

To: Chuck Proctor
VDOT Culpepper District

Date: July 7, 2020

Project #: 34418.24

Memorandum

From: Chris Daily, P.E., VHB
Ricky Wiatt, P.L.A., VHB
Chuck Conran, E.I.T., VHB

Re: Rivanna River Pedestrian Path Concept

Various planning documents, including Albemarle County's Pantops Master Plan, Charlottesville's Bike/Ped Master Plan, and the Rivanna River Area Plan, have called for a pedestrian/bike crossing of the Rivanna River in the vicinity of Riverview Park (see **Figure 1**). This planned crossing would connect the Pantops region of Albemarle County (east side of the Rivanna River) with both the Woolen Mills area of Albemarle County and the City of Charlottesville (both on west side of the Rivanna River). Today, the closest crossing is approximately 1.5 miles upriver at the US 250 Free Bridge. The Pantops area of Albemarle County is projected to grow in both residential and working population in the coming years, while a substantial economic development project is currently under construction at the Woolen Mills site. A Rivanna River crossing in this vicinity would join these economic growth areas, link existing Albemarle County employment centers (State Farm Operations Center and Sentara Martha Jefferson Hospital) to the City of Charlottesville, and connect recreational trail facilities (Rivanna Trail and Old Mills Trail) on both sides of the river. The Pantops Master Plan and the TJPDC Bike/Ped Plan also indicate future on-street bike facilities on Peter Jefferson Parkway and State Farm Boulevard.

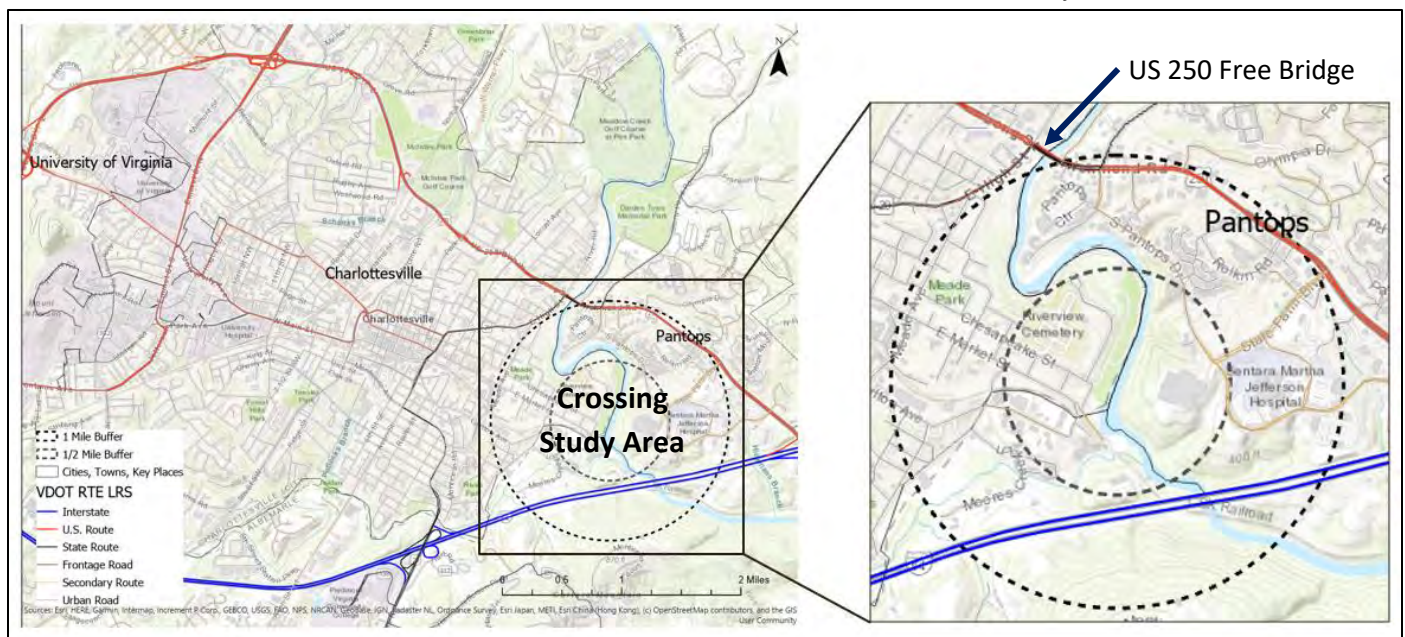


Figure 1: Rivanna River Crossing Vicinity Map

VDOT's Transportation Mobility and Planning Division (TMPD) tasked VHB with developing a conceptual plan and planning-level engineer's cost estimate for the Rivanna River path crossing that could be potentially used in the development of a grant application for funding. The planning documents identified the crossing being located somewhere within the half-mile stretch of river between the Riverview Park parking lot and the I-64 river crossing bridges. VHB reviewed the existing planning documents, completed a site visit with City, County, VDOT, and PDC staff, and evaluated existing conditions. The western takeoff point was determined to be flexible, while the eastern connection point for the shared use path was determined to be the intersection of Peter Jefferson Highway and State Farm Boulevard. VHB identified six potential crossing alignments from this preliminary review process and presented these to



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the stakeholder group in February 2020. Feedback received at this meeting narrowed the potential alignments from six to two: a single-span alignment continuing straight across the river from Chesapeake Street and a dual-span alignment between East Market Street (near Woolen Mills development), the sediment island, and the east side of the river. Design criteria for both concepts are included in **Appendix A**.

Concept 1, shown in **Appendix B**, starts at the intersection of Chesapeake Street and Riverside Avenue on the west side of the river at Elevation 320 feet. Utilizing a 325-foot long truss bridge structure, the path maintains a consistent grade from this point to an elevation of 338 feet at the riverbank where it ties into the 240-foot cable-stayed single-span suspension bridge across the river. With a riverbed elevation of approximately 300 feet, this bridge span has a vertical clearance of nearly 40 feet over normal river height and fifteen feet over the 100-year floodplain at 324 feet. A bridge elevation of 338 feet, however, is necessary to tie into the slope on the east riverbank, specifically connecting to the existing Old Mills Trail. From here, the shared use path traverses a ~3,000-foot linear run along the slope (staying on the west side of the ravine and passing through transmission line easement), gaining 110 feet of elevation before tying into the intersection of Peter Jefferson Highway and State Farm Boulevard at an elevation of 450 feet. This 10-foot wide path alignment maintains a 5% max grade. The Rivanna River suspension bridge is a similar design to the Neuse River suspension bridges outside of Raleigh, North Carolina, except the proposed Rivanna bridge only has a single bridge tower on the west bank.

