



# **SALISBURY RAILS WITH TRAILS MASTER PLAN**

August 2018





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# ACKNOWLEDGEMENTS



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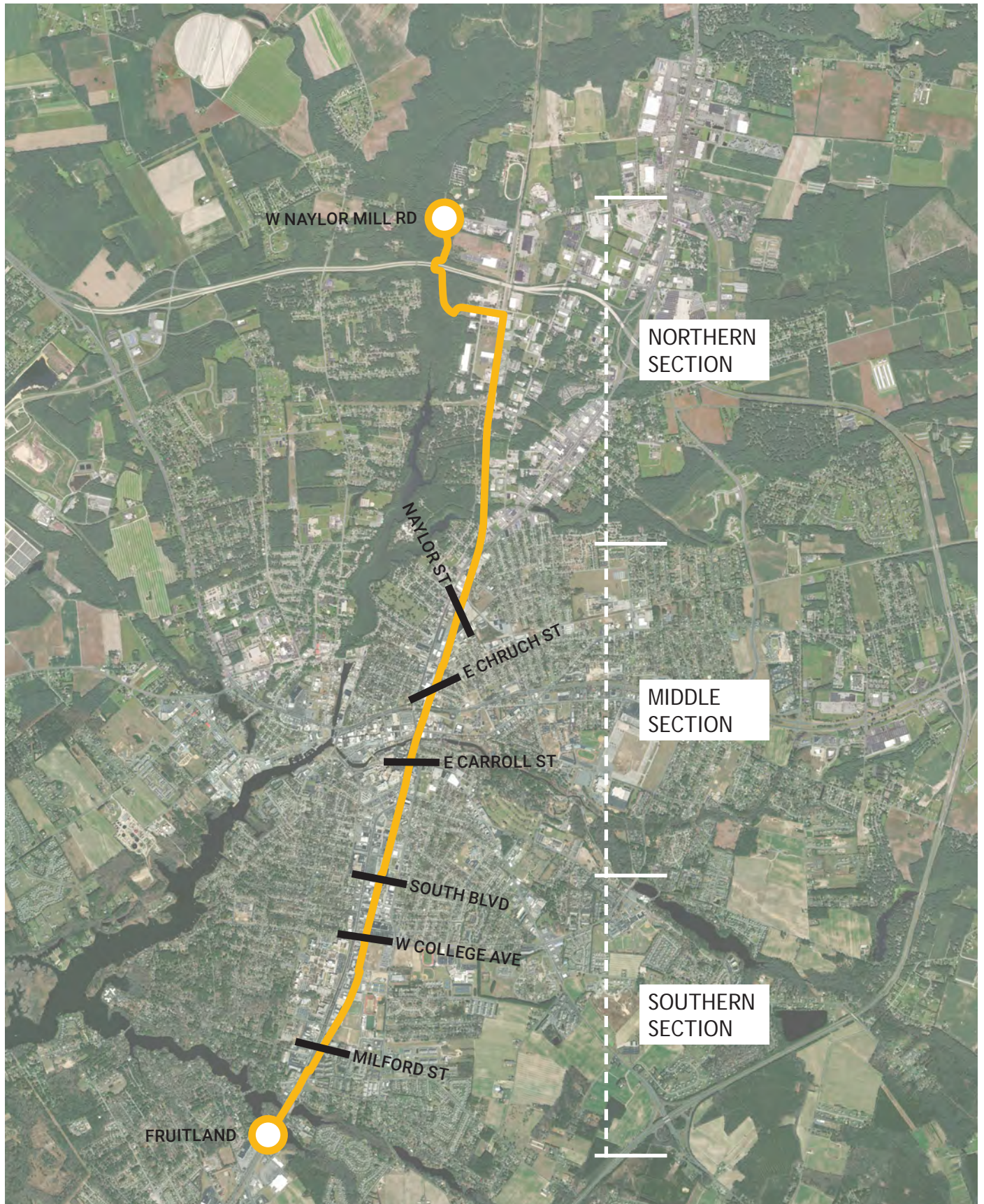


Figure 1. The proposed 5.75-mile-long trail runs south-north and connects a number of crucial recreational and institutional destinations.

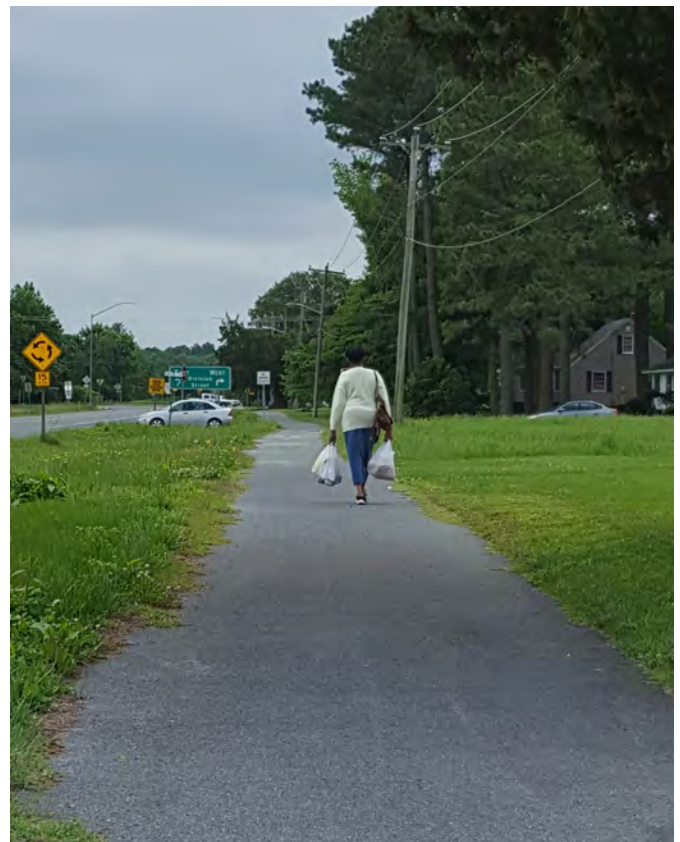


# Introduction

The City of Salisbury 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 planned trail is 5.75 miles running between the City of Fruitland (southern end) and West Naylor Mill Road (northern end). Key to the trail's success is its alignment through downtown Salisbury and connections to the newly completed Riverwalk, a major focus of the City's trail system.

The trail is an important part of the City of Salisbury's transformation. In a few short years, Salisbury has reinvented itself to become one of Maryland's most progressive cities, intent on building a vibrant multimodal transportation network. Salisbury's expanded bicycle master plan, current bicycle network, and supporting policies and programs have earned it recognition as the Eastern Shore's first Bicycle Friendly Community.<sup>1</sup> The City's bicycle network capitalizes on existing infrastructure such as quiet residential streets, established park trails and reallocating space on wider roads for bicycle lanes, typically known as a road diet. The recent launch of a dockless bike share program at Salisbury University represents another milestone for the city.<sup>2</sup> The proposed trail addresses a key missing piece to the city's existing trail network: a comfortable, safe, and centrally-located trail that serves both recreation and transportation purposes.



<sup>1</sup> <http://www.bikeleague.org/community>

<sup>2</sup> <http://www.salisbury.edu/news/article/SU-Launches-New-Bike-Share-Program>

## Background and Purpose

This Master Plan document is a comprehensive look at the trail and its implementation. The Master Plan includes a recommended and alternative alignment, an assessment of existing conditions for both alignments, offers connections to key destinations along the trail, and identifies the trail design and configuration as it travels through the city. It builds on the City's 2017 Bike Network Plan, which identifies the trail as a high priority segment.<sup>3</sup>

The Master Plan document also includes design guidelines and planning level cost estimates, along with information on funding resources and an implementation sequence.

## How This Trail Benefits Salisbury

Trails have increasingly become valuable assets for communities. Cities, towns, villages and hamlets across the nation are building trails along stream valleys, active and abandoned railroad lines, and through central business districts and college campuses – all to benefit mobility, economic vitality, and community well-being.

The benefits of trails are well known. According to the Rails to Trails Conservancy, five key benefits are described in the table below.<sup>4</sup>






## Who Will the Trail Serve?

The proposed trail will connect existing and planned bicycle network, expanding the reach of both. There are three main trail sections, each of which will increase transportation and recreation opportunities for different residents, employers, and students (See Figure 1).

The *southern section* (Segments 1, 2 and 3) between South Boulevard and Fruitland Road serves Salisbury University housing, classrooms, and athletic fields.

The *middle section* (Segments 4 and 5) between North Salisbury Boulevard and South Boulevard will serve nearby residential neighborhoods, parks and schools, businesses, the riverfront, and downtown Salisbury; and

The *northern section* (Segment 7) between the Henry S. Parker Athletic Complex (at Naylor Mill Road) and N. Salisbury Boulevard provides a connection to the Henry S. Parker Athletic Complex. This section also serves the industrial businesses in the north.

Health	Transportation and Livability	Conservation and the Environment	Economy and Revitalization	Historic Preservation and Community Identity
The proposed alignment offers a low stress off-road trail facility. The relatively flat topography combined with destinations of interest and scenic beauty offers something for trail users of all abilities to enjoy.	The trail provides additional transportation options for students at Salisbury University and residents with limited transportation means.	Connection with the River Walk, Salisbury City Park, and the Zoo. The trail also presents opportunities for ornamental planting, vegetative screening, and bioretention facilities to enhance the streetscape character.	The trail is part of a broader plan for a strong city economy. Walkable and bicycle friendly communities attract new students to the University and new residents and businesses to the city.	The trail creates connections between Downtown Salisbury and the city's historic neighborhoods of Camden and Newton. It also revitalizes the Railroad Avenue Corridor and the shuttered historic Union Station.
				

3 reference Map 3-1 Page 31. [https://salisbury.md/wp-content/uploads/2017/05/SalisburyBikeNetworkPlan\\_Adopted\\_12122016.pdf](https://salisbury.md/wp-content/uploads/2017/05/SalisburyBikeNetworkPlan_Adopted_12122016.pdf)

4 From <https://www.railstotrails.org/experience-trails/benefits-of-trails/>



# Rails with Trail Master Plan Organization

The Rails with Trail Plan provides the City with options for a primary and alternative south/north trail alignment, including an implementation strategy, and 35% design plans for the trail's preferred primary alignment. This plan will guide the City's work going forward, providing guidance on the process of right-of-way acquisition, easement agreements, and funding needed to implement the trail. The Master Plan document also includes design guidelines and planning level cost estimates, along with information on funding resources and implementation sequence.

The plan is organized as follows:

## Chapter 1- Rails With Trails

This chapter takes a look at common issues and trends regarding rails with trails development, including national statistics, liability, safety and design issues, and local experience.

## Chapter 2- Primary and Alternative Alignment

This chapter provides an illustrative overview of each of the seven trail segments, including photos of existing conditions and a bulleted list of typical design improvements. It also includes a before and after rendering of the trail segment and a list of pros and cons that helped established the chosen primary alignment. For an in-depth assessment of each trail segment including existing conditions, primary and alternative alignments, opportunities and constraints, property impacts and a planning level cost estimate, refer to the Segment Description section in the appendices.

## Chapter 3 - Design Standards and Wayfinding

This chapter provides design standards based on eight national or state publications for trail design. Elements covered are width, surface material, clearance and buffers, intersections and crossings, signage, and trail amenities and furnishing. Signage design standards are based on the City of Salisbury standards.

## Chapter 4 - Funding Opportunities

This chapter provides an overview of funding opportunities for various aspects of the trail design and trail location. The chapter includes a table with potential funding forces for each segment

## Chapter 5 - Design Implementation, and Next Steps.

This chapter lays out a recommended sequence and prioritization for building the trail,

## Conclusion

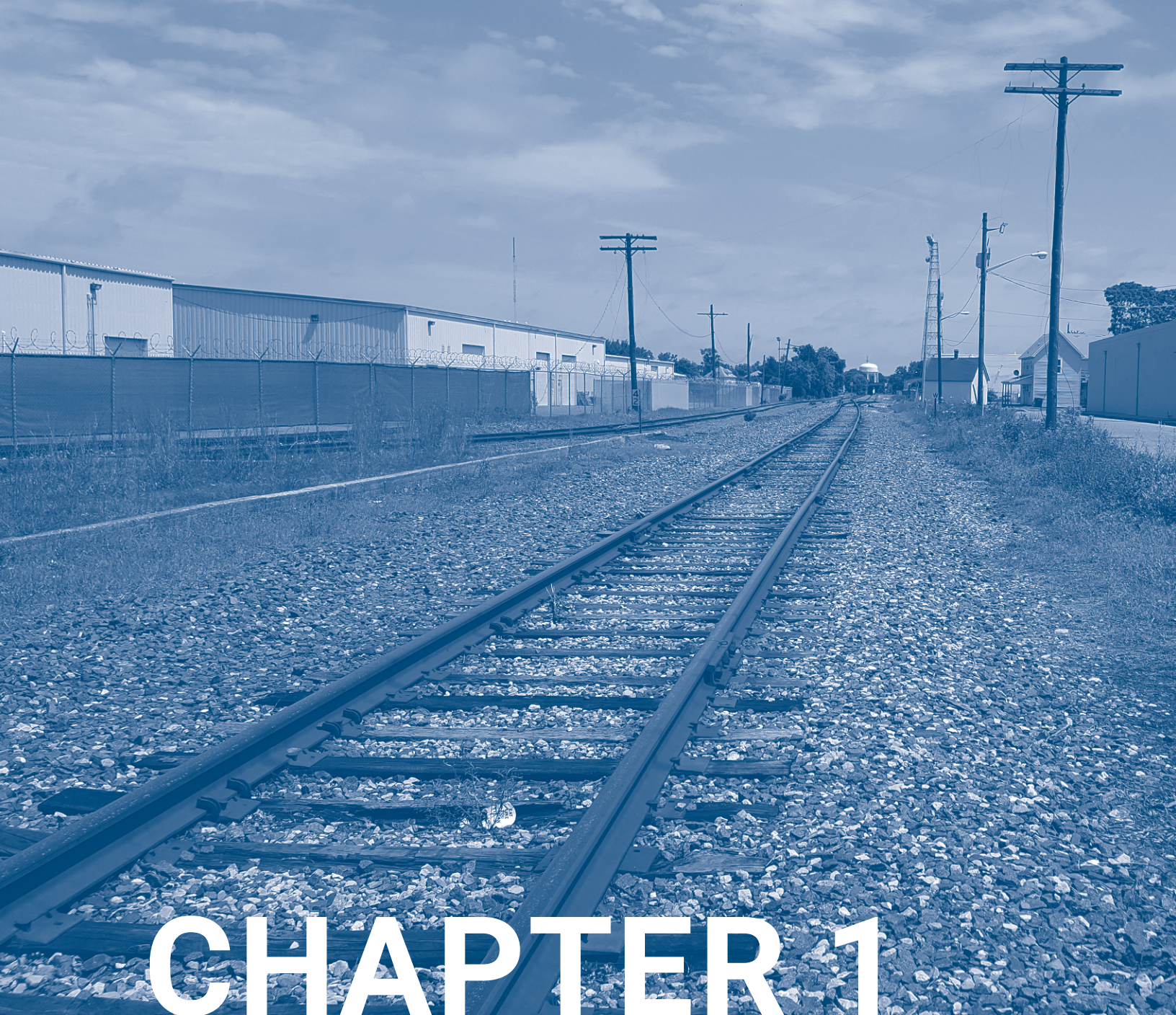
## Appendices

The appendices provides supporting information on individual chapters, including maps, tables and reports, images and design plans.



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# CHAPTER 1

## RAILS WITH TRAILS



# Rails With Trails

## Overview

Whether commuting by train or walking alongside the tracks, people have long enjoyed utilizing railroad corridors for travel. Rail corridors, by design, are relatively flat and offer direct connections to destinations within and between populated areas. As abandoned or unused railroad tracks became trails (i.e., rails to trails), a variety of trail users (hikers, cyclists, equestrians, in-line skaters, and more) and nearby communities have benefited.

Table 1.1: Rails-with-Trails in the United States

Date	Total Rail Length (mi)	Percent Parallel to Active Rail Line (mi)	# of States With Rails-with-Trails
1996	299	51%	N/A
2000	523	46%	20
2013 (88 trails)	820	39%	33
2013 Total	1,397	39%	41

In addition to developing trails on abandoned rail lines, communities have worked successfully with railroad companies to build trails along active rail lines and within the right-of-way (ROW). According to a 2013 report by the Rails-to-Trails Conservancy, there are as many as 161 rails with trails in 41 states, and another 60 in some stage of development. The total mileage of rails with trails has increased from 523 miles in 2000 to 1,397 in 2013 (see Table 1.1).<sup>5</sup>

According to a 2000 FHWA study on rails with trails, “some publicly owned railroad agencies allow, even encourage RWT projects on their properties.”<sup>6</sup> Examples include the State of Maine, Orange County Transportation Authority (OCTA), and Vermont Central Railway Railroad.”<sup>7</sup> Companies that are reluctant to allow trails along tracks do so for several reasons, including the need to preserve expansion options, liability related to safety impacts, and concerns regarding trespassing. Companies that agree to accommodate trails within their right-of-way or parallel to tracks establish guidelines for doing so, and consider each project on its merits. These guidelines focus on safety, maintenance, and operations. For example, the Wheeling Corporation based in

Brewster, OH (serving Ohio, West Virginia and Pennsylvania) will only consider a trail along a low-frequency, low-speed operation and requires certain isolation between the trail and tracks, including barriers. The company also requires the trail operators to pay for insurance, all improvements, and security.<sup>8</sup>

The experience on active rails-with-trails over many years demonstrates that trails along railroad tracks can benefit the railroad company. These benefits include reduced liability costs, financial compensation, and fewer problems such as petty crime and dumping. The natural surveillance, a design strategy aimed at “keeping intruders under observation... [and]...providing ample opportunity for legitimate users, engaged in their normal activities to observe the space around them,” contributes to the last benefit.<sup>9</sup>

## PUBLIC v. PRIVATE BENEFITS

Class I railroads, however, consider their property to be a very important tangible resource. They commonly reserve corridor property for future potential capacity expansion and, for the most part, remain firm in their intent to retain full ownership and control of their infrastructure. Any public agency considering studying the feasibility of an RWT first must start with the assumption that railroads are profit-making enterprises with a strong fiduciary responsibility to their shareholders. Since large railroads are publicly-held corporations, their shareholder base includes millions of Americans with investments in mutual funds and retirement programs. While on occasion they may “donate” items to the public, for the most part they do not expect to part with their assets for free.

Source: Rails-with-Trails: Lessons Learned. Literature Review, Current Practices, Conclusions, page 49

5 America's Rails-with-Trails: A Resource for Planners, Agencies and Advocates on Trails along Active Railroad Corridors, September 2013, Rails-to-Trails Conservancy, page 6.

6 The study is currently being updated, given that trails in 2000 numbered 61 and today they have grown to 161 open with 60 in various stages of development.

7 Rails-with-Trails: Lessons Learned; Literature Review, Current Practices, Conclusions. <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/RailsWithTrails.pdf>

8 IBID

9 St. Petersburg, FL Police Department Crime Prevention brochure on CEPTED. <https://police.stpete.org/crime-prevention/brochures/cepted-brochure.pdf>

## Liability, Safety, and Design

Railroads considering whether to allow trails along active rail lines have a number of important items to consider that affect operations, including their liability for what occurs on the trail, what types of safety measures would be needed, and how to design the trail with adequate separation from the tracks.

### Liability

A railroad company's concern regarding liability is primarily the extent to which it would be held responsible for harm to people or property. Companies "... weigh and balance three factors: (1) the extent, if any, to which the RWT will elevate the railroad's duty of care to any particular individual; (2) the potential increased scope of the railroad's liability; and (3) the increased or decreased likelihood of an injury occurring as a result of the RWT."

### Specific Liability Concerns Include

- » Trail users may not be considered trespassers if a railroad intentionally invites and permits trail use within a portion of their right-of-way, and that the railroad would therefore owe a higher duty of care to trail users than they would otherwise owe to persons trespassing on their corridor.
- » Incidents of trespassing and injuries to trespassers may occur with greater frequency due to the proximity of a trail.
- » Trail users may be injured by railroad activities, such as an object falling or protruding from a train, hazardous materials, or by a derailment.
- » Injured trail users might sue railroad companies even if the injury is unrelated to railroad operations, causing railroads to incur legal fees, court costs, and potential judgments for damages. Railroads have in the past borne the burden of litigation for many incidents on their property, even for crashes with at-fault automobile drivers who have blatantly ignored obvious warning systems. Further, Class I railroads can be considered to have deep financial pockets and thus may be more of a target.<sup>10</sup>

## Potential Solutions

Railroad company liability can be reduced in several ways, such as through **maintenance agreements** and agreements requiring designs that include specific ways to reduce rail access such as **fencing** (especially if it is erected and maintained in perpetuity) and **landscaping and crossing design**.<sup>11</sup> In many circumstances, a local jurisdiction will take on this responsibility. Further, some states have strengthened their Recreational Use Statute in order to lessen the liability for such facilities. The Maryland Recreational Use Statute governs and provides more information on this.<sup>12</sup> Other conditions that may persuade a railroad company to allow a trail adjacent to their active rail line includes their ability to sell the property to a trail owner or operator; there are no new at-grade crossings, and existing crossings be equipped with appropriate crossing devices paid for by the trail owner.<sup>13</sup>

<sup>10</sup> <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/RailsWithTrails.pdf>, pages 40-41.

<sup>11</sup> Rails-with-Trails: Lessons Learned Literature Review, Current Practices, Conclusions, page 49; and the last one from Rails with Trails: Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines, November 2000, page 10.

<sup>12</sup> [https://www.americanwhitewater.org/resources/repository/Maryland\\_Recreational\\_Use\\_Statute.htm](https://www.americanwhitewater.org/resources/repository/Maryland_Recreational_Use_Statute.htm)

<sup>13</sup> <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/RailsWithTrails.pdf>, pages 28-29.

## Safety and Design

The concern by railroad companies about safety and design is real, given the annual rate of fatalities along railroad corridors. The Federal Railroad Administration (FRA) report data shows a decline in annual fatalities along railroad lines since the 1976 peak of 1,516. "These numbers include people who cross tracks by foot or in vehicles, . . . as well as those who use tracks to walk to a destination." Since the decline in deaths is occurring concurrently with the increase in rail-with-trail, it may be the case that "interventions like rail-with-trail accommodations and improved crossing infrastructure are having a positive safety impact" for railroads and trail users.<sup>14</sup> Since 1992, only one of these fatalities involved a trail user on a rail-with-trail. The trail user did not slow or attempt to stop at a track crossing outfitted with recognizable safety signage. As a result of the rail and trail crossing design, neither the railroad nor the trail manager were found liable in this case.<sup>15</sup>

FHWA's Report, *Rails-with-Trails: Lessons Learned, Section V: Design*, provides information on design guidelines and standards in use based on research and interviews with railroad officials, trail managers, and law enforcement officials, among others.<sup>16</sup>

Elements of rails-with-trails design are based on three inter-related factors: setbacks, separation, and barriers.

- » Trail setbacks from the railroad tracks help create separate space for trains on the tracks and people on the trail. A recommended setback on low density/low speed branch lines, like the one through Salisbury, is 25 feet (or more) and 11 feet in constrained areas with a fence or other separation technique (see Table 1.2).
- » The setback is augmented by one of two types of separation, horizontal, which is a greater distance between the track and trail, and vertical, which is a change in grade between the tracks and trail.
- » Incorporating a physical barrier, such as trees or fences, reduces encroachment onto the tracks and improves overall safety.

These safety elements can be incorporated into trail design in urban and suburban settings similar to Salisbury, MD (see the three examples to the right).



Figure 1.1. Setback between existing trail and Norfolk Southern tracks, Salisbury MD



Figure 1.2. Separation (vertical) between Willamette River Trail and Amtrak line, Portland OR.



Figure 1.3. Barrier between the Downtown Lakewalk Trail and tracks, Duluth, MN.

<sup>14</sup> America's Rails-with-Trails: A Resource for Planners, Agencies and Advocates on Trails along Active Railroad Corridors, September 2013, Rails-to-Trails Conservancy, page 12.

<sup>15</sup> IBID

<sup>16</sup> Rails-with-Trails: Lessons Learned; Literature Review, Current Practices, Conclusions. [https://www.fhwa.dot.gov/environment/recreational\\_trails/publications/rwt/page19.cfm#s5a](https://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt/page19.cfm#s5a) , Section V: Design



Design minimums for setback, separation, and barriers are based on the dynamic envelope, which identifies the clearance width required for a train's safe operation, taking into account its cargo overhang, sway, and/or suspension failure (see Figure 1.4 below). The *Vermont Department of Transportation's Pedestrian and Bicycle Facility Planning and Design Manual* includes a table showing minimum separation from active rail lines (see Table 1.2).<sup>17</sup>

The accompanying design cross-sections incorporate various separation and barrier configurations (see Figures 1.5, 1.6, 1.7). Separation techniques vary and depend upon the context, including topography, amount of space, and adjacent land use.

Table 1.2: Minimum Separation from Active Rail Line

<b>High density/high speed lines:</b> (11 or more trains per day, maximum speed over 72 km/h (45 m/h))	Recommended: 7.6 m (25 ft) or more, with fence or other separation technique Minimum: 4.6 m (15 ft), with solid-type barrier
In constrained areas, e.g., cut/fill, bridges, trestles	Minimum: 4.6 m (15 ft), with fence or other separation technique
With vertical separation or 3 m (10 ft)	Minimum: 6 m (20 ft)
<b>Medium density/medium speed lines:</b> (less than 11 trains per day, maximum speed 72 km/h (45 m/h))	Recommended: 7.6 m (25 ft) or more, Minimum: 4.6 m (15 ft), with adequate separation technique
In constrained areas, e.g., cut/fill, bridges, trestles	Minimum: 3.3 m (11 ft), with fence or other separation technique
Extensive history of trespassing (>100 persons per day)	Minimum: 3.3 m (11 ft), with fence or other separation technique
<b>Low density/low speed branchlines:</b> (less than one train per day, maximum speed 56 km/h (35 m/h))	Recommended: 7.6 m (25 ft) or more, Minimum: 3.3 m (11 ft) (RWT to serve as maintenance access)
In constrained areas, e.g., cut/fill, bridges, trestles	Minimum: 3.3 m (11 ft), with fence or other separation technique

Source: Rail-with-Trails: Lessons Learned – Draft; Table 5.2 Minimum Setbacks with modifications by VTrans Rail Division.

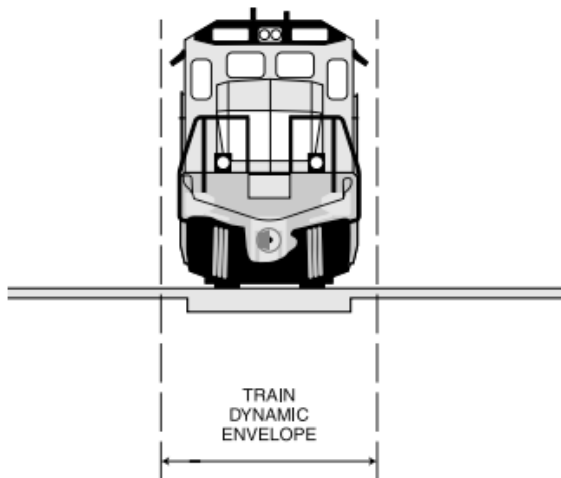


Figure 1.4. Dynamic envelope delineation

Source: MUTCD Fig. 8A-1 (Note: no dimensions given in MUTCD)

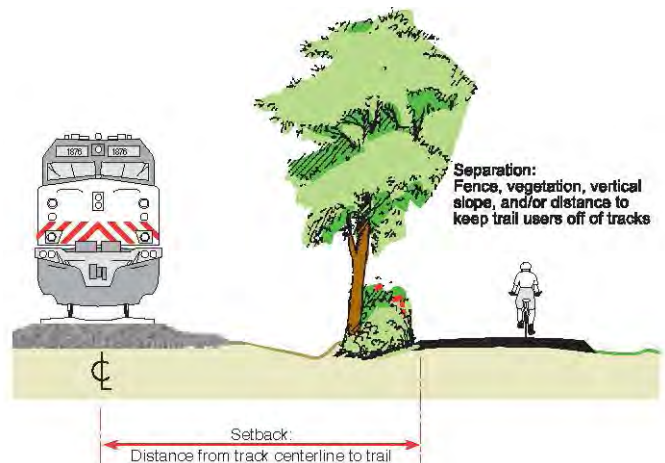


Figure 1.5. Setback and separation definition.

