrian volume hours were 10:00 a.m. – 11:00 a.m. and 12:00 p.m. – 1:00 p.m. At this location, only one bicycle was observed during the peak hours and that was along the south side of the intersection on the existing pedestrian facilities. Peak hour pedestrian counts are depicted in Figure 17.

Figure 17: Pedestrian/Bicycle Counts, Wesley Drive at Pine Bluff Road

Review of 2022 vehicle traffic count data for this location identified the peak hour times for vehicle turning movements between 11:00 a.m. – 12:00 p.m. and 12:00 p.m. – 1:00 p.m. At this location, since it is so close to the University parking lots, the peak hours are in the middle of the day due to start and end times at the university. Peak hour vehicle volume counts are shown in Figure 18.

Figure 18: Vehicle Counts, Wesley Drive at Pine Bluff Road

Wesley Drive at Dogwood Drive

Pedestrian and bicycle counts can be found in Figure 19 for the peak volume hours. The peak pedestrian and bicycle volume hours were from 10:45 AM – 11:45 AM and 3:45 PM – 4:45 PM. Vehicle Counts for the intersection can be found in Figure 20, the peak hour times for this intersection were 11:00 AM – 12:00 PM and 4:00 PM – 5:00 PM.

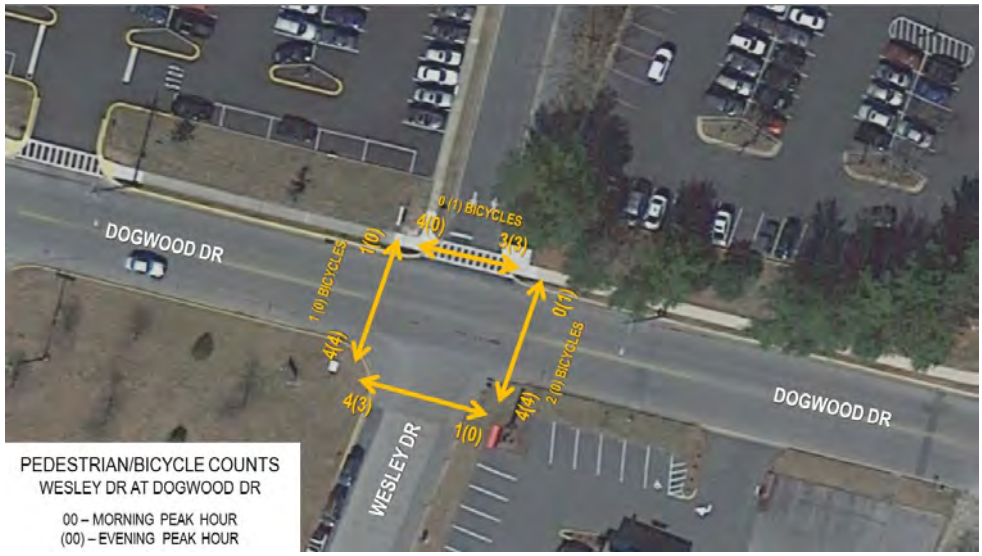


Figure 19: Pedestrian/Bicycle Counts, Wesley Dr at Dogwood Dr

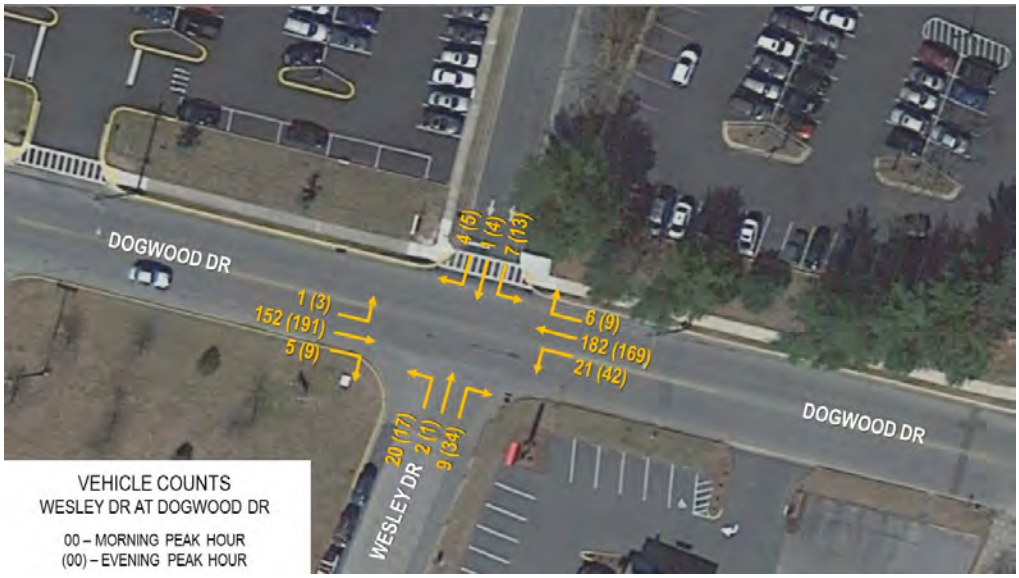


Figure 20: Vehicle Counts, Wesley Dr at Dogwood Dr

C. Crash Data

Crash data for a five-year period between January 1, 2017, and December 31, 2021, was provided by Salisbury-Wicomico Metropolitan Planning Organization (SWMPO) for six intersections within the study area. A five-year study period was conducted instead of a normal three-year period due to the inconsistencies that may have been collected during the 2020-2021 period due to the COVID-19 pandemic. The collected crash data is summarized below. Figure 21 shows the number of crashes at each studied intersection broken down into property damage crashes and personal injury crashes.

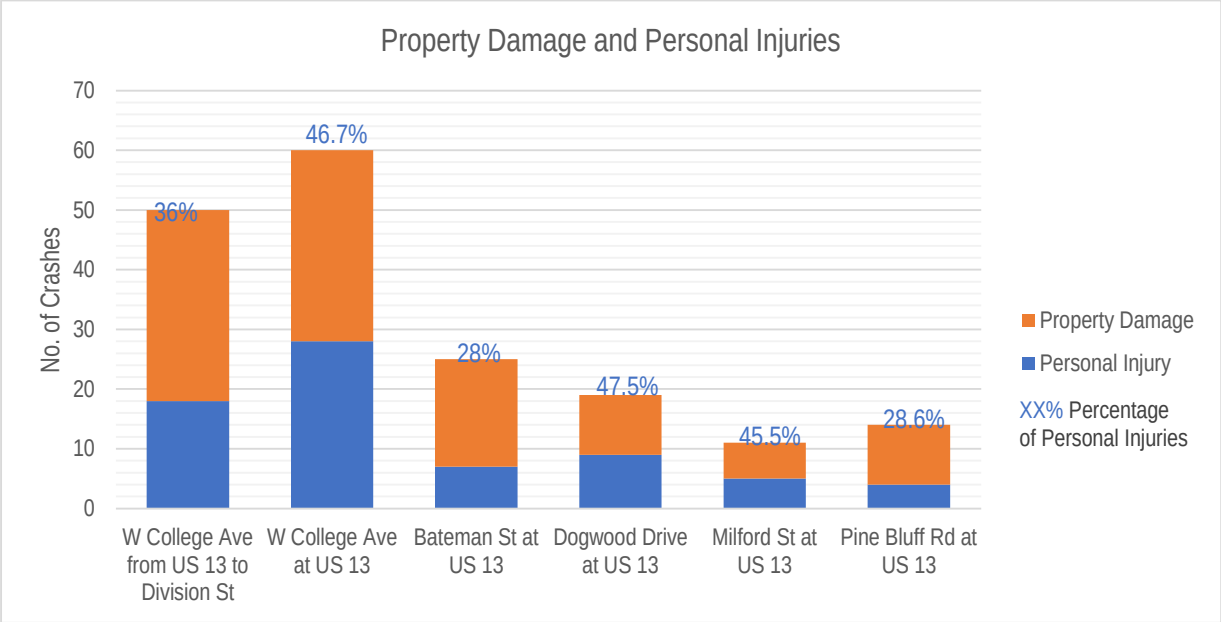


Figure 21: Property Damage and Personal Injuries

W College Avenue from US Route 13 Business to Division Street

During the five-year period, 50 crashes occurred along the 0.86 mile stretch of W College Ave from US Route 13 Business to Division St. Eighteen (36%) of the crashes resulted in personal injury. There were no fatalities. There was one (2%) crash that involved a pedestrian. Thirty-four of the crashes occurred during the day, two occurred during dawn/dusk, ten occurred in the dark with lights on, three occurred in the dark with lights off, and one crash had unknown lighting conditions. Figure 22 shows each of the crash types along this roadway. The primary contributing factors were failure to give full attention to driving, influence of alcohol, failure to yield right of way, and failure to obey the traffic signal. The pedestrian crash occurred on W College Ave near the intersection of Eastern Shore Dr on a September evening around 7:00 PM with dry conditions for unknown reasons. There was one injury.

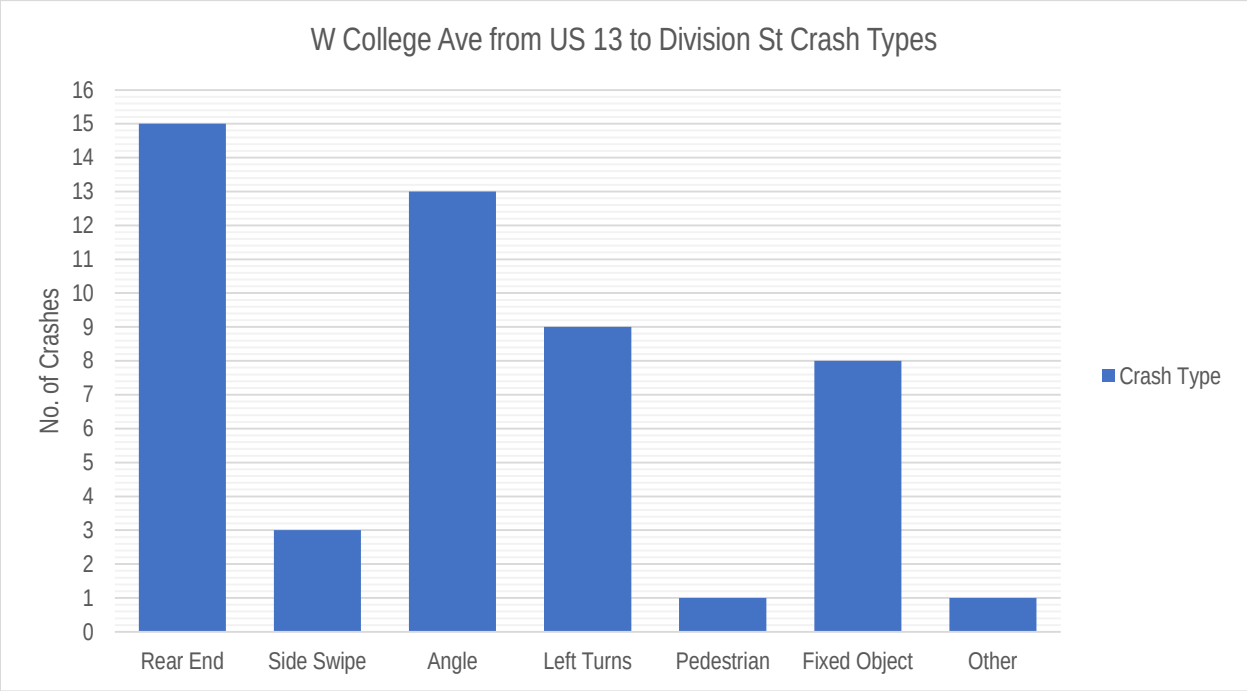


Figure 22: W College Ave from US Route 13 Business to Division St Crash Types

W College Avenue at US Route 13 Business

During the five-year period, 60 crashes occurred within a 250-foot radius of the intersection of W College Ave at US Route 13 Business. Twenty-eight (46.7%) of these crashes resulted in personal injury. There were no fatalities. There were three (5%) crashes that involved a pedestrian. Thirty-seven of the crashes occurred during the day, seven of the crashes occurred during dawn/dusk, 15 of the crashes occurred in the dark with lights on and one crash had unknown lighting conditions. Figure 23 shows the crash types for each crash at this intersection. The primary contributing factors were failure to give full attention to driving, failure to obey the traffic signal, and following too closely. One pedestrian crash occurred in the northbound right turn lane on a November evening around 6:00 p.m. with dry conditions for unknown reasons, there were two injuries in this crash. Another pedestrian crash occurred in the westbound through lane on an April afternoon around 4:00 p.m., with dry conditions for unknown reasons, there were no injuries. The third pedestrian crash occurred in the westbound through lane on a July morning around 11:00 a.m., with dry conditions and for unknown reason, there was one injury.

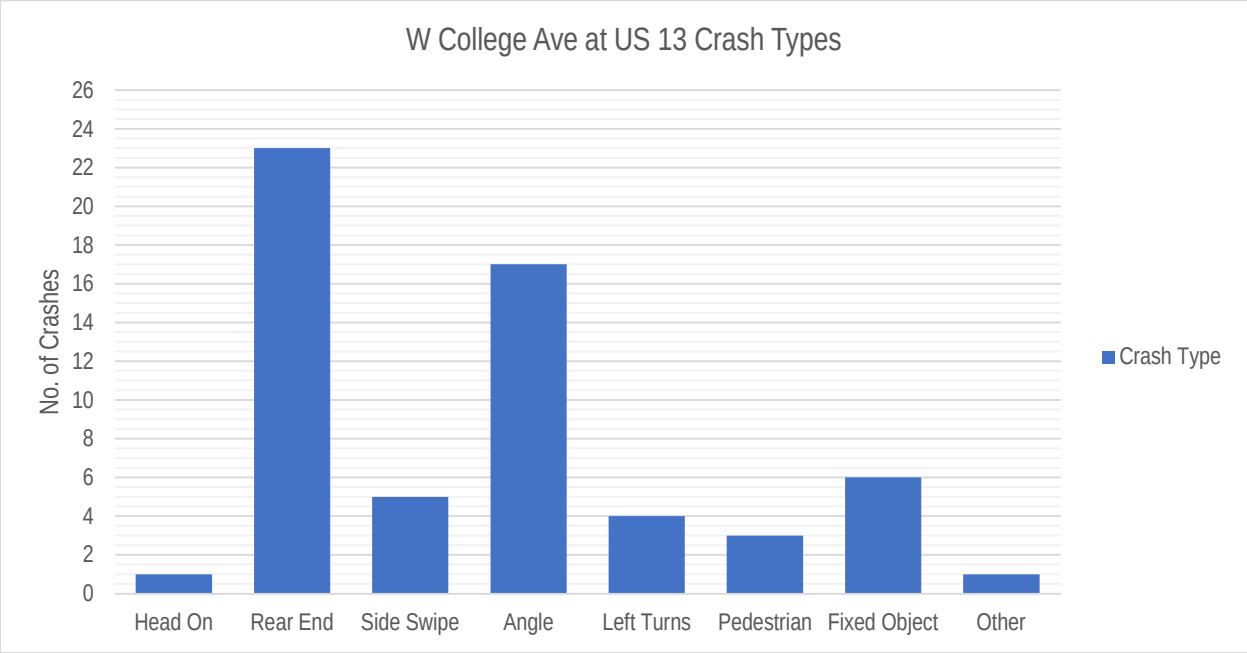


Figure 23: W College Ave at US Route 13 Business

Bateman Street at US Route 13 Business

During the five-year period, 25 crashes occurred within a 250-foot radius of the intersection of Bateman St at US Route 13 Business. At this location, there is an underground pedestrian tunnel. Seven (28%) of these crashes resulted in personal injury. There were no fatalities. There was one (4%) crash that involved a pedestrian. Twenty of the crashes occurred during the day and five of the crashes occurred in the dark with lights on. Figure 24 shows the crash types for each crash at this intersection. The primary contributing factors were failure to give full attention to driving and following too closely. The pedestrian crash occurred on the west leg of the intersection on a November afternoon around 4:00 p.m. in dry conditions for unknown reasons. There was one injury in the crash.