Concept 2, shown in **Appendix C**, starts from East Market Street beneath the Moore's Creek railroad bridge. Launching from an elevation of 320 feet, the first 296-foot arch bridge span rises 5 feet to reach 325 feet (25 feet above the normal water level and one foot above the 100-year flood zone). A pier would be constructed on the mid-river sediment island and a second 296-foot arch bridge span crosses to the east riverbank, landing at a 325-foot elevation near the existing Old Mills Trail. The 10-foot wide shared use path then climbs 125 feet to the Peter Jefferson Highway / State Farm Boulevard intersection over ~2,400 linear feet of path (staying on the west side of the ravine and passing through transmission line easement). This alignment mostly maintains a 5% max grade; however, it requires a 150-foot run of 6.5% grade. Additional consideration was given to connecting the path to the proposed five-foot wide trail on the east side of the ravine that is included in the Presidio Development Site Plan. This option was discarded as it would either require an additional 290-foot bridge span across the ravine at Elevation 373 feet or would require switchbacks to maintain a 5% max grade as the path climbs on the east side of the ravine from the riverbank to the site development trail (see **Appendix D**). This alternative concept would also require widening the five-foot development trail to a ten-foot shared use path.

VHB evaluated the environmental impacts and permitting requirements of the two concepts. Based on knowledge of permitting requirements and similar project experience, Concept 1 would require a permit from the Virginia Marine Resources Commission, while Concept 2 would require this permit plus a permit from the U.S. Army Corps of Engineers (due to proposed placement of bridge pier on the river island). Additionally, both bridge concepts would require hydraulic modeling to determine any impact to the 100-year floodplain elevation and boundary. Impacts to either would require a Special Use Permit from Albemarle County, a Floodplain Development Permit from the City of Charlottesville, and a Conditional Letter of Map Revision from FEMA. With a top of bridge deck elevation just above the 100-year floodplain, Concept 2 has a significantly higher risk of impacting the floodplain. **Appendix E** includes a full write-up on the permitting and floodplain impacts.

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Ref: Rivanna River Pedestrian Path Concept
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VHB developed line-item engineer's cost opinion for the two concepts that utilize VDOT's 2020 cost development spreadsheet. The total construction + preliminary engineering + right of way estimate for Concept 1 is approximately \$11,330,000, while the total estimate for Concept 2 is approximately \$15,360,000, or about 35% more expensive than Concept 1. **Appendix F** shows the cost estimates by major line item. A twenty-foot wide right of way corridor is currently assumed through the State Farm and Presidio Development properties. Negotiation of an easement for the trail through these properties could substantially reduce right of way costs. In accordance with VDOT cost development policy, these preliminary cost estimates include substantial contingency factors, including 12% for preliminary engineering, 50% for right of way, and 40% for construction.

In addition to the environmental and cost considerations, there are several transportation planning considerations in comparing the two concept alignments. Concept 1 provides a direct connection to the Rivanna Trail, Riverview Park's parking lot, and Chesapeake Street, which can be used to access downtown Charlottesville. Concept 2, with its connection to East Market Street, provides direct access to the Woolen Mills economic development site; however, the connections to other destinations farther west are more challenging. East Market Street has a constrained 20-foot cross-section that would force pedestrians and bicyclists to share pavement space with vehicles. Additionally, there is no room for parking along East Market Street for recreational bridge users. The additional 600-feet of linear path on the east riverbank of Concept 1 is offset by the extra linear distance on East Market Street of Concept 2. On the east riverbank, Concept 2 has a steeper grade than Concept 1, and has potential impacts to the historical canal and lock system. Finally, from a constructability standpoint, Concept 1 is likely simpler due to the presence of a large staging area on the west riverbank and the absence of in-river construction. For all of the above stated reasons, VHB recommends Concept 1 be retained for future funding applications.

Appendix G includes perspective renderings of the two Rivanna River bridge concepts and the proposed trailhead located at the intersection of Peter Jefferson Highway and State Farm Boulevard. It also includes two potential typical sections for the path.

Appendix A – Design Criteria



RIVANNA RIVER PEDESTRIAN CROSSING PLANS DESIGN CRITERIA April 2020

VHB project # 34418.24

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>
Functional Classification Peter Jefferson Highway: Major Collector. ADT 9,100 vpd (2018)	VDOT ArcGIS Online Map VDOT Online Traffic Data
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 Inlet Tops and Grates- Grates need to be replaced so that openings are perpendicular to bike travel ways and sidewalks.	VDOT Drainage Manual ² AASHTO Bike Guide ³ ADA ⁴