Source: Rails-with-Trails: Lessons Learned. Figure 5.6

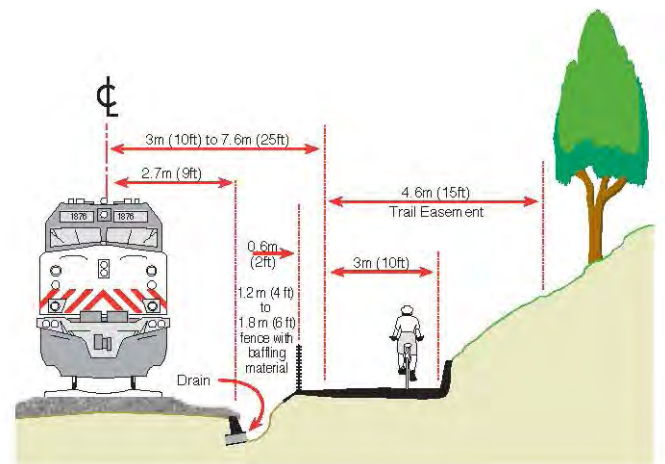


Figure 1.6. Minimum RWT setback - constrained sections (depending on situation).

Source: Rails-with-Trails: Lessons Learned. Figure 5.13

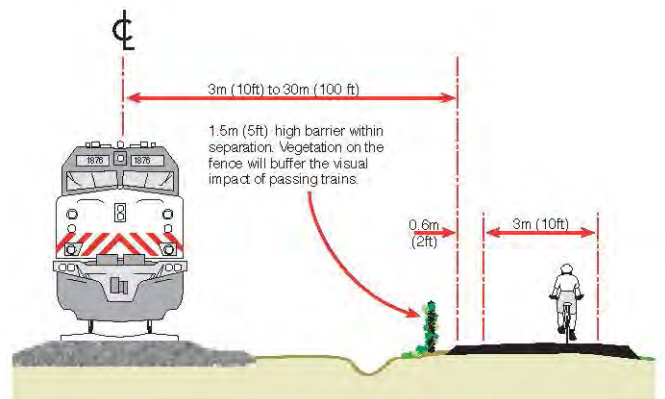


Figure 1.7. Minimum RWT setback depends on specific situations.

Source: Rails-with-Trails: Lessons Learned. Figure 5.10

<sup>17</sup> <http://vtrans.vermont.gov/sites/aot/files/highway/documents/publications/PedestrianandBicycleFacilityDesignManual.pdf>, page 6-13.

## Rails with Trails: Norfolk Southern Policy and Experience

### About Norfolk Southern

Norfolk Southern is a Class I railroad, which means its annual gross operating revenue exceeds \$467 million (2013 dollars). Norfolk Southern owns the north-south rail line traveling through Salisbury, ending in Hallwood, Virginia. While Delmarva Central Railroad Co is leasing the tracks from Norfolk Southern, Norfolk Southern retains control over adjacent use of the ROW, such a trail. The tracks generally parallel State Route 50 in Salisbury, which becomes a major commercial boulevard, connecting travels within the City and with destinations north and south of the City. In addition, US-13 Bus. and a number of local roads are next to the tracks, coming as close as 8 feet in some locations. Examples of locations where the existing road or trail are within 25 feet of the track (centerline) are:

- » East Railroad Avenue – 22 feet from centerline of the track to the edge of road.
- » Evolution Brewery and Peninsula Cardiology at 400 Eastern Shore Drive - rear parking lots between 20 feet and 23 feet from the centerline of the track
- » Cross Street -- Vehicles parking within 8 feet from the centerline of the track
- » South Tower Drive – Vehicles parking within 17 feet from the centerline of the track
- » The existing trail south of Milford Street is approximately 40 feet from the centerline of the track with no vertical separation

According to city staff and local stakeholders, the close proximity between tracks and roads have been in existence for many years with little indication of trespassing or vandalism. However, establishing a trail with requisite set backs, separation and barriers would be an important strategy to mitigate safety and liability concerns for Norfolk Southern.



Figure 1.8. The track is close to existing residences and parked cars on East Railroad Avenue (looking south just beyond Baker Street).

## UNDERSTANDING IF THERE IS ROOM FOR A TRAIL

From a physical standpoint, railroad rights of way come in many shapes and sizes. They range in size, from as little as 25 feet wide up to 400 feet wide or more. Placement of the tracks within the right of way (ROW) as well as the corresponding, statutorily required safety margin will determine the width of that portion of the ROW that is required to support any operating railroad tracks and that the portion which can be put to another use. Any land not considered as part of the safety margin is considered excess ROW, with a potentially different HBU (Highest and Best Use). For a typical 100-foot ROW with a single operating track located in the center, the required minimum width is often an 8.5-foot safety clearance on either side of the centerline, or a total of 17 feet minimum width for the operating track. This leaves approximately 41.5 feet on either side of the track as potential excess ROW.

SOURCE: Railroad Right of Way: Appraising Public Utility Easements, Part II, John T. Schmick & Robert J. Strachota, Right of Way, March/April 2006, page 29.



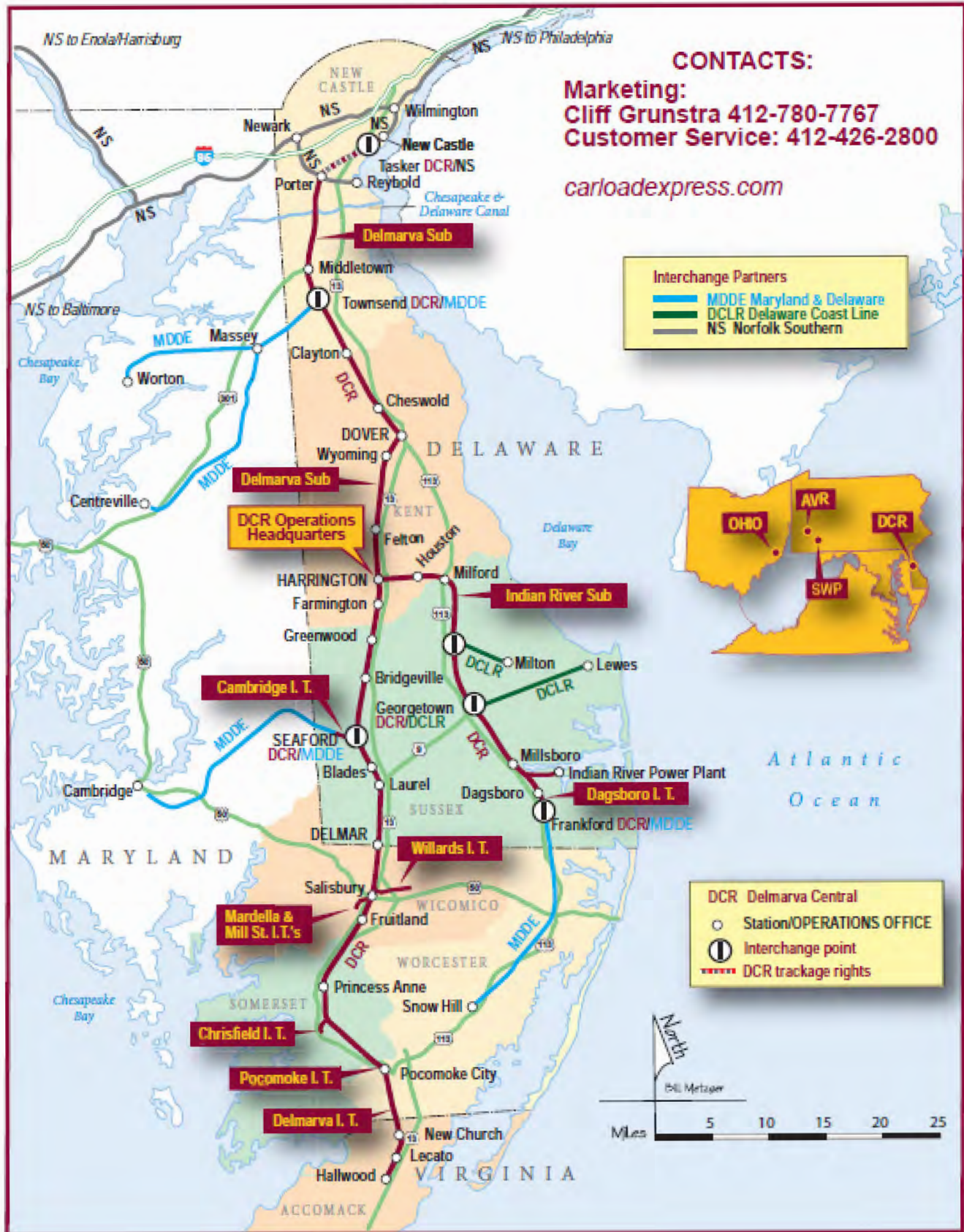





Figure 1.9. Delmarva Central Railroad operates through Salisbury, MD.

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.<sup>18</sup> See “Obtain Abandoned Track Right of Way” for more information.

The table below shows exceptions for the Norfolk Southern policy, as shown below. Each rail with trail has portions within or along Norfolk Southern property and has at least two things in common: (1) The trail largely generally travels away from the rail line and comes within the right-of-way by exception and for short distances; and (2) the trail placement and design conforms to a design with appropriate setbacks and vertical separation.

	<b>Columbus Riverwalk (Chattahoochee Trail)</b> Columbus, GA	The Columbus Riverwalk is approximately 25.7 km (16 mi) of trail adjacent to the Chattahoochee River from the Lake Oliver Walkway to Fort Benning. About 1.6 km (1 mi) of the trail is located on Norfolk Southern property. The tracks are leased by the Railtex/GATX/Georgia Southwestern Railroad Company. Freight trains are the primary users of the tracks and run infrequently, mostly in the spring when the river is high enough so barges can bring petroleum products up to the docks for further transport by rail. The trains travel at speeds less than 16 km/h (10 mi/h). The Consolidated Government of Columbus operates the trail. <sup>15</sup>
	<b>Doodle Trail</b> Pickens and Easley, South Carolina	In 2015, the cities of Easley and Pickens installed a 7.5-mile multi-use trail, following the old Pickens Railway. This wide, paved trail is mostly flat and allows walking, running, biking, rollerblading, and pets. The trail connects the two cities, running from downtown Pickens to the edge of Easley. Future expansions will bring the trail fully into the downtown areas of Easley and Pickens and will improve the trailheads and parking areas. A small portion of the trail travels within the Norfolk Southern right of way (see photo)
	<b>Schuylkill River Trail</b> Pennsylvania	About 2 miles of the trail located in Norristown PA is along Norfolk Southern Railroad property, with another 2 miles adjacent to a SEPTA commuter rail corridor. Approximately 20 freight and commuter trains travel the corridor per day, some at speeds up to 40 miles per hour. The trail is 10-12 feet wide. The width of the separation varies, but is as narrow as 10 feet from centerline in some places. A split-rail fence separates the trail and track where the distance is 10 feet. Officials believe the presence of trail users deters incidence of trespassing. Montgomery County owns and operates the trail easement.  The railroad was involved at the trail feasibility and design stages of planning and an easement agreement gave the railroad final approval of the design. Safety concerns were resolved when Norfolk Southern accepted designs for extra safety provisions for fencing and crossings. <sup>16</sup>

18 <http://www.nscorp.com/content/nscorp/en/about-ns/frequently-askedquestions.html>, Railroad Property, How Do I Obtain a Hiking or Biking Trail Along the Railroad?

19 Rails-with-Trails: Lessons Learned; Literature Review, Current Practices, Conclusions. [https://www.fhwa.dot.gov/environment/recreational\\_trails/publications/rwt/page19.cfm#s5a](https://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt/page19.cfm#s5a), page 15

20 Memorandum, to the River Plan Committee, North Reach (Portland, OR), September 18, 2007; and Rails-with-Trails: Lessons Learned; Literature Review, Current Practices, Conclusions. [https://www.fhwa.dot.gov/environment/recreational\\_trails/publications/rwt/page19.cfm#s5a](https://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt/page19.cfm#s5a)

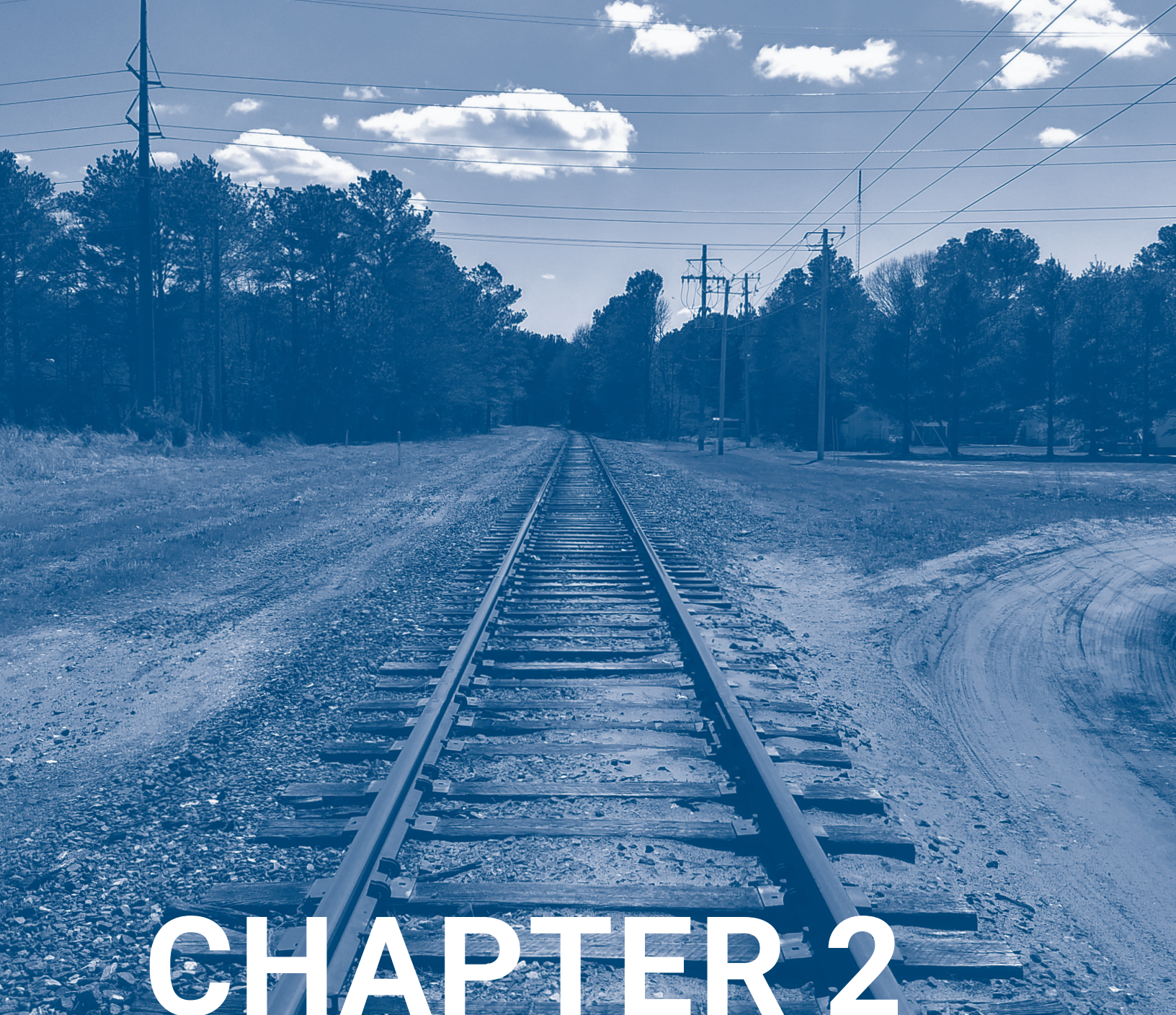


### Salisbury's Rail Trail and Norfolk Southern

The recommended Salisbury Rails with Trail alignment is respectful of the challenges and opportunities provided by the Norfolk Southern property. Every effort was made to work outside of the railroad right-of-way, finding the right balance for the trail both within the public right-of-way (including private land for which an easement would be sought) and within the railroad right-of-way. As a result, about half of the recommended alignment is within the railroad right-of-way. All of these locations meet the 25-foot minimum clearance from the track center line to the edge of trail; in most locations, the clearance exceeds 25 feet.

Understanding that reaching agreement with Norfolk Southern to build a portion of the trail within its right-of-way is not a given, this master plan includes an alternative alignment that does not require any of the railroad's property, save enhancements to existing railroad crossings. The alternative alignment uses a mix of public and private property, and locates the trail on the City's existing and planned on-road bicycle network. While not ideal, the alternative alignment would establish the desired north-south connection through Salisbury and connections to key destinations with the City.

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# CHAPTER 2

## PRIMARY & ALTERNATIVE ALIGNMENT





# Primary & Alternative Alignment

Through the development of this Master Plan, the City of Salisbury examined a primary and alternative alignment for the south-north trail connection from Fruitland in the South to West Naylor Mill Road in the North. The primary alignment for which 35% design plans were developed, follows the Norfolk Southern rail corridor, primarily uses City and State right-of-way, Norfolk Southern right-of-way, and private property. The alternative alignment uses the City streets network and private property. Each alignment offers a number of unique opportunities and challenges with differing accommodations for pedestrians and bicyclists.

The overall challenge of the primary alignment is that it will require a network of on road and off-road facilities to connect trail users with their ultimate destinations. While the trail completes a vital north south link, the 2017 Bicycle Network points to other facilities design and construction to realize the City of Salisbury’s long-term bicycle and pedestrian goals.

The railroad is a part of the Salisbury communities in which is travels through. Unlike portions of this line that travel through sparsely developed areas to the north and south, the railroad line is woven into residential and commercial areas, including Salisbury University. Thus, there is an overall gain from the primary trail alignment is that it takes full advantage of the existing railroad right-of-way in formalizing current pedestrian travel within the right of way. In addition to the trail’s impact on Norfolk Southern’s liability concerns, the primary trail alignment could increase safety for all users, and enhance the attractiveness of the City’s public space. A detailed description of funding opportunities is provided in Chapter 4 and Appendix D.

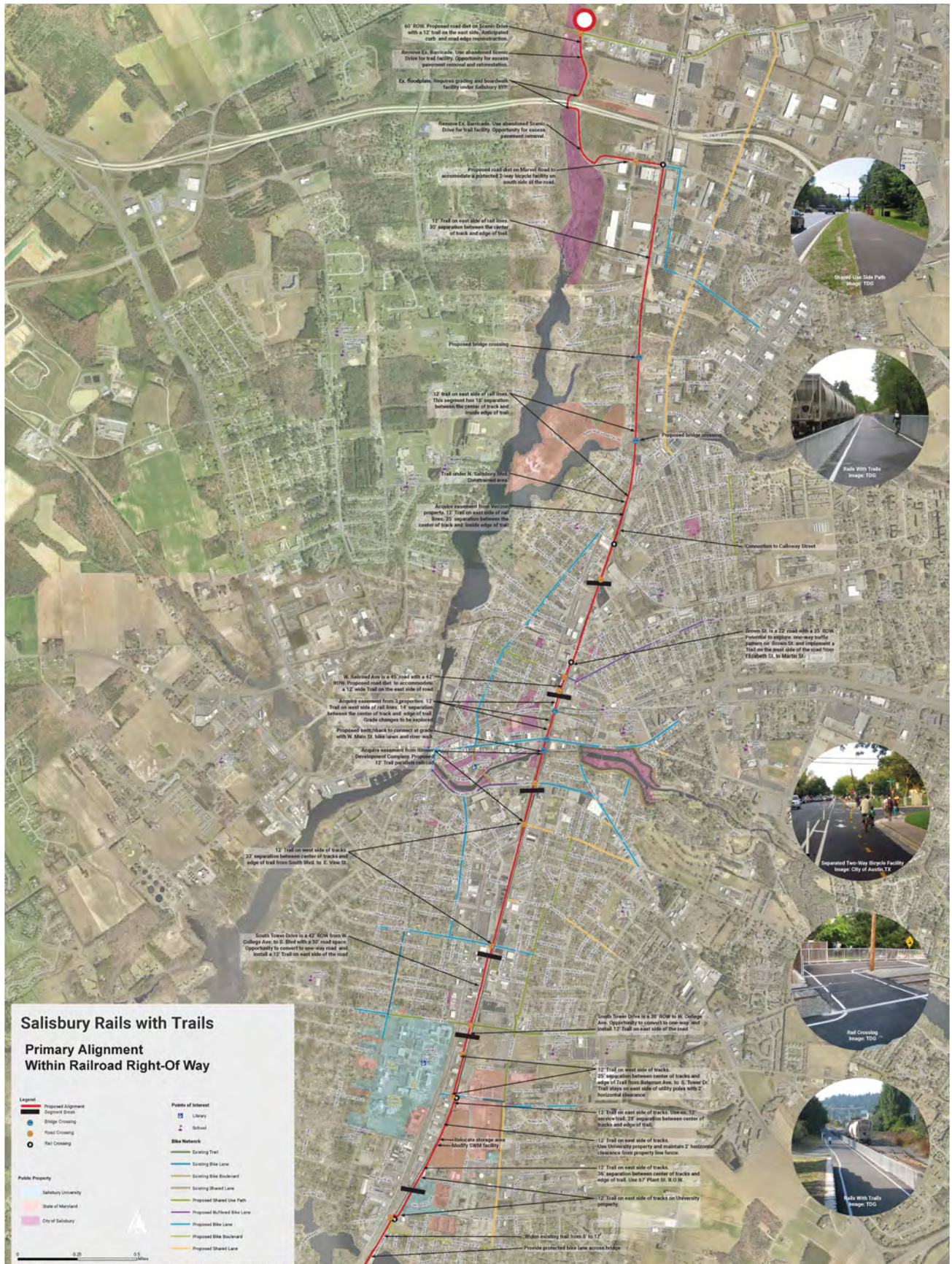


Figure 2.1. Primary alignment





Figure 2.2. Alternative alignment



# Segment 1, Fruitland to Milford Street

## Overview

Segment 1 begins at the City's most southern limits and extends along South Salisbury Boulevard, U.S. Route 13 Business (US-13 Bus.), from the City of Fruitland to Milford Street. The overall trail segment is approximately 0.6 miles in length. The main purpose of this trail segment is to extend the existing mile long 8-foot-wide asphalt trail from Fruitland to Salisbury University's southern border. A detailed description of the primary and alternative alignment, and 35% design plans and cost estimate for the primary alignment can be found in Appendix B and E.





## Proposed Primary and Alternative Alignment Highlights



- ① Existing Site Photo 1. View south along US-13 Bus. with the existing 8-foot-wide asphalt trail as it passes over the Morris Prong bridge

- A. Expand the existing 8-foot-wide trail to 12 feet.
- B. A vertical object in the street buffer provides separation between trail users and motor vehicle traffic. Vertical objects may include flexible delineator posts, parking stops, planter boxes, concrete barriers, or rigid bollards.



- ② Existing Site Photo 2. View south from Milford Street towards University Park fence line

- A. Proposed 12-foot-wide trail with opportunities for seating, planting, and bioretention areas.



- ③ Existing Site Photo 3. view south along Milford Street towards University Park Apartment

- A. Proposed trail head with opportunities for landscaping and benches



## Proposed Primary Alignment Before & After Renderings



Figure 2.3. Before Photo of Primary Alignment- Segment 1



Figure 2.4. After Photo of Primary Alignment- Segment 1

## Property Impacts

Table 2.1: Segment 1 Property Impacts

Estimated Property Impacts	Account ID	Property Owner	Street Address	Map	Grid	Parcel
481 SF	2313060851	1505 S. Salisbury Blvd., LLC	1505 S. Salisbury Blvd.	0117	0022	3271
479 SF	2313010358	Pennsylvania Lines, LLC	110 Franklin Rd. SE	0117	0015	1629
13,748 SF	2313038236	Salisbury State University	216 Milford St.	0117	0023	1634
25,847 SF	2313015279	Maryland State of	1322 Wayne St.	0117	0016	1635
21,443 SF	2313129598	Maryland State of	1101 Camden Ave.	0117	0010	3279

## Planning Level Cost Estimate

Table 2.2: Segment 1 Cost Estimate

Alignment	Approximate Cost
Primary	\$977,094



# Segment 2: Salisbury University (Milford Street to West College Avenue)

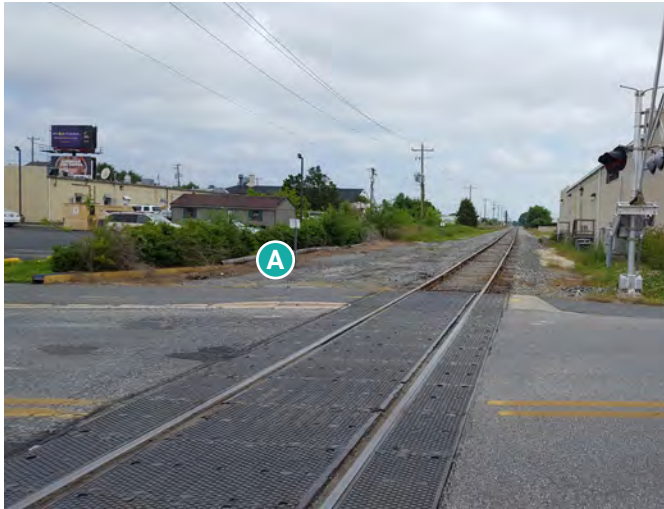
## Primary Alignment Overview

Segment 2 Primary Alignment begins at Milford Street and extends north for approximately 0.6 miles to West College Avenue. The proposed trail alignment is primarily within property owned by Salisbury University and City-owned right-of way. The main purpose of this trail segment is to provide a north-south connection to the 12-foot-wide pedestrian tunnel on Bateman Street that links Salisbury University main campus, located west of US-13 Bus., with its athletic fields and student housing on the east.





## Proposed Primary Alignment Highlights



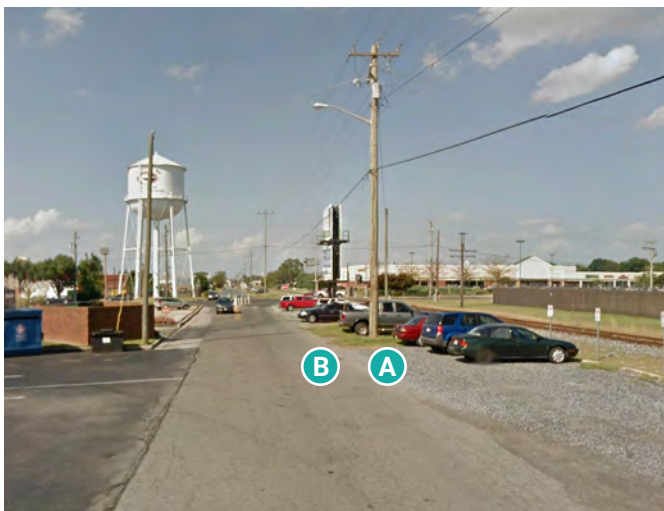
① Existing Site Photo 1. View north along Bateman Street.