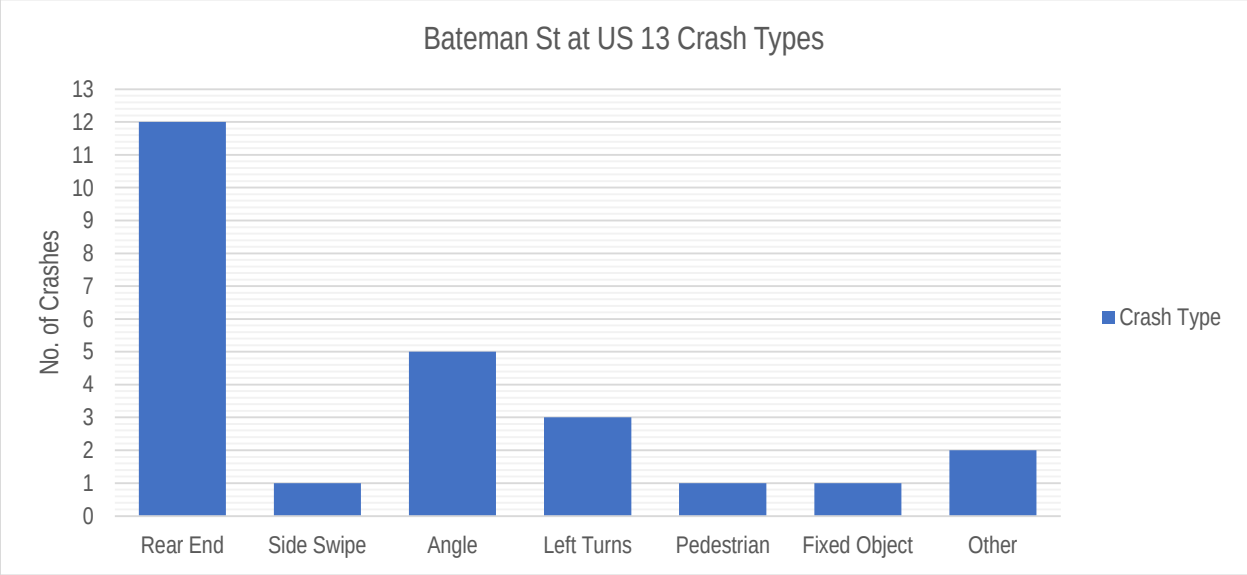


Figure 24: Bateman St at US Route 13 Business Crash Types

Dogwood Drive at US Route 13 Business

During the five-year period, nineteen (19) crashes occurred within a 250-foot radius of the intersection of Dogwood Dr at US Route 13 Business. Nine (47.4%) crashes resulted in personal injury. There were no fatalities. There were three (15.8%) crashes that involved pedestrians. Twelve of the crashes occurred during the day light and seven of the crashes occurred in the dark with lights on. Figure 25 shows the crash types for each crash at this intersection. The primary contributing factors were failure to give full attention to driving and following too closely.

Of the recorded pedestrian crashes, one occurred on west leg of the intersection on an October afternoon around 3:00 p.m. with dry conditions the reasoning for this crash was failure to drive in a single lane. There was one injury in that crash. Two others occurred on the east leg of the intersection on an August morning around 11:00 a.m. with dry conditions for unknown reasons with no injuries and on a May afternoon around 1:00 p.m. with dry conditions due to a vehicle failing to give full attention to driving with one injury.

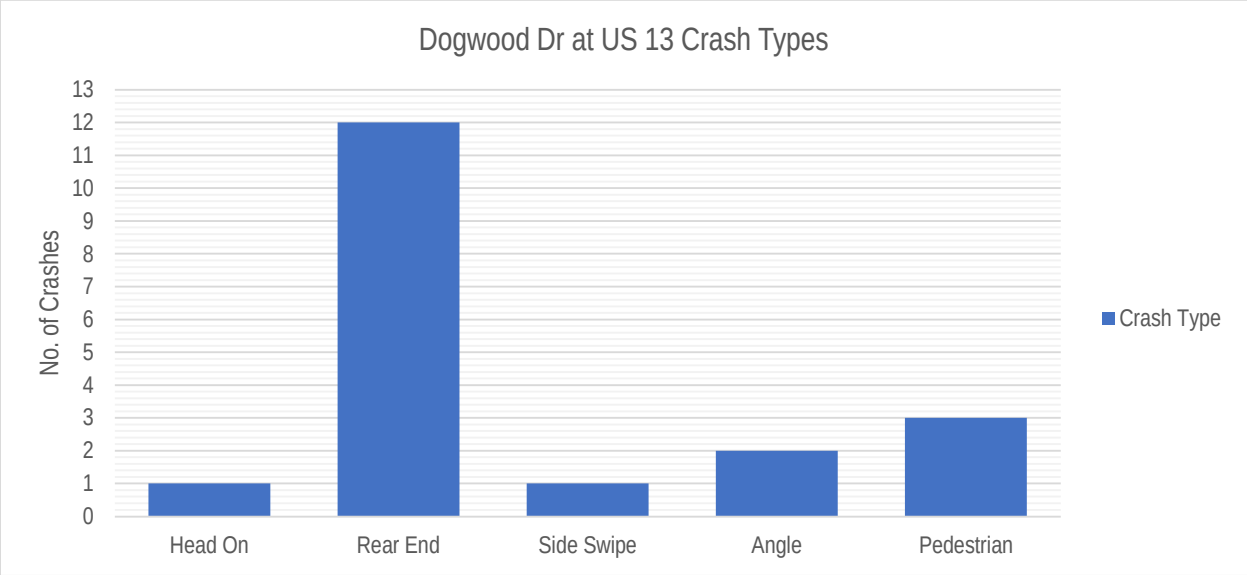


Figure 25: Dogwood Dr at US Route 13 Business Crash Types

Milford Street at US Route 13 Business

During the five-year period, eleven (11) crashes occurred within a 250-foot radius of the intersection of Milford St at US Route 13 Business. Five (45.5%) crashes resulted in personal injury. There were no fatalities. There was one (9.1%) crash that involved pedestrians. Eight of the crashes occurred during the day and three of the crashes occurred in the dark with lights on. Figure 26 shows the crash types for each crash at this intersection. The primary contributing factors for crashes was failure to yield. The pedestrian crash occurred on the east leg of the intersection on an October morning around 11:00 a.m. with dry conditions for unknown reasons. There was one injury in this crash.

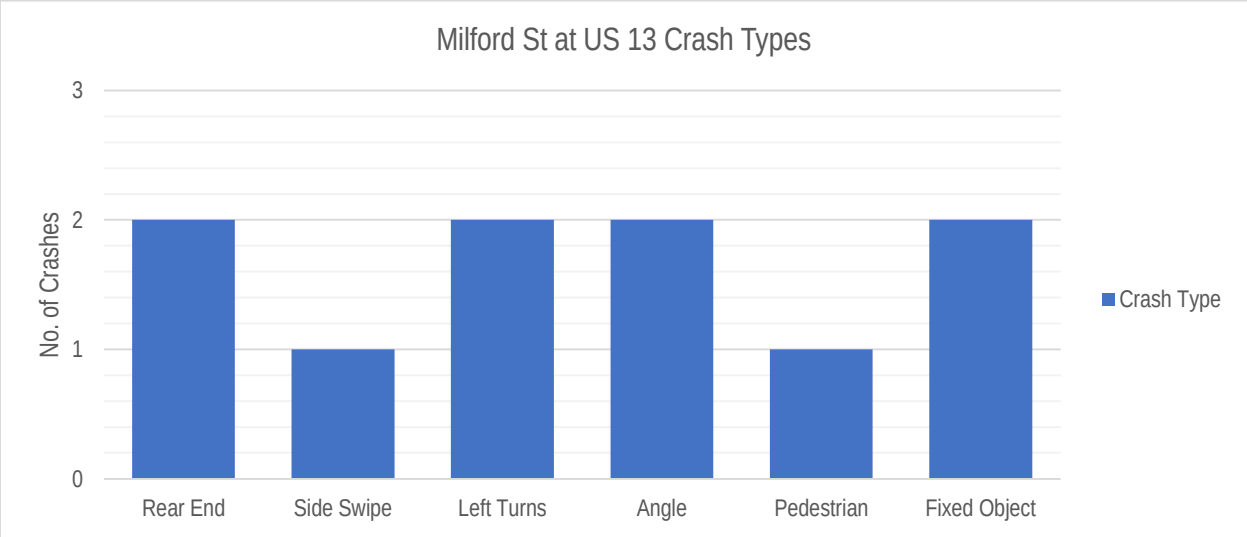


Figure 26: Milford St at US Route 13 Business Crash Types

Pine Bluff Road at US Route 13 Business

During the five-year period, fourteen (14) crashes occurred within a 250-foot radius of the intersection of Pine Bluff Road at US Route 13 Business. Four (28.6%) crashes resulted in personal injury. There were no fatalities. There were no crashes pertaining to pedestrians or bicycles. Eleven of the crashes occurred during the day light and three of the crashes occurred in the dark with lights on. Figure 27 shows the crash types for each crash at this intersection. The primary contributing factors were failure to yield, failure to give full attention to driving and falling asleep behind the wheel.

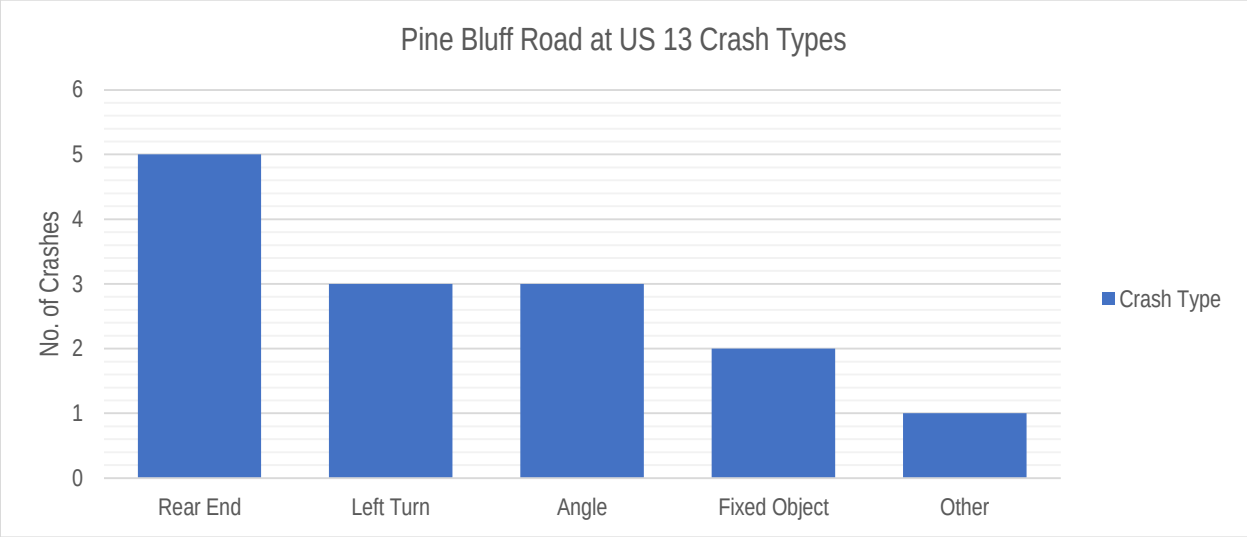


Figure 27: Pine Bluff Road at US Route 13 Business Crash Types

D. Local Transit

Shore Transit, a division of the Tri-County Council for the Lower Eastern Shore of Maryland, is the public transit agency for the Maryland lower eastern shore counties of Somerset, Wicomico, and Worcester. Shore Transit offers public transportation via fixed route and origin-to-destination services. Shore Transit operates a safe, efficient, and effective community public transportation system. Shore Transit has two stops located along US 13, within the study area. Both are located near the US Route 13 Business corner with Bateman Street. Each stop accommodates multiple routes.

Stop S174

Located adjacent to southbound US Route 13 Business at the Salisbury University Maggs Activity Center. The following routes stop here:

- 103 (Downtown Salisbury)
- 111 (South: Salisbury – Princess Anne – University of Maryland Eastern Shore)
- 120 (Delmar – Fruitland)
- 251 (Salisbury – Princess Anne – Pocomoke)
- 252 (Salisbury – Princess Anne – Pocomoke)
- 253 (Salisbury – Princess Anne – Pocomoke)
- 255 (Salisbury – Princess Anne – Pocomoke weekend service only)
- 451 (Salisbury – Pocomoke – OC)
- 452 (Salisbury – Pocomoke – OC)
- 703 (Salisbury – Crisfield – Princess Anne Sunday service only)

Stop S107

Located adjacent to northbound US Route 13 Business at Pat's Pizzeria.
The following routes stop here:

- 111 (South: Salisbury – Princess Anne – University of Maryland Eastern Shore)
- 120 (Delmar – Fruitland)
- 151 (South Salisbury – Fruitland)
- 251 (Salisbury – Princess Anne – Pocomoke)
- 252 (Salisbury – Princess Anne – Pocomoke)
- 253 (Salisbury – Princess Anne – Pocomoke)
- 255 (Salisbury – Princess Anne – Pocomoke weekend service only)
- 703 (Salisbury – Crisfield – Princess Anne Sunday service only)

E. Current and Future Land Use

The study area is located in the City of Salisbury and in unincorporated Wicomico County, Maryland. The corridor is flanked on both sides by Salisbury University campus and facilities. Commercial properties front US Route 13 Business as well. Portions of the study corridor are located within a Maryland Department of Commerce (COMMERCE) enterprise zone where businesses may be eligible for income tax and real property tax credits for job creation and investments. The study corridor intersects the Salisbury/Wicomico Sustainable Community Area, as designated by the Maryland Department of Housing and Community Development's Sustainable Communities Program. This designation places special emphasis on infrastructure improvements, multimodal transportation and development that strengthens existing communities. Portions of the study corridor are adjacent to the Beach to Bay Heritage Area, as designated by the Maryland Heritage Areas Authority (MHAA) and administered by the Maryland Historical Trust.

Wicomico County's unique blend of urban and rural environments sets it apart from all other counties on the Eastern Shore. The City of Salisbury and the surrounding urban area offer a variety of quality residential environments. These are established neighborhoods with schools, parks, and places of worship nearby. Goods and services can be purchased from a large assortment of businesses centrally located in the urban core. Shopping needs are accommodated by small, locally owned business establishments or at a regional mall. Travel and the transport of goods is made easier by a good highway network, a regional airport located just a few miles from the City of Salisbury, commercial rail, and the Wicomico River, navigable for barge traffic all the way to Salisbury.

The following existing plans were reviewed to consider development plans and community goals in identifying appropriate improvements.

City of Salisbury 2010 Comprehensive Plan

In the 2010 Comprehensive Plan, the City of Salisbury sets forth a vision to remain the medical, educational, cultural, and economic center of the Eastern Shore, committing to excellence, innovation, service, and sound fiscal management to ensure Salisbury is a safe, vibrant, and healthy community. One of the objectives is to provide a comprehensive, balanced transportation system for the safe, convenient, and efficient movement of people, goods, and services among places of residence, employment, shopping, and recreation throughout the City.

The City of Salisbury's Comprehensive Plan identifies separate planning areas across the City, this study area is partially in Planning Area 5. This periphery area is largely residential with some established commercial, institutional, and cropland uses. Bennett Middle, Bennett High, and Parkside High Schools are located inside the City in this area. Planning Area 5 contains a variety of residential communities, including senior housing, university housing, multi-family housing, and single-family housing. Commercial and office space is located along Route 50 near the bypass, north of the study area. Planning Area 5 also includes the City Park which is a much-underutilized resource. The City of Salisbury's Comprehensive Plan also notes that there is an emerging business area along US Route 50 at the western edge of Planning Area 5, from Phillip Morris Drive to the City limits. Several medical and biomedical businesses have located along the corridor.

Wicomico County 1998 Comprehensive Plan

Wicomico County has not updated their Comprehensive Plan since 1998. The 1998 Comprehensive Plan notes that Salisbury (State) University underwent significant growth prior to 1990, spurring the expansion of campus east of US Route 13 Business. The document includes plans for a pedestrian crossover of US Route 13 Business, providing direct access between the college and the recreational complex at Bateman Street. The 1998 Comprehensive Plan highlights a student enrollment cap of 6,000; noting, "If the enrollment of the University grows significantly beyond 4,000 full-time students it may be necessary to seek land in the vicinity of the Main Campus for expansion, parking and limited green space." Based on US News and World Report Fall 2021 enrollment numbers hovered around 7,500 students including both undergraduate and graduate students. The City of Salisbury created a college-university district, that Wicomico County recognizes, to encompass lands owned by the college to:

- Recognize the college and existing related uses, and encourage further expansion in an area convenient to main campus;
- Provide an area for development of college housing convenient to main campus; and
- Provide for recreational and other accessory uses intended to complement college uses.

Salisbury University 2019 Facilities Master Plan Update

The Facilities Master Plan establishes 528,000 gross square feet of net new build capacity for institutional growth in three phases of development. It also includes 334,000 gross square feet of renovated space within existing campus buildings. It concentrates on immediate needs for new housing and a new student recreation center, while also expanding Salisbury University's presence downtown. New residence halls are proposed south of campus at Court Plaza, replacing aging facilities and allowing Dogwood Village to be demolished and make room for the new student recreation center.

