



Figure 25: Typical Section – 5-foot sidewalk and 14-foot shared-use path

Summary

The overarching purpose of this study was to define, at a conceptual level, if a facility could be incorporated within the former NSRR right-of-way that would connect proposed transit stations, while simultaneously acting as a pedestrian friendly connection between Strategic Growth Areas throughout the City of Virginia Beach. With very few areas requiring acquisition of right-of-way or permanent easements, a 5-foot sidewalk and 14-foot shared-use path was determined to be the best option (Figure 24). The recommended typical section allows space for shallow swales and a piped drainage system. The 10.5-mile facility incorporates a total of 8 expected mid-block crossings, two water crossings, and three elevated structures. At a preliminary level, the total project construction cost is estimated to be \$54.1 million, yielding an overall cost of \$5.1 million per mile.

What's Next

This preliminary study was intended to determine if a shared-use path along the proposed transit alignment is feasible. At a conceptual level, it is possible to begin a framework for a shared-use path system, with intent to continuously develop and improve the facility over time. The project will require cooperation of various entities, including the City of Virginia Beach, Dominion Virginia Power, Hampton Roads Transit, and the development community. Throughout the design process, joint agreements will be forged between the appropriate entities to determine responsibilities including maintenance and capital costs.

The next steps in development of the shared-use path will constitute much more in-depth, design level work. It is expected that a 30 percent level of design of the pedestrian and bicycle facilities will be completed and included in the Design-Build

contract documents. It is the intent to construct these facilities as part of the LRT extension. It will be important to incorporate the opportunities and constraints outlined in this report to design an effective multi-modal system. Developing a study on north/south connections and connectivity at specific transit stations also will be a key requirement for a successful system. To make this project a reality, the study will need to be approved and adopted into the master plan. Funding will also need to be identified before taking steps to include the project as a part of the City of Virginia Beach Capital Improvement Plan.

If the plan moves forward to the next level of development, determining the stormwater management impacts will be an immediate need. As part of the impact determination, right-of-way outside of the former NSRR right-of-way will be identified so any additional acquisition can begin to be processed.

This project aligns with the goals and visions for the City's SGAs. The shared-use path will create an east/west connection through six of the City's SGAs, enhance development, and act as an amenity to the residents and visitors of the City. With strategic design, this pathway system will greatly enhance the development of the City of Virginia Beach.



Appendix

Estimated Opinion of Probable Construction Cost				
PROJECT: Construction of LRT Shared Use Path, Conceptual Study Newtown Road to Constitution Drive				
Description	Quantity	Units	Unit Price	Cost
General Items				
Mobilization	1	LS	\$500,000	\$500,000
Construction Surveying	1	LS	\$62,800	\$63,000
Clearing & Grubbing	24	AC	\$7,000	\$170,000
Field Office, Type 1	18	MO	\$1,500	\$27,000
Pavement Items				
2" Asphalt Concrete Ty. SM-9.5A (North Path [5ft])	605	TON	\$95	\$57,475
6" Agg. Base Mat. Ty. I No. 21A or 21B (North Path [5ft])	1,800	TON	\$45	\$81,000
2" Asphalt Concrete Ty. SM-9.5A (South Path [14ft])	3,086	TON	\$95	\$293,175
6" Agg. Base Mat. Ty. I No. 21A or 21B (South Path [14ft])	9,200	TON	\$45	\$414,000
Geotextile (Subgrade Stabilization)	33,600	SY	\$2	\$67,200
Ballast Curb	1,440	CY	\$450	\$648,000
CG-12 Detectable Warning Surface	110	SY	\$200	\$22,000
Fence FE-CL (North Path)	9,900	LF	\$20	\$198,000
Fence FE-CL (South Path)	18,100	LF	\$20	\$362,000
Structural Items				
Elevated Structure (Independence)	1	LS	\$6,500,000	\$6,500,000
Drainage Items				
Drainage	1	LS	\$1,711,000	\$1,711,000
Earthwork Items				
Earthwork	1	LS	\$840,000	\$840,000
Signing and Marking Items				
Signing and Marking	1	LS	\$54,000	\$54,000
Lighting Items				
Lighting	1	LS	\$700,000	\$700,000
Signalization				
Mid-Block Crossings (Stop-Sign Controlled)	6	EA	\$35,000	\$210,000
Erosion & Sediment Control				
E&S Control	1	LS	\$88,000	\$88,000
Maintenance of Traffic				
MOT (At-Grade Intersection)	8	EA	\$5,000	\$40,000
MOT (Grade-Separated Intersection)	1	EA	\$60,000	\$60,000
				\$ 13,105,850
			Construction Contingency (20%)	\$ 2,621,170
				\$ 15,728,000
Right-of-Way for Stormwater Management				\$ 1,800,000
Other Soft Costs				\$ 262,000
				\$ 17,790,000
Total Cost Per Mile: \$3.7 million/mile + \$6.5 million for elevated structure				
*This estimate does not include utility relocation, or demolition of existing railway tracks or distribution/transmission poles.				