- A. Proposed 12-foot-wide trail



② Existing Site Photo 2. View south along Bateman Street towards Salisbury University garage

- A. Proposed trail head by university garage
- B. Proposed 12-foot-wide crosswalk
- C. Proposed 12-foot-wide trail



③ Existing Site Photo 3. View north along South Tower Drive

- A. Proposed 12-foot-wide trail
- B. Proposed landscape buffer with 2-foot-high wooden railing



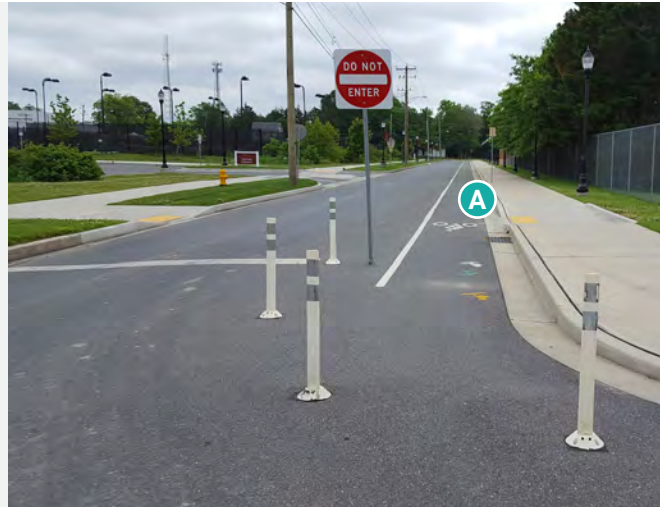
## Alternative Alignment

Segment 2 Alternative Alignment begins at Milford Street and extends north within Salisbury University property for approximately 0.4 miles to Bateman Street. The trail continues east on Bateman Street to South Division Street. At South Division Street the trail extends north for approximately 0.3 miles to East College Avenue. The proposed trail alignment is primarily within property owned by Salisbury University and City-owned right-of way. The main purpose of this trail segment is to provide a north-south connection to the 12-foot-wide pedestrian tunnel on Bateman Street that links Salisbury University's main campus, located west of US-13 Bus., with its athletic fields and student housing on the east.





## Proposed Alternative Alignment Highlights



### 1 Existing Site Photo 1. View east along Bateman Street

- A. Expand the existing sidewalk to accommodate 12-foot-wide trail and landscape buffer



### 2 Existing Site Photo 2. View north along South Division Street

- A. Proposed 12-foot-wide trail crossing
- B. Proposed 12-foot-wide trail with landscape buffer on road side



### 3 Existing Site Photo 3. View north along South Division Street

- A. Proposed 12-foot-wide trail transitions to east side of South Division Street via improved crosswalk



## Proposed Primary Alignment Before & After Renderings



Figure 2.5. Before Photo of Primary Alignment- Segment 2

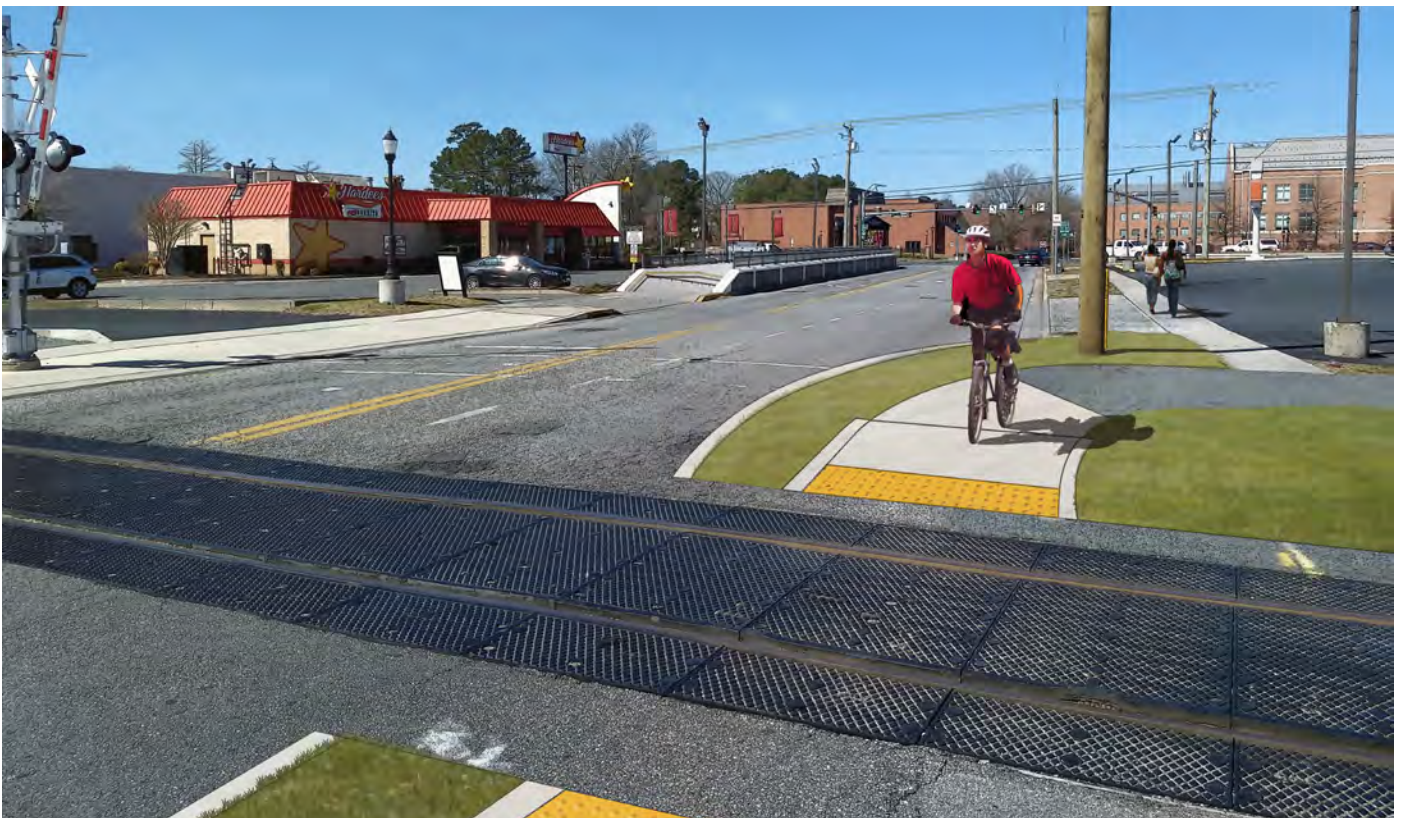


Figure 2.6. After Photo of Primary Alignment- Segment 2

Property Impacts

Table 2.3: Segment 2 Property Impacts

Estimated Property Impacts	Account ID	Property Owner	Street Address	Map	Grid	Parcel
28,761 SF	2313010358	Pennsylvania Lines, LLC		0117	0015	1629

Planning Level Cost Estimate

Table 2.4: Segment 2 Cost Estimate

Alignment	Approximate Cost
Primary	\$574,644



# Segment 3: South Tower Drive (West College Avenue to South Boulevard)

## Overview

Segment 3 Primary Alignment begins at West College Avenue and extends north along South Tower Drive for approximately 0.35 miles to South Boulevard. The main purpose of this trail segment is to extend the trail from Salisbury University towards downtown by utilizing City-owned right-of-way.



## Proposed Primary Alignment Highlights



### 1 Existing Site Photo 1. View north along South Tower Drive

- A. Proposed 12-foot-wide trail
- B. Proposed landscape buffer with 2' tall wooden railing
- C. South Tower Drive to be narrowed to single 11-foot-wide northbound travel lane



### 2 Existing Site Photo 2. View north along South Tower Drive

- A. Proposed 12-foot-wide trail
- B. Proposed landscape buffer with 2' tall wooden railing
- C. Proposed 12-foot-wide trail crossing with bumpouts



## Alternative Alignment Overview

Segment 3 Alternative Alignment East College Avenue and extends north along Eastern Shore Drive for approximately 0.35 miles to South Boulevard. The main purpose of this trail segment is to extend the trail from Salisbury University towards downtown by utilizing City-owned right-of-way. The City is currently reviewing design alternatives that propose a road diet on Eastern Shore Drive to accommodate bike lanes or a trail from East College Avenue north to East Carroll Street. To date, a final design treatment has not been decided.



## Proposed Alternative Alignment Highlights



① Existing Site Photo 1. View north along Eastern Shore Drive

A. Proposed 12-foot-wide trail with landscape buffer



② Existing Site Photo 2. View north along Eastern Shore Drive

A. Proposed 12-foot-wide trail with landscape buffer

Note: The City of Salisbury is currently exploring a road diet and improved bicycle and pedestrian facilities on Eastern Shore Drive.



**Proposed Primary Alignment Before & After Renderings**



Figure 2.7. Before Photo of Primary Alignment- Segment 3



Figure 2.8. After Photo of Primary Alignment- Segment 3

## Property Impacts

Segment 3 stays within the City of Salisbury right-of-way and does not affect any private or public property.

## Planning Level Cost Estimate

### Table 2.5: Segment 3 Cost Estimate

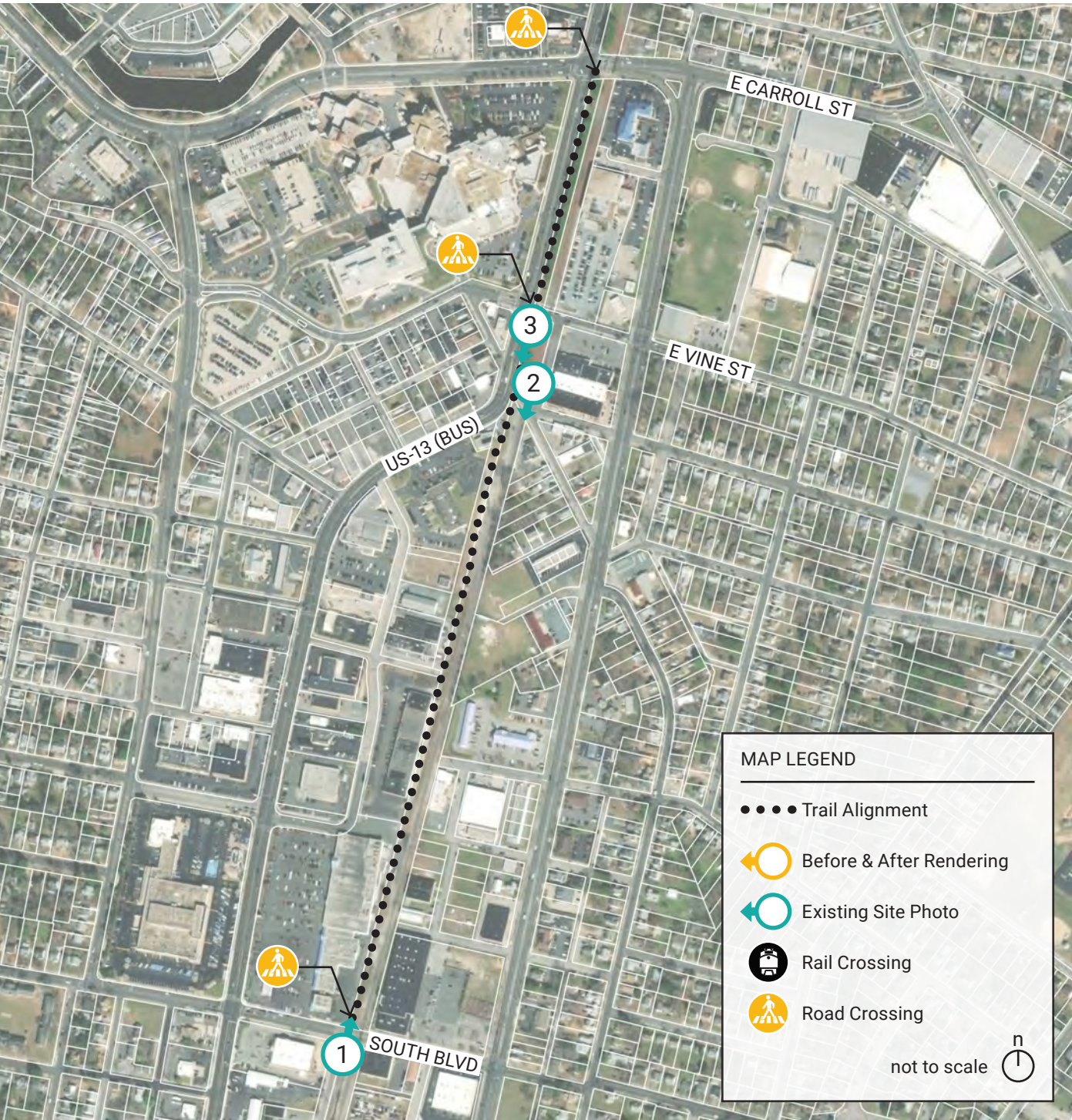
Alignment	Approximate Cost
Primary	\$276,488



# Segment 4: South Boulevard to East Carroll Street

## Overview

Segment 4 Primary Alignment begins at South Boulevard and extends 0.7 miles north within Norfolk Southern property to East Carroll Street. The main purpose of this trail segment is to extend a connection from Salisbury University and the businesses along the US-13 Bus. corridor to Peninsula Regional Medical Center and downtown.



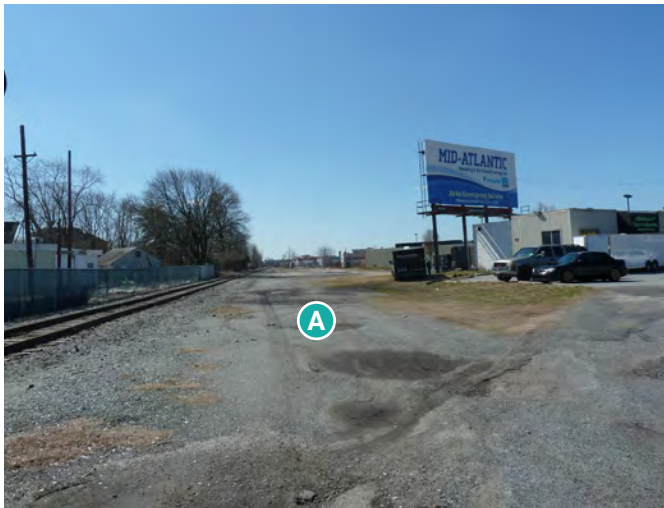


## Proposed Primary Alignment Highlights



### 1 Existing Site Photo 1. View north along South Boulevard

- A. Proposed 12-foot-wide trail crossing with bumpouts
- B. Proposed 12-foot-wide trail



### 2 Existing Site Photo 2. View south at South Division Street and US-13 Bus. intersection

- A. Proposed 12-foot-wide trail with opportunities for seating, planting, and bioretention areas.



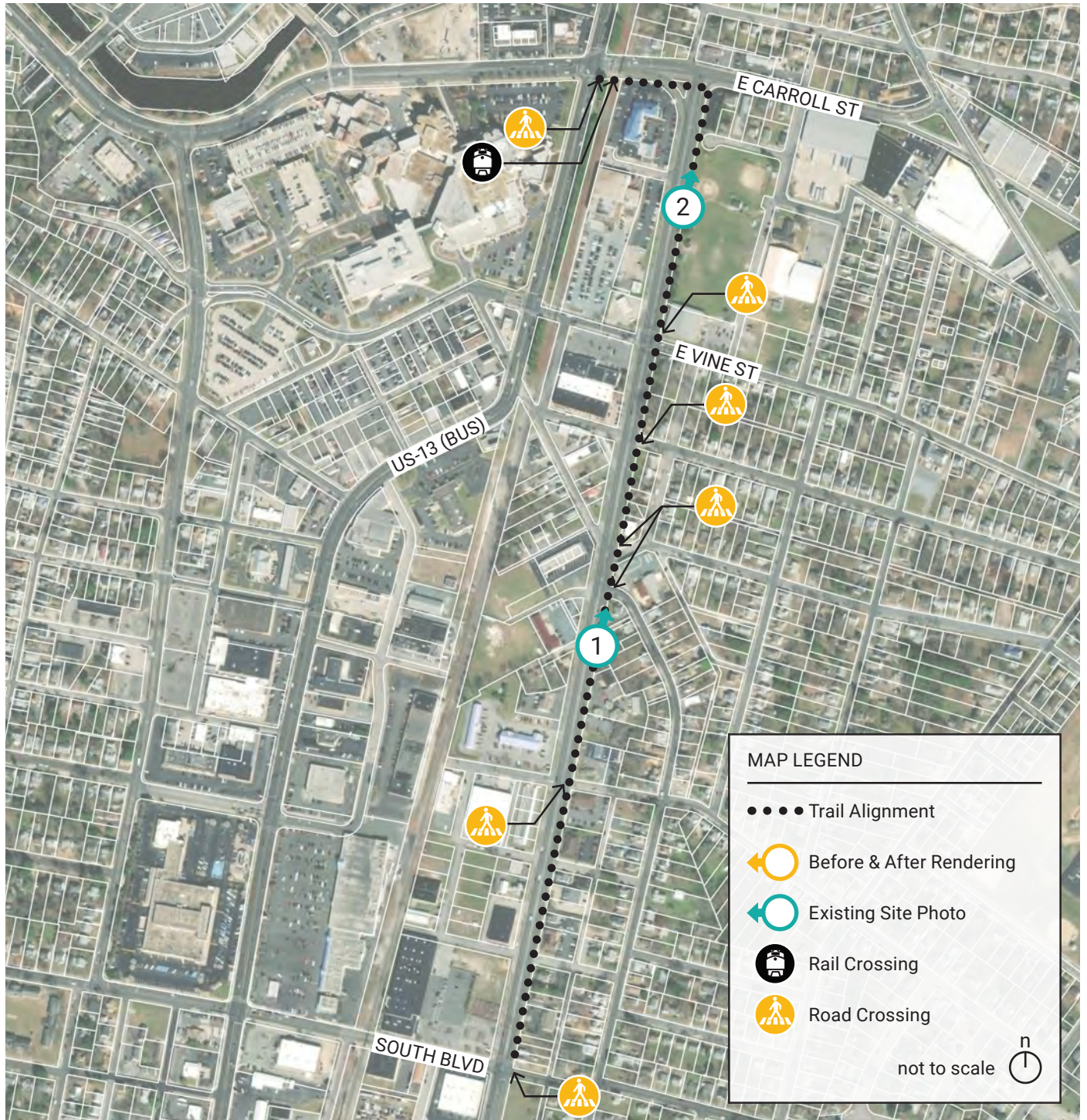
### 3 Existing Site Photo 3. View south at East Vine Street and US-13 Bus. intersection

- A. Existing concrete sidewalk to be expanded to 12-foot-wide asphalt trail with seating and landscape buffer



## Alternative Alignment Overview

Segment 4 Alternative Alignment begins at South Boulevard and extends north along Eastern Shore Drive for approximately 0.75 miles to East Carroll Street. The main purpose of this trail segment is to extend a connection from Salisbury University to Peninsula Regional Medical Center and downtown within City-owned right-of-way. The City is currently reviewing design alternatives that propose a road diet on Eastern Shore Drive to accommodate bike lanes or a trail from East College Avenue north to East Carroll Street. To date, a final design treatment has not been decided.





## Proposed Alternative Alignment Highlights



① Existing Site Photo 1. View north along Eastern Shore Drive

A. Proposed 12-foot-wide trail



② Existing Site Photo 2. View north along Eastern Shore Drive

A. Proposed 12-foot-wide trail

Note: The City of Salisbury is currently exploring a road diet and improved bicycle and pedestrian facilities on Eastern Shore Drive



Proposed Primary Alignment Before & After Renderings



Figure 2.9. Before Photo of Primary Alignment- Segment 4



Figure 2.10. After Photo of Primary Alignment- Segment 4

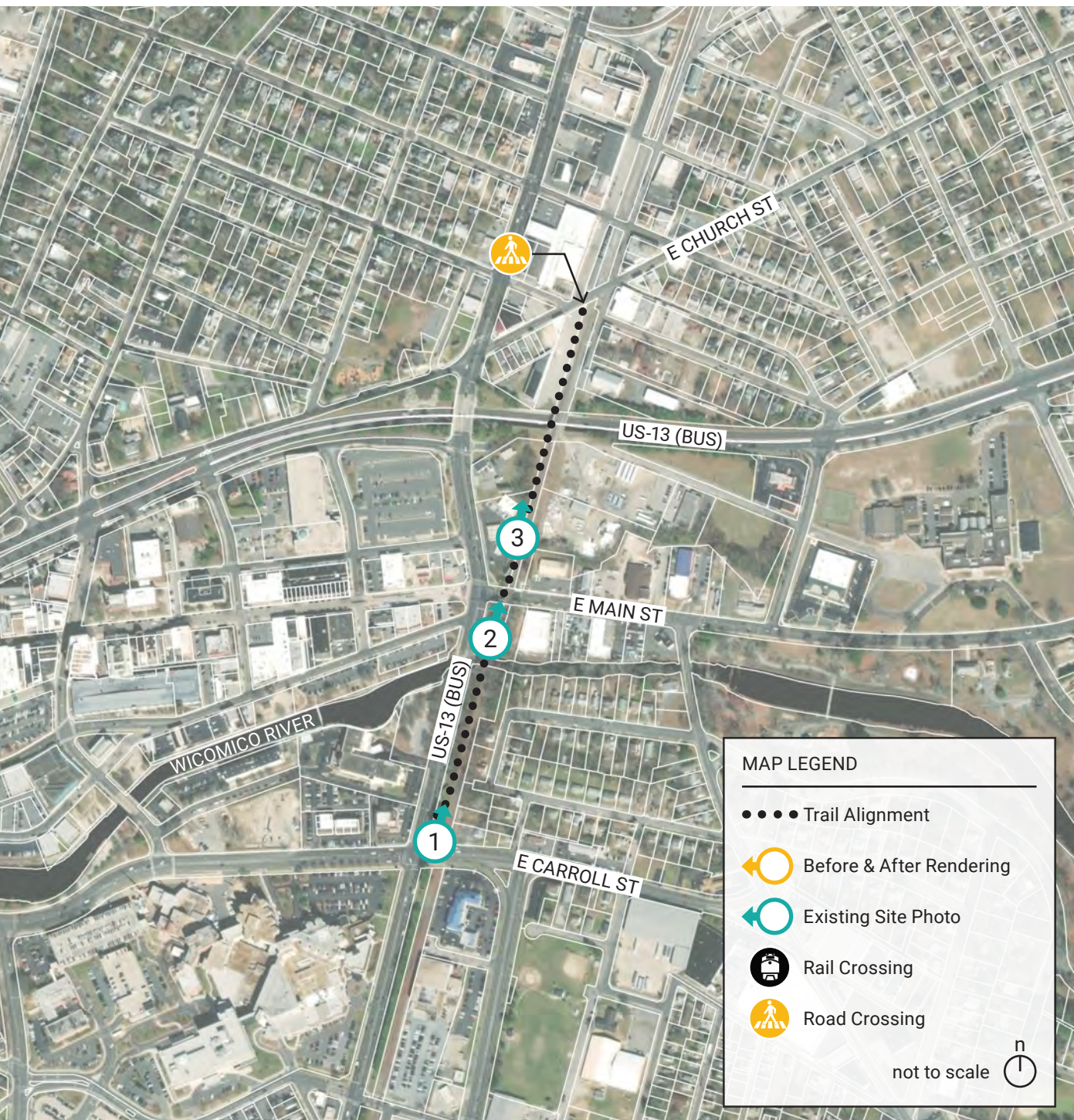




## Segment 5: East Carroll Street to East Church Street

## Overview

Segment 5 Primary and Alternative Alignment begins at East Carroll Street and extends north for approximately 0.4 miles to the beginning of East Church Street. Th trail is mainly within private property. The main purpose of this trail segment is to provide a north-south connection to downtown Salisbury with connections to the Riverwalk and other area attractions. The proposed trail bridges the South Prong Wicomico River, East Main Street, and West Salisbury Parkway (US-50 Bus.).





## Proposed Primary and Alternative Alignment Highlights



### 1 Existing Site Photo 1. View north along US-13 Bus.

- A. Existing billboard to be removed/relocated
- B. Proposed 12-foot-wide trail connection to Downtown and Riverwalk
- C. Proposed 12-foot-wide main trail



### 2 Existing Site Photo 2. View north on bridge crossing East Main Street

- A. Proposed 12-foot-wide bicycle and pedestrian bridge across East Main Street utilizing existing rail bridge abutments



### 3 Existing Site Photo 3. View north towards US-50 Bus. bridge crossing

- A. Proposed 12-foot-wide trail
- B. Proposed soldier-pile retaining wall with 4-foot-high fence
- C. Proposed 4-foot-high fence



**Proposed Primary Alignment Before & After Renderings**



Figure 2.11. Before Photo of Primary Alignment- Segment 5



Figure 2.12. After Photo of Primary Alignment- Segment 5



## Property Impacts

Table 2.8: Segment 5 Property Impacts

Estimated Property Impacts	Account ID	Property Owner	Street Address	Map	Grid	Parcel
16,701 SF	2313032270	Rinnier Development Company	201 S. Salisbury Blvd.	0107	0016	1627
4,258 SF	2305013224	Rinnier Development Company	210 S. Salisbury Blvd.	0107	0016	0905
5,171 SF	2305008123	Banks, Edward G. Jr.	101 N. Salisbury Blvd.	0107	0016	0913
2,858 SF	2305008875	Phoebus, Barbara A. & Michael W.	109 N. Salisbury Blvd.	0107	0010	1865
8,206 SF	2305017238	Brittingham, Scott W. & Katrina T.	ES W. Railroad Ave.	0107	0010	1886

## Planning Level Cost Estimate

Table 2.9: Segment 5 Cost Estimate

Alignment	Approximate Cost
Primary	\$1,201,072



# Segment 6: East Church Street to Naylor Street

## Primary Alignment Overview

Segment 6 Primary Alignment begins at East Church Street and extends north 0.5 miles along East and West Railroad Avenue to Naylor Street. The trail utilizes a mix of City-owned right-of-way, private property and property owned by the Norfolk Southern railroad. Naylor Street is the natural terminus for this trail segment as it provides a signalized crossing at the intersection of US-13 Bus. for east-west bicycle and pedestrian traffic.





## Proposed Primary Alignment Highlights



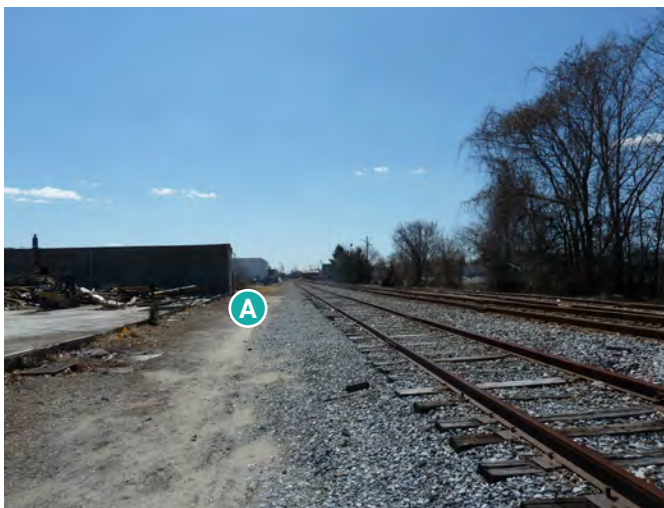
### 1 Existing Site Photo 1. View south along East Railroad Avenue

- A. Proposed 12-foot-wide trail with 5-foot landscape buffer



### 2 Existing Site Photo 2. View south along East Railroad Avenue

- A. Proposed road diet on East Railroad Avenue to one-way northbound traffic
- B. Proposed 12-foot-wide trail with 4-foot-high fence on railroad side and 2-foot-high wooden railing on road side



### 3 Existing Site Photo 3. View south along Naylor Street

- A. Proposed 12-foot-wide trail with 4-foot-high fence on railroad side



## Alternative Alignment Overview

Segment 6 Alternative Alignment begins at East Church Street and extends north 0.5 miles along East and West Railroad Avenue and Brown Street to Naylor Street. The trail utilizes a mix of City-owned right-of-way and private property. Naylor Street is the natural terminus for this trail segment as it provides a signalized crossing at the intersection of US-13 Bus. for east-west bicycle and pedestrian traffic.