The Facilities Master Plan calls for four new buildings south of Pine Bluff Road and one new building north of Dogwood Drive with renovations to four additional buildings between Dogwood Drive and W College Ave. These improvements expand the campus further South. The four new buildings south of Pine Bluff Road, the new Court Plaza Residence Halls, are included in Phase 1 of this plan (identified as improvement #2 in Figure 28). With over 200 residential units, anticipated to host 750 beds, the facility is expected to feature amenities such as increased green space, a fitness center, bicycle storage, and a connecting pathway to the south end of campus. It also will include limited retail areas, providing new options for Salisbury University and the community. Phase 2 includes the construction of a new Student Recreation Center on the former Dogwood Village Site on Dogwood Drive (identified as improvement #3 on Figure 28). It is reasonable to assume that the addition of this large residential complex and student recreation center will increase pedestrian and bicycle activity south of Dogwood Drive.

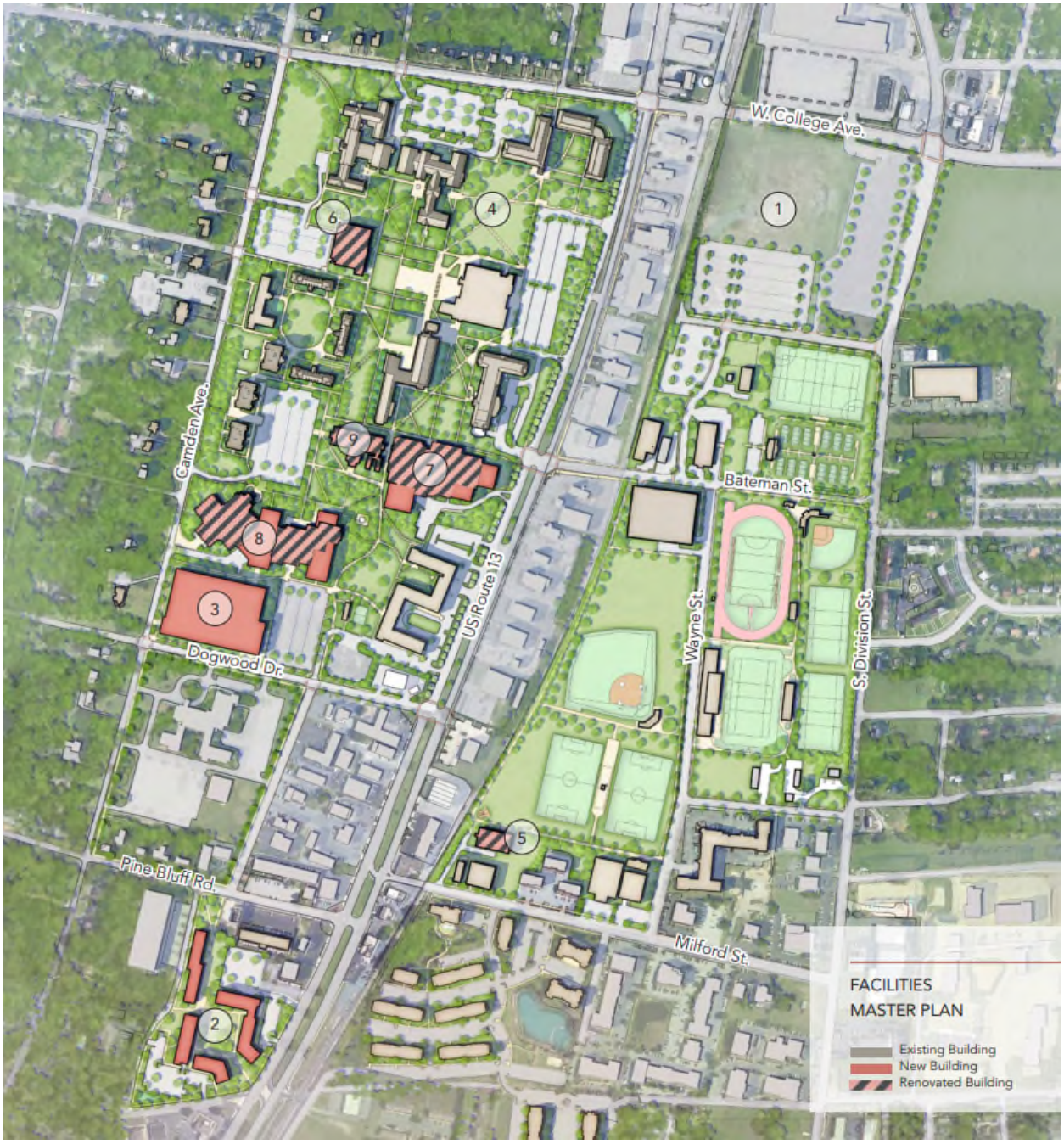


Figure 28: 2019 Salisbury University Facilities Master Plan, Main Campus Improvements

2018 Salisbury Rails with Trails Master Plan

The 2018 Salisbury Rails with Trails Master Plan outlines the City of Salisbury's plans to build a trail running south-north through the center of town, following the general alignment of the Norfolk Southern railroad tracks. The trail will be a centerpiece to the city's active transportation network, connecting residents, employees, students, and visitors to key destinations. The trail would extend nearly six miles between the City of Fruitland (southern end) and West Naylor Mill Road (northern end). This plan includes a segment parallel to and east of US Route 13 Business, with connections identified to the Bateman tunnel for use by the students, faculty, and staff of Salisbury University. See Figure 29 for the general alignment, more detailed primary and alternative alignments can be found in the 2018 Salisbury Rails with Trails Master Plan.

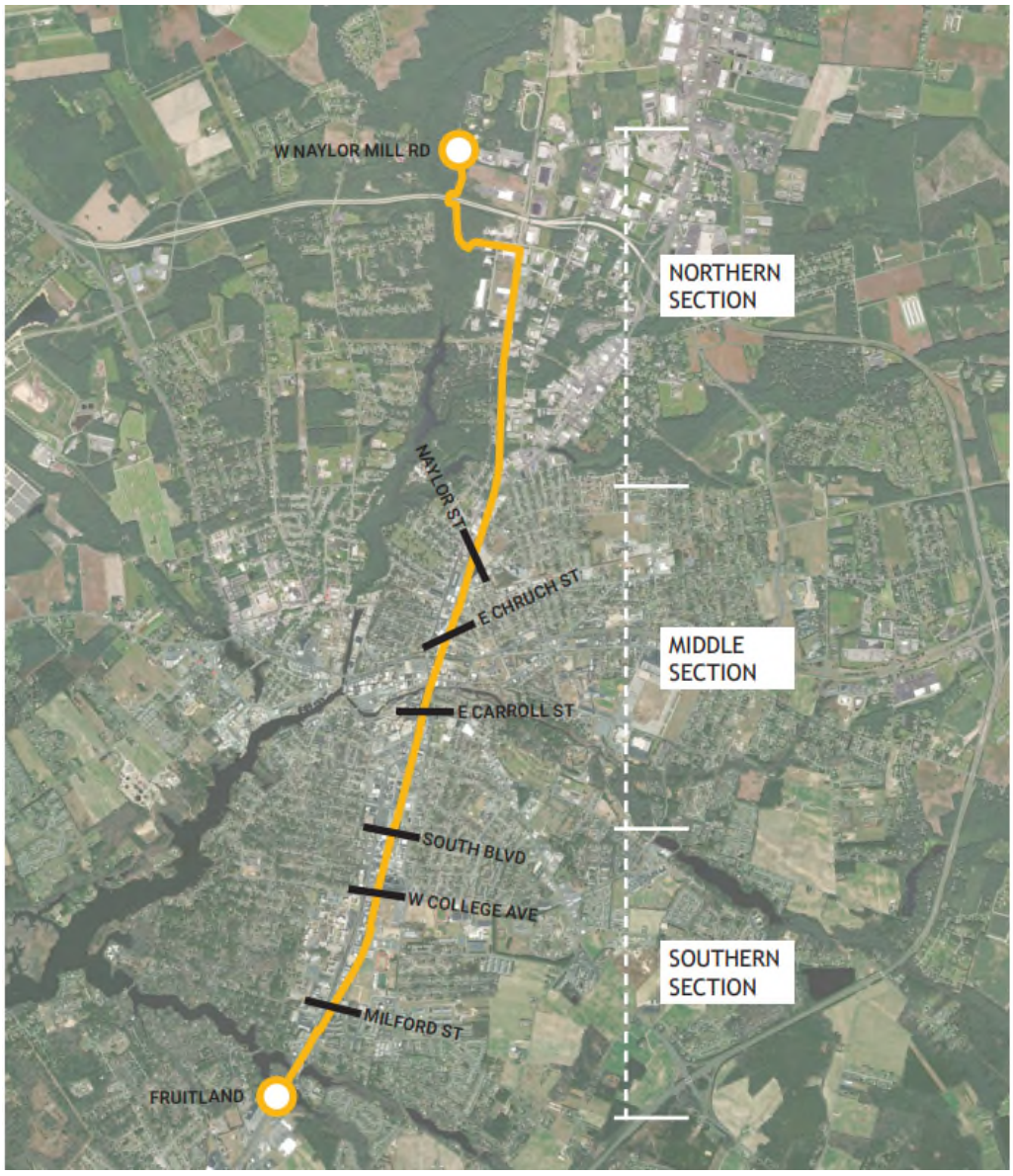


Figure 29: Proposed 5.75-mile-long trail per the 2018 Salisbury Rails with Trails Master Plan

2017 Salisbury Bicycle Network Plan

The 2017 City of Salisbury Bicycle Network identifies a list of improvements with prioritizations and cost estimates to enhance the City's bicycle network. Improvements identified within the study area include new facilities along College Ave, Bateman Street, and South Salisbury Avenue (along the northbound direction of traffic from College Ave to Kay Avenue and along the southbound direction of traffic from Dogwood Drive to Kay Avenue).

F. Environmental Considerations

A desktop analysis of natural resources including wetlands and waters within the study area was conducted in July 2022. The study area consists of developed urban landscape located within the Lower Wicomico River Watershed (hydrologic unit code 02130301). The study area does not fall within a Federal Emergency Management Agency (FEMA) 100-year floodplain, nor are wetlands or waterways located within the project area according to Maryland Environmental Resource & Land Information Network (MERLIN, gisapps.dnr.state.md.us/MERLIN/index.html). Further, the study area is not located with the Chesapeake Day Critical Area (CBCA), or other MD Department of Natural Resources protected lands. Stretches of the study corridor are lined by street trees. Forest and tree impacts in Maryland would require MD DNR Roadside Tree Permit (RTP) or Reforestation Law approval. RTP covers all individual tree and forest impacts less than one acre within existing public road right-of-way. If forest impacts are greater than or equal to one acre, Reforestation Law would apply.

A search of the US Fish & Wildlife Services IPaC database for information on federally listed threatened, and endangered species was conducted on July 10, 2022. The USFWS Chesapeake Bay Ecological Field Office (CBFO) listed candidate species monarch butterfly (*Danaus plexippus*) as potentially occurring within the study area; however, no critical habitat has been designated within the project area for these species.

The National Register of Historic Places (NRHP) nominations and Maryland Inventory of Historic Property (MIHP) forms available through MD DNRs MERLIN database was reviewed. The preliminary investigation of cultural resources was limited to the study area. Within the study area, there are no documented MIHP or NRHP protected historic properties. Additional desktop review and potentially field research by a cultural resources' specialist would be required to identify the potential for archaeological resources within the study area. Transportation improvements within the study area would be subject to the requirements of Section 106 of the National Historic Preservation Act of 1966 (NHPA). These requirements include consultation with the Maryland Historical Trust (MHT) to delineate an Area of Potential Effects (APE), identify and evaluate additional standing structures greater than fifty years of age or archeological resources for NRHP eligibility, and assess potential impacts to historic properties.

III. Public Survey

A 13-question survey was sent out via email to all students at Salisbury University on May 11, 2022. Eighty-nine (89) individuals participated in the survey.

They were given an introductory prompt followed by 13 questions. Overall survey responses indicate that students are looking for safe and convenient ways to cross US Route 13 Business to attend classes, after-school activities, visit friends, shop, and eat along the corridor. A new elevated pathway or tunnel is the preferred method for crossing this busy corridor and would be appropriate at either W College Ave or Dogwood Drive based on use. These questions and a summary of results is presented here.

Introductory Prompt

> *The Salisbury/Wicomico Metropolitan Organization (S/WMPO) in conjunction with Salisbury University (SU), is interested in your opinions regarding your travel patterns, safety concerns, and preferences when you are traveling to and from the SU campus across US Route 13 Business (Rt. 13). Your answers will be used to improve future safety and connectivity of pedestrians and cyclists traveling to and from campus across Rt. 13.*
>
> *This survey will take about 5 minutes to complete. Thank you for contributing to the safety of our transportation system!*

Question 1 – Where do you live?

About 1/3 of the respondents (33.0%) live on campus, 20.5% live in University Park, and 34.1% selected other, many of those that selected other listed that they commute from another town/city. Results are depicted in Figure 30.

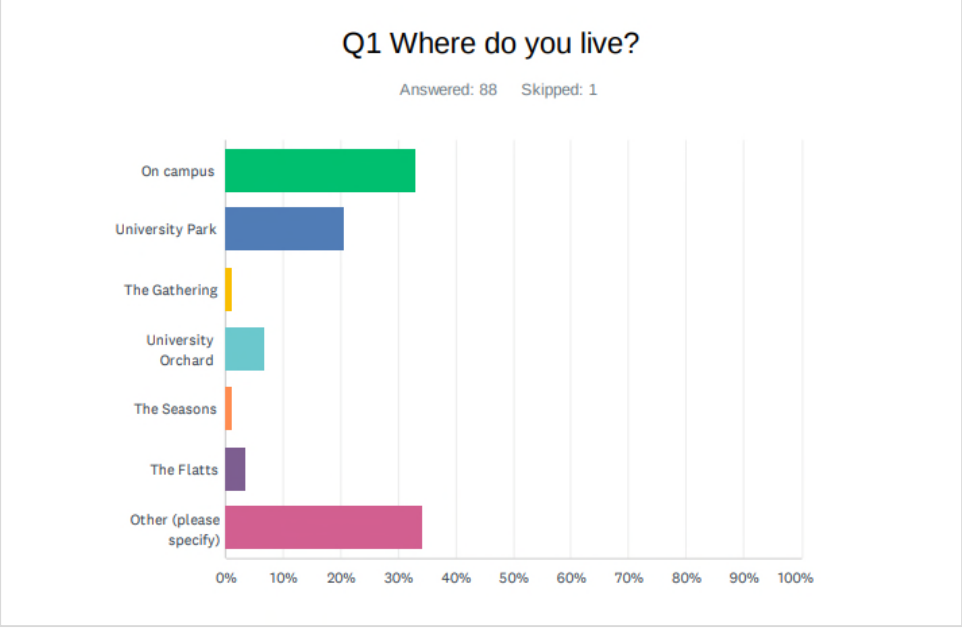


Figure 30: Question 1 Results

Question 2 – On average how many times per week do you cross US Route Business 13 (Rt. 13) within the study area?

This question was presented with an open-ended response format, so an average number was not calculated. Several respondents said they cross US Route 13 Business less than 5 times a week, several others however noted that they cross US 13 11-15 times a week, with some even responding they crossed it more than 20 times a week. Overall, responses averaged around 6-10 times a week.

Question 3 – How do you cross Rt. 13 within the study area? Mark all that apply.

The most popular response was walking (86.5%), followed by car (66.3%), biking (18.0%) and transit (2.3%). Four respondents chose other and said that they skate, longboard or scooter within the study area. Results are depicted below in Figure 31.

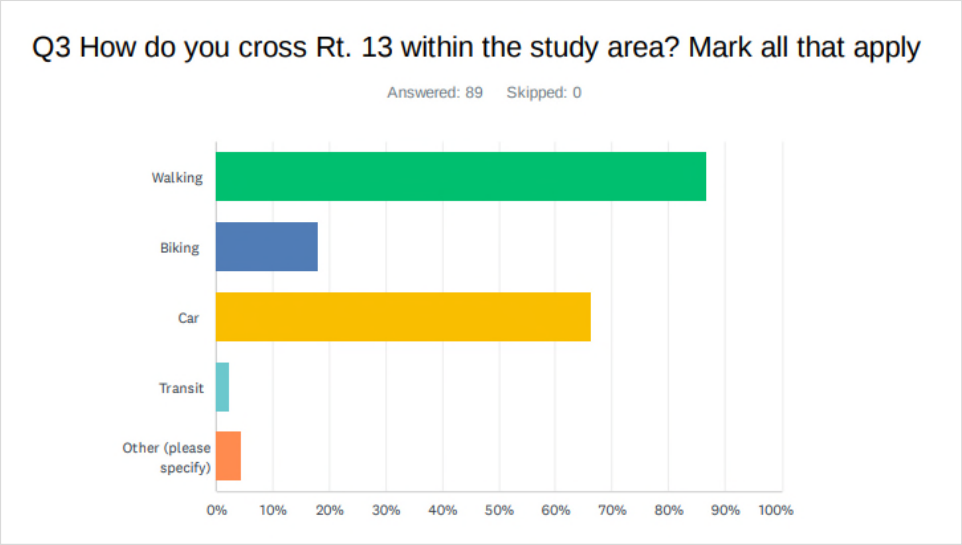


Figure 31: Question 3 Results

Question 4 – How do you primarily cross Rt. 13 within the study area?