Shared Use Path

<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.	AASHTO Bike Guide



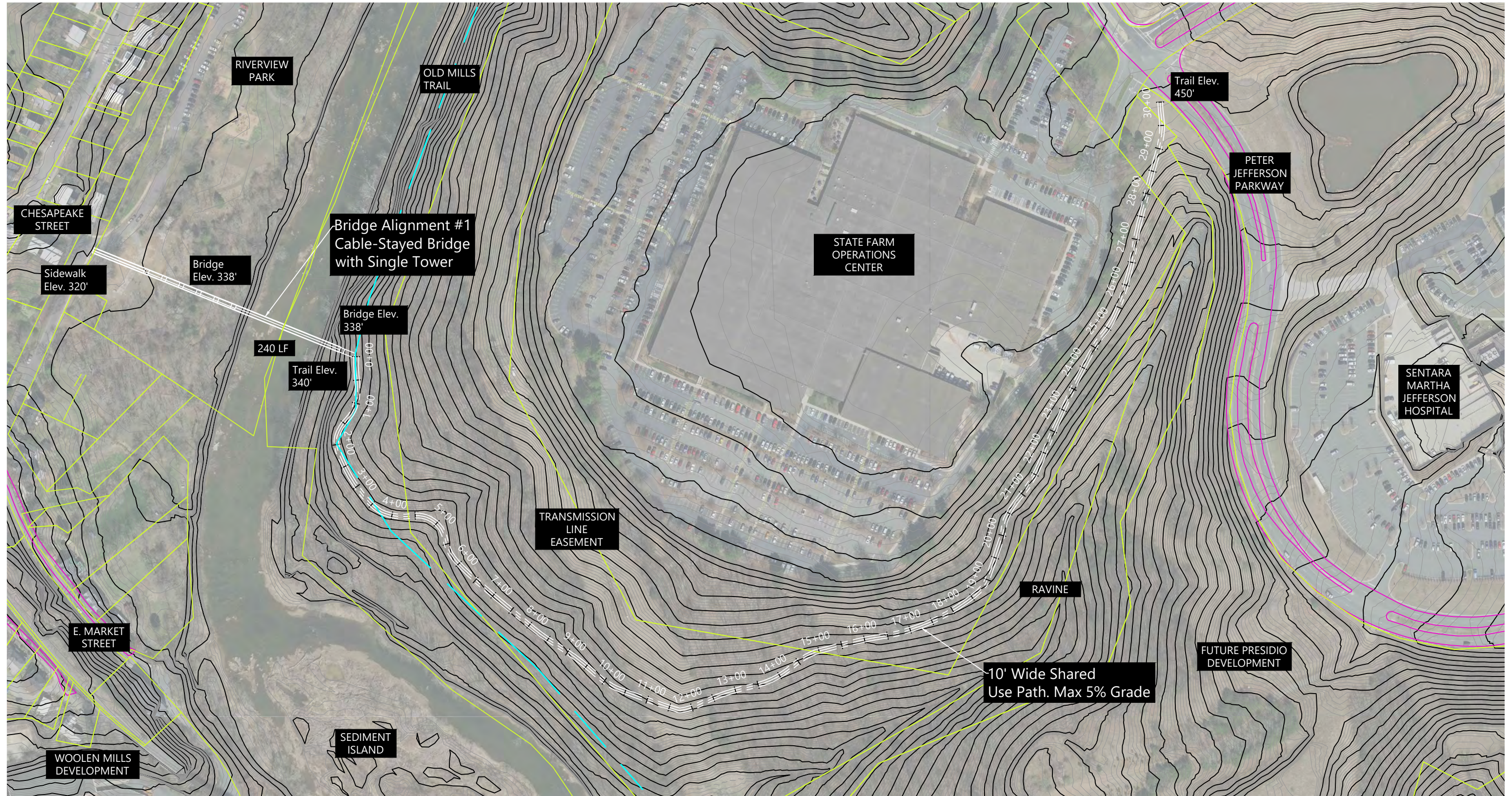
	Shoulder width 2 feet min, 3-5 feet ideal @1'V:6'H or flatter	
Clear Zone (for Path)	2 feet 5 feet (inc. shoulder)	AASHTO Bike Guide VDOT Complete Streets Guidelines
Vertical clearance	10 feet for bicyclists	AASHTO Bike Guide, p. 3-3
Lateral Clearance, Horizontal Curves	2 feet	AASHTO Bike Guide
Bridges	Width same as paved approach, plus 2 ft. clear area on each side	AASHTO Bike Guide
Physical Barrier / Railing	42" min	VDOT Complete Streets Guidelines

References:

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- 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>

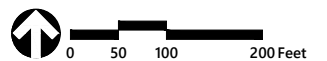
Appendix B

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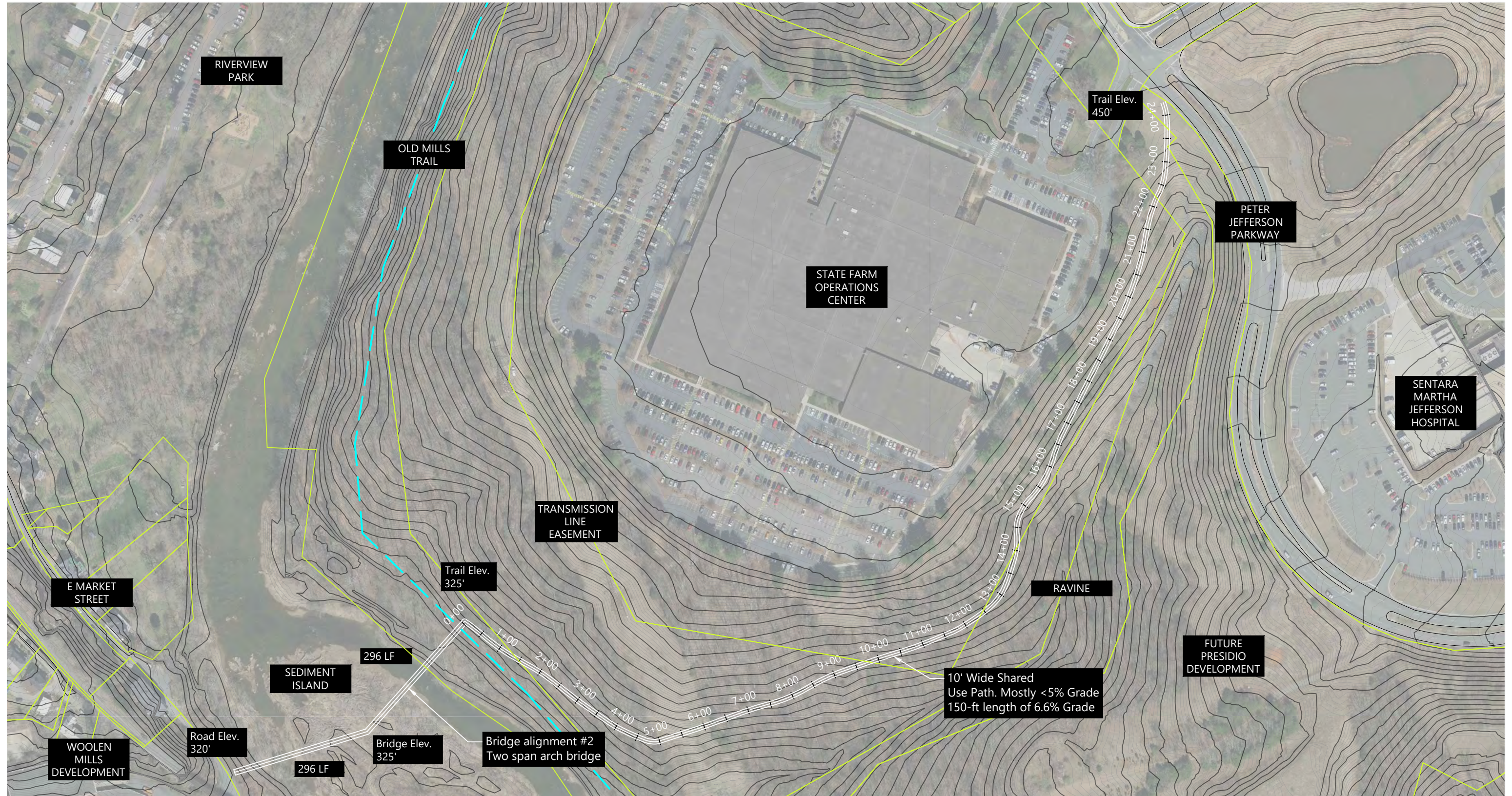
Concept Alignment - Bridge #1 Rivanna River Path Crossing Charlottesville, Virginia