## Proposed Alternative Alignment Highlights



### 1 Existing Site Photo 1. View northeast along Brown Street

- A. Proposed road diet on East Railroad Avenue to one-way northbound traffic
- B. Proposed 12-foot-wide trail with landscape buffer



### 2 Existing Site Photo 2. View northwest along Naylor Street

- A. Proposed 12-foot-wide trail with landscape buffer



**Proposed Primary Alignment Before & After Renderings**



Figure 2.13. Before Photo of Primary Alignment- Segment 6



Figure 2.14. After Photo of Primary Alignment- Segment 6

Property Impacts

Table 2.10: Segment 6 Property Impacts

Estimated Property Impacts	Account ID	Property Owner	Street Address	Map	Grid	Parcel
6,640 SF	2305117569	Speake, John M. III	ES W. Railroad Ave.	0108	0013	0942
315 SF	2305123607	Railroad Avenue Investments, LLC	611 E. Railroad Ave.	0104	0022	2612
75 SF	2305000963	Pennsylvania Lines, LLC	E. Railroad Ave.	0104	0022	1426
1,591 SF	2305017246	Pennsylvania Lines, LLC	E. Railroad Ave.	0104	0022	2589
636 SF	2305000998	Pennsylvania Lines, LLC		0104	0016	1425
1,609 SF	2305021073	Whittington, Frances I & Jones, Shirley	703 Brown St.	0104	0017	1424
7,522 SF	2305011159	Brown Street, LLC	707 Brown St.	0104	0017	1423
5,266 SF	2305022134	Peninsula Warehouse, LLLP	713 Brown St.	0104	0017	1422

Planning Level Cost Estimate

Table 2.11: Segment 6 Cost Estimate

Alignment	Approximate Cost
Primary	\$646,060



# Segment 7a & 7b: Naylor Street to West Naylor Mill Road

## Primary Alignment Overview

Segment 7a Primary Alignment begins at Naylor Street and extends north for approximately 1.75 miles within Norfolk Southern property to Marvel Road. The trail heads west on Marvel Road and utilizes the abandoned City-owned Scenic Drive to connect to the Henry S. Parker Athletic Complex. This trail segment passes under North Salisbury Boulevard, crosses the Peggy Branch and Brewing Branch and passes under the US-50 Salisbury Bypass. The main purpose of this trail segment is to provide a north-south connection from downtown to commercial businesses and the Henry S. Parker Athletic Complex.



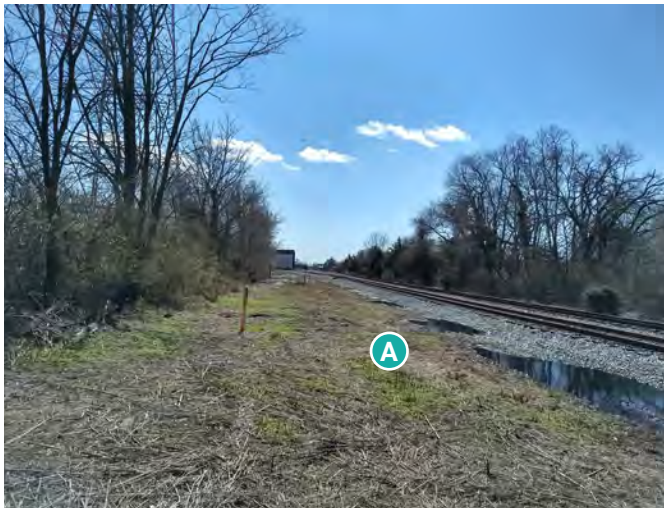


## Proposed Primary Alignment Highlights



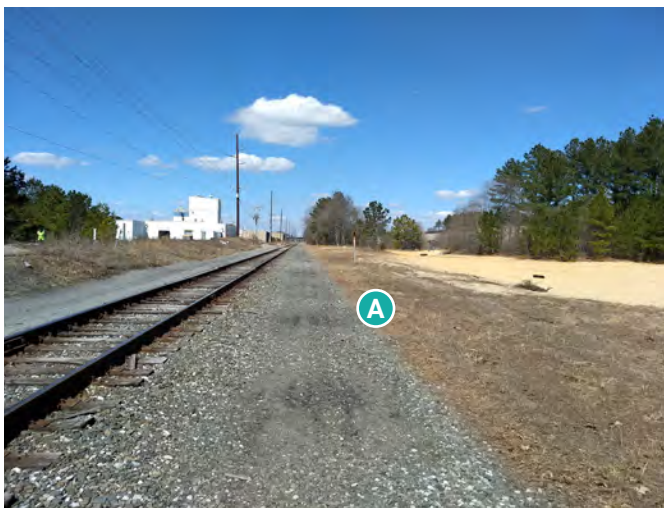
① Existing Site Photo 1. View north along Naylor Street

A. Proposed 12-foot-wide trail



② Existing Site Photo 2. View south from US-13 Bus. underpass

A. Proposed 12-foot-wide trail with opportunities for seating, planting, and bioretention areas.



③ Existing Site Photo 3. View north along railroad tracks towards Beam Street

A. Proposed 12-foot-wide trail



# Segment 7a & 7b: Naylor Street to West Naylor Mill Road

## Alternative Alignment Overview

Segment 7a Alternative Alignment begins at Naylor Street and continues west across US-13 Bus. This section of trail uses the street network to continue north along North Division Street, Union Avenue and Emerson Avenue. At Marvel Road, the trail heads west and utilizes the abandoned City-owned Scenic Drive to connect to the Henry S. Parker Athletic Complex. This trail segment passes under the US-50 Salisbury Bypass. The main purpose of this trail segment is to provide a north-south connection from downtown to commercial businesses and the Henry S. Parker Athletic Complex.



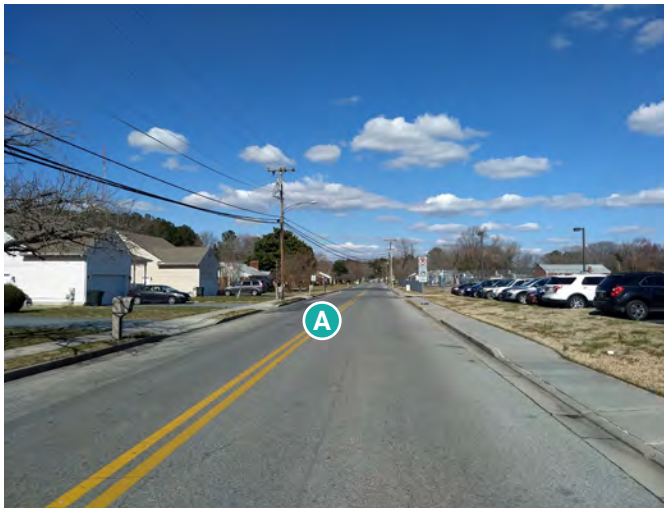


## Proposed Alternative Alignment Highlights



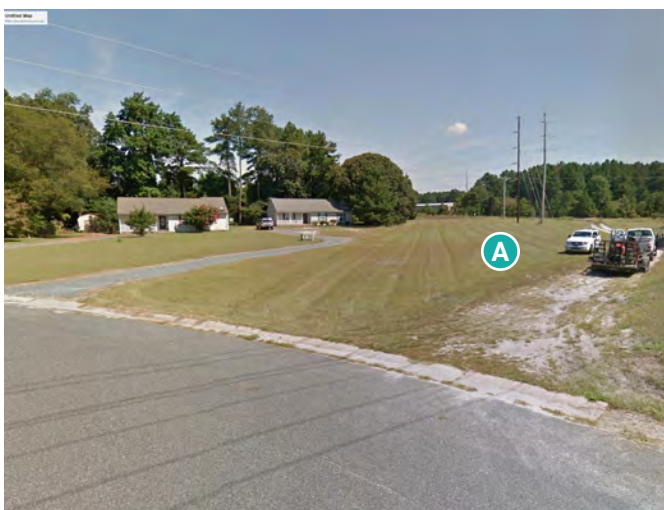
### 1 Existing Site Photo 1. View southeast along Union Avenue

- A. Proposed reconstruction of sidewalk to accommodate a 12-foot-wide trail along south side of Union Avenue



### 2 Existing Site Photo 2. View north along Emerson Avenue

- A. Proposed bike boulevard



### 3 Existing Site Photo 3. View north along Emerson Avenue towards railroad tracks

- A. Proposed 12-foot-wide trail to connect to Beam Street



**Proposed Primary Alignment Before & After Renderings**



Figure 2.15. Before Photo of Primary Alignment- Segment 7



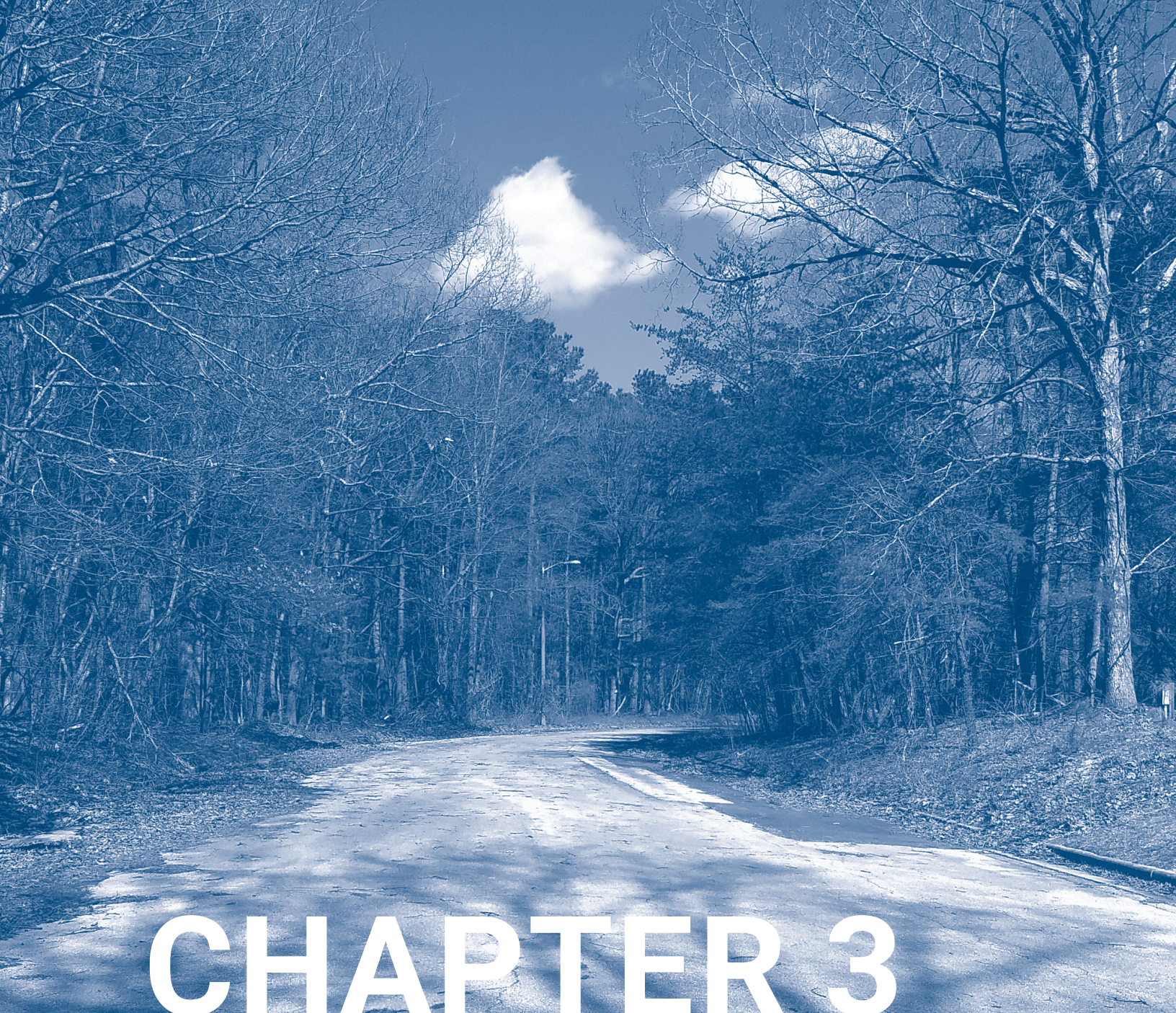
Figure 2.16. After Photo of Primary Alignment- Segment 7





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# CHAPTER 3

## UNIFORM DESIGN STANDARDS & WAYFINDING



# Uniform Design Standards & Wayfinding

This chapter is intended to provide guidance on uniform design standards and wayfinding along the Salisbury Rails with Trails corridor. The goal is to identify common standards including trail and buffer widths, surface materials, intersection and railroad crossing treatments, regulatory and wayfinding signage, landscaping, lighting, call boxes, and site furnishing. The following publications were reviewed in the development of this chapter:

- » *Guide for the Development of Bicycle Facilities by the American Association of State Highway and Transportation Officials (AASHTO)*
- » *National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide*
- » *Bicycle Policy and Design Guidelines from the Maryland State Highway Administration*
- » *Maryland Manual on Uniform Traffic Control Devices (MMUTCD) from the Maryland State Highway Administration*
- » *Maryland Bike Policy and Design Guide*
- » *The MassDOT Separated Bike Lane Design Guide*
- » *U.S. Department of Transportation Federal Highway Administration (FHWA) Rails-with-Trails Report*
- » *America's Rails-with-Trails Report – Rails to Trails Conservancy*

## Trail Design Standards

### Trail Width Requirement

According to the 2012 AASHTO *Bike Guide*, typical width for a shared use path range from 10 to 14 feet and is dependent on the context of a trail and its anticipated volume and mix of users.<sup>5</sup> Wider paths of 11 to 14 feet are recommended where there are high users volumes and where pedestrians account for at least 30% of the trail users. This allows for safer passing movements and accounts for maintenance and emergency vehicle access (see fig 3.1). The minimum width for a two-directional shared use path is 10 feet with 2 feet of horizontal clearance on either side.

### Trail Surface Material

According to the *Maryland Bike Policy and Design Guide*, some form of asphalt or concrete paving is recommended for paths and trails.<sup>6</sup> A hard, non-slip pavement surface works well for a variety of trail users, requires less maintenance, and can sustain heavy loads such as maintenance or emergency vehicles. Flexpave should be considered in wooded areas to reduce impacts to tree roots. Permeable mixes are desirable to lessen the effect of stormwater runoff; however, the positive effects of these materials must be balanced against their higher initial and long-term maintenance costs, as well as the underlying soil permeability.

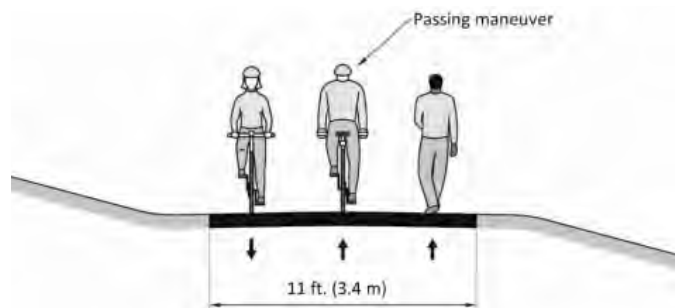


Figure 3.1. Shared use path width is dependent on a variety of factors, including the context and expected user type and volume.

### Clearance and Buffer

#### Buffer Types for On-road Facilities

According to the *MassDOT Separated Bike Lane Planning and Design Guide*, the recommended buffer width of a street-level bicycle facility is 6 feet. Vertical objects such as flexible delineator posts, parking stops, planter boxes, concrete barriers, and rigid bollards should be considered to maximize safety and increase the level of comfort of trail users (See Figure 3.2).<sup>7</sup>

#### Clearance for Off-Road Facilities

The 2012 AASHTO *Bike Guide* recommends a 5-foot horizontal separation between a high-volume and high-speed roadway and sidepath. Where a 5-foot horizontal separation cannot be achieved, a 42" vertical separation is recommended. Future signs, mailboxes, and other side obstructions should be considered when designing separation between the shared use path (trail) and roadway.

5 *Guide for the Development of Bicycle Facilities by the American Association of State Highway and Transportation Officials (AASHTO)*

6 *Maryland Bike Policy and Design Guide*

7 *The MassDOT Separated Bike Lane Design Guide*

## Clearance for Facilities Adjacent to Operating Railroads

According to the FHWA *Rails-with-Trails: Lessons Learned* report, there is no consensus on appropriate separation or method to determine the requirements between active rail lines and trails. In some cases, the state or railroad operator has set the requirements. For low density/low speed branch lines, 25 feet or more is recommended. In constrained areas, such as bridges and trestles, 11 feet may be acceptable with a fence or other separation technique. Norfolk Southern will ultimately determine the required setbacks along its corridor. Refer to Chapter 1: Rails with Trails for additional information on safety and design.

## Intersections and Crossings

### Trail and Roadway Intersection

Intersections between paths and roadways often require the most consideration in trail design. The *Massachusetts DOT Guide on Shared Use Paths and Greenways* specifies some basic principles to be followed when designing intersections:

- » Unusual conflicts should be avoided.
- » Intersection design should create a path for bicyclists that is direct, logical and as close to the path of motor vehicle traffic as possible.
- » Bicyclists following the intended trajectory should be visible and their movements should be predictable.
- » Potential safety problems associated with the difference between auto and bicycle speeds should be minimized.

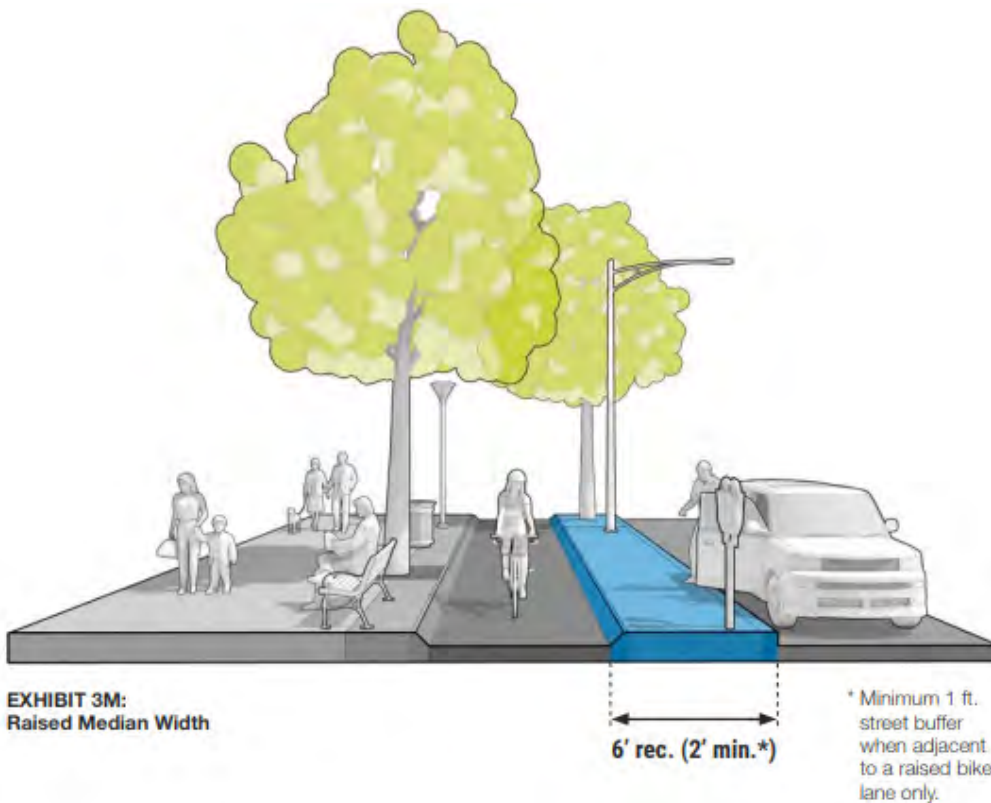


Figure 3.2. On-road bike facility buffer



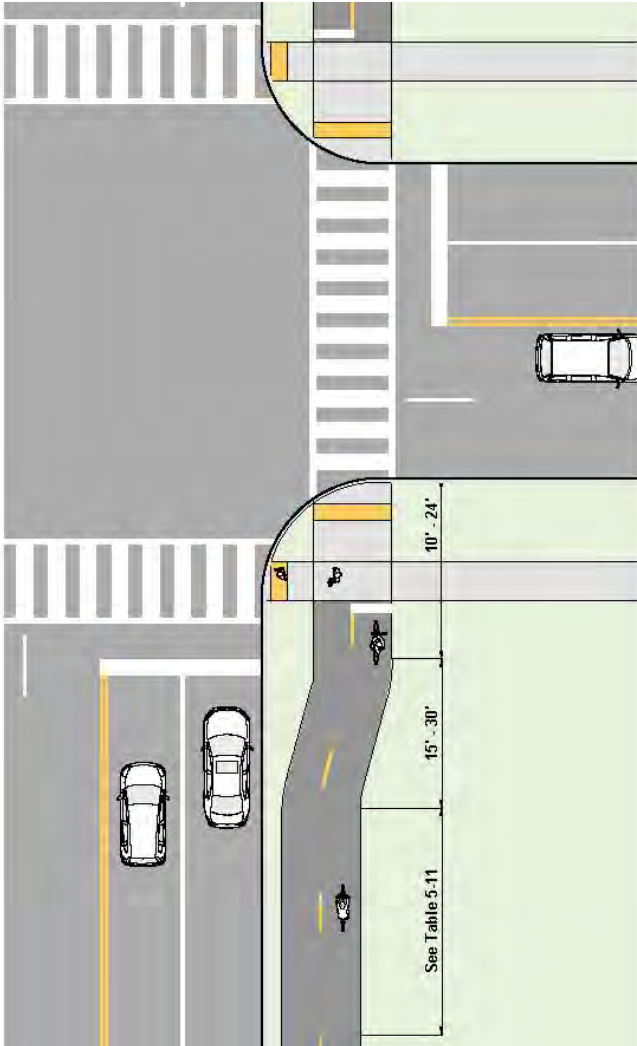
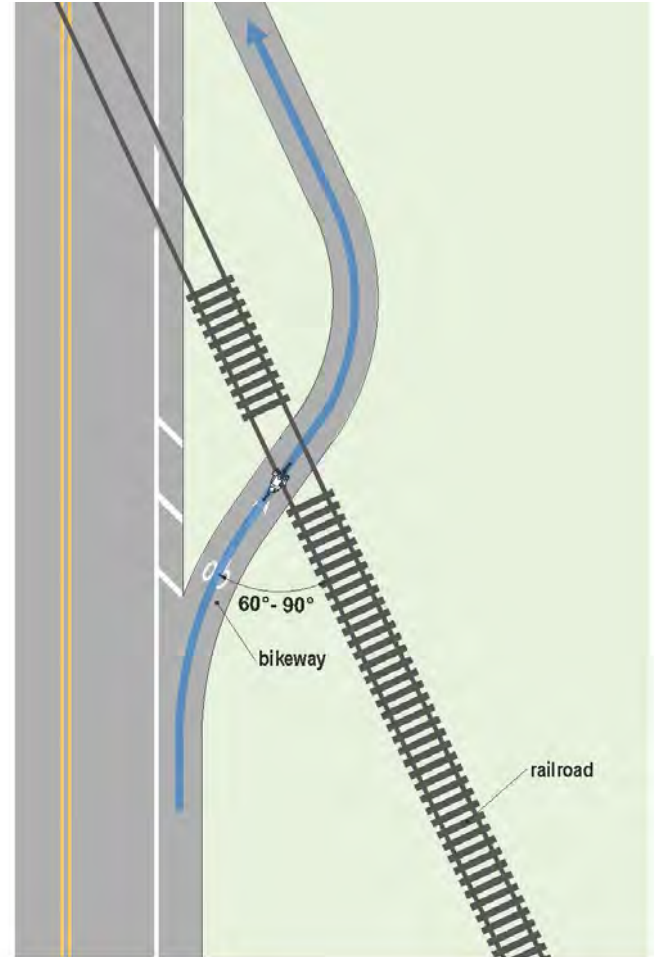


Figure 3.3. Trail and roadway crossing.

As the trail approaches the crossing it should be aligned with the destination of the crossing on the other side of the road. The crossing should also be as perpendicular as possible to the road being crossed (see Figure 3.3).<sup>8</sup> Refer to the MMUTCD guide for appropriate signage and pavement markings.



legend

→ bicycle travel path

Figure 3.4. Trail and railroad crossing.

## Railroad Crossing

In locations where the trail intersects the Norfolk Southern rail lines, the proposed trail facility should be designed so that the bicyclist can approach the track at an angle between 60 and 90 degrees (see Figure 3.4). This ensures trail users have a clear line of sight to approaching trains, encourages a lower approach speed to the crossing and reduces the possibility of bike tires getting caught in the tracks. Refer to the MMUTCD guide for appropriate trail grade crossing signs and pavement markings.

Another important aspect of railroad crossings is ensuring that they are compliant with the Americans with Disabilities Act (ADA). A safe crossing is level with non-skid surface, and flangeway areas in the tracks are minimized with flangeway fillers.

8 Maryland Manual on Uniform Traffic Control Devices (MMUTCD) from the Maryland State Highway Administration

### Trail Signage

Trail signage orients trail users to their destination and provides guidance on appropriate trail behavior. Directional signs are important along the trail, especially in locations where decisions are to be made about direction of travel. These signs orient the users to upcoming destinations and their respective direction and distance. Regulatory signs are required in locations where traffic laws are to be enforced. For example, at an unsignalized intersection between the trail and a road, stop signs are installed to regulate the flow of trail traffic. Warning signs are required ahead of possible hazards and conflict zones like narrowing of the trail.

### City of Salisbury Wayfinding Signs

A number of key destinations were identified along the proposed trail alignment. These include Salisbury University, Peninsula General Hospital, downtown Salisbury, the Riverwalk Trail, Doverdale Park, and the Henry S. Parker Athletic Complex, to name a few. The City of Salisbury provides a set of design requirements for their wayfinding signs (see Figure 3.5). These guidelines are to be followed for wayfinding along the trail. In addition, mile markers should be installed along the trail in the event that emergency services need to quickly locate a person in distress.



Figure 3.5. City of Salisbury wayfinding signage.



## Trail Amenities and Site Furnishings

## Landscaping

A number of landscaping opportunities were identified along the corridor. These include areas along the street, railroad and property buffers as well as at trailheads and other available sites. Where the trail parallels a road, a minimum five-foot-wide planting strip is provided to accommodate street trees and potential bioretention facilities. Street trees provide a higher quality separation between trail and road users, enhance the streetscape character, and provides shade to trail and roadway users. Street trees should be limbed up to a height of 7 feet so as not to interfere with road and trail users. Plant heights should be limited to 2 feet tall at trail and roadway intersections and other conflict points to maximize sight distances. Maintenance requirements should be considered when selecting an appropriate plant palette for the corridor.