When asked to choose a primary mode of transportation responses were divided, possibly indicating that many students drive to Salisbury University and park their car on the east side of US Route 13 Business, but then cross by foot. 55.0% of respondents chose walking as their primary way to cross, followed by 36.0% by car, 6.7% indicated other and noted car as the preferred mode. Only one respondent chose transit as their primary mode. Results are depicted in Figure 32.

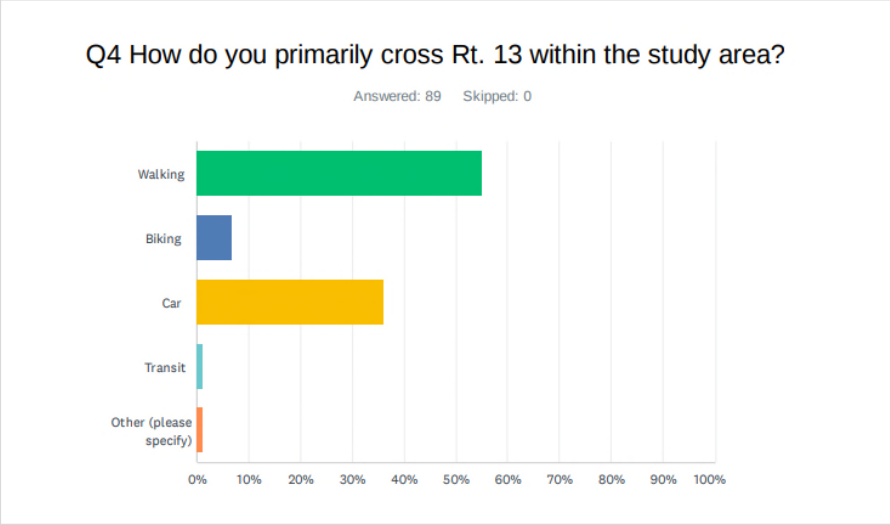


Figure 32: Question 4 Results

Question 5 – Why do you cross Rt. 13 within the study area? Mark all that apply.

The most popular reasons for crossing US Route 13 Business in the study area are to get to and from class (67.4%) and to get to and from campus facilities for non-class related activities (i.e., sports, events, campus clubs, etc.). Results are depicted in Figure 33.

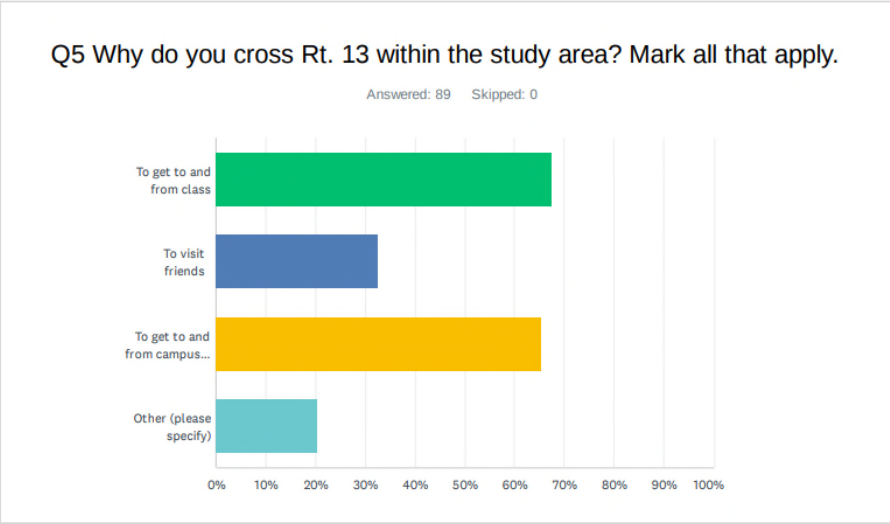


Figure 33: Question 5 Results

Question 6 – Why do you primarily cross Rt. 13 within the study area?

When asked to choose a primary reason for crossing US Route 13 Business within the study area the most popular reason was to get to and from class (58.4%). Some of the reasons responders chose other was to get to and from an internship, and to access restaurants and stores. Results are depicted below in Figure 34.

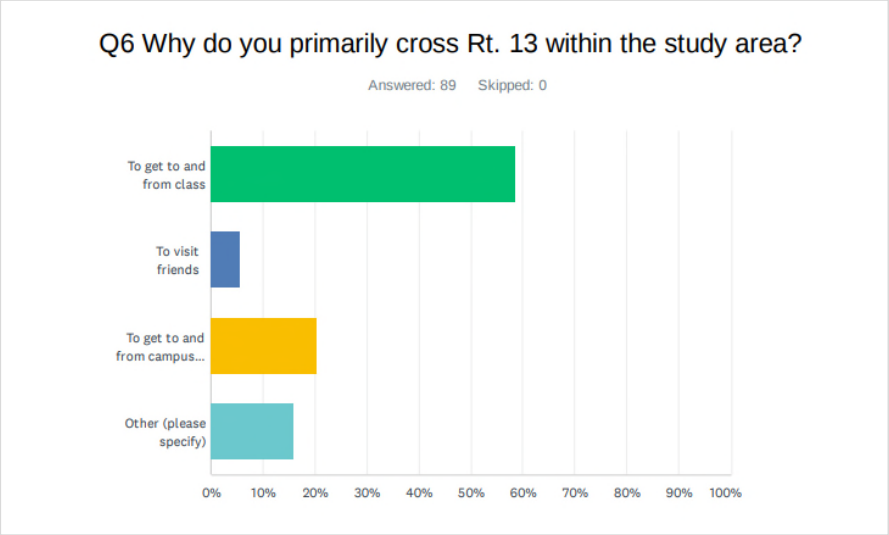


Figure 34: Question 6 Results

Question 7 – Which of the five intersections do you use to cross Rt. 13 within the study area? Mark all that apply.

When respondents were asked to mark all crossings that they utilize in the study area it was clear that the Bateman Street Tunnel is the most utilized, receiving votes from 83.4% of respondents, followed by W College Ave (58.0%) and Dogwood Drive (52.3%). Over half of respondents utilize all three of these intersections. Results are depicted below in Figure 35.

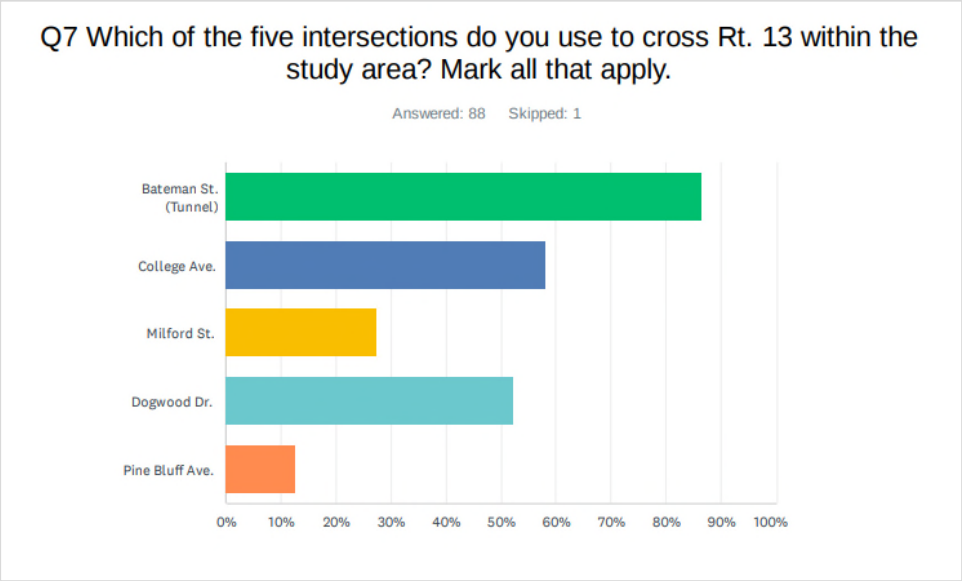


Figure 35: Question 7 Results

Question 8 – Which of the five intersections do you primarily use to cross Rt. 13 within the study area?

When asked to choose only one intersection that they use most often, students primarily utilize the Bateman Street tunnel (57.7%), once again followed by W College Ave (18.4%) and Dogwood Drive (17.2%). Results are depicted below in Figure 36.

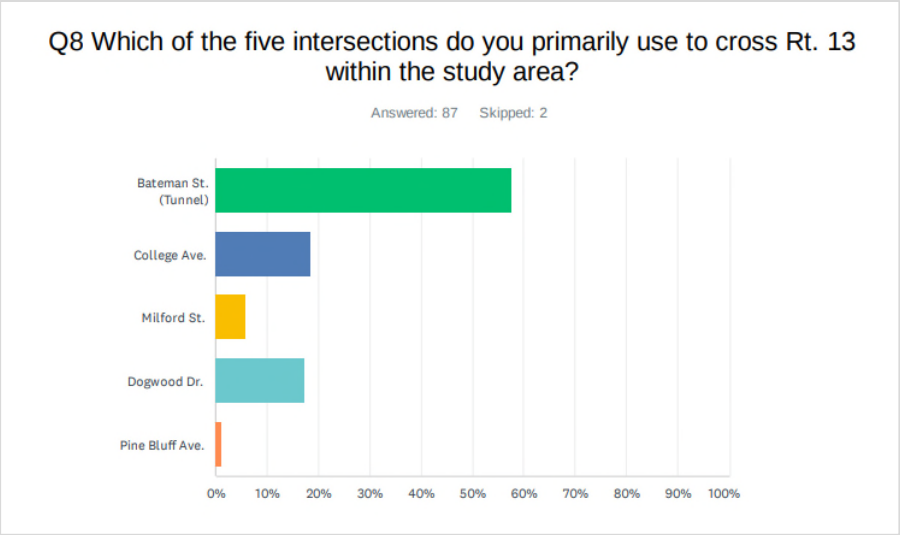


Figure 36: Question 8 Results

Question 9 – Why is the intersection you answered in Question 8 your primary intersection?

The most popular reason for using their chosen intersection was safety (43.2%). It is no surprise that the Bateman Street Tunnel would provide a safer crossing away from traffic. Other reasons cited include convenience (25%), shortest route (21.6%) and access (10.2%). Results are depicted below in Figure 37.

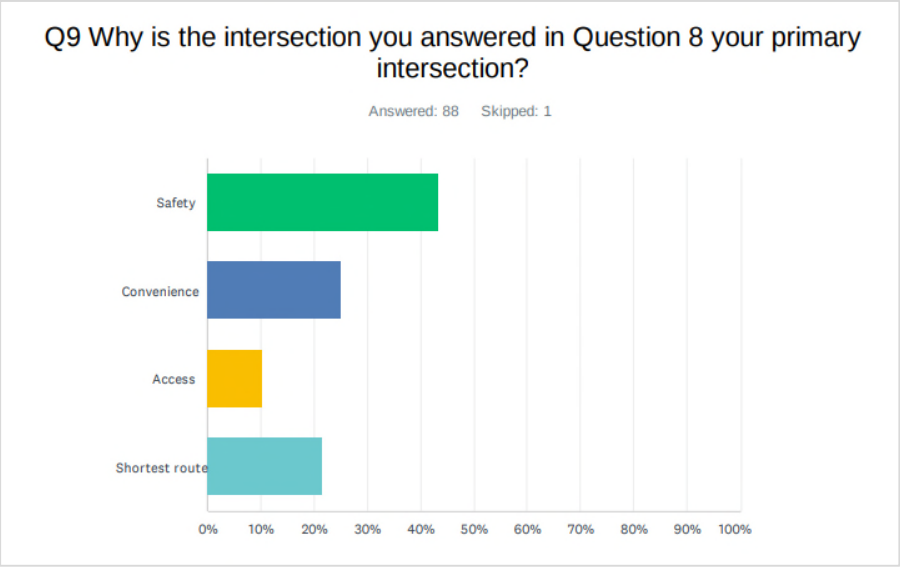


Figure 37: Question 9 Results

Question 10 – On a scale of 1 to 10, within 1 being not safe at all and 10 being extremely safe, how safe do you feel when crossing in the study area?

The average score for Question 10 was a 6, possibly indicating that students feel somewhat but not completely safe crossing the study corridor. Results are depicted below in Figure 38.

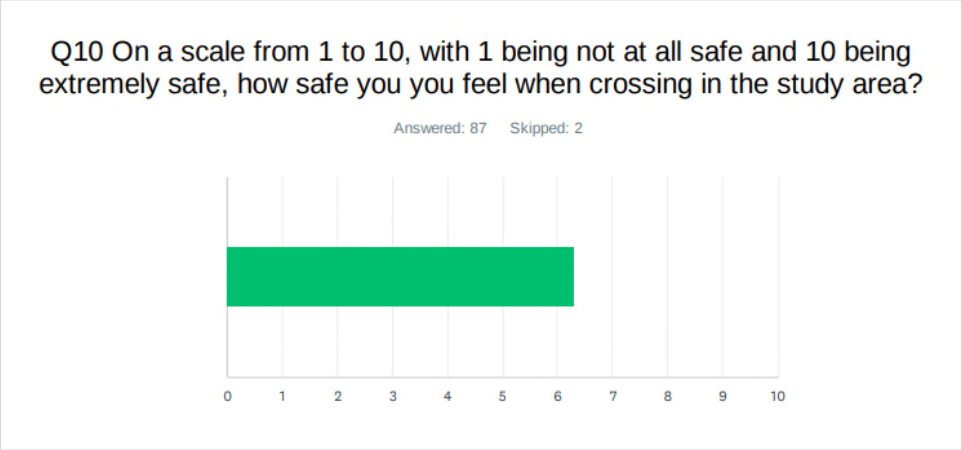


Figure 38: Question 10 Results

Question 11 – On a scale of 1 to 10, with 1 being not at all safe and 10 being extremely safe, how safe do you feel walking and/or cycling along the east side of Rt. 13? (picture below provided)

Responses to question 11, indicate that students do not feel quite as safe when travelling along the east side of US Route 13 Business where many restaurants, stores, and recreation centers are located. The average response to this was a 4, again indicating students do not feel safe. Results are depicted below in Figure 39.

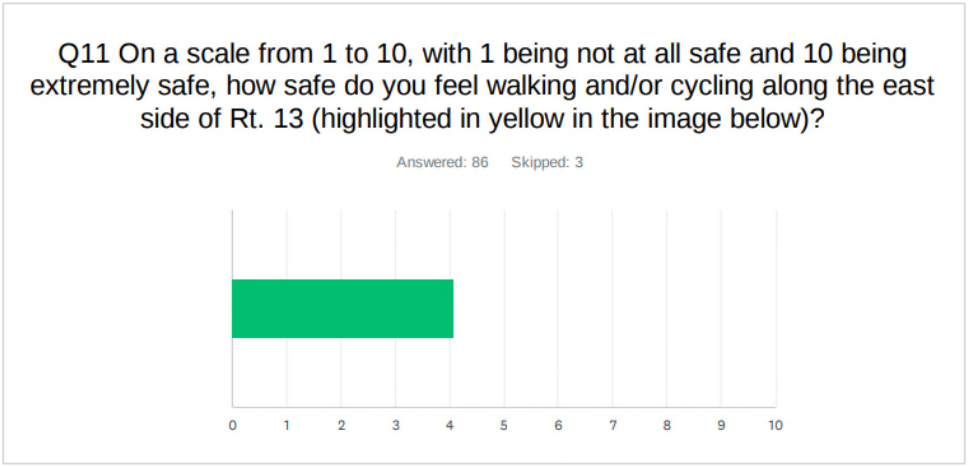


Figure 39: Question 11 Results

Question 12 – Would you prefer to walk along Rt. 13 on a sidewalk or along a public pathway parallel to the existing railroad in the study area? (Picture below provided)

About 67% of students said they would prefer to walk along a separated public pathway parallel to existing railroad as opposed to sidewalk along US Route 13 Business. This split could indicate that many students prioritize safety and do not feel safe travelling so close to vehicular traffic on US Route 13 Business. Results are depicted below in Figure 40.