Source:
Prepared for: **Memo Documentation**
Date: **June 2nd, 2020**



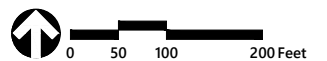
Appendix C

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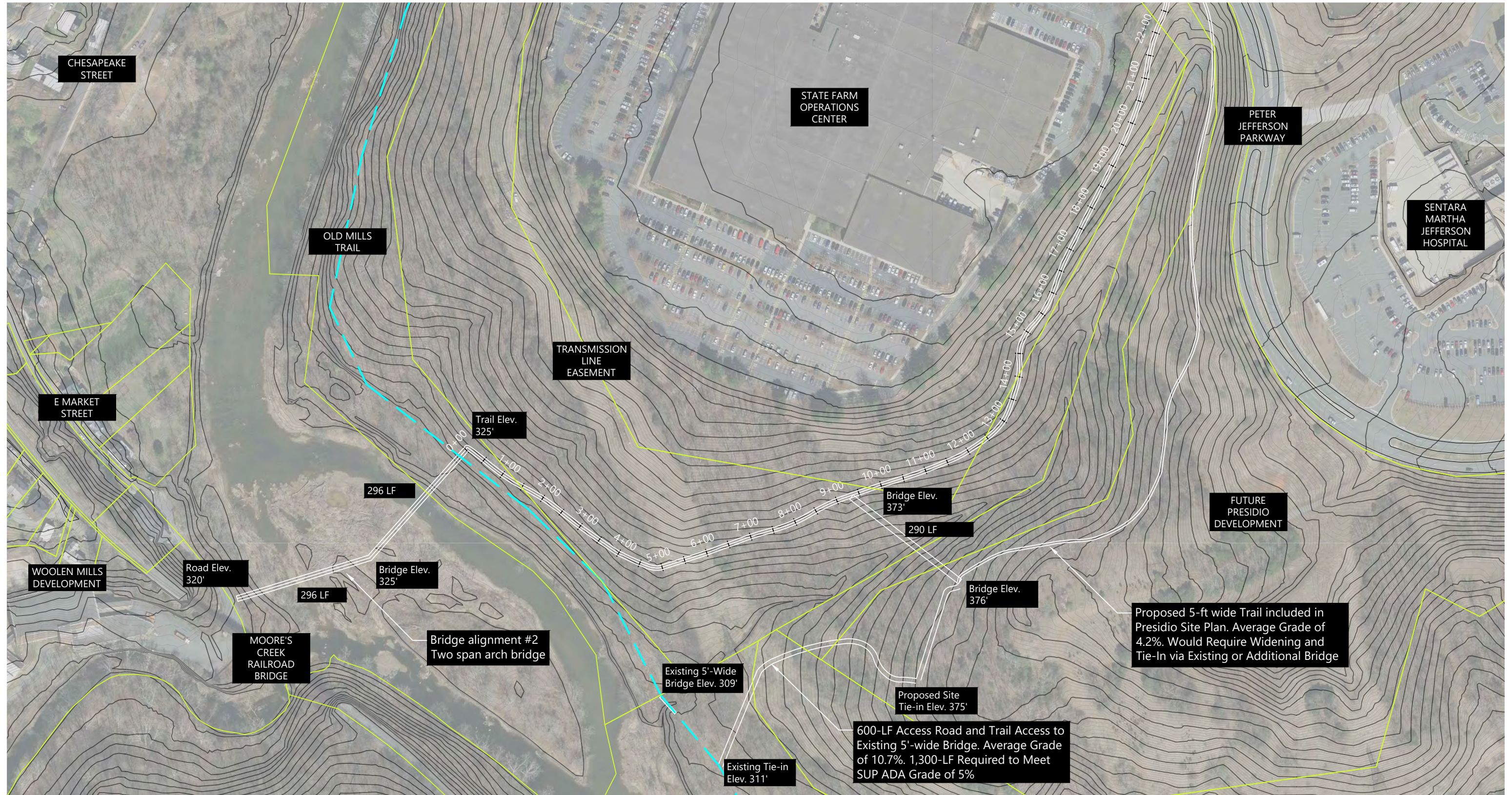
Concept Alignment - Bridge #2 Rivanna River Path Crossing Charlottesville, Virginia

Source:
Prepared for: **Memo Documentation**
Date: **June 3rd, 2020**



Appendix D

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Concept Alignment - Potential Tie-In to Presidio Trail Rivanna River Path Crossing Charlottesville, Virginia

Source:
Prepared for: **Memo Documentation**
Date: **June 3rd, 2020**



Appendix E – Permitting Impacts



Rivanna River Trail

Summary of Environmental Permits Required

The proposed trail plan calls for a new suspended pedestrian bridge to cross the Rivanna River that would require environmental permits. This section outlines the expected environmental permitting of two alternative bridge concepts. Bridge Alignment #1 would cross the Rivanna River approximately 2,000 feet upstream from the confluence with Moores Creek. This crossing would include abutments on each side of the river channel to support a bridge deck situated at approximately 38 feet above the river elevation. The span between abutments is projected to be 240 feet long. Bridge Alignment #2 would cross the river approximately 300 feet upstream from the Moores Creek confluence. This bridge alignment has a longer span (592 feet) requiring a single support pier to be placed on an island of river sediment at approximately one half of the span distance. The elevation of the deck of Alignment #2 is projected to be set at 325 feet, which is approximately 25 feet above the normal water level of the river.

Wetland/Waters Regulatory Permits

Bridge Alignment #1 - The jurisdictional limits of the river would be determined by surveying the ordinary high water mark (OHWM) of the river bank presuming no adjacent vegetated wetlands are present. The OHWM is identifiable by physical features along the river bank as outlined in U.S. Army Corps of Engineers (USACE) guidance. The agencies having jurisdiction include the USACE, Virginia Department of Environmental Quality (VDEQ), and Virginia Marine Resources Commission (VMRC). Based on VHB's experience working in similar river settings, the channel is not likely to be deemed "navigable" by the U.S. Coast Guard, and no permit would be required from this agency. Likewise, VHB believes the USACE would not regulate this channel under the federal Section 10 of the Rivers and Harbors Act, but instead would regulate activities under Section 404 of the Clean Water Act.

USACE regulates the placement of fill material in jurisdictional 404 waters. Similarly, the VDEQ regulates the dredging, filling, and altering of state waters to include wetlands. VMRC regulates all activities placed under, within, and over state bottomlands, defined in this case as any river channel having a drainage basin greater than 5 square miles (3,200 acres).