## Lighting

Trail lighting is particularly important where nighttime trail use is anticipated. This includes segments of trail that services Salisbury University, student housing, and the downtown central business core. Lighting should also be considered through underpasses and highway intersections where nighttime security may be a concern. The City's standard ornamental light fixture provides an appropriate level of trail illumination and allows for a visual uniformity throughout the city. If the City of Salisbury chooses to illuminate remote sections of the trail, solar lighting may be an appropriate option to reduce wiring and installation costs. Unlit remote trail segments should be signed appropriately indicating trail closure after dark.

## Emergency Call Boxes

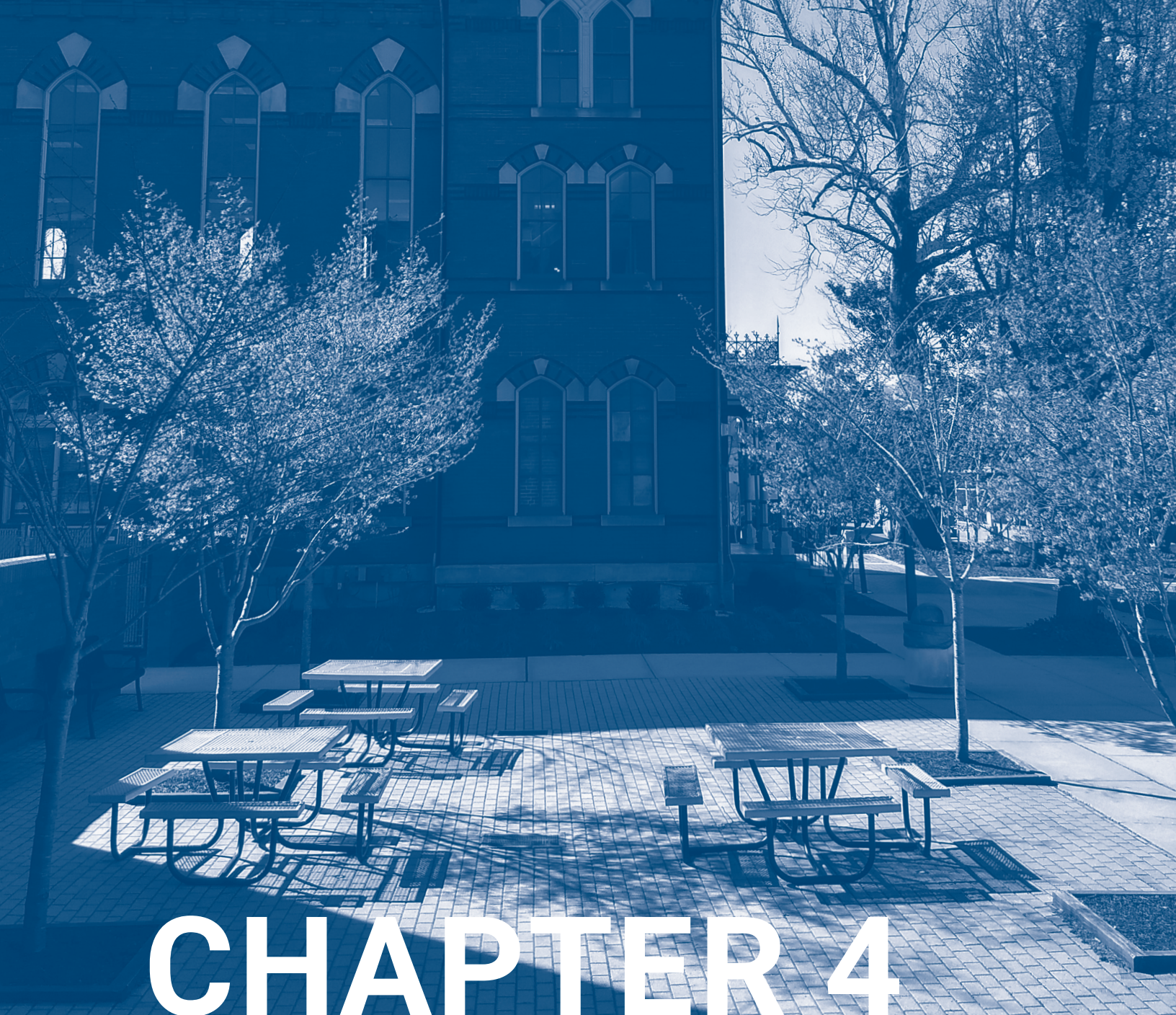
Emergency call boxes are a valuable component of trail safety as they facilitate an emergency response when needed, increase the trail user's perceived safety, and may deter crime. Call box placement should be frequent enough so that trail users can reach the call box relatively quickly. However, they can also be costly, and with the rise of cell phones, they may become increasingly unnecessary (this is not true in rural locations where cell service is unreliable). The number of call boxes and their distances apart depend on the length of the trail and various at-risk locations on the trail. Generally, they are placed at one mile or half mile intervals from each other as well as at the trail head.

Before committing to call boxes, it is important to consider all the options. One alternative to call boxes is a trail watch program, where volunteers and “friends of the trail” serve as extra eyes and ears for local police forces. Some trails have also implemented successful trail marker systems. The Upper Tampa Bay Trail uses an emergency response numbering system with bright yellow decals placed every 200 feet with individual trail numbers. This allows trail users to provide emergency responders with their precise location along a trail.

## Furnishing

There are several key locations along the proposed alignment for trail furnishing and amenities. These include trailheads and waysides where trail users can be expected to stop and rest. At a minimum, trailheads and waysides should include pedestrian signage and benches to accommodate trail users that may need to rest between destinations. Where appropriate, lighting, water fountains, bicycle repair stations, and trash and recycle receptacles should also be provided. The City's furnishing standards applied to the trail will provide a level of visual uniformity in street furnishings throughout the trail corridor.





# CHAPTER 4

## FUNDING OPPORTUNITIES



# Funding Opportunities

The Salisbury Rail Trail is an ideal project for several federal and state funding sources. Grant programs are available for the design work needed to develop construction-ready plans and for the construction itself. Signage for trail gateways, wayfinding and destinations, and for interpretive wayside rest areas is also available and should be considered concurrently with construction funding.

Programs that provide incentives for private property owners to donate land or enter into trail maintenance agreements with public agencies can also be pursued, especially where the trail would beautify or otherwise enhance the property. These incentives typically are a type of tax benefit, such as a tax credit. Techniques used include a land conservation trust or easements.

The table below matches funding sources with rail segments. These recommendations should be considered a starting place for funding trail development. Details for each funding source are provided in Appendix D.

The funding sources included in this plan are current as of the plan's publication date. The City of Salisbury should update this list as part of developing a funding plan as work begins on implementing each trail segment.

## Potential funding sources by trail segment

The funding scheme for the rail trail should be strategic in its effort to secure funding efficiently. The list of potential funding sources detailed in this section should be reviewed carefully to match the right sources with the right trail segment. The table below is a first pass at matching the characteristics of each trail segment with a potential funding source. Given the evolving nature of funding opportunities, the City should revisit this table to determine the most appropriate pursuit.

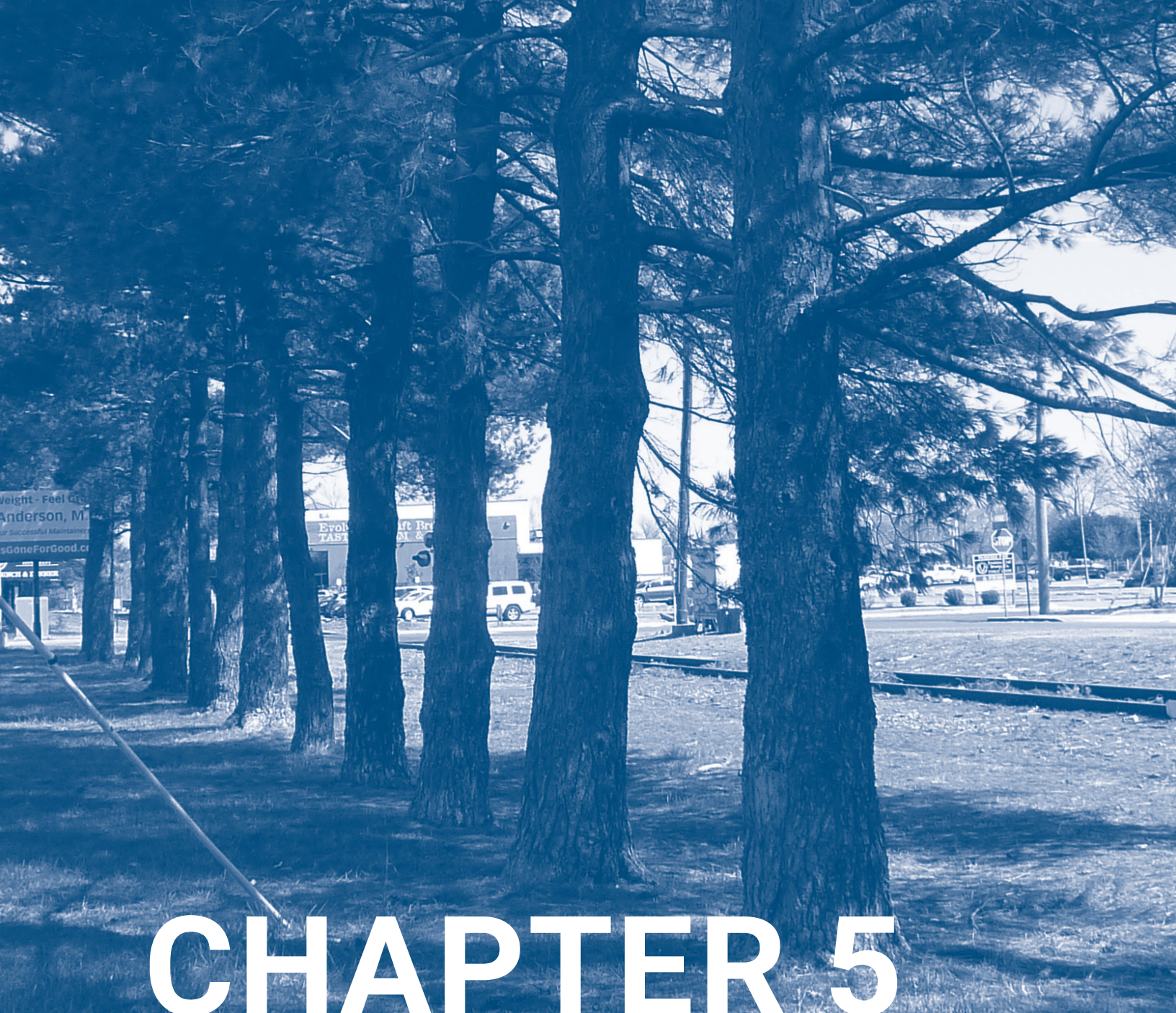
Trail segment	Characteristics	Potential funding sources
Segment 1 (Fruitland to Milford Street)	<ul style="list-style-type: none"> <li>» Trail in MDSHA right-of-way and on Salisbury University property requires easements.</li> <li>» Proposes bridge re-channelization with vertical buffer</li> <li>» Proposes intersection realignment at rail crossing</li> <li>» May require modification of stormwater facility</li> </ul>	<ul style="list-style-type: none"> <li>» Maryland Bikeways Program</li> <li>» Transportation Alternatives Program</li> <li>» Maryland Recreational Trails Program</li> <li>» Bicycle Retrofit (SHA Fund 88)</li> <li>» Chesapeake and Atlantic Coastal Bays Trust Fund</li> <li>» DNR Program Open Space</li> <li>» Robert Wood Johnson Foundation</li> </ul>
Segment 2 (Salisbury University – Milford Street to South Tower Drive)	<ul style="list-style-type: none"> <li>» Trail on Salisbury University property, Norfolk Southern right-of-way, and private property requires easements</li> <li>» Improves University pedestrian/bike connections</li> <li>» Crosses railroad track at Wayne St.</li> <li>» Proposes street conversion from two-way to one-way</li> <li>» Alternative alignment uses street improvements to be constructed independent of trail project</li> </ul>	<ul style="list-style-type: none"> <li>» Maryland Bikeways Program</li> <li>» Transportation Alternatives Program</li> <li>» Maryland Recreational Trails Program</li> <li>» Chesapeake and Atlantic Coastal Bays Trust Fund</li> <li>» DNR Program Open Space</li> </ul>
Segment 3 (South Tower Drive – West College Avenue to South Boulevard)	<ul style="list-style-type: none"> <li>» Trail in City right-of-way</li> <li>» Connects the University to downtown</li> <li>» Proposes crosswalk improvements at W. College Ave.</li> <li>» Primary alignment requires crossing improvements</li> <li>» Alternate alignment uses Eastern Shore Dr. approved future road diet and cycle track</li> </ul>	<ul style="list-style-type: none"> <li>» Maryland Bikeways Program</li> <li>» Transportation Alternatives Program</li> <li>» Maryland Recreational Trails Program</li> <li>» Chesapeake and Atlantic Coastal Bays Trust Fund</li> <li>» DNR Program Open Space</li> <li>» Community Legacy Program</li> </ul>

Trail segment	Characteristics	Potential funding sources
Segment 4 (South Boulevard to East Carroll Street)	<ul style="list-style-type: none"> <li>» Trail in Norfolk Southern right-of-way requires easement</li> <li>» Trail surrounded by single-family residential homes, commercial buildings, and the Peninsula Regional Medical Center</li> <li>» 3 street crossings (1 may be removed)</li> <li>» Alternate alignment uses Eastern Shore Dr. approved future road diet and cycle track</li> </ul>	<ul style="list-style-type: none"> <li>» Maryland Bikeways Program</li> <li>» Transportation Alternatives Program</li> <li>» Maryland Recreational Trails Program</li> <li>» Chesapeake and Atlantic Coastal Bays Trust Fund</li> <li>» DNR Program Open Space</li> <li>» Community Legacy Program</li> </ul>
Segment 5 (East Carroll Street to East Church Street)	<ul style="list-style-type: none"> <li>» Trail on private property along railroad tracks and in MDSHA right-of-way by the bridges require easements (MDSHA is attempting to purchase property south of Main St.)</li> <li>» Proposed alignment goes over 3 bridges, the bridge over the Wicomico River will require widening</li> </ul>	<ul style="list-style-type: none"> <li>» Maryland Bikeways Program</li> <li>» Transportation Alternatives Program</li> <li>» Maryland Recreational Trails Program</li> <li>» Chesapeake and Atlantic Coastal Bays Trust Fund</li> <li>» DNR Program Open Space</li> <li>» Community Legacy Program</li> </ul>
Segment 6 (East Church Street to Naylor Street)	<ul style="list-style-type: none"> <li>» Trail on private property and in MDSHA right-of-way requires easement</li> <li>» Surrounded by industrial, commercial, and residential uses.</li> <li>» Features historic train station</li> <li>» Crosses railroad track at Elizabeth St.</li> <li>» Drainage issues near highway underpass</li> <li>» Primary alignment follows the railroad tracks (except at Brown St.) and crosses under US-13 Bus.</li> <li>» Alternate alignment proposes road diet and separated bike facilities and shared use path starting at Naylor St. to Union Ave. This alignment crosses US-13 Bus. at Naylor St.</li> </ul>	<ul style="list-style-type: none"> <li>» Maryland Bikeways Program</li> <li>» Transportation Alternatives Program</li> <li>» Maryland Recreational Trails Program</li> <li>» Community Safety and Enhancement Program (SHA Fund 84)</li> <li>» Chesapeake and Atlantic Coastal Bays Trust Fund</li> <li>» DNR Program Open Space</li> <li>» Community Legacy Program</li> <li>» Alternative Alignment only:</li> <li>» SHA Retrofit (SHA Fund 33)</li> </ul>
Segment 7 (Naylor Street to West Naylor Mill Drive)	Primary Alignment	
	<ul style="list-style-type: none"> <li>» Trail in MDSHA right-of-way requires easements on 3 private properties on Naylor Mill Rd.</li> <li>» Surrounded by industrial and residential uses</li> <li>» Connects to Henry S. Parker Athletic Complex</li> <li>» Alignment goes under US-50</li> </ul>	<ul style="list-style-type: none"> <li>» Maryland Bikeways Program</li> <li>» Transportation Alternatives Program</li> <li>» Community Safety and Enhancement Program (SHA Fund 84)</li> <li>» Chesapeake and Atlantic Coastal Bays Trust Fund</li> <li>» DNR Program Open Space</li> <li>» Community Legacy Program</li> </ul>
	Alternative Alignment	
	<ul style="list-style-type: none"> <li>» Trail in City right-of-way and on private property requires easements for Delmarva Power and Light company and private properties</li> <li>» Surrounded by industrial and residential uses and river green belt.</li> <li>» Potential bicycle boulevard on Emerson Ave.; north of Emerson Ave., the alignment is on dirt paths and abandoned roads, with shared use path on Beam St. and north end of Scenic Dr.</li> <li>» Path under US-13 Bus. poses grading challenges and special attention to the wetlands</li> <li>» Connects to Henry S. Parker Athletic Complex</li> </ul>	<ul style="list-style-type: none"> <li>» Maryland Bikeways Program</li> <li>» Transportation Alternatives Program</li> <li>» Chesapeake and Atlantic Coastal Bays Trust Fund</li> <li>» DNR Community Parks &amp; Playgrounds</li> <li>» Community Legacy Program</li> </ul>





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# CHAPTER 5

## DESIGN IMPLEMENTATION & NEXT STEPS



# Design Implementation & Next Steps

Given the 5.75-mile overall trail length from the City of Fruitland (south) to West Naylor Mill Road (north) and the accompanying cost of the proposed alignment, a phased implementation schedule is needed to ensure that all sections are realized in a balanced and efficient manner. The City will ultimately decide which segments to build and in what sequence. Factors that may affect these decisions include, but are not limited to, available funding, right-of-way and property acquisition, community and stakeholder support, and the political climate. The existing and proposed bike routes outlined in the *2017 Salisbury Bicycle Network Plan* will serve to fill in the gaps until a direct south/north route is implemented. Below is a suggested phasing sequence:

## Segment 7b (Marvel Street to West Naylor Mill Road)

The City submitted a Maryland Department of Transportation (MDOT) Transportation Alternatives Program (TAP) application in May 2018 to partially fund the construction of segment 7b from Marvel Road to the Henry S. Parker Athletic Complex. If the City is awarded a grant for this section, it may be one of the first sections to be built.

## Segment 3 (South Tower Drive – West College Avenue to South Boulevard)

This section of trail includes a road diet along South Tower Drive. The alignment is within the City-owned right-of-way and the proposed trail uses the existing road surface. This section requires improvements to intersections and trail crossings and may be constructed by the City as funding becomes available.

## Segment 1 (Fruitland to Milford Street)

Improvements to this existing section of trail include trail widening and a vertical buffer beginning at the US 13, Morris Prong bridge and the construction of a 12-foot-wide trail from Seagull Lane to Milford Street. An easement from Salisbury University is required to construct the trail across the University Park Student Apartments complex.

The remaining sections require easements from Norfolk Southern and acquisition of private property.

## Segment 2 (Salisbury University – Milford Street to West College Avenue)

The section of trail from Milford Street to Bateman Street is within City-owned right-of-way and within Salisbury University property. The section of trail will likely be maintained by the University. A road diet on Bateman Street and crossing improvements are within the City-owned right-of-way and may be constructed as funding becomes available. North of Bateman Street, the City will need to acquire an easement from Norfolk Southern to construct the trail within the railroad right-of-way.

## Segment 4 (South Boulevard to Carroll Street)

This segment requires an easement from Norfolk Southern and acquisition of private property along US-13. This segment requires intersection and crossing improvements at multiple locations along the alignment.

Implementation Phasing	Trail Segment	Estimated Cost
Short-term	Segment 7b (Marvel Street to West Naylor Mill Road)	\$3,373,374
	Segment 3 (South Tower Drive – West College Avenue to South Boulevard)	\$276,488
	Segment 1 (Fruitland to Milford Street)	\$977,094
Mid-term	Segment 2 (Salisbury University – Milford Street to West College Avenue)	\$574,644
	Segment 4 (South Boulevard to Carroll Street)	\$804,276
Long-term	Segment 6 (East Church Street to Naylor Street)	\$646,060
	Segment 7a (Naylor Street to Marvel Street)	\$1,546,574
	Segment 5 (Carroll Street to East Church Street)	\$1,201,072

### Segment 6 (East Church Street to Naylor Street)

This segment requires an easement from Norfolk Southern and acquisition of private property along East and West Railroad Avenue. A road diet is required along West Railroad Avenue, and East Railroad Avenue will require a conversion to one-way northbound travel to accommodate the trail. Intersection and crossing improvements are required for this segment.

### Segment 7a (Naylor Street to Marvel Street)

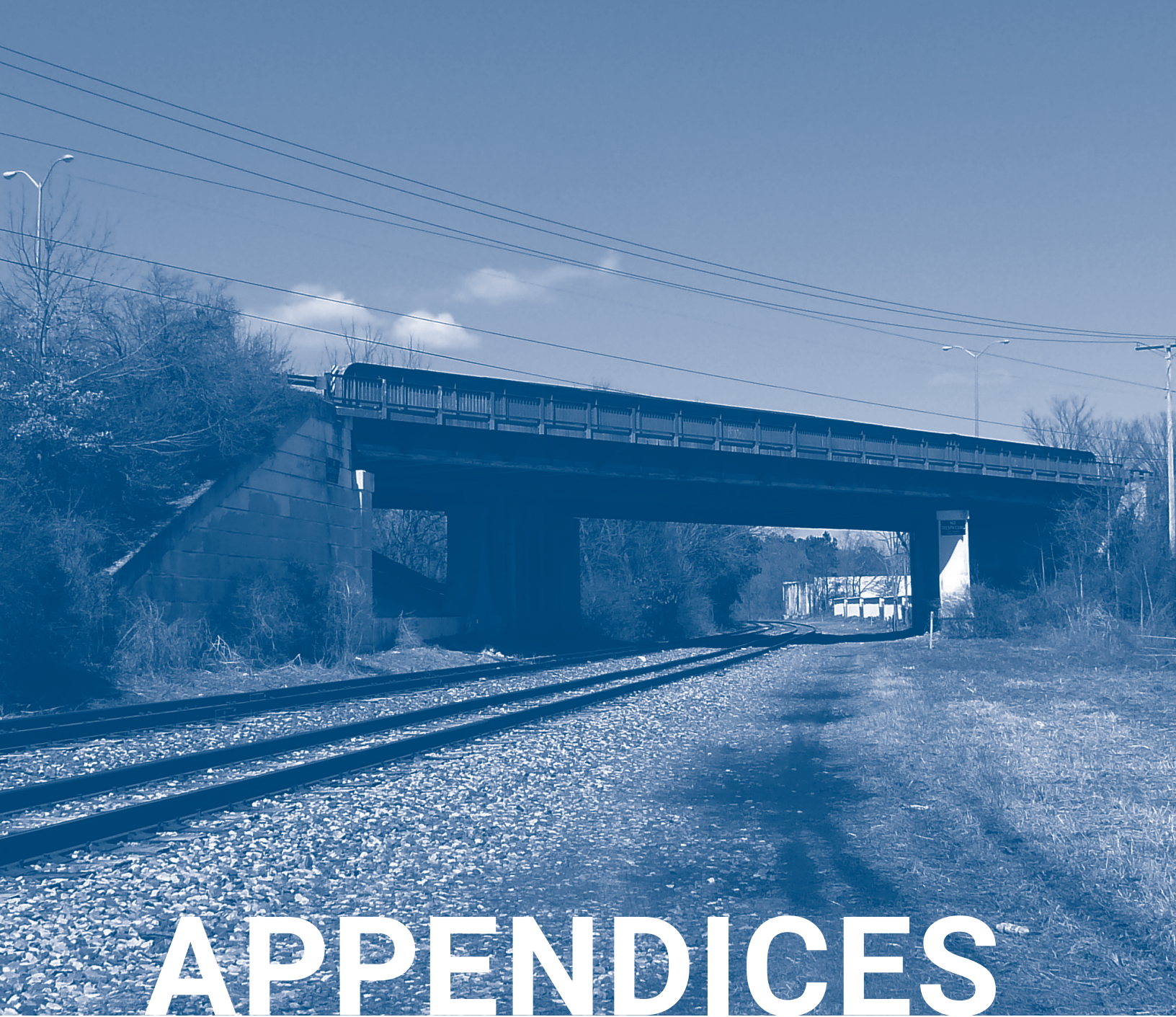
An easement from Norfolk Southern is required to construct this section of trail. This segment crosses over Brewington Branch and Peggy Branch. Additional engineering and construction costs are required to install a soldier pile retaining wall in these areas.

### Segment 5 (Carroll Street to East Church Street)

This segment requires an easement from Norfolk Southern and acquisition of private property. The trail requires extensive grading and the construction of three bridges and a soldier pile retaining wall. Bridges typically add significant expense to a trail project and additional time may be needed to secure construction funding.