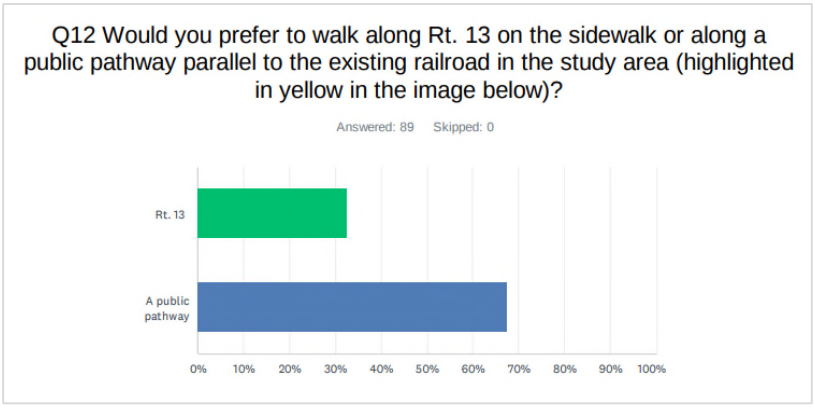


Figure 40: Question 12 Results

Question 13 – Which of the following improvements in the study area would you most like to see?

The most popular (45.5%) improvement that students would like to see in the study area is a new elevated path or tunnel crossing US Route 13 Business, similar to what exists at Bateman Street. Votes for other improvements were split with 22.7% voting for crosswalk enhancements, 14.8% voting for a public pathway along the railroad, and 8.0% voting for additional street lighting. Results are depicted below in Figure 41.

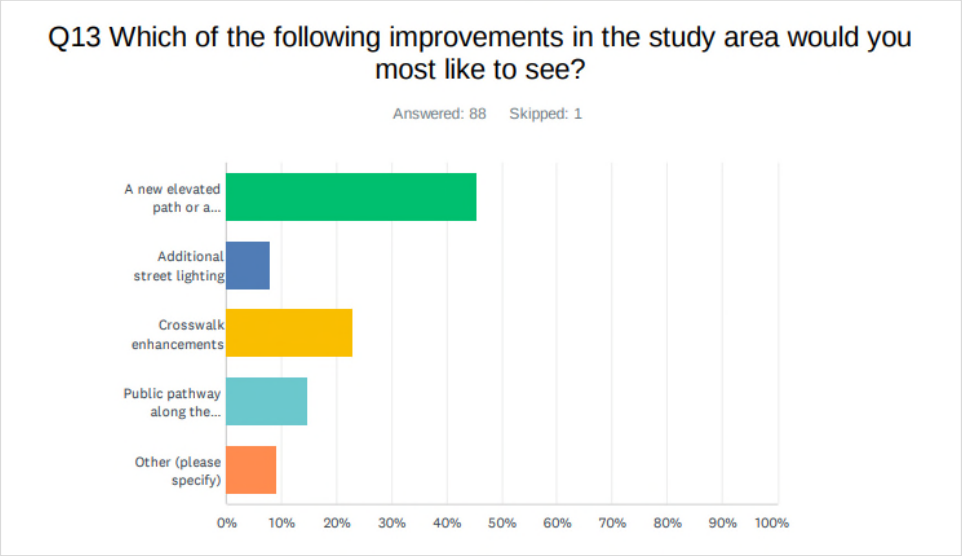


Figure 41: Question 13 Results

Overall survey responses indicate that students are looking for safe and convenient ways to cross US Route 13 Business to attend classes, after-school activities, visit friends, shop, and eat along the corridor. A new elevated pathway or tunnel is the preferred method for crossing this busy corridor and would be appropriate at either W College Ave or Dogwood Drive based on use.

IV. Other Considerations

Other elements were also considered for the development of safe, context-sensitive bicycle and pedestrian improvement concepts, they included railroad crossings, bicycle safety, access management, and HAWK signal education. Each element area describes how the concept affects the study area and offers best practice recommendations that were used to develop each concept plan.

A. Railroad Crossings

The Delmarva Central Railroad Company (DCR), a subsidiary of Carload Express Inc. (CEI), operates a rail line east of US Route 13 Business. DCR took over for Norfolk Southern in 2019. It is the main north-south rail line through the Delmarva Peninsula. The 2018 Salisbury Rails with Trails Master Plan acknowledges liability concerns from the railroad for users close to the tracks.

> *"Establishing a trail with requisite setbacks, separation and barriers would be an important strategy to mitigate safety and liability concerns for Norfolk Southern. While Norfolk Southern supports Rails to Trails conversions on a select basis, its current policy prohibits trails within the right-of-way of an active train line, based on safety concerns: Because of risks and hazards of pedestrian and motor vehicle traffic adjacent to or across active railroad tracks, Norfolk Southern will not donate, sell, lease, or grant easements along its operating corridors for pedestrian walking/hiking/jogging trails, bikeway paths, parks, or other recreational uses. Norfolk Southern does not participate in the "Rails With Trails" program but does support "Rails To Trails" on a select basis." (Salisbury Rails with Trails Master Plan, 2018)*

The Salisbury Rails with Trails Master Plan proposes a path that may cross the DCR line at Seagull Lane and at Bateman Street.

Additionally, a connection is currently being considered separate from this Plan that would link the Salisbury University campus north of Sea Gull Square to Wayne Street, just north of Power Street. While this would provide a safe connection between main campus and residences east of campus as well as the school's athletic fields, a tunnel would be required to safely cross the DCR rail line. The required tunnel would be long, costly, and require considerable negotiations with DCR; therefore, it was not proposed for concept design in this plan.

B. Safe Bicycle Facility Design

Per Federal Highway Administration, bicycle facility design elements vary depending on the functional classification of the roadway and roadway characteristics, but generally the following design elements are preferred:

- Minimum of 5' width for a one-way separated bicycle lane, preferably widths of 7' to allow for passing or side-by-side riding.
- A two-way separated bicycle way preferably should have a width of 12'.
- Minimum 3' buffer adjacent to parking.

- Avoid drainage grates or gutter seams within the usable width if feasible.
- Buffers can be pavement markings or a combination of pavement markings and physical vertical elements.

Consideration should be given to a right or left-side bikeway given other roadway characteristics, including midblock driveways. Additional detailed guidance for the design of bicycle facilities within Maryland can be found in MDOT SHA's Bicycle Policy and Design Guide.

C. Access Management

Access management is the planning, design, and implementation of land use and transportation strategies that control the flow of traffic between entry and exit points along a roadway, including intersections with other roads and driveways that serve adjacent properties. Appropriate consideration of access management and its implementation has the potential to enhance safety for all modes, facilitate walking and biking, and reduce trip delay and congestion. According to FHWA, reducing driveway density may result in a 25-31 % reduction in fatal injury crashes along urban and suburban arterial roadways like US Route 13 Business. Successful corridor access management involves balancing overall safety and mobility for all users along with the needs of adjacent land uses.

Commonly used access management techniques that may be appropriate for this study corridor include:

- Regulating minimum spacing of median openings and access connections (driveways and street connections);
- Limiting the number of access points per property or consolidating access points and encouraging shared driveways;
- Establishing standards for driveway width, driveway throat length and internal drive aisles to move traffic smoothly off the adjacent street;
- Moving access points away from signalized intersections;
- Incorporating right and left-turn lanes into roadways;
- Promote interconnection of parking lots and unified on-site circulation systems.

FURTHER RESOURCES

1. FHWA Corridor Access Management
2. FHWA Safe Access Is Good For Business
3. Access Management: An Overview
4. FHWA Access Management Publications & Resources

D. HAWK (High intensity Activated crossWalK) Beacon Education

Currently, there are no operating HAWK beacons on the Maryland Eastern Shore, however, they are approved and implemented by MDOT SHA and they can be a safe option for crossing in certain conditions. There is a HAWK beacon located in Rehoboth, Delaware on Route 1, which is a similar highway with higher traffic volumes. According to FHWA:

> *"While several roadway treatments are available to address pedestrian concerns, only a few are appropriate for high-speed or wide-crossing conditions [like US Route 13 Business]. The HAWK beacon was developed to address these conditions. At a HAWK crossing, drivers receive multiple cues to emphasize the potential presence of a pedestrian. These cues include a unique configuration of the HAWK beacon (two red lenses over a single yellow lens), high-visibility crosswalk markings (ladder-style or continental markings as opposed to only two transverse white lines), a stop bar approximately 50 ft from the crosswalk, 8-inch solid lane lines between through travel lanes, signs that can be illuminated and read "CROSSWALK," and School Warning signs. When activated, the HAWK uses a red indication to inform drivers to stop, thereby creating a time period for pedestrians to cross the major roadway."*

The HAWK beacon is not illuminated until it is activated by a pedestrian, this triggers the warning flashing yellow. After a set amount of time, the beacon changes to a solid yellow light, mimicking the yellow light found on most traffic signals. The beacon then displays a dual solid red light to drivers on the major street and a walking person symbol to pedestrians, signaling that drivers should stop, and pedestrians can proceed. After the walk phase, the beacon displays an alternating flashing red light, and pedestrians are shown an upraised hand symbol with a countdown of the time left to cross. During the alternating flashing red lights, drivers can proceed after coming to a full stop and checking that pedestrians have already crossed their lane of travel. Each successive driver is legally required to come to a full stop before proceeding during the alternating flashing red phase.

The alternating flashing red phase allows the driver delay to match the actual crossing needs of the pedestrian. Drivers can proceed with a stop-and-go operation during the flashing red phase if a pedestrian walks faster than the assumed walking speed and clears the lanes or roadway. If pedestrians need more time, then the drivers remain stopped until they finish crossing. The ability to balance the needs of the pedestrians with driver delay is a valuable component of the HAWK treatment.

An FHWA study conducted in Tucson, AZ demonstrated that, "with proper education and with experience, drivers understand when they should stop and when they should resume travel. The city has conducted public campaigns and increased enforcement to teach and encourage appropriate driver and pedestrian behavior at HAWK crossings as well as at all pedestrian crossings."

If a HAWK beacon is installed as part of any recommendation an education campaign should accompany any plans for a HAWK beacon in Salisbury, MD.

V. Concepts Developed

The project team reviewed traffic counts, street geometry, public survey results and crash data to identify intersections and corridors for improvements. Master plans and development patterns were also considered to recognize context-sensitive solutions.

Any concepts developed must be coordinated with MDOT SHA, some may require additional evaluation and study before proceeding into engineering design.

W College Avenue

Two concepts were developed for the intersection of W College Ave and US Route 13 Business.

Concept 1 would require the reconstruction and removal of concrete islands (Figure 42). This concept would eliminate the free right turn lane from eastbound W College Ave to southbound US Route 13 Business and the existing concrete island. Eliminating the free right turn would allow for a clearer and more direct pedestrian crosswalk across the W College Ave eastbound leg of the intersection. To accomplish this, the southwest corner of the intersection would be redesigned to bump out and create a perpendicular crosswalk on the west side of the intersection and align better with the roadway geometry. This concept would also eliminate the free right turn lane from northbound US Route 13 Business to W College Ave and the existing concrete island. Eliminating the free right turn would allow a clearer and more direct pedestrian crosswalk across the westbound W College Ave leg of the intersection. To accomplish this, the southeast corner of the intersection would also be redesigned to bump out further to create a perpendicular crosswalk on the east side of the intersection and align better with the roadway geometry. This concept would refresh existing crosswalk striping and add a fourth crosswalk that crosses the south leg of the intersection. Lastly, new pedestrian signals and push buttons would be added to all four corners of the intersection.

Figure 42: W College Avenue at US Route 13 Business Concept 1

Concept 2 proposes a raised pedestrian bridge that would cross the southern leg of US Route 13 Business (Figure 43). This concept would require significant right-of-way acquisition and impacts during construction. This concept would include a 170-foot pedestrian bridge and two towers. The towers would include an elevator in the center of the structure to assist pedestrians and cyclists as well as stairs that wrap around the elevator tower for pedestrians. Pedestrian paths would also be included in this concept to guide pedestrians and cyclists to the towers from the existing sidewalks.

Figure 43: W College Ave at US Route 13 Business Concept 2

Bateman Street

The concept improvements here include three separate elements, seen in Figure 44. Each of these elements could be implemented independently or with the others as part of an entire package.

Element 1 includes the addition of enhanced crossings for pedestrians with the use of pavement markings. This concept would update the existing crosswalk along US Route 13 Business by replacing the parallel bar crosswalk with a continental crosswalk for better driver visibility. This concept also includes a highly visible painted crossing across the Hardee's entrance. This crossing is suggested to be red in color and include two horizontal white bars to guide pedestrians and cyclists across the entrance towards the pedestrian tunnel. This area of the concept also includes a new pedestrian signal and push button for crossing Bateman Street at US Route 13 Business.

Element 2 would be a new mid-block crosswalk added just west of the railroad tracks to provide pedestrians and cyclists a safe crossing to utilize the existing pedestrian tunnel, this crosswalk would also be updated with new pedestrian crossing signage to alert motorists of the potential for pedestrians crossing the road.

Element 3 would require the closure of two access points for Pat's Pizzeria, this is included in the concept package to minimize pedestrian and turning vehicle conflicts and create a safer corridor for both pedestrians and cyclists as well as motorists.

Figure 44: Bateman Street at US Route 13 Business Concept

Dogwood Drive

Two concepts were developed for the intersection of Dogwood Dr and US Route 13 Business.

Concept 1 includes the intersection of Dogwood Dr and US Route 13 Business as well as a portion along Dogwood Drive (Figure 45). The first enhancement is updating existing parallel bar crosswalks across US Route 13 Business with continental crosswalks. In addition, two new crosswalks would be added along US Route 13 Business on the west leg and east side shopping center entrance. New pedestrian push buttons and signals would also be added at the new crosswalk locations. The last enhancement is a painted pedestrian path that guides pedestrians and cyclists from the intersection of Dogwood Dr and US Route 13 Business to the existing campus sidewalk just east of the intersection. This painted path is recommended to be red in color and include white parallel lines to guide pedestrians. This enhancement would also help motorists identify where pedestrians are expected to be making it safer for pedestrians to cross the entrances of Cheers property.

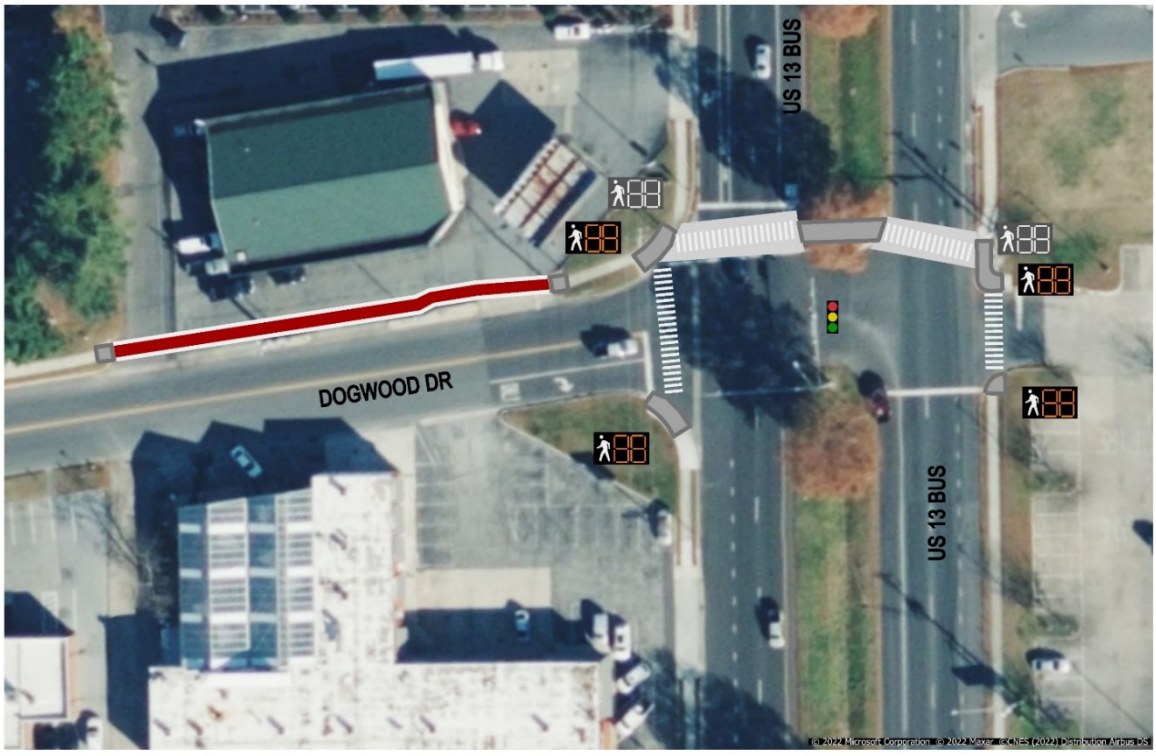


Figure 45: Dogwood Drive at US Route 13 Business Concept 1

Concept 2 proposes an underground pedestrian tunnel just north of the intersection of Dogwood Dr and US Route 13 Business (Figure 46). The pedestrian tunnel would be approximately 160-feet in length underground and guide pedestrians from the east side of US Route 13 Business to the west side of US Route 13 Business and vice versa. This concept would require significant right-of-way acquisition and impacts during construction. On the east side of US Route 13 Business the tunnel begins in the open space in between the existing AutoZone Auto Parts and Truist properties and includes a sidewalk extension from the existing sidewalk along US Route 13 Business to the

entrance of the tunnel. On the west side of US Route 13 Business, the tunnel would extend into the existing Sea Gull Square shopping center on Salisbury University's campus and would include a sidewalk extension from the existing sidewalk along US Route 13 Business to the entrance of the tunnel. In addition, two new crosswalks and a pedestrian island would be added to guide pedestrians to the existing campus sidewalk behind the Sea Gull Square shopping center.

