



Appendix E

Shared Use Path Design Criteria



EASTERN SHORE RAIL TO TRAIL FEASIBILITY STUDY
Shared Use Path Design Criteria
April 2020

VHB project # 34418.37

The following criteria have been compiled based on standard engineering practice and the successful application of regulatory standards and guidelines. The Virginia Department of Transportation (VDOT), the American with Disabilities Act (ADA) Design Guidelines; the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Planning Design, and Operation of Pedestrian Facilities, 2004 edition; the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, 2012 edition, (2012 AASHTO Bicycle Guidelines); American Association of State Highway and Transportation Officials (AASHTO) A Policy on Geometric Design of Highways and Streets (AASHTO Road Design); and the Manual on Uniform Traffic Control Devices (MUTCD) were the primary references.

General

| <u>FACET</u> | <u>REFERENCE</u> |
|---|---|
| Traffic Control | FHWA, 2009 Manual of Uniform Traffic Control Devices (MUTCD) ¹ |
| Drainage and Stormwater Management – BMP’s sized to treat or by-pass 10 year, 24-hour storm | VDOT Drainage Manual ² |
| Inlet Tops and Grates- Grates need to be replaced so that openings are perpendicular to bike travel ways and sidewalks. | AASHTO Bike Guide ³ ADA ⁴ |

Shared Use Path Design Criteria

| <u>CRITERIA: SHARED USE PATH</u> | | <u>REFERENCE</u> |
|-----------------------------------|--|---|
| Design Speed (D) - Path | 18 MPH (minimum) | VDOT Complete Streets Guidelines ⁵ |
| Radius Horizontal Curve | 60 feet (minimum) | VDOT Complete Streets Guidelines |
| Superelevation/Cross Slope | 2% | ADA |
| Stopping Sight Distance | 115 feet | AASHTO Road Design ⁶ |
| Profile Grade | 5% (or maximum of adjoining roadway) | ADA PROWAG ⁷ |
| Length Vertical Curve – for Bikes | Sag – 175 feet Crest – 50 feet | AASHTO Road Design |
| Typical Section | Pavement width 10 ft. Shoulder width 2 feet min, 3-5 feet ideal @1’V:6’H or flatter | AASHTO Bike Guide |
| Clear Zone (for Path) | 2 feet 5 feet (inc. shoulder) | AASHTO Bike Guide VDOT Complete Streets Guidelines |



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| Vertical clearance | 10 feet for bicyclists | AASHTO Bike Guide, p. 3-3 |
| Lateral Clearance, Horizontal Curves | 2 feet | AASHTO Bike Guide |
| Physical Barrier / Railing | 42" min | VDOT Complete Streets Guidelines |

Amenities Placement Guidelines

| <u>AMENITY</u> | <u>PLACEMENT GUIDANCE</u> |
|-------------------------|---|
| Trailhead | Provide at least one primary or secondary trailhead in each of the towns that the shared use path corridor passes through if right of way is available. Primary trailheads should be provided at town locations with a larger population and should provide more robust amenities. Secondary trailhead locations will provide more amenities than a typical trail section, but not as many as a primary trailhead location. |
| Wayfinding Signs | Provide wayfinding to any town or other designated attraction along the shared use path corridor with an establish connection. Additionally, mile marker signs should be placed at logical intervals (e.g., every 1, ½, ¼, or 1/10 mile along the shared use path corridor). |
| Information Kiosks | Provide at primary trailhead locations. A smaller kiosk (such as a single trail map) may be provided at secondary trailhead locations. |
| Restrooms | Provide at primary trailhead locations. |
| Drinking Fountains | Provide at primary and secondary trailhead locations. Spacing for access to developed water should be no greater than 15 miles ⁸ . |
| Bicycle Racks | Provide at primary and secondary trailhead locations. Individual towns and businesses along the shared use path may choose to install additional bicycle racks. |
| Bicycle Repair Stations | Provide at primary trailhead locations. Bike repair stations may also be provided at secondary trailhead locations as right of way allows. |
| Benches | Provide at primary and secondary trailhead locations as well as along the trail where additional right of way allows, and the area is flat and cleared. Benches should be provided at regular intervals along the shared use path as well. Benches should be offset from the shared use path |



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| | so that a minimum 2' shoulder can be provided. Benches could be provided as part of a trail sponsorship program. |
| Picnic Tables | Provide at primary trailhead locations. |
| Parking | Provide at primary trailhead locations. Parking may also be provided at secondary trailhead locations if right of way is available and a clear, flat area exists. Designated parking areas should typically be spaced between 5-15 miles apart ⁸ . |
| Landscaping | Provide at all primary and secondary trailhead locations. |
| Public Art | Provide public art installations as desired by towns, primarily at trailhead locations. The public art "theme" may be carried over into other amenities such as benches and drinking fountains. |
| Historic Marker | Provide at historic locations along the shared use path corridor. |

References:

¹ FHWA Manual of Uniform Traffic Control Devices (MUTCD), 2009, see http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm
² VDOT, Drainage Manual, Rev. 2019
³ AASHTO, Guide for the Development of Bicycle Facilities, 4th edition, 2012
⁴ United States Access Board, Americans with Disabilities Act Accessibility Guidelines, 2010
⁵ VDOT, Complete Streets: Bicycle & Pedestrian Facility Guidelines, Rev. 2020
⁶ AASHTO, A Policy of Geometric Design of Highways and Streets, 2011
⁷ United States Access Board, Proposed Public Right-of-Way Accessibility Guidelines (PROWAG), 2011, see <http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines>
⁸ National Park Service, Handbook for Trail Design, 2015, see https://www.nps.gov/noco/learn/management/upload/NCT_CH6.pdf