# APPENDICES





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# APPENDIX A

## PRIMARY AND ALTERNATIVE ALIGNMENT MAPS



# Salisbury Rails with Trails

## Alternative Alignment Outside Railroad Right-Of Way

**Legend**

- Proposed Alignment
- Segment Break
- Bridge Crossing
- Road Crossing
- Rail Crossing

**Public Property**

- Salisbury University
- State of Maryland
- City of Salisbury

**Points of Interest**

- Library
- School

**Bike Network**

- Existing Trail
- Existing Bike Lane
- Existing Bike Boulevard
- Existing Shared Lane
- Proposed Shared Use Path
- Proposed Buffered Bike Lane
- Proposed Bike Lane
- Proposed Bike Boulevard
- Proposed Shared Lane



0 0.25 0.5 Miles



Shared-Use Path (SUP)  
Image: TDG



Separated Two-Way Bicycle Facility  
Image: City of Austin, TX



Rail Crossing  
Image: TDG



Shared-Use Side Path  
Image: TDG



Shared-Use Side Path  
Image: TDG



Shared-Use Side Path  
Image: TDG



Shared-Use Path Adjacent Railroad  
Image: TDG



# Salisbury Rails with Trails

## Primary Alignment Within Railroad Right-Of Way

**Legend**

- Proposed Alignment
- Segment Break
- Bridge Crossing
- Road Crossing
- Rail Crossing

**Points of Interest**

- Library
- School

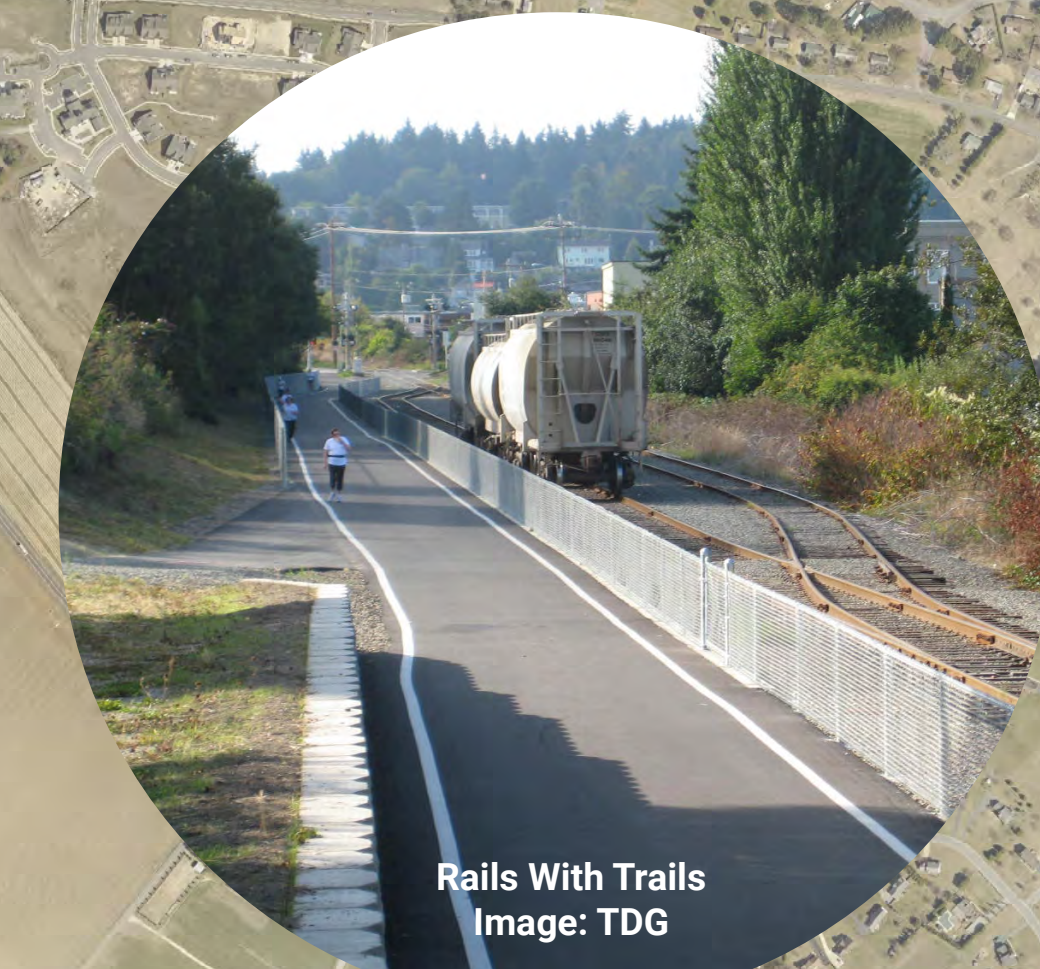
**Bike Network**

- Existing Trail
- Existing Bike Lane
- Existing Bike Boulevard
- Existing Shared Lane
- Proposed Shared Use Path
- Proposed Buffered Bike Lane
- Proposed Bike Lane
- Proposed Bike Boulevard
- Proposed Shared Lane

**Public Property**

- Salisbury University
- State of Maryland
- City of Salisbury

0 0.25 0.5 Miles





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# APPENDIX B

## PRIMARY AND ALTERNATIVE ALIGNMENT- SEGMENT DESCRIPTION



## Segment Description

The goal of the Salisbury Rails with Trails project is to provide a safe and accessible multi-modal trail from Fruitland to West Naylor Mill Road. The City has broken the 5.75-mile trail into several unique segments. Each segment is written as a stand-alone document to provide the reader with existing site information, a description of the proposed primary and alternative alignment and a list of opportunities and constraints to the projects implementation. The preferred alignment is accompanied by 35% design plans. Refer to Chapter 2 for existing site photos and accompanying description. Chapter 2 also includes a property Impacts table, cost estimate table and a before and after rendering of the preferred alignment.

The following trail segments are described below in detail:

- » Segment 1 (Fruitland to Milford Street)
- » Segment 2 (Salisbury University – Milford Street to West College Avenue)
- » Segment 3 (South Tower Drive – West College Avenue to South Boulevard)
- » Segment 4 (South Boulevard to East Carroll Street)
- » Segment 5 (East Carroll Street to East Church Street)
- » Segment 6 (East Church Street to Naylor Street)
- » Segment 7A & 7B (Naylor Street to West Naylor Mill Road)

## Segment 1: Fruitland to Milford Street

## Existing Conditions

Segment 1 begins at the City's most southern limits and extends along South Salisbury Boulevard, U.S. Route 13 Business (US-13 Bus.), from the City of Fruitland to Milford Street. The overall trail segment is approximately 0.6 miles in length. The main purpose of this trail segment is to extend the existing mile long 8-foot-wide asphalt trail from Fruitland to Salisbury University's southern border. The existing north/south trail is constructed within Maryland State Highway (MDSHA) right-of-way (ROW) and is situated between US-13 Bus. to the west and the active Norfolk Southern rail lines to the east. Much of this existing trail segment maintains a grass buffer with US-13 Bus. except where it bridges over the Morris Prong, a tributary of the Wicomico River. At this location the trail enters the roadway and shares the existing MDSHA bridge with vehicular traffic. The existing 8-foot-wide striped bike lane is separated from motor vehicle traffic by a 5-foot-wide striped buffer, which is in need of repainting. The existing 8-foot-wide asphalt trail continues for approximately 900-feet north of the bridge and terminates at the intersection of US-13 Bus. and Canal Park Drive. A 5-foot wide concrete sidewalk connects the existing trail to Salisbury University and points north.

The primary and alternative alignment for Segment 1 utilizes MDSHA right-of-way and Salisbury University property to connect the existing 8-foot-wide asphalt trail from the City of Fruitland to Milford Street. Design improvements to the existing trail include widening the striped bicycle facilities on the Morris Prong Bridge from 8-feet to 10-feet and installing a 3-foot wide vertical buffer to increase the level of protection for trail users crossing the bridge. Vertical separators may include flexible delineator posts, parking stops, planters, concrete barrier, or a raised concrete median among others. The ultimate design treatment will need to be coordinated with MDSHA and their bridge engineers.

North of the bridge, trail improvements include widening the existing 8-foot-wide asphalt trail to 12 feet. At the intersection of US-13 Bus. and Canal Park Drive, design improvements include shortening the trail crossing distance by tightening the turning radius for vehicles entering and exiting Canal Park Drive.

North of Canal Park Drive, the trail crosses the railroad tracks from west to east at a 90-degree angle. It then continues north on the east side of the University Park Student Apartments fence line, utilizing available space within the 25-foot lawn. A stormwater pond at the apartments southern limit offers a potential location for a trail wayside with landscaping and benches. At the northern limits of the property approaching Milford Street, the site is wooded and will need to be cleared and graded to accommodate a 12-

foot wide boardwalk as it traverses the northern limits of an existing bioretention facility. A small trail head is proposed on the south side of Milford Street where the trail and existing sidewalk intersect.

Locating the trail on the east side of the tracks provides access to students living in the University Park Student Apartments complex. It also takes advantage of the existing fence line separation with the rail line. Trail users are directed to cross the rail lines at established road intersections.

## Opportunities

- » Increase trail user comfort on the Morris Prong Bridge by implementing a vertical barrier between trail users and motor vehicles.
- » Increase trail crossing safety at Canal Park Drive by realigning the intersection and reducing the turning radius for motor vehicles.
- » Provide direct connection between the trail and student housing.
- » Provide opportunity for a trail wayside and interpretive signage at the storm pond.
- » Provide opportunity for a trail head on the south side of Milford Street where the proposed trail and existing sidewalk intersect.

## Constraints

- » Intersection realignment at Canal Park Drive may require MDSHA approval.
- » Right-of-way is required from MDSHA and Salisbury University.
- » Tree removal, grading, and a boardwalk are required on the University Park property near Milford Street.



## Segment 2: Salisbury University (Milford Street to West College Avenue)

## Existing Conditions

Segment 2 begins at Milford Street and extends north for approximately 0.6 miles to West College Avenue. The Annual Average Daily Traffic (AADT) on Milford Street is 5,715 and 12,510 on West College Avenue. The main purpose of this trail segment is to provide a north/south connection to the 12-foot wide pedestrian tunnel on Bateman Street that links Salisbury University main campus, located west of US-13 Bus., to its athletic fields and student housing on the east.

Bateman Street between US-13 Bus. and Wayne Street is a two-way road measuring 36 feet from face of curb to face of curb. East of Wayne Street, Bateman Street becomes a twenty-foot wide one-way westbound street with a 5-foot-wide bike lane. The AADT counts are not available for Bateman Street, but based on field observations and measurements, Bateman Street may be a viable candidate for a road diet.

South of Bateman Street, much of the property to the east of the railroad tracks is owned by Salisbury University and accommodates their athletic fields and parking garage. North of Bateman Street, properties to the east of the track are primarily private and accommodate a parking lot and a 28-acre brownfield under site remediation. On the west side of the tracks, commercial properties fronting US-13 Bus. back up to the existing Norfolk Southern railroad corridor and the City-owned South Tower Drive, which terminates 600 feet south of West College Avenue.

South Tower Drive is a two-way road with a 30-foot right-of-way. It is currently used as a service road, providing rear access to commercial buildings that front US-13 Bus. South Tower Drive runs parallel to the Norfolk Southern rail tracks with the edge of road approximately 47 feet west of the centerline of the tracks. Utility poles run along the east side of South Tower Drive with an average spacing of 300 feet. During field observations, it was noted that vehicles are parking on Norfolk Southern Property. Concrete wheel stops and signs are located less than 20 feet from the center line of the tracks. A billboard and train signal infrastructure are in the Norfolk Southern right-of-way just south of West College Avenue.

In 2015, Salisbury University hired a consulting company to prepare a Schematic Design for a pedestrian pathway along the east side of the existing Norfolk Southern railroad corridor from Milford Street to West College Avenue. The goal of the project was to:

- » Provide connections to existing points of access.
- » Provide proper lighting and camera coverage along the entire length of the project.
- » Provide a chain-link fence and landscaping to separate the trail from the active railroad.
- » Provide storm water management facilities to address increased impervious area.

After a breakdown in discussion between Norfolk Southern and Salisbury University, project plans for the pedestrian path are currently on hold awaiting the outcome of the City-led effort on this project.

## Proposed Trail Alignment

The proposed primary and alternative alignments extend north from Milford Street to Bateman Street as a 12-foot-wide trail. The Annual Average Daily Traffic (AADT) on Milford Street is 5,715. The alignment runs on the East side of the railroad tracks as originally proposed in the Salisbury University schematic design. The proposed trail is contained within City-owned right-of-way at Plant Street, extending north within Salisbury University property. The trail maintains a 2-foot-wide horizontal clearance from the Norfolk Southern railroad property line. Minor grading, fence relocation, stormwater management, and site clearing are required along this section of trail. South of the University baseball field, a trail connection to Wayne Street is proposed using the existing 12-foot-wide service road.

At Bateman Street, a proposed road diet reduces the trail crossing distance from 36 feet to 22 feet by reducing travel lane widths and implementing curb extensions on the north side of the street. From the trail crossing to US-13 Bus., Bateman Street maintains its original cross-section dimension to accommodate the existing turn lanes. A trail head is proposed on the south side of Bateman Street within City owned right-of-way between the University garage and the Norfolk Southern-owned rail corridor. The trail head provides an opportunity for site amenities including, but not limited to, planting, benches, a water fountain, call box, and trash and recycle receptacles.

## Primary Alignment

At Bateman Street, the proposed primary alignment makes a 90-degree turn across the railroad tracks and continues north to West College Avenue within the Norfolk Southern right-of-way. A 25-foot-wide horizontal clearance is maintained between the edge of trail and center of track and a two-foot wide horizontal clearance is maintained with the utility poles located to the west. The trail intersects the city-owned South Tower Drive 600 feet south of West College Avenue. Due to site constraints related to utilities on Norfolk Southern Property at this location, a conversion from two-way traffic to one-way northbound traffic is proposed along the entire length of South Tower Drive to accommodate the trail. This conversion provides space for an 11-foot-wide northbound travel lane, a 5-foot-wide planted buffer and a 12-foot wide trail. The proposed alignment avoids utility pole conflicts along the corridor and signal and utility conflicts at the intersections. The Annual Average Daily Traffic (AADT) on West College Avenue is 12,510.

## Opportunities

- » Provide a low-stress, off-road bicycle facility.
- » Increase accessibility to Salisbury University's athletic complex and student housing.
- » Increase connectivity between the Salisbury University pedestrian bridge and points north and south.
- » Implement a road diet on Bateman Street to accommodate north side curb extensions and reduce the trail crossing distance.
- » Provide opportunity for a trail head and site amenities at Bateman Street .
- » Connect to the proposed shared-use path along West College Avenue.
- » Primarily utilize Salisbury University and City-owned right-of-way.

## Constraints

- » Implementing a road diet on Bateman Street requires significant changes to the northern curb line.
- » Convert South Tower Drive to one-way northbound traffic to accommodate a buffered trail.
- » Reconstruction of South Tower Drive intersection at West College Avenue.
- » Right-of-way is required from Salisbury University south of Bateman Street and from Norfolk Southern north of Bateman Street.

## Alternative Alignment

The proposed alternative alignment heads east along the south side of Bateman Street. Recommendations for this section of the trail include a road diet on Bateman Street and widening the existing 10-foot-wide sidewalk to 12 feet with a 5-foot-wide minimum buffer between the proposed trail and travel lanes. The 5-foot-wide buffer provides an opportunity for amenities like street furnishing and plantings, which will provide a more comfortable space for pedestrians. With the implementation of the trail, the existing westbound bike lane on Bateman Street would be eliminated.

At the intersection of Bateman Street and South Division Street, the trail crosses Bateman Street and proceeds north as a 12-foot-wide trail with 5-foot-wide buffer on the west side of South Division Street to West College Avenue. The AADT on this section of South Division Street is 10,800. Construction of this trail segment requires right-of-way from Salisbury University and Dresser Industries Inc.

## Opportunities

- » Provide a low-stress, off-road bicycle facility between Bateman Street and West College Avenue.
- » Increase accessibility to Salisbury University athletic complex and student housing.
- » Increase connectivity between the Salisbury University pedestrian bridge and destinations to the north and south.
- » Implement a road diet on Bateman Street to accommodate a 12-foot-wide trail with 5-foot-wide buffer on the south side of the road.
- » Provide opportunity for a trail head and site amenities at Bateman Street.
- » Connect to the proposed shared-use path along West College Avenue.
- » Primarily utilize Salisbury University and City-owned right-of-way.

## Constraints

- » The intersection crossing at Avery Street requires reconstruction to reduce crossing distances and slow traffic turning movements.
- » A circuitous route to downtown may reduce the number of trail users.
- » Some user groups may not feel comfortable traversing potential conflict points resulting from driveways intersecting the trail north of Avery Street.
- » Right-of-way is required from Salisbury University and Dresser Industries Inc.
- » Tree removal, grading, and utility and curb relocation is required on property owned by Dresser Industries Inc.



# Segment 3: South Tower Drive (West College Avenue to South Boulevard)

## Existing Conditions

Segment 3 begins at West College Avenue and extends north along South Tower Drive for approximately 0.35 miles to South Boulevard. The main purpose of this trail segment is to extend the trail from Salisbury University towards downtown by utilizing City-owned right-of-way. South Tower Drive is a two-way road with a 35 to 40-foot right-of-way. The Annual Average Daily Traffic (AADT) is unknown for South Tower Drive but based on field observations and conversations with City staff, it is assumed to be low. It is currently used as a service road, providing rear access to commercial buildings that front US-13 Bus. on the West side. South Tower Drive runs parallel to the Norfolk Southern rail tracks with the edge of road approximately 47 feet west of the centerline of the tracks. Lloyd Street creates a T-intersection with South Tower Drive approximately 500 feet south of South Boulevard. Lloyd Street marks the beginning of curb and gutter and storm drains along the east side of South Tower Drive to South Boulevard. Utility poles run along the east side of South Tower Drive with an average spacing of 300 feet. During field observations, it was noted that vehicles are parking on Norfolk Southern Property less than 20 feet from the center line of the tracks. A billboard and train signal infrastructure are located in the Norfolk Southern right-of-way just south of South Boulevard.

## Proposed Primary and Alternative Alignments:

### Primary Alignment

The primary alignment begins with crossing improvements at West College Avenue to include crosswalk striping and signage. The proposed primary trail alignment for this segment is within City owned right-of-way on South Tower Drive west of the Norfolk Southern rail lines. Due to site constraints related to utilities on Norfolk Southern Property along this segment, a conversion from two-way traffic to one-way northbound traffic is proposed along the entire length of South Tower Drive to accommodate the trail. This conversion provides space for an 11-foot-wide northbound travel lane, a 5-foot-wide planted buffer and a 12-foot wide trail (See Image #). The proposed alignment avoids utility pole conflicts along the corridor and signal and utility conflicts at the intersections.

## Opportunities

- » Provide a low stress, off-road bicycle facility with planted buffer and protective barrier.
- » Improve streetscape aesthetic with a planted buffer.
- » Increase accessibility from Salisbury University to downtown.
- » Implement a conversion from two-way traffic to one-way northbound traffic on South Tower Drive to accommodate a protected trail and streetscape planting.
- » Connect to the proposed shared-use path along West College Avenue and the proposed bike lanes along South Boulevard.
- » Increase crossing safety at West College Avenue and South Boulevard
- » Utilizes City-owned right-of-way.

## Constraints

- » Implement a conversion from two-way traffic to one-way northbound traffic on South Tower Drive requires significant changes to traffic flow and may receive push back from existing businesses along US-13 Bus.
- » Significant impacts to the existing eastern curb line and storm drains to accommodate the trail and planted buffer.
- » Reconstruction of South Tower Drive intersection at West College Avenue and South Boulevard.

## Alternative Alignment

The alternative alignment for Segment 3 begins with trail crossing improvements at West College Avenue and South Division Street. Improvements include reconstruction of the intersection to reduce crossing distances and slow traffic turning movements. It also includes appropriate signage to alert trail users and road users of potential conflicts.

North of West College Avenue, the alternative alignment utilizes the existing Eastern Shore Drive right-of-way. Eastern Shore Drive is a 60-foot-wide, five-lane road with a 90-foot-wide right-of-way. It has an AADT of 11,175. The City is currently reviewing design concepts that propose a road diet on Eastern Shore Drive to accommodate bike lanes or a trail from West College Avenue to Carroll Street. A final design treatment has not been decided, but the chosen improvements will ultimately improve pedestrian and bicycle connectivity along the corridor.

## Opportunities

- » Improve pedestrian and bicycle safety along the corridor.
- » Provide a comfortable designated space for pedestrians and bicyclists.
- » Improve streetscape aesthetic through landscaping and curbside amenities.
- » Provide pedestrian and bicycle access to businesses, services, schools and homes.
- » Improve intersection safety.

## Constraints

- » A circuitous route to downtown may reduce the number of trail users.
- » If bike lanes are the chosen facility type, some user groups may not feel comfortable using an on-road facility.
- » Multiple street and driveway intersections along the trail alignment increase opportunities for potential conflicts. Some user groups may not feel comfortable traversing these potential conflict points.
- » Impacts to existing infrastructure may be significant depending on the chosen facility type.



## Segment 4: South Boulevard to East Carroll Street

## Existing Conditions

Segment 4 begins at South Boulevard and extends 0.7 miles north to East Carroll Street. The main purpose of this trail segment is to connect Salisbury University and the businesses along the US-13 Bus. corridor to Peninsula Regional Medical Center and downtown Salisbury. Segment 4 presents three potential north/south alignments: one along US-13 Bus., one along the Norfolk Southern rail corridor and one along Eastern Shore Drive. The US-13 Bus. corridor was eliminated as a potential alignment option due to existing infrastructure, an Annual Average Daily Traffic (AADT) count of 22,731, fast-moving traffic, and numerous driveway and intersection conflict points.

The Norfolk Southern rail corridor was selected as the preferred alignment because of its wide right-of-way, ranging in width from 80 feet at South Boulevard to 105 feet at South Division Street. Within this segment, the Norfolk Southern rail corridor is interrupted by two street crossings, one at South Division Street and another at East Vine Street. The City plans to eliminate the South Division Street crossing, closing the street from the US-13 Bus. intersection to Cross Street.

A number of commercial properties back up to the rail corridor east and west of the tracks between South Boulevard and South Division Street. North of South Division Street, the Norfolk Southern rail right-of-way narrows to approximately 40 feet in width. It is buffered from US-13 Bus. on the west by a line of evergreen trees and a 36-foot-wide property owned by Rinnier Development Company. A 4-foot-wide grass buffer and 5-foot-wide concrete sidewalk run along the back of curb adjacent US-13 Bus. The grass buffer accommodates utility poles spaced at 150 feet on-center. East of the tracks, Cross Street runs parallel to the railroad corridor from South Division Street to East Vine Street. A parking lot, Evolution Brewery, and a medical facility hug the eastern edge of the Norfolk Southern rail property from East Vine Street to Carroll Street. The separation between parked vehicles and the center line of the tracks is less than 25 feet.

Eastern Shore Drive was selected as an alternative alignment for Segment 4 based on its wide right-of way and low AADT of 11,175.

## Proposed Primary and Alternative Alignments

## Primary Alignment

The primary alignment begins with crossing improvements at South Boulevard. A proposed road diet reduces the trail crossing distance from 45 feet to 35 feet by implementing a curb extension on the north side of the street. At the intersection of US-13 Bus., South Boulevard will maintain its original cross section dimension to accommodate the existing turn and through lanes.

North of South Boulevard, the proposed trail alignment stays within the Norfolk Southern right-of-way until East Vine Street. The trail runs on the west side of the tracks and maintains a minimum 25-foot horizontal clearance from the centerline of the tracks to the edge of trail. The trail also maintains a 2-foot-wide clearance with utility poles on the west side. South of Downing Street, 550 feet of existing fence line sits 13 feet inside the Norfolk Southern right-of-way. In order to accommodate the proposed trail, the fence will need to be relocated to the property line. An access point to the trail is located at Downing Street.

North of Downing Street, the Norfolk Southern right-of-way expands, and the trail shifts further to the west of the property, increasing the horizontal clearance from the center line of the track to 65 feet. Continuing north, the trail crosses South Division Street, which is slated for closure by the City, and stays within the Norfolk Southern right-of-way to East Vine Street.

Between East Vine Street and East Carroll Street, the trail utilizes property owned by Rinnier Development Company. The design treatment for this segment of the trail includes the removal of existing sidewalk between South Division Street and East Carroll Street to increase the grass buffer along US-13 Bus. to 5 feet. The reconstruction of the sidewalk and planting buffer will accommodate ornamental trees along the road and a 12-foot-wide flexpave trail. The use of flexpave material for the trail surface in this section helps limit impacts to the line of existing evergreen trees. A description of flexpave material is provided in Chapter 5 of this document.

## Opportunities

- » Improve crossing treatment on South Boulevard.
- » Provide a low-stress, off-road bicycle facility.
- » Provide opportunity for linear bioretention facilities, landscaping, and site furnishings.
- » Improve streetscape aesthetic with a planted buffer between South Division Street and East Carroll Street.
- » Increase accessibility from Salisbury University to downtown.
- » Connect to the proposed bicycle facilities on East Carroll Street.

## Constraints

- » The intersection crossing at South Boulevard requires reconstruction of the north side of the road to accommodate a curb extension and reduce crossing distances. Right-of-way is required from Waverly Associates Ltd.
- » Relocate 550 feet of fence line south of Downing Street
- » Right-of-way is required from Norfolk Southern and Dresser Industries Inc.
- » Remove existing sidewalk from South Division Street to East Carroll Street.
- » Relocate billboard and signs from South Division Street to East Carroll Street.

## Alternative Alignment

The alternative alignment for Segment 4 utilizes the existing Eastern Shore Drive right-of-way. Eastern Shore Drive is a 60-foot-wide, five-lane road with a 90-foot-wide right-of-way. It has an AADT of 11,175. The alignment begins with trail crossing improvements of South Boulevard at South Division Street. The City is currently reviewing design concepts that propose a road diet on Eastern Shore Drive to accommodate bike lanes or a trail from East College Avenue north to East Carroll Street. A final design treatment has not been decided, but the chosen design will ultimately improve pedestrian and bicycle connectivity along the corridor.

## Opportunities

- » Improve pedestrian and bicycle safety along the corridor.
- » Provide a comfortable designated space for pedestrians and bicyclists.
- » Improve streetscape aesthetic through landscaping and curbside amenities.
- » Provide pedestrian and bicycle access to businesses, services, schools, and homes.
- » Improve intersection safety.

## Constraints

- » A circuitous route to downtown may reduce the number of trail users.
- » If bike lanes are the chosen facility type, some user groups may not feel comfortable using an on-road facility.
- » Several streets and driveways intersect the trail alignment increasing opportunities for potential conflicts. Some user groups may not feel comfortable traversing these potential conflict points.
- » Impacts to existing infrastructure may be significant depending on the chosen facility type.



## Segment 5: East Carroll Street to East Church Street

## Existing Conditions

Segment 5 begins at East Carroll Street and extends north for approximately 0.4 miles to the beginning of East Church Street. The main purpose of this trail segment is to provide a north/south connection to downtown Salisbury with connections to the Riverwalk and other area attractions. The South Prong Wicomico River is the lowest elevation through this segment. The railroad tracks sit on top of a graded berm that bridge over the South Prong Wicomico River, East Main Street, and West Salisbury Parkway (US-50 Bus.). Even though there is currently a single line operating in this corridor, these single span rail bridges were built to accommodate two rail lines. The bridge over the South Prong Wicomico River is approximately 20 feet wide and spans approximately 50 feet. The bridge abutments extend an additional 10 feet on either side of the existing bridge. The bridge over East Main Street is approximately 30 feet wide and spans approximately 50 feet. The bridge abutments extend an additional 15 feet on either side of the existing bridge. The bridge over West Salisbury Parkway is approximately 48 feet wide and spans approximately 75 feet. A retaining wall for West Salisbury Parkway extends on both sides.

Between East Carroll Street and East Main Street, the Norfolk Southern train lines are located within property owned by the Rinnier Development Company. The Rinnier Development Company right-of-way expands from a width of 75 feet at East Carroll Street to 130 feet at East Main Street. A 4-foot-wide grass buffer and 5-foot-wide concrete sidewalk run along the back of curb adjacent to US-13 Bus. The grass buffer accommodates utility poles spaced at 150 feet on-center. A line of evergreen and deciduous trees and 4 billboards separates US-13 Bus. and the mounded train track berm. Commercial and residential properties back up to the Rinnier Development Company property on the east side of the tracks.

Maryland State Highway Administration (MDSHA) is currently working on plans to replace the bridge deck on US-13 Bus. from East Carroll Street to South of US-50. Design improvements include road and bridge widening to the east to accommodate a 4-foot wide bike lane in either direction. Additional improvements include green infrastructure improvements east of the curb line on property currently owned by Rinnier Development Company. Construction is scheduled to begin in the Fall of 2018.

## Proposed Primary and Alternative Alignments

The proposed primary and alternative alignments extend north from East Carroll as a 12-foot-wide asphalt trail. The alignment runs on the west side of the railroad tracks through the Rinnier Development Company right-of-way and elevates up to the rail bridge crossing the South Prong Wicomico River approximately 240 feet south of East Main street. The trail stays at the rail line elevation as it crosses East Main Street. A detailed engineering study and acquisition of right-of-way is required to determine whether the proposed new pedestrian bridge can utilize the existing rail bridge and its abutments.

A spur from the main trail alignment extends north from East Carroll Street along US-13 Bus. at road grade to connect to the Riverwalk at East Main Street. Proposed design improvements at East Main Street include a trail head, landscaping, and site furnishing. Alterations to MDSA bridge deck design are required to implement the proposed trail spur. Alterations to MDSA design plans include the removal of the two planned 4-foot-wide bike lanes and shifting the eastern curb edge to the west 8 feet to accommodate the 12-foot-wide trail spur.