Figure 46: Dogwood Drive at US Route 13 Business Concept 2

Pine Bluff Road

The Pine Bluff Rd at US Route 13 Business concept would include enhancements to the intersection and pedestrian sidewalks along Pine Bluff Rd, depicted in Figure 47. At the intersection, the concept would include new continental crosswalks on the northern leg of the intersection and the east leg of the intersection. In addition, a concrete pedestrian refuge would be added in the median on the north leg of the intersection. New pedestrian signals and push buttons would also be added at these new crosswalks. Along Pine Bluff Rd, sidewalks would be extended east towards Wesley Dr, and parallel line crosswalks would be added across existing driveway entrances to provide a visible crossing for pedestrians.

Figure 47: Pine Bluff Road at US Route 13 Business Concept

Wesley Drive Corridor

The Wesley Drive Corridor concept would utilize the existing roadway right-of-way to provide a dedicated 10-feet wide multimodal path down the center of Wesley Dr by eliminating on-street parking, depicted in Figure 48. This dedicated path would include a 2.5' wide buffer from traffic to provide a safe path for pedestrians and cyclists. Also, along Wesley Dr, new stop bars would be added on Wesley Dr at Pine Bluff Rd and Dogwood Dr. The existing crosswalks at Dogwood Dr and Wesley Dr would be updated from parallel lines to continental crosswalks on all four approaches. Lastly, a new crosswalk and pedestrian ramp would be added at the intersection of Wesley Dr and Pine Bluff Rd with Pedestrian Crossing signage to alert motorists that pedestrians may be in the area.

Figure 48: Wesley Drive Corridor Concept

Kay Ave

The Kay Ave concept would include two mid-block continental crosswalks, a new sidewalk to be provided as a refuge island in between crosswalks. To provide pedestrians a safe crossing, two High-Intensity Activated Crosswalk (HAWK) beacons would be added to stop traffic, this signal is only activated when a pedestrian activates it with new pedestrian push buttons. The installation of the HAWK beacons would have to be coordinated and approved by MDOT SHA. An associated education campaign is recommended. The concept is depicted in Figure 49.

Figure 49: Kay Avenue at US Route 13 Business Concept

Bicycle Lanes and Turn Lanes along US Route 13 Business

Concepts to enhance bicycle lanes and turn lanes visibility along US Route 13 Business primarily uses updated striping and signing along the corridor. For the right turn lanes, the concept would update right turn striping and pavement markings to be compliant with the Maryland Manual on Uniform Traffic Control Devices (MD MUTCD). This would include additional right turn lane pavement marking approaching intersections and updated striping. For bicycle lanes, - “sharrow” bicycle marking along the turn lanes would be added that currently do not have a separated bicycle lane. These symbols would be spaced approximately 300’ apart along the corridor. The existing bicycle lanes would be upgraded with green paint to emphasize the bicycle lane from the travel lane. In addition, more bicycle symbols would be added to the bicycle lanes spaced approximately 200’ apart. Lastly, this concept would include additional signage along the corridor to alert motorists when bicycles are sharing the road, when bicycle lanes begin, and when bicycle lanes end. The concept is depicted in Figures 50-56.

Figure 50: Bicycle Lanes and Turn Lanes Along US Route 13 Business Concept (1/7)

Figure 51: Bicycle Lanes and Turn Lanes Along US Route 13 Business Concept (2/7)

Figure 52: Bicycle Lanes and Turn Lanes Along US Route 13 Business Concept (3/7)

Figure 53: Bicycle Lanes and Turn Lanes Along US Route 13 Business Concept (4/7)

Figure 54: Bicycle Lanes and Turn Lanes Along US Route 13 Business Concept (5/7)

Figure 55: Bicycle Lanes and Turn Lanes Along US Route 13 Business Concept (6/7)

Figure 56: Bicycle Lanes and Turn Lanes Along US Route 13 Business Concept (7/7)

VI. Implementation

A. Concept Costs

Concept construction cost estimates were developed using MDOT SHA guidance. A summary of the estimated costs per concept location are included in Table 1 below.

Table 1: Estimated Costs per Concept Location

Concept Location	Approximate Construction Cost
W College Avenue 1	$834,000
W College Avenue 2	$6,393,000
Bateman Street	$369,000
Dogwood Drive 1	$473,000
Dogwood Drive 2	$10,145,000
Pine Bluff Road	$777,000
Wesley Drive	$418,000
Kay Avenue	$428,000
Bicycle and Turns Package	$1,051,000

Estimated costs do not include any potential right-of-way acquisition costs or preliminary engineering costs. Potential right-of-way acreage is included with each estimate (see Appendix B). Major quantity items were quantified via CAD. Contingencies and percent-based categorical items were derived via the 2022 MDOT

SHA Highway Cost Estimating Manual. Percentage-based items include Maintenance of Traffic (MOT), Construction Stakeout, Mobilization, Drainage, Landscaping, and Traffic and Utilities. The manual provides percentage ranges for each item (for example, MOT ranges from 1%-8% of the total cost for Categories 2-8). The percentages applied from the ranges were discretionary depending on the perceived project type, which ranges from short-term Safety & Spot Improvements to Major Projects for the pedestrian bridge and pedestrian tunnel.

B. Future Phasing

Concept construction costs, area development plans, and student needs were considered to generate recommendations for phasing each of the improvements. The implementation of the proposed concepts should be integrated with the City of Salisbury, Wicomico County, and MDOT MHA planned mobility projects including but not limited to the 2018 Salisbury Rails with Trails Master Plan and the Moves By Mobility Masterplan.

Short-Term

Short-term projects are recommended for implementation within the next 3 years. These projects may not require the acquisition of right-of-way and/or have a lower cost associated with them.

- Bateman Street (Phase 1)
- Pine Bluff Road
- Bike Lanes and Turn Lanes along US Route 13 Business

Medium-Term

Medium-term projects are recommended for implementation within the next 3-7 years. These projects may require the acquisition of right-of-way, but there is an imminent need for the improvements based on development trends and safety needs.

- W College Ave (Concept 1)
- Bateman Street (Phases 2 & 3)
- Dogwood Drive (Concept 1)
- Kay Avenue

Long-Term

Long-term projects are recommended for implementation in 7+ years. These projects are worth noting and considering as traffic along the corridor continues to increase. They may require additional outreach, design, and multiple funding sources to properly implement. Budgeting for those improvements should be considered.

- W College Ave (Concept 2)
- Dogwood Drive (Concept 2)
- Wesley Drive

C. Funding Sources

In addition to typical capital project funding from State or local funding, pedestrian and bicycle improvement projects may be eligible for grants or specific state funded programs. S/WMPO can also work with MDOT's Grants Team to apply for federal funding programs listed below. MDOT has many opportunities for bicycle and pedestrian funding programs listed below.

Grants:

- Transportation Alternatives Program (MDOT SHA)
- Maryland Bikeways Program (MDOT)
- Recreational Trails Program (MDOT SHA)
- Safe Routes to Schools (MDOT SHA)
- Maryland Highway Safety Office Grant (MDOT MVA)

Federal Funding Programs:

- Section 5303, 5304, 5305 – Metropolitan & Statewide and Nonmetropolitan Transportation Planning: eligible recipients include State DOTs and MPOs and can be used to fund planning activities pertaining to bicycle facilities
- Section 5339 – Bus and Bus Facilities Formula Grants: eligible recipients include States and local governments, as well as subrecipients and can be used to fund bicycle routes to transit, bike racks, shelters, and equipment
- Section 5310 – Enhanced Mobility of Senior and Individuals with Disabilities: eligible recipients include States (areas < 200,000 population) and designated recipients, and State DOTs and can be used to fund bicycle improvements that provide access to eligible public transportation facilities and meet the needs of the elderly and individuals with disabilities
- Section 5311 – Formula Grants for Rural Areas: eligible recipients include States, Indian tribes, and State DOTs for local rural transit providers and can be used to fund bicycle routes to transit, bike racks, shelters, and equipment

State Funding Programs:

- Sidewalk Reconstruction for Pedestrian Access (Fund 33)
- New Sidewalk Construction for Pedestrian Access (Fund 79)
- Bicycle Retrofit (Fund 88)

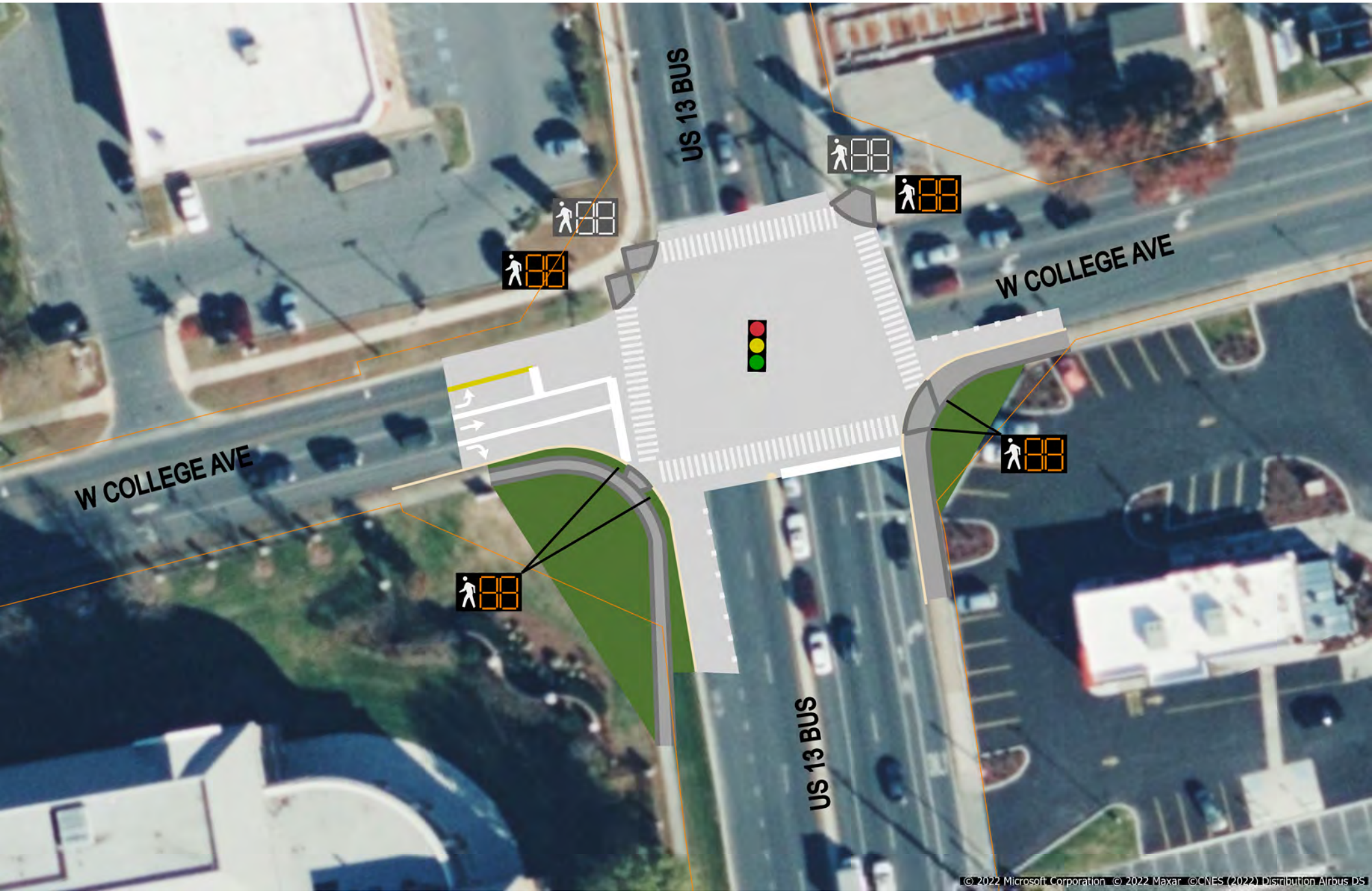
Additional Private Grant Opportunities:

- Robert Wood Johnson Foundation
- PeopleForBikes
- National Center for Safe Routes to School

Additional information and eligibility details regarding the funding opportunities can be found in MDOT's summary of *Bicycle and Pedestrian Funding Programs in Maryland (2018, mdot.maryland.gov/OPCP/Bicycle_and_Pedestrian_Funding_Programs_Maryland.pdf*).

Appendix A – Concept Drawings

W College Avenue 1

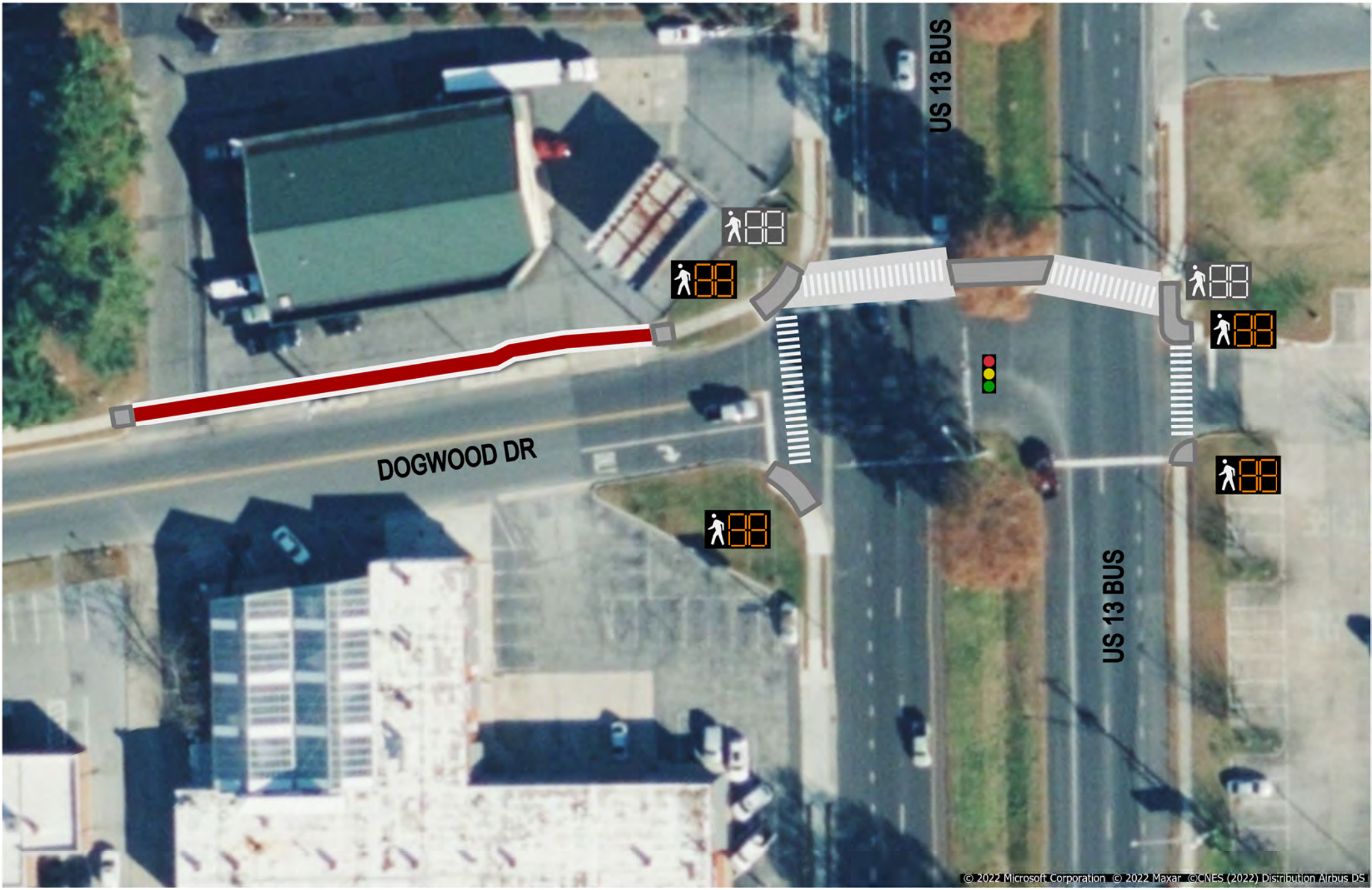


W College Avenue 2

Bateman Street

Note: Connectivity to future rail trail along the railroad should be coordinated.