Estimated Opinion of Probable Construction Cost				
PROJECT: Construction of LRT Shared Use Path, Conceptual Study Town Center to London Bridge Road				
Description	Quantity	Units	Unit Price	Cost
General Items				
Mobilization	1	LS	\$1,390,900	\$1,390,900
Construction Surveying	1	LS	\$135,500	\$135,500
Clearing & Grubbing	38	AC	\$7,500	\$285,000
Field Office, Type 1	18	MO	\$1,500	\$27,000
Pavement Items				
2" Asphalt Concrete Ty. SM-9.5A (North Path [5ft])	1,254	TON	\$100	\$125,400
6" Agg. Base Mat. Ty. I No. 21A or 21B (North Path [5ft])	3,700	TON	\$45	\$166,500
2" Asphalt Concrete Ty. SM-9.5A (South Path [14ft])	4,070	TON	\$100	\$407,000
6" Agg. Base Mat. Ty. I No. 21A or 21B (South Path [14ft])	12,100	TON	\$45	\$544,500
Geotextile (Subgrade Stabilization)	48,300	SY	\$2	\$96,600
Ballast Curb	1,980	CY	\$500	\$990,000
CG-12 Detectable Warning Surface	90	SY	\$200	\$18,000
Fence FE-CL (North Path)	20,360	LF	\$20	\$407,200
Fence FE-CL (South Path)	23,760	LF	\$20	\$475,200
Structural Items				
Elevated Structure (Rosemont Road)	1	LS	\$5,784,000	\$5,784,000
Elevated Structure (Lynnhaven Parkway)	1	LS	\$5,784,000	\$5,784,000
Water Crossing (Thalia Creek)	1	LS	\$554,400	\$554,400
Water Crossing (Lynnhaven River)	1	LS	\$6,032,000	\$6,032,000
Drainage Items				
Drainage	1	LS	\$2,554,000	\$2,554,000
Earthwork Items				
Earthwork	1	LS	\$1,127,000	\$1,127,000
Signing and Marking Items				
Signing and Marking	1	LS	\$94,000	\$94,000
Lighting Items				
Lighting	1	LS	\$1,247,000	\$1,247,000
Signalization				
Mid-Block Crossings (Stop-Sign Controlled)	5	EA	\$20,000	\$100,000
Erosion & Sediment Control				
E&S Control	1	LS	\$137,000	\$137,000
Maintenance of Traffic				
MOT (At-Grade Intersection)	5	EA	\$5,000	\$25,000
MOT (Grade-Separated Intersection)	2	EA	\$50,000	\$100,000
				\$ 28,607,200
			Construction Contingency (30%)	\$ 8,582,160
				\$ 37,190,000
Total Cost Per Mile: \$4.2 million/mile + \$18.1 million for elevated structures				
*This estimate does not include right-of-way acquisition, utility relocation, or demolition of existing railway tracks or distribution/transmission poles.				



Estimated Opinion of Probable Construction Cost				
PROJECT: Construction of LRT Shared Use Path, Conceptual Study London Bridge Road to Norfolk Avenue				
Description	Quantity	Units	Unit Price	Cost
General Items				
Mobilization	1	LS	\$291,700	\$292,000
Construction Surveying	1	LS	\$26,100	\$27,000
Clearing & Grubbing	22	AC	\$7,500	\$168,000
Field Office, Type 1	18	MO	\$1,500	\$27,000
Pavement Items				
2" Asphalt Concrete Ty. SM-9.5A (North Path [5ft])	539	TON	\$100	\$53,900
6" Agg. Base Mat. Ty. I No. 21A or 21B (North Path [5ft])	1,600	TON	\$45	\$72,000
2" Asphalt Concrete Ty. SM-9.5A (South Path [14ft])	2,530	TON	\$100	\$253,000
6" Agg. Base Mat. Ty. I No. 21A or 21B (South Path [14ft])	7,500	TON	\$45	\$337,500
Geotextile (Subgrade Stabilization)	27,800	SY	\$2	\$55,600
Ballast Curb	1,230	CY	\$500	\$615,000
CG-12 Detectable Warning Surface	40	SY	\$200	\$8,000
Fence FE-CL (North Path)	8,775	LF	\$20	\$175,500
Fence FE-CL (South Path)	14,725	LF	\$20	\$294,500
Drainage Items				
Drainage	1	LS	\$1,648,000	\$1,648,000
Earthwork Items				
Earthwork	1	LS	\$649,000	\$649,000
Signing and Marking Items				
Signing and Marking	1	LS	\$70,000	\$70,000
Lighting Items				
Lighting	1	LS	\$598,000	\$598,000
Signalization				
Mid-Block Crossings (Stop-Sign Controlled)	4	EA	\$20,000	\$80,000
Erosion & Sediment Control				
E&S Control	1	LS	\$81,000	\$81,000
Maintenance of Traffic				
MOT (At-Grade Intersection)	4	EA	\$5,000	\$20,000
				\$ 5,525,000
Construction Contingency (30%)				\$ 1,657,500
				\$ 7,183,000
Total Cost Per Mile: \$2.6 million/mile				
*This estimate does not include right-of-way acquisition, utility relocation, or demolition of existing railway tracks or distribution/transmission poles.				



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