North of East Main Street, the elevated trail remains to the west of the rail tracks and utilizes property owned by Edward Banks Jr. (Royal Farms) and Michael Phoebus (American Tire Center). This section of the trail requires an elevated boardwalk to accommodate changes in grade from east to west. A billboard behind Royal Farms will require relocation. A trail spur to the west connects US-13. Bus and Church Street through property owned by MDSA. Church Street has the potential to serve an important east/west link to downtown Salisbury. The trail bridges West Salisbury Parkway and continues north on the west side of the tracks through property owned by Scott Brittingham to East Church Street. The trail at this location is back on road grade, and an easement is required to provide room for the 12-foot-wide trail and 5-foot-wide planted buffer on both sides of the trail. A curb extension on the south side of East Church Street improves the east/west pedestrian and bicycle crossing safety by reducing the road crossing width.

## Opportunities

- » Provide a low-stress, off-road bicycle facility that negates busy street crossings.
- » Provide elevated trail with views of downtown Salisbury and the river.
- » Provide road grade trail spur to East Main Street.
- » Increase connectivity between the downtown core, Riverwalk, and other destinations to the north and south.
- » Provide an opportunity for a trail head and site amenities at East Main Street.
- » Provide a connection to the Riverwalk, Downtown, and the Salisbury Zoological Park.
- » Provide trail spur connection to US-13. Bus and Church Street just south of West Salisbury Parkway.
- » Improve streetscape aesthetic with a 5-foot planted buffer on either side of the trail approaching East Church Street.

## Constraints

- » Requires an easement from Rinnier Development Company and Norfolk Southern and acquisition of private property north of East Main Street.
- » A constrained right-of-way shifts the trail edge to a 15-foot offset from the centerline of the tracks.
- » An engineering study is required to determine feasibility of the three bridge crossings. Bridges typically incur a substantial expense to a trail project, and additional time may be needed to secure construction funding.
- » Changes in topography requires a retaining wall or elevated boardwalk for the trail to run parallel to the rail tracks. An engineering study is required to determine feasibility and appropriate structures.
- » Relocate billboards to accommodate the trail.
- » Significant alterations to MDSHA's design plans for the bridge deck on US-13 Bus are required to accommodate an at-grade trail spur to East Main Street.



# Segment 6: East Church Street to Naylor Street

## Existing Conditions

Segment 6 begins at East Church Street and extends north 0.5 miles to Naylor Street. Naylor Street is the natural terminus for this trail segment as it provides a signalized crossing at the intersection of US-13 Bus. for east and west bicycle and pedestrian traffic. North of East Church Street, the Norfolk Southern rail corridor bisects West Railroad Avenue (57-foot right-of-way) from East Railroad Avenue (26-foot right-of-way). The entire corridor width, including the Norfolk Southern property, is approximately 140 feet wide and consists of asphalt and gravel. The corridor is primarily light industrial and home to the historic shuttered Union Station, which is located at the northeast corner of West Railroad Avenue. Residential buildings front East Railroad Avenue between Elizabeth Street and Anne Street. The corridor is interrupted by two intersections, one at East Isabella Street and the other at Elizabeth Street.

West Railroad Avenue is an unmarked two-way road with a 10-foot-wide sidewalk with overhead utilities on the west side of the road. Between East Church Street and East Isabella Street, the curb to curb road width is 33 feet. East of West Railroad Avenue, a 25-foot-wide gravel parking lot, which is privately owned by John Speake, buffers the Norfolk Southern property. North of East Isabella Street, the curb to curb width on West Railroad Avenue expands to 47 feet with a 10-foot-wide asphalt path on the Norfolk Southern Property. West Railroad Avenue continues north and terminates at Wilson Street. A rail spur parallels Wilson Street to the north and continues to downtown Salisbury. The rail spur provides an excellent opportunity for a future rail to trails project connecting downtown to the historic Union Station.

East Railroad Avenue is an unmarked two-way road with a 5-foot-wide sidewalk and overhead utilities on the east side of the road. Private businesses utilize the Norfolk Southern property on the west side of the road for parking and in some cases, have installed private parking signs. Despite NO PARKING signs north of Elizabeth Street, cars were observed parking within 11 feet of the active rail lines. Six utility poles are spaced approximately 100-feet on-center along the west side of East Railroad Avenue between Baker Street and Brown Street. East Railroad Avenue continues as Brown Street north of Barclay Street.

North of the shuttered Union Station two rail spurs intersect the main rail line and continue north. The Norfolk Southern right-of-way expands to 55 feet and passes behind a number of commercial and industrial buildings before reaching Naylor Street.

The proposed primary and alternative alignments begin with street crossing improvements at East Church Street

and continue north on the east side of West Railroad Avenue to Elizabeth Street. A road diet and acquisition of private property is required along West Railroad Avenue to accommodate the 12-foot-wide asphalt trail and 5-foot-wide linear bioretention planting buffer. The road diet includes an 8-foot-wide parking lane on the west side of the street and two 11-foot travel lanes. Between East Church Street and East Isabella Street, approximately 11 feet of right-of-way is required from the property of John Speake. Curb extensions are proposed on West Railroad Avenue on the north side of East Church Street and the north and south sides of East Isabella Street. A five-foot-wide sidewalk is proposed between West Railroad Avenue and East Railroad Avenue.

Between East Isabella Street and Elizabeth Street, the trail and planted buffer remain within the city owned right of way. Curb extensions are proposed on West Railroad Avenue on the north and south sides of Elizabeth Street. A 5-foot-wide sidewalk is proposed between West Railroad Avenue and East Railroad Avenue. North of Elizabeth Street, a trail spur continues north to connect Union Station and a future western rail trail to Downtown.

On the north side of Elizabeth Street, the main trail crosses the railroad tracks at 90 degrees to the east and continues north on the west side of East Railroad Avenue to Brown Street where the primary and alternative alignment split. To accommodate a trail on the west side of East Railroad Avenue, a two-way to one-way northbound road conversion is required between Elizabeth Street and Barclay Street. The proposed 10-foot-wide northbound travel lane is separated from the trail by a varying width planted street buffer and vertical barrier. Pavement striping is provided along the western edge of the trail where the utility poles are within 2 feet of the edge of trail.

## Primary Alignment

Beginning at Barclay Street, the primary trail alignment veers west onto property owned by Frances Whittington. The 12-foot-wide trail travels behind a storage building and continues to maintain a 2-foot-wide clearance with the Norfolk Southern rail property. The area behind the storage building creates a pinch point for the trail. Pavement striping is provided along the trail where the storage building is within 2 feet of the edge of trail. The trail continues north behind commercial buildings owned by Brown Street LLC and Peninsula Warehouse LLP. An easement and fence relocation are required for this section of trail up to Naylor Street.

## Opportunities

- » Improve pedestrian and bicycle safety along the corridor.
- » Eliminate parking close to the active rail line with a planted buffer and protective barrier on West and East Railroad Avenue.
- » Extend the sidewalk connections across West and East Railroad Avenue.
- » Improve street crossings with curb extensions, pavement marking, and signage.
- » Improve streetscape aesthetic and provide shade with a planted buffer and linear bioretention facilities.
- » Implement a conversion from two-way to one-way northbound traffic on East Railroad Avenue and Brown Street to accommodate a protected trail and streetscape planting.
- » Provide connection to future improvements at Union Station and the western trail spur to downtown.
- » Provide an east/west connection at Naylor Street.

## Constraints

- » Requires property acquisition from John Speake and minor easements from Norfolk Southern.
- » Implementing a road diet on West Railroad Avenue requires significant changes to the eastern curb line.
- » Implementing a conversion from two-way traffic to one-way northbound traffic on East Railroad Avenue and Brown Street requires significant changes to traffic flow and may receive push back from existing businesses and the community.
- » A circuitous route to Naylor Street may reduce the number of trail users.
- » Several streets and driveways intersect the trail alignment north of Barclay Street, increasing opportunities for potential conflicts. Some user groups may not feel comfortable traversing these potential conflict points.
- » Significant impacts to the existing northern curb line and storm drains on Naylor Street to accommodate the trail and planted buffer.

Beginning at Barclay Street, the alternative trail alignment veers east along Brown Street. To accommodate a trail on the west side of Brown Street, a two-way to one-way northbound roadway conversion continues from Barclay Street to Naylor Street. The proposed 10-foot-wide northbound travel lane is separated from the trail by a varying width paved buffer. The trail crosses Naylor Street and follows Naylor street West to the signalized intersection crossing at US-13 Bus. Naylor Street has a 40-foot right-of-way. A road diet and curb relocation on the north side of the street provides room for a 12-foot-wide trail with a planted buffer of varying width.



# Segment 7A & 7B: Naylor Street to West Naylor Mill Road

## Existing Conditions

Segment 7 begins at Naylor Street and extends north for approximately 2.6 miles to West Naylor Mill Road and the Henry S. Parker Athletic Complex. The main purpose of this trail segment is to provide a north/south connection from downtown to commercial businesses and the Henry S. Parker Athletic Complex. The primary alignment follows the Norfolk Southern rail corridor under the North Salisbury Boulevard overpass and crosses the Peggy Branch and Brewing Branch. The Maryland State Highway North Salisbury Boulevard overpass creates a pinch point in the corridor. The centerline of the tracks is 26 feet from the eastern bridge abutment. Two rail tracks operate this segment up to the Peggy Branch bridge. The corridor is sparsely wooded in the southern section with a number of commercial businesses backing up to the rail corridor further north.

The alternative alignment uses the existing street network, including Naylor Street, North Division Street, Union Avenue, and Emerson Avenue. All streets accommodate two-way traffic and have a sidewalk, curb, and gutter except for Emerson Avenue. North of Deers Head Hospital Road, Emerson Avenue has curb and gutter in some sections but does not have sidewalks. Utility poles are spaced 140-feet on-center on the north and east sides of the streets. The corridor is primarily residential and services the North Salisbury Elementary School, which is located at the corner of Union Avenue and Emerson Street, and the Deer’s Head Hospital Center.

At Marvel Road, the primary and alternative alignments utilize Marvel Road and Scenic Drive to connect with the Henry S. Parker Athletic Complex. West of Goddard Parkway, Marvel Road is a two-way 40-foot-wide road that intersects with Industrial Parkway and Scenic Drive. It services a number of commercial buildings and ends 500 feet west of Industrial Parkway. A gate closes the entrance to the abandoned Scenic Drive cul-de-sac.

Scenic Drive consists of two abandoned fully constructed cul-de-sacs split by the Salisbury Bypass. There is currently no road or trail connections under the Salisbury Bypass between the two cul-de-sacs. Despite being abandoned, Scenic Drive is in relatively good condition with some surface cracking and vegetation growth. Fire hydrants and other utilities are located at the back of the road’s 6-inch-high asphalt curb. The entire section of Scenic Drive is wooded with a stream valley and floodplain on the west side of the road. The Scenic Drive cul-de-sac north of the Salisbury Bypass is blocked by jersey barriers approximately 500 feet

south of West Naylor Mill Road. This section of road services the Naylor Mill Paleo Water Plant and one other business.

## Proposed Primary and Alternative Alignments

### Primary Alignment

The primary alignment proceeds north from Naylor Street on the east side of the Norfolk Southern rail tracks. The 12-foot-wide asphalt trail maintains a 25-foot-wide horizontal separation with the centerline of the tracks. A rail spur from the east merges with the main rail line requiring the trail to shift east across private property owned by Morris and Morris Ltd. and make a 90-degree crossing with the track of the rail spur. An easement is required from Norfolk Southern and Morris and Morris Ltd. The trail continues north within the Norfolk Southern right-of-way. A proposed trail entrance from Calloway Street connects the trail to residential neighborhoods in the east. North of Calloway Street the trail passes through Verizon property and follows the double rail lines under North Salisbury Boulevard. Due to site constraints in this area, the western edge of trail is 14 feet from the centerline of the track. A proposed fence provides a vertical separation under US-13 BUS.

North of North Salisbury Boulevard, the trail continues in the Norfolk Southern right-of-way and maintains a 2-foot-wide horizontal clearance with the property line. The western edge of trail is approximately 17 feet from the centerline of the track through this constrained double rail track corridor. A boardwalk and bridge are proposed across the Peggy Branch and Brewing Branch. A number of trees will need to be assessed for removal based on the location of the trail. A trail spur to the east connects to West Gordy Road and points east via the signalized crossing at US-13 Bus. A trail head with benches, site furnishing, and landscaping is proposed on the south side of Marvel Road to indicate the beginning or end of the rails-with-trails segment.

The primary and alternative alignments continue north via Marvel Road and Scenic Drive. A road diet is proposed on Marvel Road from Goddard Parkway to Scenic Drive to accommodate the 12-foot-wide trail. The 40-foot-wide roadway is reduced to two 11-foot-wide travel lanes, a 7-foot-wide linear bioretention facility and 12-foot-wide trail on the south side of the street. Design improvements include pavement markings and signage across intersecting driveways and road.

At Scenic Drive, design improvements include the removal of over 11 feet of asphalt on the east side of the road up to the Naylor Mill Paleo Water Plant. The removal of excess asphalt provides an opportunity for reforestation and waysides along the stream valley corridor. It also provides stormwater credit opportunities for the City through the removal of excess asphalt. The 12-foot-wide trail utilizes the remaining asphalt on the west side of the road and receives a mill and overlay treatment to provide a smooth trail surface. As the trail reaches the end of the cul-de-sac at Salisbury Bypass, it veers west into the forested stream valley and crosses beneath the Parkway, rising again on the north side of the parkway to merge back with Scenic Drive. The section of trail under Salisbury Bypass includes an elevated boardwalk through the floodplain. The boardwalk is 12 feet wide with railings and is constructed above the 100-year flood elevation. North of Salisbury Bypass, the trail continues north within the wooded corridor. At the Naylor Mill Paleo Water Plant, a road diet is proposed for the open section of Scenic Drive. The 28.5-foot roadway is reduced to two 11-foot travel lanes by relocating the curb and gutter 6.5 feet into the roadway. The relocation of the curb provides space for a five-foot-wide planted buffer and 12-foot-wide flexpave trail behind the curb. Intersection improvements at Scenic Drive and West Naylor Mill Road include pavement marking and signage. The trail continues north into the Henry S. Parker Athletic Complex on the East side of the entrance drive. A trailhead with benches and site amenities are located at the driveway entrance to the pavilion and playing fields.

## Opportunities

- » Provide a low stress off-road bicycle facility.
- » Provide a trail connection to Doverdale Park and its residential community via Calloway Street.
- » Provide a trail connection under the busy five lane US-13 Bus.
- » Provide a trail connection to West Gordy Road and points east via the signalized crossing at US13 Bus.
- » Provide direct connection to the Henry S. Parker Athletic Complex via the Norfolk Southern right-of-way, Marvel Road, and Scenic Drive.
- » Provide opportunity for a trail head, landscaping, and site amenities at Marvel Road
- » Provide a road diet on Marvel road to include two 11-foot-wide travel lanes, a 7-foot-wide linear bioretention facility, and 12-foot-wide trail on the south side of the street.
- » Improve intersection safety.
- » Remove excess asphalt along Scenic Drive and provide an opportunity for reforestation along the Scenic Drive trail alignment.
- » Provide opportunities for waysides along Scenic Drive.
- » Provide opportunity for wetland improvements, nature exhibits, and education stations along Scenic Drive.

## Constraints

- » Requires an easement from Norfolk Southern and a handful of private properties.
- » Constrained rail corridor between US-13 Bus. and the Peggy Branch moves the trail within <25 feet of the centerline of the tracks
- » An engineering study is required to determine feasibility of two bridge crossings. Bridges typically incurs substantial costs expense to a trail project, and additional time may be needed to secure construction funding.
- » Limited connections to the neighborhoods on the west side of the tracks.
- » Requires grading and boardwalk construction approaching the Peggy Branch and Brewington Branch as well as under Salisbury Parkway.
- » Requires a tree assessment for potential removal.



The alternative alignment proceeds east from Naylor Mill Drive across the signalized US-13 Bus. on the north side of the street. A proposed road diet on Naylor Street requires the reconstruction of the northern curb to accommodate a 12-foot-wide asphalt trail and 5-foot-wide planted buffer. A traffic study is required to confirm the removal of the right eastbound turn lane. The proposed trail crosses North Division Street and continues north on the west side of the street. A proposed road diet on North Division Street requires the reconstruction of the western curb to accommodate a 12-foot-wide asphalt trail and 5-foot-wide planted buffer. The trail turns west on Union Avenue and continues north on the south side of the street. A proposed road diet on Union Avenue requires the reconstruction of the southern curb to accommodate a 12-foot-wide asphalt trail and 5-foot-wide planted buffer. The trail continues north for 1 mile on Emerson Avenue as a bicycle boulevard. The bicycle boulevard consists of striping and signage to give bicycles priority through the low speed, low volume traffic corridor. North of Wordsworth Terrace, the alignment turns east across property owned by Delmarva Power and Light and PNA development. The 12-foot-wide asphalt trail hugs the southern and eastern property lines, maintaining a 2-foot-wide horizontal clearance. The trail turns left at Marvel Road and follows Scenic Drive to West Naylor Mill Road. The design improvements for Naylor Mill Road and Scenic Drive are the same as proposed for the primary alignment above.

- » Improve pedestrian and bicycle safety along the corridor.
- » Provide a comfortable designated space for pedestrians and bicyclists.
- » Improve streetscape aesthetic through landscaping and curbside amenities.
- » Provide pedestrian and bicycle access to businesses, services, schools, and homes.
- » Improve intersection safety.
- » Provide opportunity for a trail head, landscaping, and site amenities at Marvel Road.
- » Provide a road diet on Marvel road to include two 11-foot-wide travel lanes, a 7-foot-wide linear bioretention facility, and 12-foot-wide trail on the south side of the street.
- » Improve intersection safety.
- » Remove over 11 feet of asphalt along Scenic Drive and provide an opportunity for reforestation along the Scenic Drive trail alignment.
- » Provide opportunities for waysides along Scenic Drive.
- » Provide opportunity for wetland improvements, nature exhibits, and education stations along Scenic Drive.

- » A circuitous route to West Naylor Mill Road may reduce the number of trail users.
- » Several streets and driveways intersect the trail alignment increasing opportunities for potential conflicts. Some user groups may not feel comfortable traversing these potential conflict points.
- » Impacts to existing street infrastructure may be significant.
- » A bike boulevard on Emerson Avenue may discourage some user groups.
- » Sidewalk construction is required north of Deers Head Hospital Road to accommodate pedestrians.
- » Limited connections to the neighborhoods on the east side of the tracks.
- » Requires grading and boardwalk construction under Salisbury Parkway.
- » Requires a tree assessment for potential removal.

# APPENDIX C

## BRIDGE REPORT



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## City of Salisbury, Maryland Rails with Trails Project

### Project Background

Dadson Consulting Inc (DCI) in collaboration with Toole Design Group (TDG) has prepared planning level inspection, evaluation and cost estimate of five (5) trail bridges adjacent to Norfolk Southern rail lines in the City of Salisbury, Maryland. The bridges are part of a 5.75 Mile rails with trail project in the City. The width of the trail is 12-foot and runs from Fruitland (southern limits) to Naylor Mill Road (northern limits).

### Inspection and Evaluation

DCI engineers performed visual field inspection of the location and structure, if existing, of the proposed five crossings to ascertain their feasibility, type of bridge or crossing and the associated costs. One of the trail sections is over a creek, two over existing roadways and the remaining two over active culverts. Railroad clearance requires a minimum 11-foot trail separation from centerline of tracks to nearest edge of trail.

### **Bridge #1:**

The proposed bridge is part of the 12-foot-wide trail alignment and is on the west side of the tracks. The bridge would be adjacent to an existing bridge that spans over the South Prong Wicomico River. The existing bridge superstructure is constructed with riveted steel plate girders supporting transverse timber planks. The rail tracks have been laid longitudinally over the timber planks. The steel plate girders show moderate corrosion. The span of the bridge is approximately 43 feet from center line of abutment to centerline of abutment. Face of backwall to face of backwall is 44 feet.

The superstructure is supported on concrete abutments attached to wingwalls. The abutments and wingwalls appear to be gravity walls. These types of walls require little steel reinforcement and depend solely on their self-weight to resist gravity loads and live loads from moving trains. The abutment and wingwall concrete appear in relatively good condition. However, there is severe crack at the western side of the south abutment. The crack is almost vertical and runs through the entire thickness and height of wall. The crack measures 4 inch wide approximately. No settlement of the cracked wall was observed. Major crack repair would be required before the cracked abutment could be used to support proposed loading. The north abutment shows minor cracks that do not appear to impact it structurally.

### *Trail Bridge Type*

The distance from track centerline to edge of existing bridge edge is approximately 16 feet. The 11-foot minimum horizontal clearance from rail track centerline to edge of trail falls on the timber planks leaving only 5 feet to edge of bridge. The existing steel girders are in relatively good but one additional steel beam would be required to widen the bridge to install the 12-foot wide trail. The existing abutments are wide enough to receive a new steel girder. The 2 existing steel beams and a new steel beam of same depth would form the superstructure for the proposed trail bridge. It appears the existing steel beams were designed to support rail live load which is far higher than pedestrian loading from the proposed trail. 8x8 timber planks would be proposed as the decking material. However, stay-in-place form with concrete could also be used as the decking material. The existing abutments would be reused after structural crack repair of the south abutment.

**Estimated Cost: \$ 176,950.00**

### ***Bridge #2:***

The proposed bridge at this location is also part of the 12-foot-wide trail alignment and is on the west side of the tracks. The bridge would be adjacent to an existing bridge that spans over East Main Street. The existing bridge superstructure is constructed with riveted steel plate girders supporting a metal deck with gravel fill material. The rail tracks have been laid longitudinally over transverse steel floor beams. The steel plate girders show moderate corrosion. The span of the bridge is approximately 45 feet from center line of abutment to centerline of abutment. Face of backwall to face of backwall is 46 feet approximately.

The superstructure is supported on concrete abutments attached to wingwalls. The abutments and wingwalls appear to be gravity walls. These types of walls require little steel reinforcement and depend solely on their self-weight to resist gravity loads and live loads from moving trains. The abutment and wingwall concrete appear in relatively good condition. No significant cracks were observed on the abutment walls. Also, no settlement of the substructures was observed.

### ***Trail Bridge Type***

The distance from track centerline to inner face of exterior rail is 20 feet. The 11-foot minimum horizontal clearance from rail track centerline to edge of trail falls between two short rails. Even though the distance between the inner faces of the two short steel railings is wider than the required 12 feet trail width, the space encroaches on the minimum 11 feet clearance from the track centerline. Therefore, an entirely new superstructure would be required for the trail to be located on the westside of the tracks. The new superstructure would be completely isolated from the existing superstructure bridge but would share the abutments. The edge of trail would be approximately 22 feet from centerline of rail tracks.

The existing substructure was designed to carry steel beams that in turn support rail live load which is far higher than pedestrian loading from the proposed trail. The existing abutments are also wide enough to accommodate a new bridge superstructure that provides a 12-foot wide trail. Even though the existing superstructure is constructed with steel beams, it is



recommended that the new bridge superstructure be constructed with a 4-ft wide x 21-inch deep precast concrete voided slabs (SIV-48) for easy installation, low cost and minimal maintenance. The decking would be 4-inch thick concrete topping or asphalt overlay.

**Estimated Cost: \$ 186,875.00**

### ***Bridge #3:***

The proposed bridge is part of the 12-foot-wide trail alignment and is on the west side of the tracks. The bridge would be adjacent to an existing bridge that spans over West Salisbury Parkway. The existing bridge superstructure is constructed with riveted steel plate girders supporting a metal deck with gravel fill material. The rail tracks have been laid longitudinally over transverse steel floor beams. The steel plate girders show moderate corrosion.

The superstructure is supported on concrete abutments attached to wingwalls. The abutment and wingwall type is unclear but could be gravity walls. The abutment and wingwall concrete appear in relatively good condition. No significant cracks were observed on the abutments and wingwalls. Also, no settlement of the substructures was observed.

### ***Trail Bridge Type***

The span of the existing bridge is approximately 70 feet from center line of abutment to centerline of abutment. The distance from the track centerline to inner face of concrete rail is approximately 18 feet. Therefore, with the required 11-foot clearance, the remaining 7 feet is inadequate for the required 12 feet trail width. One option is to widen the existing bridge by demolishing the existing west railing. However, the existing abutment length is not long enough and the existing wingwall would need to be converted to an abutment. Due to the absence of as-built drawings this option was not pursued. The recommended option is to build an entirely new bridge to the west of the existing bridge. The existing wingwall would retain the soil backfill and allow the new bridge foundation to be designed mainly for gravity loads. The new bridge span would be approximately 80 feet to be located behind the existing wingwalls.

The recommended superstructure would be two precast concrete bulb tee PCBT-45 which are 45 inches deep topped with 4-inch concrete on metal deck. The abutment would be three 30" diameter drilled shaft concrete at each abutment capped with 3'x4'x12' footing. The shaft depth would be determined by geotechnical investigation but 60 feet long is a good initial estimate. A single span semi-integral abutment is recommended. The reason to use drilled shaft concrete is to avoid using driven pile that may cause vibration close to the railway tracks. However, if driven steel HP piles would be allowed, that could also be an option.

**Estimated Cost: \$ 358,250.00**

**Bridge #4:**

The proposed crossing is part of the 12-foot-wide trail alignment and is on the east side of the tracks at marker 817. The existing tracks span an existing creek called Peggy Branch using a culvert. The proposed crossing would need to span the existing culvert located at the toe of the slope. The culvert is approximately 30 feet below the trail elevation. The soil is eroding at the culvert entry location likely due to the steep slope and flooding from the creek.

**Trail Crossing Type**

To adequately span the culvert, avoid potential flooding around the culvert entry, and into stable slope would require a retaining structure of approximately 50 feet length. Soldier pile using steel H piles or drilled concrete shaft with timber wales or lagging is recommended to stabilize the slope and also provide adequate width for the trail. The spacing of the steel piles may be estimated at 8 feet using HP12 and 4x permanent timber lagging.

The distance from the centerline of tracks to edge of trail of 11 feet and another 12 feet for trail width lead to a location directly over the steep slope which is currently eroding. Therefore, a retaining wall system is required.

**Estimated Cost: \$ 71,188.00**

**Bridge #5:**

The proposed crossing is part of the 12-foot-wide trail alignment and is on the east side of the tracks at marker 819. The existing tracks span an existing creek called Brewington Branch using a culvert. The proposed crossing would need to span the existing culvert located at the toe of the slope. The culvert is approximately 40 feet below the trail elevation. The soil is more stable at the culvert entry location due to rip rap placed on the slope.

**Trail Crossing Type**

To adequately span the culvert, avoid potential flooding around the culvert entry, and into stable slope would require a retaining structure of approximately 40 feet length. Soldier pile using steel H piles or drilled concrete shaft with timber wales or lagging is recommended to stabilize the slope and also provide adequate width for the trail. The spacing of the steel piles may be estimated at 8 feet using HP12 and 4x permanent timber lagging.

The distance from the centerline of tracks to edge of trail of 11 feet and another 12 feet for trail width lead to a location directly at the beginning of the steep slope. Therefore, a retaining wall system is required.

**Estimated Cost: \$ 61,656.00**



## Summary of Costs

Description	Cost	Comment
Bridge #1	\$176,950.00	
Bridge #2	\$186,875.00	
Bridge #3	\$358,250.00	
Bridge #4	\$71,188.00	Retaining Wall
Bridge #5	\$61,656.00	Retaining Wall
Retaining Wall Along Trail		\$1,200-\$1,500 per foot horizontal length of depending on total length of wall
Total	\$854,919	

*Source:* Unit costs used from Maryland Department of Transportation (MDOT) construction costs in District 1 and surrounding Districts, and Virginia Department of Transportation unit costs with adjustments for Maryland.