Bridge Alignment #1 would not require a permanent structure to be placed in the jurisdictional limits of the river. Nonetheless, a Joint Permit Application (JPA) would be required for submittal to the Virginia Marine Resources Commission (VMRC). This agency is the clearinghouse for the JPA, as they will transfer copies of the JPA to all local, state, and federal regulatory agencies for unilateral review as per each agency's regulations.

Assuming the USACE deems the Rivanna River a Section 404 waterbody and not a Section 10 navigable waterbody, VHB believes that because Alignment #1 would not place fill, dredge, or alter the Rivanna River, no permit would be required from the USACE and VDEQ. However, a permit would be required from the VMRC since the bridge crosses state bottomlands associated with the river channel.



Bridge Alignment #2

This bridge location would have bridge abutments within uplands on each side of the river. However, the design incorporates the use of an island in the center of the Rivanna River channel for the placement of a bridge support pier. For purposes of this analysis, VHB presumes that the section of the island where the pier would be located is either a jurisdictional wetland or is situated below the OHWM. Under this scenario, Alignment #2 would likely qualify for a Nationwide Permit 42 (Recreational Facilities) or Nationwide Permit 18 (Minor Discharge) provided the impact is less than 0.1 acre. The VDEQ, however, has issued state-wide Section 401 Water Quality Certification approval for Nationwide Permits 42 and 18 with conditions, meaning that a separate VDEQ permit would not be issued provided the USACE verifies the use of a Nationwide Permit. A VMRC permit would be needed just as described for Alignment #1.

Below is a permitting summary table for both bridge alignments.

Permitting Agency	Permit Required?	
	Alignment #1	Alignment #2
U.S. Army Corps of Engineers	No	Yes
Virginia Department of Environmental Quality	No	No
Virginia Marine Resources Commission	Yes	Yes
U.S. Coast Guard	No	No

Flood Zone Impacts

FEMA LOMR Case No. 16-03-1207P, dated February 6, 2017, revised the effective Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM), both dated May 16, 2016 to reflect the removal of the dam, updated hydrologic and hydraulic analyses and updated topography. As a result, the 100-year floodplain elevation and floodway elevation were lowered at the project site (depicted in the attached figure).

In the vicinity of the southern suspension bridge with an assumed deck elevation of 325', the FEMA-mapped 100-year floodplain elevation is approximately 324.1'. At the northern single-span suspension bridge with an assumed deck elevation of 338', the FEMA-mapped 100-year floodplain elevation is approximately 324.2'.

Approvals:

Per the Albemarle County Code Floodplain Overlay District Section 30.3.11, the proposed bridges would require hydraulic modelling to determine the impact of the bridges on the 100-year floodplain elevation



and boundary and the mapped floodway. The bridges would classify as a by-right development if it can be demonstrated that they result in no change to the floodplain elevation or boundary, in addition to being reviewed and approved by the department of community development. Included in the approval process would be the submittal of a Floodplain Development Permit and Land Disturbance Permit to Albemarle County.

If the bridges do raise the floodplain elevation or increase the floodplain boundary, then in addition to the permits above, a Special Use Permit would be required from Albemarle County, and a Conditional Letter of Map Revision from FEMA. These would include notification of affected landowners, of which there are a few private landowners with property in the floodplain along the shoreline at and upstream of the project area.

City of Charlottesville would require a Floodplain Development Permit and the same approval process by FEMA if the bridges result in an increase to the floodplain elevation or boundary.

Considerations:

While the bridges are proposed at elevations above the 100-year floodplain and floodway, which is 0.3 feet higher than the aforementioned floodplain elevations, both bridges have the potential to impact the floodplain elevation, boundary and floodway, when considering their approach and any fill or structures within the floodplain or floodway. Specifically of concern is the southern bridge with an assumed deck elevation of 325', which it can be assumed will have a bottom of deck/support structure ("low chord") below the floodplain/floodway elevation and would likely impact its elevation and boundary. Thus, it is recommended that the hydraulic analysis be examined early in the design process to see what modification may be necessary and at what cost/benefit depending on their effect on the floodplain/floodway, approval process, and design and construction.

Appendix F

SYIP PROJECTS DETAILED PROJECT COST ESTIMATE SUMMARY (Version: 1/21/2020 - CTS Modified)

Portal ID:		Project UPC:	
Prepared By:	Chuck Conran	Milestone	Creation/Pre Scope
Reviewed By:	Chris Daily	Date:	6/3/2020
County/City/Town:	Albemarle County (02)	Tier Level	1

Preliminary Engineering

Project Estimate Component		Proposed Project Cost Estimate (\$)		
Discipline	Source	Base (\$)	Contingency (%)	Total
Roadway	Profess. Judgement	\$ 267,866	12.00%	\$300,010
Hydraulics	Profess. Judgement	\$ 28,196	12.00%	\$31,580
In-plan Utilities	Profess. Judgement	\$ 70,491	12.00%	\$78,950
Traffic				\$0
Structures/Bridges	Profess. Judgement	\$ 690,813	12.00%	\$773,710
Materials/Geotech	Profess. Judgement	\$ 70,491	12.00%	\$78,950
Survey	Profess. Judgement	\$ 140,982	12.00%	\$157,900
Environmental	Profess. Judgement	\$ 42,295	12.00%	\$47,370
Right of Way	Profess. Judgement	\$ 28,196	12.00%	\$31,580
Other	Profess. Judgement	\$ 70,491	12.00%	\$78,950
VDOT Oversight Costs		\$ 126,884	12.00%	\$142,110
Total PE Phase Estimate		\$ 1,536,705	12.00%	\$1,721,110
PE Base Estimate Date (XX/XX/XXXX)				
PE Phase Dates (XX/XX/XXXX)	Start Date		End Date	

Right-of-Way & Utilities

Discipline	Source	Base (\$)	Contingency (%)	Total
Right-of-Way	Tax Map	\$1,088,331	50.00%	\$1,632,497
Out-of-Plan Utilities (power, cable, gas, etc.)				\$0
VDOT Oversight Costs		\$54,417	50.00%	\$81,625
Total RW Phase Estimate		\$1,142,748	50.00%	\$1,714,121
RW Base Estimate Date (XX/XX/XXXX)				
RW Phase Dates (XX/XX/XXXX)	Start Date		End Date	