Dogwood Drive 1



Dogwood Drive 2

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Note: Connectivity to future rail trail along the railroad should be coordinated.

Pine Bluff Road

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Wesley Drive

(c) 2022 Microsoft Corporation (c) 2022 Maxar (c) NES (2022) Distribution Airbus DS

Kay Avenue


US BUS 13
KAY AVE
KAY AVE
US BUS 13
CANAL PARK DR
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Bicycle and Turns Package - Overview (1 of 8)

Bicycle and Turns Package (2 of 8)

Bicycle and Turns Package (3 of 8)

Bicycle and Turns Package (4 of 8)

Bicycle and Turns Package (5 of 8)

Bicycle and Turns Package (6 of 8)

Bicycle and Turns Package (7 of 8)

Bicycle and Turns Package (8 of 8)

Appendix B – Cost Estimates

MAJOR COST ESTIMATE: W COLLEGE AVENUE AT US 13 BUS

DATE:	12/14/2022	PROJECT #:	
JOB DESCRP:	SWMPO US 13 Business Ped Cyclist Plan	COUNTY:	Wicomico
	College Ave		
IMPROV TYPE:	Pedestrian and Bicycle Upgrades		
TYPICAL SEC:	2-Lane Undivided	PRJ LENGTH:	0.06 Miles
PREPARED BY:	ROSSI GROUP	DIVISION:	MDOT SHA- OFFICE OF HIGHWAY DEVELEOPMENT

1	PRELIMINARY		[CAT 1]				76,000.00
	TYPE B ENGINEERS OFFICE	1	LS	20,000.00	20,000.00		
	MAINTENANCE OF TRAFFIC	1	LS	26,500.00	26,500.00	8% of Cat. 2-8	
	CONSTRUCTION STAKEOUT	1	LS	7,000.00	7,000.00	2% of Cat. 1-8	
	MOBILIZATION	1	LS	21,000.00	21,000.00	6% of Cat. 1-8	
	CLEARING AND GRUBBING	0.20	AC	5,000.00	1,000.00		
2	GRADING						20,000.00
	Removal of Existing Sidewalk	75	CY	100.00	7,500.00		
	Removal of Existing Pavement	125	CY	100.00	12,500.00		
3	DRAINAGE	15%	[% OF CAT 2,4,5,6] + Items below				84,500.00
	Bicycle-safe Inlet Grate Replacement	4	EA.	1000	4,000		
	Inlet replacement	2	EA.	5000	10,000		
5	PAVING						10,205.00
	SURFACE	7	TON	85.00	595.00		
	HOT MIX ASPHALT SUPERPAVE 19.0mm FOR BASE	27	TON	75.00	2,025.00		
	8 INCH GRADED AGGREGATE BASE COURSE	56	SY	10.00	560.00		
	5 INCH YELLOW THERMOPLASTIC PAVEMENT MARKINGS	33	LF	5.00	165.00		
	5 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	122	LF	5.00	610.00		
	12 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	850	LF	5.00	4,250.00		
	24 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	100	LF	10.00	1,000.00		
	WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LEGENDS AND SYMBOLS	50	SF	20.00	1,000.00		
6	SHOULDER						42,500.00
	Concrete Curb and Gutter	500	LF	35.00	17,500.00		
	5" Concrete Sidewalk	2,500	SF	10.00	25,000.00		
7	LANDSCAPING	12%	[% OF CAT 2,4,5,6] + Items below				17,700.00
	Furnish and Install Topsoil	1,100	SY	5.00	5,500		
	Turfgrass Establishment	1,100	SY	2.00	2,200		
8	TRAFFIC AND UTILITIES	15%	[% OF CAT 2,4,5,6] + Items below				269,575.000
	Remove and Relocate Utility Poles	3	EA.	12000	36,000		
	APS/CPS Pedestrian Intersection Upgrades	1	LS	20000	20,000		
	Signal Modifications	1	EA.	200000	200,000		
	Relocate Existing Ground Mounted Signs	43	SF	25	1,075		
	SUBTOTAL OF CATEGORIES 2,4, 5,6						148,705.00
	SUBTOTAL ROADWAY COST						520,480.00
	CONTINGENCY [%]	40%					208,192.00
	SUBTOTAL- NEAT CONSTRUCTION						$729,000.00
	OVERHEAD AND ADMIN	14.4%					$104,976.00
	TOTAL PROJECT COST						$833,976.00

Notes:

1. Cost estimate does not include Right-of-Way costs, if needed

MAJOR COST ESTIMATE: W COLLEGE AVENUE AT US 13 BUS

DATE:	12/14/2022	PROJECT #:	
JOB DESCRP:	SWMPO US 13 Business Ped Cyclist Plan	COUNTY:	Wicomico
	College Ave		
IMPROV TYPE:	Pedestrian Bridge		
TYPICAL SEC:	2-Lane Undivided	PRJ LENGTH:	0.06 Miles
PREPARED BY:	ROSSI GROUP	DIVISION:	MDOT SHA- OFFICE OF HIGHWAY DEVELEOPMENT

1	PRELIMINARY		[CAT 1]				114,000.00
	TYPE B ENGINEERS OFFICE	1	LS	20,000.00	20,000.00		
	MAINTENANCE OF TRAFFIC	1	LS	45,500.00	45,500.00	8% of Cat. 2-8	
	CONSTRUCTION STAKEOUT	1	LS	12,000.00	12,000.00	2% of Cat. 1-8	
	MOBILIZATION	1	LS	35,500.00	35,500.00	6% of Cat. 1-8	
	CLEARING AND GRUBBING	0.20	AC	5,000.00	1,000.00		
2	GRADING						15,000.00
	Removal of Existing Pavement	150	CY	100.00	15,000.00		
3	DRAINAGE	25%	[% OF CAT 2,4,5,6] + Items below				420,000.00
4	STRUCTURES						2,171,575.00
	Bridge Over Roadway	3,187	SF	325.00	1,035,775.00		
	Modify and Relocate Existing Salisbury College Landscape Wall Sign Structure	1	LS	50,000.00	50,000.00		
	Pedestrian Bridge Elevatiors, Stairwells and Base, Infrastructure	5,429	SF	200.00	1,085,800.00		
5	PAVING						
6	SHOULDER						25,000.00
	5" Concrete Sidewalk	2,500	SF	10.00	25,000.00		
7	LANDSCAPING	16%	[% OF CAT 2,4,5,6] + Items below				362,350.00
	Furnish and Install Topsoil	1,050	SY	5.00	5,250		
	Turfgrass Establishment	1,050	SY	2.00	2,100		
8	TRAFFIC AND UTILITIES	15%	[% OF CAT 2,4,5,6] + Items below				852,000.000
	Relocate Light Poles	2	EA.	10000	20,000		
	Underground Utilities in Immediate Area	1	LS	500000	500,000		
	SUBTOTAL OF CATEGORIES 2,4, 5,6						2,211,575.00
	SUBTOTAL ROADWAY COST						3,959,925.00
	CONTINGENCY [%]			40%			1,583,970.00
	SUBTOTAL- NEAT CONSTRUCTION						$5,544,000.00
	OVERHEAD AND ADMIN			15.3%			$848,232.00
	TOTAL PROJECT COST						$6,392,232.00

Notes:

1. Cost estimate does not include Right-of-Way costs, if needed

Potentially 0.30 acres of Fee

MAJOR COST ESTIMATE: BATEMAN STREET FROM US 13 BUS TO RAILROAD CROSSING

DATE:	12/14/2022	PROJECT #:	
JOB DESCRP:	SWMPO US 13 Business Ped Cyclist Plan Bateman Street	COUNTY:	Wicomico
IMPROV TYPE:	Pedestrian and Bicycle Upgrades		
TYPICAL SEC:	2-Lane Undivided	PRJ LENGTH:	0.06 Miles
PREPARED BY:	ROSSI GROUP	DIVISION:	MDOT SHA- OFFICE OF HIGHWAY DEVELEOPMENT

1	PRELIMINARY		[CAT 1]				46,000.00
	TYPE B ENGINEERS OFFICE	1	LS	20,000.00	20,000.00		
	MAINTENANCE OF TRAFFIC	1	LS	11,000.00	11,000.00	8% of Cat. 2-8	
	CONSTRUCTION STAKEOUT	1	LS	3,500.00	3,500.00	2% of Cat. 1-8	
	MOBILIZATION	1	LS	10,500.00	10,500.00	6% of Cat. 1-8	
	CLEARING AND GRUBBING	0.10	AC	5,000.00	500.00		
2	GRADING						2,500.00
	Removal of Existing Sidewalk	25	CY	100.00	2,500.00		
3	DRAINAGE	15%	[% OF CAT 2,4,5,6] + Items below				38,000.00
	Bicycle-safe Inlet Grate Replacement	2	EA.	1000	2,000		
	Inlet replacement	1	EA.	5000	5,000		
5	PAVING						7,875.00
	HOT MIX ASPHALT SUPERPAVE 12.5MM FOR SURFACE	5	TON	85.00	425.00		
	HOT MIX ASPHALT SUPERPAVE 19.0mm FOR BASE	19	TON	75.00	1,425.00		
	8 INCH GRADED AGGREGATE BASE COURSE	40	SY	10.00	400.00		
	12 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	275	LF	5.00	1,375.00		
	24 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	25	LF	10.00	250.00		
	Red Crosswalk Paint	200	SF	20.00	4,000.00		
6	SHOULDER						12,125.00
	Concrete Curb and Gutter	175	LF	35.00	6,125.00		
	5" Concrete Sidewalk	600	SF	10.00	6,000.00		
7	LANDSCAPING	12%	[% OF CAT 2,4,5,6] + Items below				5,900.00
	Furnish and Install Topsoil	100	SY	5.00	500		
	Turfgrass Establishment	100	SY	2.00	200		
8	TRAFFIC AND UTILITIES	15%	[% OF CAT 2,4,5,6] + Items below				117,300.000
	APS/CPS Pedestrian Intersection Upgrades	1	LS	10000	10,000		
	Signal Modifications	1	EA.	100000	100,000		
	Sheet Aluminum Signs	20	SF	40	800		
	SUBTOTAL OF CATEGORIES 2,4, 5,6						68,500.00
	SUBTOTAL ROADWAY COST						229,700.00
	CONTINGENCY [%]			40%			91,880.00
	SUBTOTAL- NEAT CONSTRUCTION						$322,000.00
	OVERHEAD AND ADMIN			14.4%			$46,368.00
	TOTAL PROJECT COST						$368,368.00

Notes:

1. Cost estimate does not include Right-of-Way costs, if needed

MAJOR COST ESTIMATE: DOGWOOD DRIVE FROM US 13 BUS TO END OF CHEERS PROPERTY

DATE:	12/14/2022	**PROJECT #:**	
JOB DESCRP:	SWMPO US 13 Business Ped Cyclist Plan Dogwood Dr	**COUNTY:**	Wicomico
IMPROV TYPE:	Pedestrian and Bicycle Upgrades		
TYPICAL SEC:	2-Lane Undivided	**PRJ LENGTH:**	0.08 Miles
PREPARED BY:	ROSSI GROUP	**DIVISION:**	MDOT SHA- OFFICE OF HIGHWAY DEVELEOPMENT

1	**PRELIMINARY**		[CAT 1]					60,000.00
	TYPE B ENGINEERS OFFICE	1	LS	20,000.00	20,000.00			
	MAINTENANCE OF TRAFFIC	1	LS	18,800.00	18,800.00	8% of Cat. 2-8		
	CONSTRUCTION STAKEOUT	1	LS	5,100.00	5,100.00	2% of Cat. 1-8		
	MOBILIZATION	1	LS	15,300.00	15,300.00	6% of Cat. 1-8		
	CLEARING AND GRUBBING	0.10	AC	5,000.00	500.00			
2	**GRADING**							0.00
3	**DRAINAGE**	15%	[% OF CAT 2,4,5,6] + Items below					40,500.00
5	**PAVING**							33,230.00
	SURFACE	5	TON	85.00	425.00			
	HOT MIX ASPHALT SUPERPAVE 19.0mm FOR BASE	20	TON	75.00	1,500.00			
	8 INCH GRADED AGGREGATE BASE COURSE	43	SY	10.00	430.00			
	12 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	575	LF	5.00	2,875.00			
	Red Crosswalk Paint	1,400	SF	20.00	28,000.00			
6	**SHOULDER**							16,825.00
	Concrete Curb and Gutter	195	LF	35.00	6,825.00			
	5" Concrete Sidewalk	1,000	SF	10.00	10,000.00			
7	**LANDSCAPING**	12%	[% OF CAT 2,4,5,6] + Items below					10,850.00
	Furnish and Install Topsoil	50	SY	5.00	250			
	Turfgrass Establishment	50	SY	2.00	100			
8	**TRAFFIC AND UTILITIES**	15%	[% OF CAT 2,4,5,6] + Items below					133,000.000
	APS/CPS Pedestrian Intersection Upgrades	1	LS	20000	20,000			
	Signal Modifications	1	EA.	100000	100,000			
			SUBTOTAL OF CATEGORIES 2,4, 5,6					110,055.00
			SUBTOTAL ROADWAY COST					294,405.00
			CONTINGENCY [%]	40%				117,762.00
			SUBTOTAL- NEAT CONSTRUCTION					$413,000.00
			OVERHEAD AND ADMIN	14.4%				$59,472.00
			TOTAL PROJECT COST					$472,472.00

Notes:

1. Cost estimate does not include Right-of-Way costs, if needed

MAJOR COST ESTIMATE: DOGWOOD DRIVE ACROSS US ROUTE 13 BUSINESS

DATE:	12/14/2022	**PROJECT #:**	
JOB DESCRP:	SWMPO US 13 Business Ped Cyclist Plan	**COUNTY:**	Wicomico
	Dogwood Drive		
IMPROV TYPE:	Pedestrian Tunnel		
TYPICAL SEC:	2-Lane Undivided	**PRJ LENGTH:**	0.08 Miles
PREPARED BY:	ROSSI GROUP	**DIVISION:**	MDOT SHA- OFFICE OF HIGHWAY DEVELEOPMENT

1	**PRELIMINARY**		[CAT 1]				574,000.00
	TYPE B ENGINEERS OFFICE	1	LS	20,000.00	20,000.00		
	MAINTENANCE OF TRAFFIC	1	LS	275,000.00	275,000.00	8% of Cat. 2-8	
	CONSTRUCTION STAKEOUT	1	LS	70,000.00	70,000.00	2% of Cat. 1-8	
	MOBILIZATION	1	LS	208,000.00	208,000.00	6% of Cat. 1-8	
	CLEARING AND GRUBBING	0.10	AC	5,000.00	500.00		
2	**GRADING**						0.00
3	**DRAINAGE**	35%	[% OF CAT 2,4,5,6] + Items below				1,200,000.00
4	**STRUCTURES**						3,360,500.00
	TUNNEL	1	LS	3,360,500	3,360,500		
5	**PAVING**						5,052.50
	HOT MIX ASPHALT SUPERPAVE 12.5MM FOR SURFACE	6	TON	85.00	467.50		
	HOT MIX ASPHALT SUPERPAVE 19.0mm FOR BASE	22	TON	75.00	1,650.00		
	8 INCH GRADED AGGREGATE BASE COURSE	46	SY	10.00	460.00		
	12 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	495	LF	5.00	2,475.00		
6	**SHOULDER**						75,230.00
	Concrete Curb and Gutter	408	LF	35.00	14,280.00		
	5" Concrete Sidewalk	6,095	SF	10.00	60,950.00		
7	**LANDSCAPING**	16%	[% OF CAT 2,4,5,6] + Items below				552,750.00
	Furnish and Install Topsoil	250	SY	5.00	1,250		
	Turfgrass Establishment	250	SY	2.00	500		
8	**TRAFFIC AND UTILITIES**	15%	[% OF CAT 2,4,5,6] + Items below				516,500.000
			SUBTOTAL OF CATEGORIES 2,4, 5,6				3,440,782.50
			SUBTOTAL ROADWAY COST				6,284,032.50
			CONTINGENCY [%]	40%			2,513,613.00
			SUBTOTAL- NEAT CONSTRUCTION				$8,798,000.00
			OVERHEAD AND ADMIN	15.3%			$1,346,094.00
			TOTAL PROJECT COST				$10,144,094.00

Notes:

1. Cost estimate does not include Right-of-Way costs, if needed

Potentially 0.67 acres of Fee

MAJOR COST ESTIMATE: PINE BLUFF ROAD FROM US 13 BUS TO WESLEY DRIVE

DATE:	12/14/2022	PROJECT #:	
JOB DESCRP:	SWMPO US 13 Business Ped Cyclist Plan	COUNTY:	Wicomico
	Pine Bluff		
IMPROV TYPE:	Pedestrian and Bicycle Upgrades		
TYPICAL SEC:	2-Lane Undivided	PRJ LENGTH:	0.1 Miles
PREPARED BY:	ROSSI GROUP	DIVISION:	MDOT SHA- OFFICE OF HIGHWAY DEVELEOPMENT

1	PRELIMINARY		[CAT 1]				71,000.00
	TYPE B ENGINEERS OFFICE	1	LS	20,000.00	20,000.00		
	MAINTENANCE OF TRAFFIC	1	LS	24,500.00	24,500.00	8% of Cat. 2-8	
	CONSTRUCTION STAKEOUT	1	LS	6,500.00	6,500.00	2% of Cat. 1-8	
	MOBILIZATION	1	LS	19,500.00	19,500.00	6% of Cat. 1-8	
	CLEARING AND GRUBBING	0.10	AC	5,000.00	500.00		
2	GRADING						0.00
3	DRAINAGE	15%	[% OF CAT 2,4,5,6] + Items below				78,000.00
	Bicycle-safe Inlet Grate Replacement	7	EA.	1000	7,000		
	Inlet replacement	1	EA.	5000	5,000		
5	PAVING						20,525.00
	SURFACE	35	TON	85.00	2,975.00		
	HOT MIX ASPHALT SUPERPAVE 19.0mm FOR BASE	137	TON	75.00	10,275.00		
	8 INCH GRADED AGGREGATE BASE COURSE	290	SY	10.00	2,900.00		
	12 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	775	LF	5.00	3,875.00		
	24 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	50	LF	10.00	500.00		
6	SHOULDER						110,500.00
	Concrete Curb and Gutter	1,300	LF	35.00	45,500.00		
	5" Concrete Sidewalk	6,500	SF	10.00	65,000.00		
7	LANDSCAPING	12%	[% OF CAT 2,4,5,6] + Items below				19,410.00
	Furnish and Install Topsoil	130	SY	5.00	650		
	Turfgrass Establishment	130	SY	2.00	260		
8	TRAFFIC AND UTILITIES	15%	[% OF CAT 2,4,5,6] + Items below				185,225.000
	Remove and Relocate Utility Poles	3	EA.	12000	36,000		
	Remove and Relocate Firehydrant	1	EA.	5000	5,000		
	APS/CPS Pedestrian Intersection Upgrades	1	LS	20000	20,000		
	Signal Modifications	1	EA.	100000	100,000		
	Relocate Existing Ground Mounted Signs	49	SF	25	1,225		
	SUBTOTAL OF CATEGORIES 2,4, 5,6						202,025.00
	SUBTOTAL ROADWAY COST						484,660.00
	CONTINGENCY [%]			40%			193,864.00
	SUBTOTAL- NEAT CONSTRUCTION						$679,000.00
	OVERHEAD AND ADMIN			14.4%			$97,776.00
	TOTAL PROJECT COST						$776,776.00

Notes:

1. Cost estimate does not include Right-of-Way costs, if needed

Potentially 0.2 acres of Fee

MAJOR COST ESTIMATE: WESLEY DRIVE FROM DOGWOOD DRIVE TO PINE BLUFF ROAD

DATE:	12/14/2022	PROJECT #:	
JOB DESCRP:	SWMPO US 13 Business Ped Cyclist Plan	COUNTY:	Wicomico
	Wesley Drive		
IMPROV TYPE:	Pedestrian and Bicycle Upgrades		
TYPICAL SEC:	2-Lane Undivided	PRJ LENGTH:	0.2 Miles
PREPARED BY:	ROSSI GROUP	DIVISION:	MDOT SHA- OFFICE OF HIGHWAY DEVELEOPMENT

1	PRELIMINARY		[CAT 1]				46,000.00
	TYPE B ENGINEERS OFFICE	1	LS	20,000.00	20,000.00		
	MAINTENANCE OF TRAFFIC	1	LS	11,500.00	11,500.00	8% of Cat. 2-8	
	CONSTRUCTION STAKEOUT	1	LS	3,500.00	3,500.00	2% of Cat. 1-8	
	MOBILIZATION	1	LS	10,500.00	10,500.00	6% of Cat. 1-8	
	CLEARING AND GRUBBING	0.10	AC	5,000.00	500.00		
2	GRADING						0.00
3	DRAINAGE	15%	[% OF CAT 2,4,5,6] + Items below				31,000.00
5	PAVING						123,910.00
	SURFACE	188	TON	85.00	15,980.00		
	HOT MIX ASPHALT SUPERPAVE 19.0mm FOR BASE	20	TON	75.00	1,500.00		
	8 INCH GRADED AGGREGATE BASE COURSE	1,593	SY	10.00	15,930.00		
	STANDARD MILLING ASPHALT PAVEMENT OVER 1 INCH TO 2.5 INCH DEPTH	1,550	SY	1.00	1,550.00		
	12 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	520	LF	5.00	2,600.00		
	24 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	35	LF	10.00	350.00		
	Green Paint	4,300	SF	20.00	86,000.00		
6	SHOULDER						13,825.00
	Concrete Curb and Gutter	195	LF	35.00	6,825.00		
	5" Concrete Sidewalk	700	SF	10.00	7,000.00		
7	LANDSCAPING	12%	[% OF CAT 2,4,5,6] + Items below				19,490.00
	Furnish and Install Topsoil	70	SY	5.00	350		
	Turfgrass Establishment	70	SY	2.00	140		
8	TRAFFIC AND UTILITIES	15%	[% OF CAT 2,4,5,6] + Items below				26,350.000
	Relocate Existing Ground Mounted Signs	14	SF	25	350		
	Sheet Aluminum Signs	50	SF	40	2,000		
	SUBTOTAL OF CATEGORIES 2,4, 5,6						183,735.00
	SUBTOTAL ROADWAY COST						260,575.00
	CONTINGENCY [%]			40%			104,230.00
	SUBTOTAL- NEAT CONSTRUCTION						$365,000.00
	OVERHEAD AND ADMIN			14.4%			$52,560.00
	TOTAL PROJECT COST						$417,560.00

Notes:

1. Cost estimate does not include Right-of-Way costs, if needed

Potentially 0.01 acres of Fee

MAJOR COST ESTIMATE: US 13 BUS AT KAY AVENUE

DATE:	12/14/2022	PROJECT #:	
JOB DESCRP:	SWMPO US 13 Business Ped Cyclist Plan Kay Ave	COUNTY:	Wicomico
IMPROV TYPE:	Pedestrian and Bicycle Upgrades		
TYPICAL SEC:	4-Lane Divided	PRJ LENGTH:	0.07 Miles
PREPARED BY:	ROSSI GROUP	DIVISION:	MDOT SHA- OFFICE OF HIGHWAY DEVELEOPMENT

1	PRELIMINARY		[CAT 1]				50,000.00
	TYPE B ENGINEERS OFFICE	1	LS	20,000.00	20,000.00		
	MAINTENANCE OF TRAFFIC	1	LS	13,500.00	13,500.00	8% of Cat. 2-8	
	CONSTRUCTION STAKEOUT	1	LS	4,000.00	4,000.00	2% of Cat. 1-8	
	MOBILIZATION	1	LS	12,000.00	12,000.00	6% of Cat. 1-8	
	CLEARING AND GRUBBING	0.10	AC	5,000.00	500.00		
2	GRADING						0.00
3	DRAINAGE	15%	[% OF CAT 2,4,5,6] + Items below				37,000.00
5	PAVING						2,470.00
	SURFACE	3	TON	85.00	255.00		
	HOT MIX ASPHALT SUPERPAVE 19.0mm FOR BASE	11	TON	75.00	825.00		
	8 INCH GRADED AGGREGATE BASE COURSE	23	SY	10.00	230.00		
	12 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	232	LF	5.00	1,160.00		
6	SHOULDER						14,700.00
	Concrete Curb and Gutter	100	LF	35.00	3,500.00		
	Concrete Curb	90	LF	30.00	2,700.00		
	5" Concrete Sidewalk	850	SF	10.00	8,500.00		
7	LANDSCAPING	12%	[% OF CAT 2,4,5,6] + Items below				5,175.00
	Furnish and Install Topsoil	25	SY	5.00	125		
	Turfgrass Establishment	25	SY	2.00	50		
8	TRAFFIC AND UTILITIES	15%	[% OF CAT 2,4,5,6] + Items below				157,600.000
	HAWK Intersection Upgrades	1	LS	150000	150,000		
	Sheet Aluminum Signs	40	SF	40	1,600		
	SUBTOTAL OF CATEGORIES 2,4, 5,6						67,170.00
	SUBTOTAL ROADWAY COST						266,945.00
	CONTINGENCY [%]			40%			106,778.00
	SUBTOTAL- NEAT CONSTRUCTION						$374,000.00
	OVERHEAD AND ADMIN			14.4%			$53,856.00
	TOTAL PROJECT COST						$427,856.00

Notes:

1. Cost estimate does not include Right-of-Way costs, if needed

MAJOR COST ESTIMATE: US ROUTE 13 BUSINESS FROM W COLLEGE AVE TO KAY AVE

DATE:	12/14/2022	PROJECT #:	
JOB DESCRP:	SWMPO US 13 Business Ped Cyclist Plan US 13 Bike Lanes	COUNTY:	Wicomico
IMPROV TYPE:	Pedestrian and Bicycle Upgrades		
TYPICAL SEC:	4-Lane Divided	PRJ LENGTH:	0.9 Miles
PREPARED BY:	ROSSI GROUP	DIVISION:	MDOT SHA- OFFICE OF HIGHWAY DEVELEOPMENT

1	PRELIMINARY		[CAT 1]					99,000.00
	TYPE B ENGINEERS OFFICE	1	LS		20,000.00	20,000.00		
	MAINTENANCE OF TRAFFIC	1	LS		39,000.00	39,000.00	8% of Cat. 2-8	
	CONSTRUCTION STAKEOUT	1	LS		10,000.00	10,000.00	2% of Cat. 1-8	
	MOBILIZATION	1	LS		30,000.00	30,000.00	6% of Cat. 1-8	
2	GRADING							0.00
3	DRAINAGE							0.00
5	PAVING							456,000.00
	5 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS	8,000	LF		2.00	16,000.00		
	WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LEGENDS AND SYMBOLS	1,000	SF		20.00	20,000.00		
	Green Bicycle Lane Paint	21,000	SF		20.00	420,000.00		
6	SHOULDER							0.00
7	LANDSCAPING							0.00
8	TRAFFIC AND UTILITIES	15%	[% OF CAT 2,4,5,6] + Items below					100,100.000
	Signal Modifications	1	EA.		25000	25,000		
	Sheet Aluminum Signs	90	SF		40	3,600		
	SUBTOTAL OF CATEGORIES 2,4, 5,6							555,000.00
	SUBTOTAL ROADWAY COST							655,100.00
	CONTINGENCY [%]			40%				262,040.00
	SUBTOTAL- NEAT CONSTRUCTION							$918,000.00
	OVERHEAD AND ADMIN			14.4%				$132,192.00
	TOTAL PROJECT COST							$1,050,192.00

Appendix C – MDOT SHA Comments

Concepts Guide: District 1 MDOT SHA Responses below in **red**.

- 01_Bateman Street: N/S ped signals and crossing; mid-block enhanced crossing possibly with ped signage; enhanced signage for pedestrians esp. at Hardee's and dedicated red lane for enhanced pedestrian visibility; access management: closed first 2 entrances to Pat's Pizzeria

  Although we support the pedestrian crossing on Bateman locally, this design will need to be reviewed and approved by the Office of Traffic and Safety (OOTS). Supporting documentation will need to be provided (e.g. study, counts, signal warrant analysis) and, if approved, a signal plan will have to be submitted, reviewed, and approved by OOTS.

  Additionally, we highly support the closure of the 2 accesses on Bateman, and we would strongly encourage that consideration be given to the closure of the access closest to the intersection on US 13, just north of Bateman.

  If approval is provided, funding will need to be identified through discussions between the City of Salisbury and the MDOT SHA.

- 01_Pine Bluff: signalized pedestrian crossing installed along North and West side of Pine Bluff & 13 intersection; sidewalks installed along Pine Bluff Road to Wesley Drive and new proposed student housing

  District Traffic has no immediate objections to this design as proposed; however, the proposed design will need to be reviewed and approved by our District 1 Office and by the Office of Traffic and Safety (OOTS). Supporting documentation will need to be provided (e.g. study, counts, signal warrant analysis) to justify the modification and, if approved, a signal plan will have to be submitted, reviewed, and approved by OOTS.

  Additionally, the design will need to accommodate for the mast arm foundation in the median. Drainage will also need to be considered in the median.

  If approval is provided, funding will need to be identified through discussions between the City of Salisbury and the MDOT SHA.

  Question: Will there be push buttons in the median to maintain consistency with Dogwood?

- 01_Dogwood Drive: N/S ped signals added, addition of striping across northern crosswalk (continental style crossing) red pedestrian pathway designated across Cheers property for increased visibility

  District Traffic has no immediate objections to the signalized crossing spanning Dogwood as proposed; however, the proposed design will need to be reviewed and approved by our District 1 Office and by the Office of Traffic and Safety (OOTS). Supporting documentation will need to be provided (e.g. study, counts, signal warrant analysis) to justify the modification and, if approved, a signal plan will have to be submitted, reviewed, and approved by OOTS.

  The District opposes the signalized pedestrian crossing at the Autozone access. The number of inbound/outbound trips for this development do not warrant the necessity for a signalized crossing. However, the District does support the continental crosswalk as proposed.

  If approval is provided, funding will need to be identified through discussions between the City of Salisbury and the MDOT SHA.

- 02_Dogwood Drive: high-level concept of pedestrian tunnel crossing north of Dogwood Drive; sidewalks installed to move pedestrians from 13 to facility and crosswalks to connect to campus

  A more comprehensive proposal will need to be submitted to the District Office with regard to this project, so our office can better determine the full impacts to our right of way. When a more comprehensive submission is received, we will offer preliminary comments.

- 01_Wesley Drive: Dedicated 10’ multimodal path down the center of Wesley Drive, with a 2.5’ buffer from traffic, parking removed to maintain 11’ travel lanes; enhanced crosswalks along Dogwood Drive and new crosswalk crossing Pine Bluff Road with associated signage

  This proposal is outside of the jurisdictional authority of MDOT SHA.

- 01_College Ave: Eliminated free right turn from College Ave SB onto US 13 and Eastbound from US 13 onto W College Ave, enhanced crosswalk striping to feature continental style, pedestrian signals moved from floating islands to all corners; southern crosswalk added.

  MDOT SHA is not in favor of the elimination of the free right movement. An alternative design will need to be submitted/approved, which will safely mitigate pedestrian impacts, while continuing to maintain operational integrity.

  Additional Note: Our office is currently moving forward with a study to determine the feasibility of providing pedestrian signals on the on the east, west, and south legs of the intersection. Once we obtain the results of the study and have time to

make an evaluation based on the results locally, our District Office will determine a path forward.

- 02_College Ave: high-level concept of pedestrian bridge over the southern crossing of US 13, sidewalks connections added

  A more comprehensive proposal will need to be submitted to the District Office with regard to this project, so our office can better determine the full impacts to our right of way. When a more comprehensive submission is received, we will offer preliminary comments.

  Additional Note: This project will be subject to review/approval by the Office of Structures.

- 01_Kay Ave: Hawk style signals installed with continental crossings to connect US 13 and multi-use path/rail trail at southern edge of study area

  A HAWK signal is not approved for this crossing. HAWK signals are only permitted at mid-block crossing. We also have significant safety concerns with a HAWK or an RRFB in a 45 mph zone.

  Additional Note: Based on a realignment of the shared-use trail on the east side of US 13 northbound (as part of a recent plan we received from the City of Salisbury for the proposed Rail Trail), the alignment of the proposed crossing will not maintain connectivity to the pedestrian/bicycle network.

- Bike and Turns Pkg: greater separation of thru traffic from right turns; green thermoplastic treatment for dedicated bicycle lanes; increased bicycle signage; for concept plans, enhanced white lines were drawn in black on top of a light gray background, these lines are intended to be white when installed.

  Confirm lane widths. Sharrows can only be used in lanes 13’ – 15’.

  Right only lanes need to be considered carefully. A more detailed evaluation needs to be provided before these changes are approved. If right turn only lanes are approved, the lanes will need to meet current MD MUTCD Standards for bicycle lanes. Please see the attachment.

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