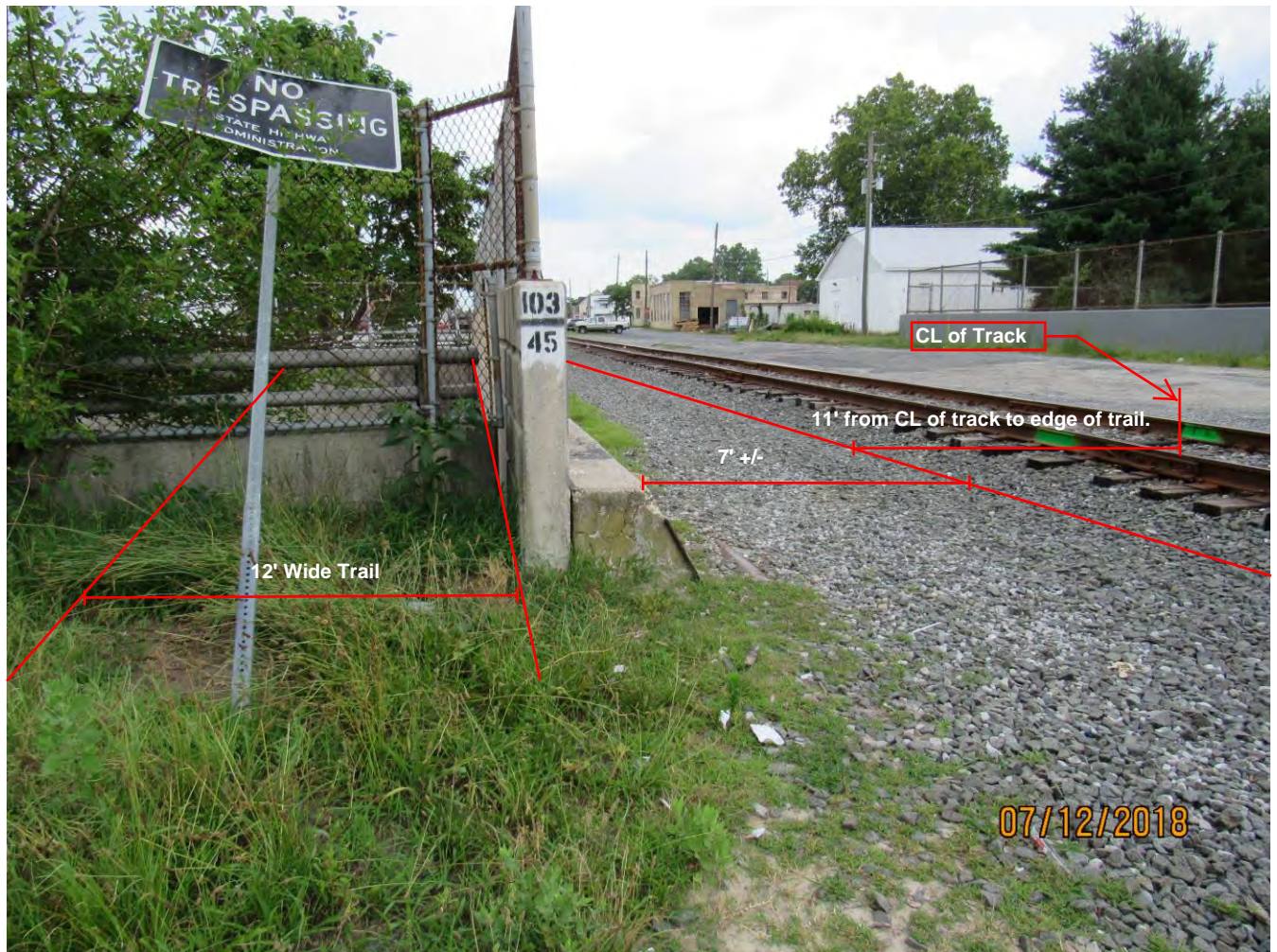
Bridge #1 over South Prong Wicomico River





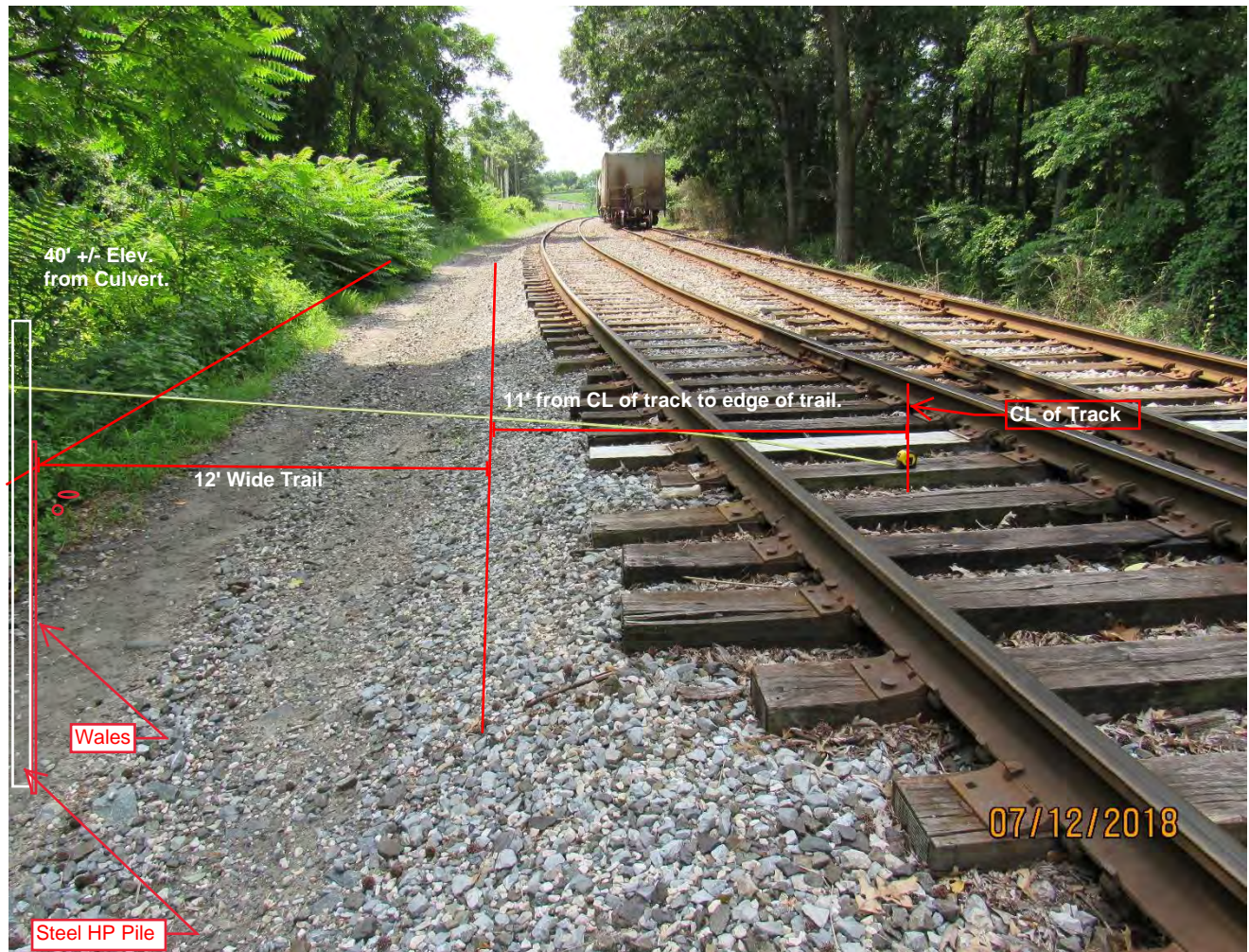
Bridge #2 over East Main Street





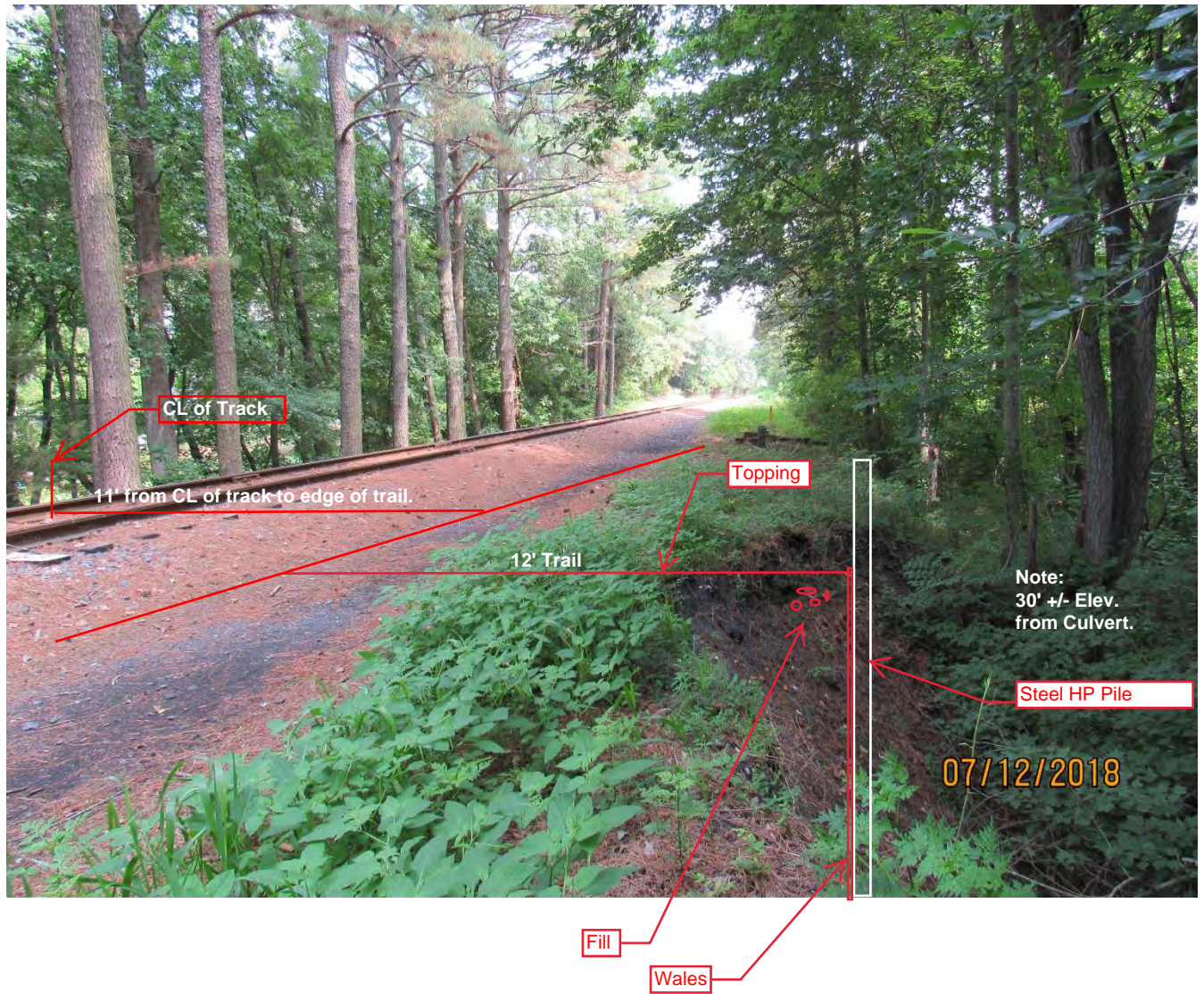
Bridge #3 over West Salisbury Parkway





Retaining Wall Crossing #4 over Peggy Branch Creek





Retaining Wall Crossing #5 over Brewington Branch



# APPENDIX D

## POTENTIAL FUNDING OPPORTUNITIES

# Potential Funding Opportunities

The Salisbury Rail Trail is an ideal project for several federal and state funding sources. Grant programs are available for the design work needed to develop construction-ready plans and for the construction itself. Signage for trail gateways, wayfinding and destinations, and interpretive wayside rest areas is also available and should be considered concurrently with construction funding.

Programs that provide incentives for private property owners to donate land or enter into trail maintenance agreements with public agencies can also be pursued, especially where the trail would beautify or otherwise enhance the property. These incentives are typically some form of tax benefit, such as a tax credit. Techniques used include a land conservation trust or easements.

The funding sources included in this plan are current as of the plan's publication date. The City of Salisbury should update this list as part of developing a funding plan as work begins on implementing each trail segment.

## State or Federal Funding (Formula Programs)

### Maryland Department of Transportation

Three programs administered by the Maryland Department of Transportation are available for projects like the Salisbury Rail Trail. The annual grant cycle for these programs varies. A complete list of state grant programs is available at this link: <http://grants.maryland.gov/Pages/StateGrants.aspx>

It is important to note that funding requests for a project can be made to more than one source. For example, 2018 awards included funding from both the Maryland Bikeways Program and the Transportation Alternative program for a trail in Somerset County.

The **Maryland Bikeways Program** is available for projects that benefit existing or new bicycle networks. The program's purpose is to "maximize bicycle access and fill missing links in the state's bicycle system, focusing on connecting bicycle-friendly trails and roads and enhancing last-mile connections to work, school, shopping and transit." The Bikeways Program is especially useful for leveraging past investments; complementing existing state, local, and federal programs; and supporting bike sharing. Qualified applicants include Maryland local governments as a lone applicant or in partnership with another local government or private organization, Maryland State Agencies, and Maryland transit agencies.



Table D.1: Bikeways Program Category Overview

Project Category		Funding Percentage/Match Requirement	
		Bikeways Priority Project	Other Projects
DESIGN	<ul style="list-style-type: none"> <li>» For Completion of Design Plans and Feasibility Assessments of proposed or potential bikeways.</li> <li>» To assess issues, such as environmental impacts, right-of-way issues, ADA compatibility, local support, and cost estimates.</li> </ul>	80%/20%	50%/20%
MINOR RETROFITS	<ul style="list-style-type: none"> <li>» For installation of low-cost treatments to enhance bicycle routes with a total project cost not exceeding \$100,000.</li> <li>» UP to 15% of grant award may support final design for the project.</li> <li>» May include bicycle route signage, pavement markings, bicycle parking, drainage grate replacement, bike share stations and equipment, and similar low-cost treatments.</li> </ul>	100%/0%	50%/50%
CONSTRUCTION	<ul style="list-style-type: none"> <li>» For construction or installation of bikeways infrastructure.</li> <li>» May include transportation trails, side-use paths, bicycle and pedestrian shared-use bridges, cycle tracks, bicycle lanes, and other major projects.</li> <li>» Funding requests will exceed \$100,000</li> </ul>	80%/20%	50%/50%

**NOTE: Ineligible items include:**

- » Recreational route way-finding
- » Print or online maps
- » Mountain bike or loop trails
- » Sidewalks
- » Education programs, brochures and events, except that up to 10% or \$10,000 of an award may be used for education and promotional materials for the infrastructure project

Unlike other transportation grant programs administered by the Maryland DOT, the Bikeways Program targets specific areas of the state that have one of several designations shown below (designations for which Salisbury qualifies are **bolded**).

- 1. Located substantially in a Priority Funding Area.**
2. Located within 3 miles of a rail transit station or major bus transit hub.
- 3. Provides or enhances bicycle access along missing trail links**, as identified in MDOT's statewide trail network vision document, *Maryland Trails: A Greener Way to Go*.
4. Identified as a transportation priority in a County's most recent annual priority letter submitted to MDOT as part of the state's capital program development.

The program offers a reduced funding match requirement for projects meeting one of the below (designations for which Salisbury qualifies are **bolded**).

- » Provide access to a transit station within 3 miles.
- » Enhances bicycle circulation within or access to a Sustainable Community Area.
- » **Is near a designated Maryland Main Street .**
- » **In census tract(s) at or below 60% of Area Median Income.<sup>5</sup>**
- » **Is near a major Institution, central business district**
- » **Is an important tourist or heritage attraction.**

Funding maximums and match requirements vary by project category and whether the subject project is designated as a Bikeways Priority Project. Table D.1 includes these limits, match requirements, and project purpose guidelines.

5 The median income in 2016 is \$54,738; 60% of this is \$32,849: <https://www.deptofnumbers.com/income/maryland/salisbury/>. At least one census tract is below the 2017 federal poverty level for a 4-person household: <http://www.city-data.com/income/income-Salisbury-Maryland.html>.

## Transportation Alternatives Program

Maryland Transportation Alternative allotment from the federal surface transportation acts, MAP-21 and FAST Act, is sub-allocated into two programs: Transportation Alternatives (including Safe Routes to School) and Recreational Trails. Further sub-allocations to MPOs, results in about half of total funds available for 'transportation alternatives' projects throughout the state. Provisions of both the Transportation Alternatives Program and Recreational Trails Program are provided below.

Transportation Alternatives Program uses federal dollars for community-based projects that support multimodal travel by expanding travel options; improving the transportation experience by addressing needs of the cultural, historic, and environmental aspects of the transportation infrastructure; improving safety for pedestrians and bicyclists; reducing the amount of motor vehicle traffic; and improving children's health. The program incorporates the formerly separate Safe Routes to School program. Qualified applicants, i.e., project sponsors, include government agencies (including those with oversight of transportation or recreational trails), regional transit authorities, tribal governments, and school districts. Project co-sponsors may include private and non-project organizations, community groups, and private individuals, but none of these can apply without a government agency as a sponsor. All projects are funded on a 20% match based on the total project cost and must be administered according to federal requirements. The project sponsor is responsible for design project management and construction, and maintenance for the project's lifespan. The Maryland State Highway Administration (SHA) assists with federal project implementation requirements including invoicing, environmental permitting, and reimbursements and provides approvals during design, right-of-way, and construction phases.

Each year, grant applications are due in April and May, with award letters issued in September.

Grant requests are limited to \$40,000 for trail construction and \$30,000 for non-construction. Applications are accepted on a rolling basis with a July 1 deadline for each funding year. Awards are announced in the fall.

Eligible projects include:

» On-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation

- » Construction and design of infrastructure-related projects that will provide safe routes for non-drivers, especially to improve the ability of students to walk and bicycle to school

- » Any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to:
  - » Address stormwater management, control related to highway construction or due to highway runoff.
  - » Reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats
- » Historic preservation and rehabilitation of historic transportation facilities
- » Inventory, control, or removal of outdoor advertising
- » Archaeological activities relating to impacts from implementation of a transportation project eligible under this title

Transportation Alternative projects in Maryland must also:

- » Benefit all potential users and allow free use by a broad segment of the public
- » Maintain a reasonable duration of the intended public use, as determined by SHA
- » Be located on publicly-owned right-of-way or on right-of-way encumbered with a permanent easement held by a state agency or the government agency sponsoring or co-sponsoring the project
- » Meet state and federal standards for width, grade, signing, and materials for pedestrian and bicycle facilities

Grant awardees must follow several processes and practices, as well as federal and state environmental regulations, including:

- » Code of Federal Regulations
- » *National Environmental Policy Act (NEPA)*
- » Section 106 of the *National Historic Preservation Act*
- » *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*
- » Title VI of the *Civil Rights Act of 1964*
- » Limited English Proficiency (LEP)
- » *Americans with Disabilities Act (ADA)*
- » Statewide and metropolitan planning rules
- » Minority Business Enterprise (MBE) requirements
- » Maryland policies and procurement rules and regulations

More information about the Maryland Transportation Alternatives is available at this link: [http://www.mdot.maryland.gov/newMDOT/Planning/Bike\\_Walk/Documents/2016\\_Workshop\\_Presentation\\_TA\\_Program\\_Overviews\\_02\\_29\\_16.pdf](http://www.mdot.maryland.gov/newMDOT/Planning/Bike_Walk/Documents/2016_Workshop_Presentation_TA_Program_Overviews_02_29_16.pdf)



## Maryland Recreational Trails Program

Maryland Recreational Trails Program uses federal dollars to develop and maintain trails and trail-related facilities for non-motorized and motorized use, such as hiking, walking, bicycling, and in-line skating. Qualified applicants include government agencies and non-profit organizations. Historically, Maryland's annual allotment is about \$1 million, 40% of which is reserved for diverse trail users, i.e., non-motorized or motorized trail users, or both. All projects are funded on a 20% match based on the total project cost and must be administered according to federal requirements. Grant requests are limited to \$40,000 for trail construction and \$30,000 for non-construction. Applications are accepted on a rolling basis, with a July 1 deadline for each funding year. Awards are announced in the fall.

Eligible projects include the:

- » Construction of a new recreational trail or trail linkage, trailhead facility, or trail side facilities directly associated with a recreational trail.
- » Acquisition of easement or property for recreational trails.
- » Maintenance, renovation, or restoration of existing trails.
- » Improvements to signage, structures, or facilities directly associated with a recreational trail.
- » Educational projects to provide information, education, and outreach programs to promote safety or conservation.

Grant awardees must follow several processes and practices, as well as federal and state environmental regulations, including:

- » *National Environmental Policy Act (NEPA)*
- » *Section 106 of the National Historic Preservation Act*
- » *Section 404 of the Clean Water Act*
- » *Section 7 of the Endangered Species Act*
- » *Wetland/Waterway/Floodplain/Erosion & Sediment Control Permits*
- » *Chesapeake and Atlantic Coastal Bay Critical Areas Act*
- » *Maryland Environmental Policies Act*

Online resources are available at: <http://roads.maryland.gov/Index.aspx?PageId=98>

## State-only Funding Programs

### Maryland State Highway Administration

Maryland State Highway Administration manages three programs that may be used for a project such as the Salisbury Rail Trail, where there are key crossings of state roads. While SHA internally identifies, designs, and constructs many of these projects, localities can identify and request projects for SHA consideration.

#### SHA Retrofit (SHA Fund 33)

This program brings existing sidewalks, curb ramps, intersections, and driveway entrances along state roads into compliance with current standards for the *Americans with Disabilities Act* (ADA). Projects are not limited to Priority Funding Areas.

#### Sidewalk Retrofit (SHA Fund 79)

This program constructs sidewalks where segments are missing along state roads in order to complete the pedestrian network. The program is only for Census Bureau-defined Urbanized Area. Project costs are typically shared on a 50-50 basis between SHA and the local government; however, the local government match is based on the project location and safety concerns. More information is available from SHA.

#### Community Safety and Enhancement Program (SHA Fund 84)

This program funds highway reconstruction and improvements along SHA roadways within urban centers that promote safety and economic development. Projects are generally requested by local jurisdictions in the annual transportation priority letter sent to MDOT. In return, local jurisdiction must agree to maintain sidewalks and other improvements after completion. Projects must be within the limits of a Priority Funding Area.

### Bicycle Retrofit (SHA Fund 88)

This is a fund to provide bicycle improvements along state roadways. Localities must provide public opportunity to provide input and must help secure right-of-way, easements, or right-of-entry agreements. Further, localities must agree to maintain completed improvements for off-road facilities, such as a parallel or shared-use path. Other requirements include:

- » These facilities must be within 100 feet of a SHA roadway.
- » The cost to construct a shared use path requested by a local jurisdiction and within a Priority Funding Area must be shared between the state (75 percent) and local government (25 percent). However, SHA may provide 100% of needed funding if the adjacent roadway is not under concurrent construction or reconstruction and SHA determines that a substantial public safety risk or significant impediment to pedestrian access exists
- » The cost to construct a shared use path requested by a local jurisdiction that is not within a Priority Funding Area is shared between the state (50 percent) and local government (50 percent).

### Chesapeake and Atlantic coastal Bays Trust Fund (The Fund)

Funds aimed at protecting the Chesapeake Bay are available from the Chesapeake and Atlantic coastal Bays Trust Fund (The Fund). Projects that reduce pollution and further water restoration are supported by The Fund. The City of Salisbury is eligible to apply for grants from The Fund and is, in fact, within its targeting area. The Fund's unique eligibility structure allows private or commercial landowners and other for-profit entities with restoration experience to partner with the City on an application for funding. The grant cycle begins early in the calendar year, with awards announced around July 1. See the website for more information.

### The Department of Natural Resources

The Department of Natural Resources offers two grant programs that could be used to fund the rail trail:

#### Program Open Space

The program's local component funds recreation facility development, including land acquisition by local governments. See the Department of Natural Resources website for more information.

### Community Parks and Playgrounds

This program funds work to restore existing parks and create new park and green space, including trails and environmentally-oriented spaces. Grant awards may provide up to 100% of the project cost. Non-profit organizations may apply in partnership with a local government. The application cycle begins in mid-summer, and awards are announced the following May.

### Community Legacy Program

A portion of downtown Salisbury is within the target area for neighborhood revitalization funds from the Community Legacy Program (Department of Housing and Community Development). This program would be appropriate for the following revitalization activities:

- » Development and/or ownership of open space.
- » Development of public infrastructure that is related to a Community Legacy project, such as parking, lighting, and improvements to pedestrian and bicycle circulation.
- » Streetscape improvements along streets that are generally not state highways.
- » Strategic demolition, including land banking, to stimulate redevelopment.
- » Acquisition and/or improvement of vacant buildings or unimproved land.

Community Legacy funding can only be used in areas known as Sustainable Communities. Sustainable Communities are geographic areas inside of the Priority Funding Area targeted for revitalization by local governments. The portion of the trail that is within Salisbury's Sustainable Community area is between College Avenue and Peggy Branch, which is located in Segment 7.

The funding cycle begins each spring, and applications are due in mid-May.



## Private Property Owners

Gaining agreement from private property owners to place a portion of the trail on their property is sometimes needed to create an effective trail alignment. Compensation for property owners can include options such as selling a portion of their land; others may agree to a long-term lease for the portion of land within the trail alignment. Another option allows property owners to retain ownership but receive a tax benefit such as a tax credit through a conservation trust. Information on a Land Conservation Trust is provided below.

A Land Conservation Trust (also called a conservation agreement) is used when property owners want to preserve the essential character of their land, foregoing specific future uses. The Land Trust Alliance describes these as: “a voluntary and legally binding agreement between a landowner and a land trust or government agency. When a landowner donates an easement to a land trust or public agency, she or he is giving away some of the rights associated with the land. The easement permanently limits uses of the donated parcel in order to protect its conservation values, as specified in the Internal Revenue Code (IRC) 170(h).”

Key to using this mechanism is the character of the land itself, in that it must be a significant natural, agricultural or historic resource for which the conservation provides a public benefit. Recreational purposes such as a trail are considered a public benefit. This provision could allow the city to either consider a trail alignment that takes advantage of such land or avoid an alignment because the private property in question does not possess the appropriate characteristics.

The Maryland Department of Natural Resource’s Environmental Trust Assistance Program works with property owners who wish to offer land for conservation with the state through a land trust. The Lower Eastern Shore Land Trust, may be helpful in establishing a conservation trust for private property associated with the Rail Trail. In addition to resources provided by the Maryland Department of Natural Resources, the Pennsylvania Land Trust Association offers guides and other materials that can be used to ensure trail design is compatible with purposes of the conservation trust.

## Private Grant Opportunities

Funding from private organizations may be available for planning and building Salisbury’s rail trail. The following organizations, included in the city’s recently adopted Bicycle Network Plan should be considered.

### Robert Wood Johnson Foundation

This organization invests in grantees such as local governments that are working to improve public health. Current or past projects in the topic area ‘walking and biking’ include greenway plans and trail project. More information is available at [www.rwjf.org](http://www.rwjf.org)

### People for Bikes

The Community Grant Program is organization invests in grantees such as local governments that are working to improve public provides funding for projects that leverage federal funding and build momentum for bicycling. Projects such as bike paths and rail trails are appropriate for this program. More information is available at [www.peopleforbikes.org](http://www.peopleforbikes.org)

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# APPENDIX E

**35% DESIGN PLANS AND  
COST ESTIMATE FOR THE  
PRIMARY ALIGNMENT**