Construction

Discipline	Source	Base (\$)	Contingency (%)	Total
Mobilization	AASHTO PreCon	\$396,000	40.00%	\$554,400
MOT	Profess. Judgement	\$57,500	40.00%	\$80,500
Roadway	Bid Tabs	\$901,232	40.00%	\$1,261,725
Hydraulics	Bid Tabs	\$86,250	40.00%	\$120,750
In-plan Utilities	Bid Tabs	\$261,625	40.00%	\$366,275
Traffic				\$0
Structures/Bridges	Bid Tabs	\$2,231,000	40.00%	\$3,123,400
Materials/Geotech	Bid Tabs	\$241,500	40.00%	\$338,100
Soundwalls				\$0
Other	Bid Tabs	\$335,225	40.00%	\$469,315
Total Bid Items		\$4,510,332	40.00%	\$6,314,465
Incidental-Claims & Work Orders (Percentage of Bid Items)	5% to 10% max	225,517	40.00%	315,723
Railroad Flagging/Coordination				0
State Forces				0
State Police				0
Contract Requirements (Incentive/Disincentive)	5%			0
Construction Engineering (Inspection)	Environmental Inspection (\$)			0
	VDOT or Locality (\$)	902,066	40.00%	1,262,893
	VDOT Oversight (\$)			0
	Total CEI			1,262,893
Total CN Phase Estimate		\$5,637,915	40.00%	\$7,893,081
CN Base Estimate Date (XX/XX/XXXX)				
CN Phase Start Date (XX/XX/XXXX)				
CN Phase End Date (XX/XX/XXXX)				
Total Project Cost Estimate				\$11,328,312

Appendix F - Cost Estimate



Project # 34418.24
Date: June 3, 2020

Rivanna River Shared Use Path Bridge Study
Alignment #1
VDOT Contract ID#46267
Opinion of Probable Construction Costs
Non-Inflated Costs are in FY2020 Dollars

Description	Unit	Quantity	Unit Cost	Extension
Mobilization				\$ 396,000.00
Mobilization	LS	1	\$ 396,000.00	\$ 396,000.00
MOT				\$ 57,500.00
Maintenance of Traffic	LS	1	\$ 50,000.00	\$ 50,000.00
Subtotal				\$ 50,000.00
+15% Unaccounted for Items				\$ 7,500.00
Roadway				\$ 901,232.00
Erosion Control	LS	1	\$ 125,000.00	\$ 125,000.00
Clearing and Grubbing	AC	1.5	\$ 50,000.00	\$ 75,000.00
Earthwork	LS	1	\$ 450,000.00	\$ 450,000.00
Aggregate Base Material TY. I No. 21B	TON	975	\$ 75.00	\$ 73,125.00
ASPHALT CONCRETE; SM-9.5A	TON	367	\$ 165.00	\$ 60,555.00
Subtotal				\$ 783,680.00
+15% Unaccounted for Items				\$ 117,552.00
Hydraulics				\$ 86,250.00
Stormwater Management	LS	1	\$ 75,000.00	\$ 75,000.00
Subtotal				\$ 75,000.00
+15% Unaccounted for Items				\$ 11,250.00
In-plan Utilities				\$ 261,625.00
Light Pole, Fixture and Foundation	EA	35	\$ 6,500.00	\$ 227,500.00
Subtotal				\$ 227,500.00
+15% Unaccounted for Items				\$ 34,125.00
Structures/Bridges				\$ 2,231,000.00
Cable-stayed Bridge	LF	240	\$ 6,000.00	\$ 1,440,000.00
Structural Abutment	EA	2	\$ 75,000.00	\$ 150,000.00
Truss Land Bridge	LF	200	\$ 1,500.00	\$ 300,000.00
Truss Bridge Piers	EA	2	\$ 25,000.00	\$ 50,000.00
Subtotal				\$ 1,940,000.00
+15% Unaccounted for Items				\$ 291,000.00
Materials/Geotech				\$ 241,500.00
Retaining Walls (2' - 4' HT.)	LF	1500	\$ 140.00	\$ 210,000.00
Subtotal				\$ 210,000.00
+15% Unaccounted for Items				\$ 31,500.00
Other				\$ 335,225.00
Construction Surveying	LS	1	\$ 40,000.00	\$ 40,000.00
Field Office	MO	18	\$ 3,000.00	\$ 54,000.00
Landscaping	LS	1	\$ 50,000.00	\$ 50,000.00
Regulatory Signage	LS	1	\$ 7,500.00	\$ 7,500.00
Seating Areas along trail	EA	3	\$ 20,000.00	\$ 60,000.00
Trailhead Structure	EA	2	\$ 25,000.00	\$ 50,000.00
Trailhead Signage, Seating, and Bike Racks	LS	1	\$ 30,000.00	\$ 30,000.00
Subtotal				\$ 291,500.00
+15% Unaccounted for Items				\$ 43,725.00
CN Total				\$ 7,893,081.00
Subtotal				\$ 4,510,332.00
Work Orders			5%	\$ 225,516.60
CEI			20%	\$ 902,066.40
Sub-Total				\$ 5,637,915.00
CN Contingency			40%	\$ 2,255,166.00

SYIP PROJECTS
DETAILED PROJECT COST ESTIMATE SUMMARY
(Version: 1/21/2020 - CTS Modified)

Portal ID:		Project UPC:	
Prepared By:	Chuck Conran	Milestone	Creation/Pre Scope
Reviewed By:	Chris Daily	Date:	6/3/2020
County/City/Town:	Albemarle County (02)	Tier Level	1

Preliminary Engineering

Project Estimate Component		Proposed Project Cost Estimate (\$)		
Discipline	Source	Base (\$)	Contingency (%)	Total
Roadway	Profess. Judgement	\$ 302,813	12.00%	\$339,150
Hydraulics	Profess. Judgement	\$ 31,875	12.00%	\$35,700
In-plan Utilities	Profess. Judgement	\$ 79,688	12.00%	\$89,250
Traffic				\$0
Structures/Bridges	Profess. Judgement	\$ 780,938	12.00%	\$874,650
Materials/Geotech	Profess. Judgement	\$ 79,688	12.00%	\$89,250
Survey	Profess. Judgement	\$ 159,375	12.00%	\$178,500
Environmental	Profess. Judgement	\$ 47,813	12.00%	\$53,550
Right of Way	Profess. Judgement	\$ 31,875	12.00%	\$35,700
Other	Profess. Judgement	\$ 79,688	12.00%	\$89,250
VDOT Oversight Costs		\$ 143,438	12.00%	\$160,650
Total PE Phase Estimate		\$ 1,737,188	12.00%	\$1,945,650
PE Base Estimate Date (XX/XX/XXXX)				
PE Phase Dates (XX/XX/XXXX)	Start Date		End Date	

Right-of-Way & Utilities

Discipline	Source	Base (\$)	Contingency (%)	Total
Right-of-Way	Tax Map	\$963,606	50.00%	\$1,445,409
Out-of-Plan Utilities (power, cable, gas, etc.)				\$0
VDOT Oversight Costs		\$48,180	50.00%	\$72,270
Total RW Phase Estimate		\$1,011,786	50.00%	\$1,517,679
RW Base Estimate Date (XX/XX/XXXX)				
RW Phase Dates (XX/XX/XXXX)	Start Date		End Date	

Construction

Discipline	Source	Base (\$)	Contingency (%)	Total
Mobilization	AASHTO PreCon	\$595,000	40.00%	\$833,000
MOT	Profess. Judgement	\$57,500	40.00%	\$80,500
Roadway	Bid Tabs	\$870,372	40.00%	\$1,218,520
Hydraulics	Bid Tabs	\$86,250	40.00%	\$120,750
In-plan Utilities	Bid Tabs	\$261,625	40.00%	\$366,275
Traffic				\$0
Structures/Bridges	Bid Tabs	\$4,398,750	40.00%	\$6,158,250
Materials/Geotech	Bid Tabs	\$193,200	40.00%	\$270,480
Soundwalls				\$0
Other	Bid Tabs	\$335,225	40.00%	\$469,315
Total Bid Items		\$6,797,922	40.00%	\$9,517,090
Incidental-Claims & Work Orders (Percentage of Bid Items)	5% to 10% max	339,896	40.00%	475,855
Railroad Flagging/Coordination				0
State Forces				0
State Police				0
Contract Requirements (Incentive/Disincentive)	5%			0
Construction Engineering (Inspection)	Environmental Inspection (\$)			0
	VDOT or Locality (\$)	1,359,584	40.00%	1,903,418
	VDOT Oversight (\$)			0
	Total CEI			1,903,418
Total CN Phase Estimate		\$8,497,402	40.00%	\$11,896,363
CN Base Estimate Date (XX/XX/XXXX)				
CN Phase Start Date (XX/XX/XXXX)				
CN Phase End Date (XX/XX/XXXX)				
Total Project Cost Estimate				\$15,359,693



Project # 34418.24
Date: June 3, 2020

**Rivanna River Shared Use Path Bridge Study
Alignment #2
VDOT Contract ID#46267
Opinion of Probable Construction Costs
Non-Inflated Costs are in FY2020 Dollars**

Description	Unit	Quantity	Unit Cost	Extension
Mobilization				\$ 595,000.00
Mobilization	LS	1	\$ 595,000.00	\$ 595,000.00
MOT				\$ 57,500.00
Maintenance of Traffic	LS	1	\$ 50,000.00	\$ 50,000.00
Subtotal				\$ 50,000.00
+15% Unaccounted for Items				\$ 7,500.00
Roadway				\$ 870,371.75
Erosion Control	LS	1	\$ 125,000.00	\$ 125,000.00
Clearing and Grubbing	AC	1.5	\$ 50,000.00	\$ 75,000.00
Earthwork	LS	1	\$ 450,000.00	\$ 450,000.00
Aggregate Base Material TY. I No. 21B	TON	780	\$ 75.00	\$ 58,500.00
ASPHALT CONCRETE; SM-9.5A	TON	293	\$ 165.00	\$ 48,345.00
Subtotal				\$ 756,845.00
+15% Unaccounted for Items				\$ 113,526.75
Hydraulics				\$ 86,250.00
Stormwater Management	LS	1	\$ 75,000.00	\$ 75,000.00
Subtotal				\$ 75,000.00
+15% Unaccounted for Items				\$ 11,250.00
In-plan Utilities				\$ 261,625.00
Light Pole, Fixture and Foundation	EA	35	\$ 6,500.00	\$ 227,500.00
Subtotal				\$ 227,500.00
+15% Unaccounted for Items				\$ 34,125.00
Structures/Bridges				\$ 4,398,750.00
Arched Truss Bridge	LF	600	\$ 6,000.00	\$ 3,600,000.00
Structural Abutment	EA	2	\$ 75,000.00	\$ 150,000.00
Truss Bridge Piers	EA	1	\$ 75,000.00	\$ 75,000.00
Subtotal				\$ 3,825,000.00
+15% Unaccounted for Items				\$ 573,750.00
Materials/Geotech				\$ 193,200.00
Retaining Walls (2' - 4' HT.)	LF	1200	\$ 140.00	\$ 168,000.00
Subtotal				\$ 168,000.00
+15% Unaccounted for Items				\$ 25,200.00
Other				\$ 335,225.00
Construction Surveying	LS	1	\$ 40,000.00	\$ 40,000.00
Field Office	MO	18	\$ 3,000.00	\$ 54,000.00
Landscaping	LS	1	\$ 50,000.00	\$ 50,000.00
Regulatory Signage	LS	1	\$ 7,500.00	\$ 7,500.00
Seating Areas along trail	EA	3	\$ 20,000.00	\$ 60,000.00
Trailhead Structure	EA	2	\$ 25,000.00	\$ 50,000.00
Trailhead Signage, Seating, and Bike Racks	LS	1	\$ 30,000.00	\$ 30,000.00
Subtotal				\$ 291,500.00
+15% Unaccounted for Items				\$ 43,725.00
CN Total				\$ 11,896,363.06
Subtotal				\$ 6,797,921.75
Work Orders	5%			\$ 339,896.09
CEI	20%			\$ 1,359,584.35
Sub-Total				\$ 8,497,402.19
CN Contingency	40%			\$ 3,398,960.88

Appendix G – Bridge and Trail Renderings



Alignment Concept 1 – Bridge Rendering



Alignment Concept 1 – Bridge Perspective Rendering



Alignment Concept 1 – Bridge Perspective Rendering



Ref: Rivanna River Pedestrian Path Concept
May 26, 2020

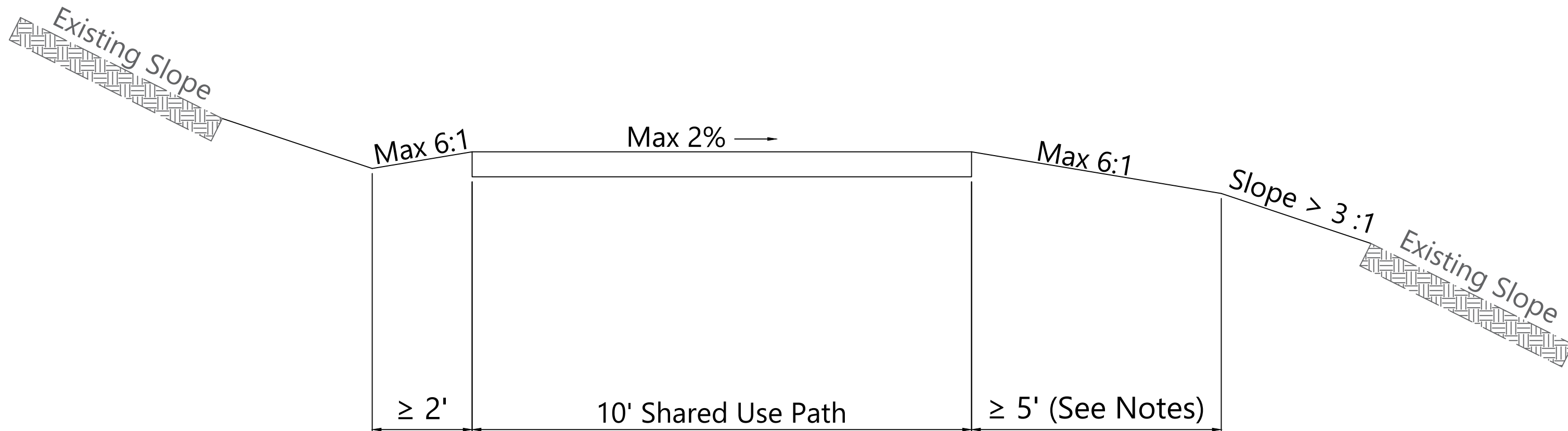


Alignment Concept 2 – Bridge Rendering



North Trailhead (Both Concepts) – Intersection of Peter Jefferson Highway and State Farm Boulevard



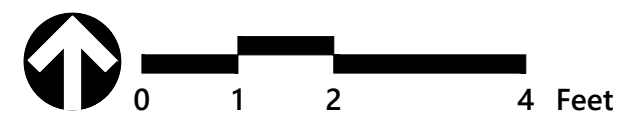


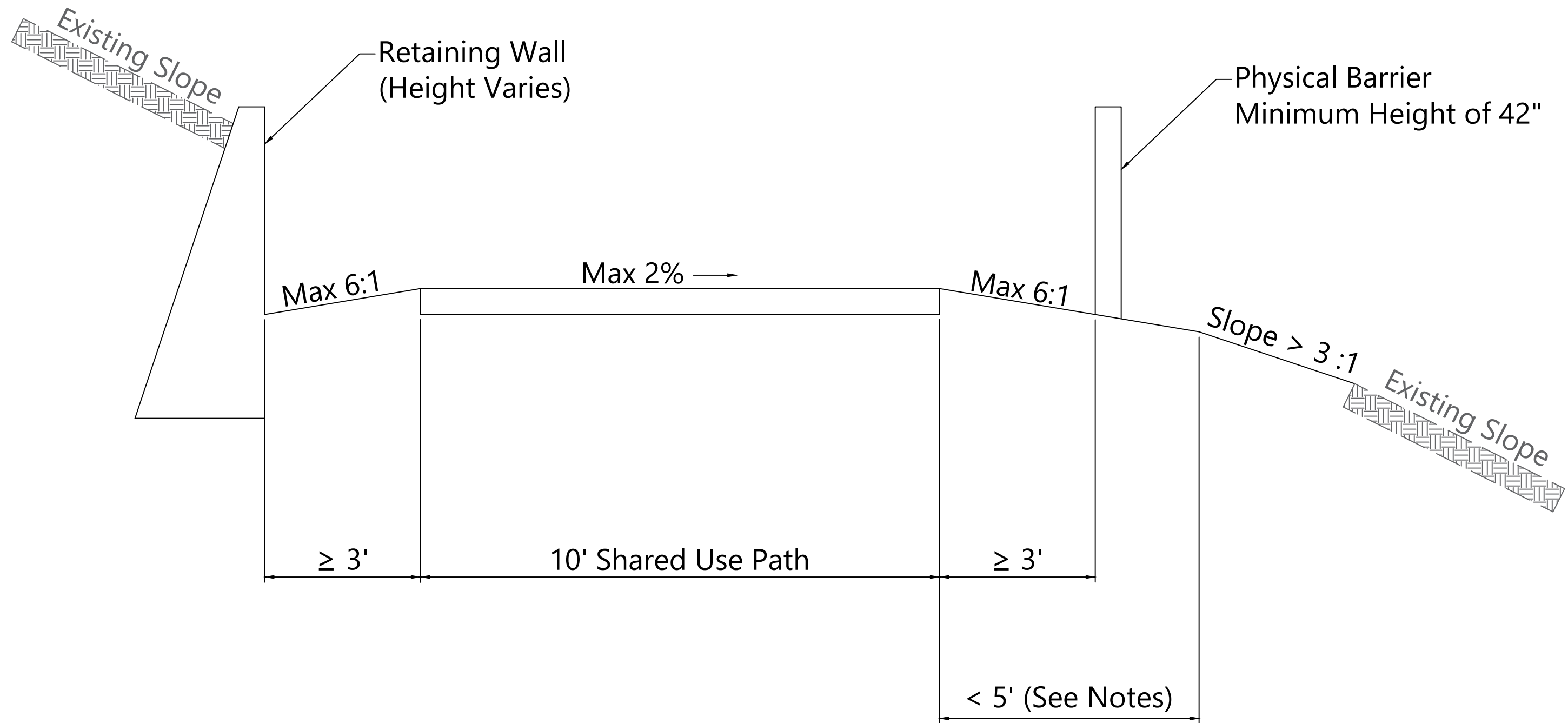
Rivanna River Shared Use Path
 Typical Section
 May 2020



NOTES

- Minimum 5' separation required from edge of Shared Use Path to downward slopes steeper than 3:1.
- Typical section is for illustrative purposes only. Survey has not been performed. Existing slopes are unknown.





**Rivanna River Shared Use Path
Typical Section**
May 2020



NOTES

- Physical Barrier (e.g. fence or handrail) required if less than 5' separation from:
- Slopes 2:1 or steeper, with a drop of 4 feet or greater
 - Slopes 3:1 or steeper, with a drop of 6 feet or greater
 - Slopes 3:1 or steeper, adjacent to parallel water hazard (greater than 2 feet deep) or other obvious hazard
 - Retaining wall or structure with a drop-off of 1 foot or more

NOTES (cont'd)

- Typical section is for illustrative purposes only. Survey has not been performed. Existing slopes are unknown.

