

## MEMORANDUM

June 4, 2022

To: Bryan Davis, CCRPC and Todd Odit, Town of Hinesburg

From: Lucy Gibson, PE

Project: Richmond Road Bicycle and Pedestrian Scoping Study Update

### **Re: Richmond Road Project Segment Costs**

Toole Design has been retained by the Chittenden County Regional Planning Commission to update the Richmond Road Bicycle and Pedestrian Scoping Study, prepared for CCRPC and the Town of Hinesburg in August, 2016. This study investigated the costs, impacts and feasibility of constructing a shared use path on Richmond Road in Hinesburg from Pond Road to Texas Hill Road. The report's findings included a total construction cost estimate of \$2,485,000. Because this cost significantly exceeds the typical funding award from the Vermont Agency of Transportation Bicycle-Pedestrian Program, the Town of Hinesburg has elected to break the project into smaller segments, with estimated costs that are more in line with typical projects funded by VTrans.

Toole Design conducted the following tasks to support the revised cost estimate:

- Site visit to confirm field conditions
- Identify project segment limits
- Develop updated project cost estimates for each segment using most recent available VTrans unit costs

This memorandum summarizes this effort and provides updated projects costs by segment.

### **Current Field Conditions**

A site visit was conducted to assess any changes in field conditions that have occurred since the 2016 study was completed. The only significant change is the construction of stormwater infrastructure to support new development on the north side of Richmond Road. The new infrastructure will need to be considered in the design, but does not affect the basis for the cost estimate. Drainage infrastructure cannot be determined until the design engineering phase, when a topographic survey is available, hydrologic modeling is conducted, and drainage requirements can be determined.

## Project Segment Analysis

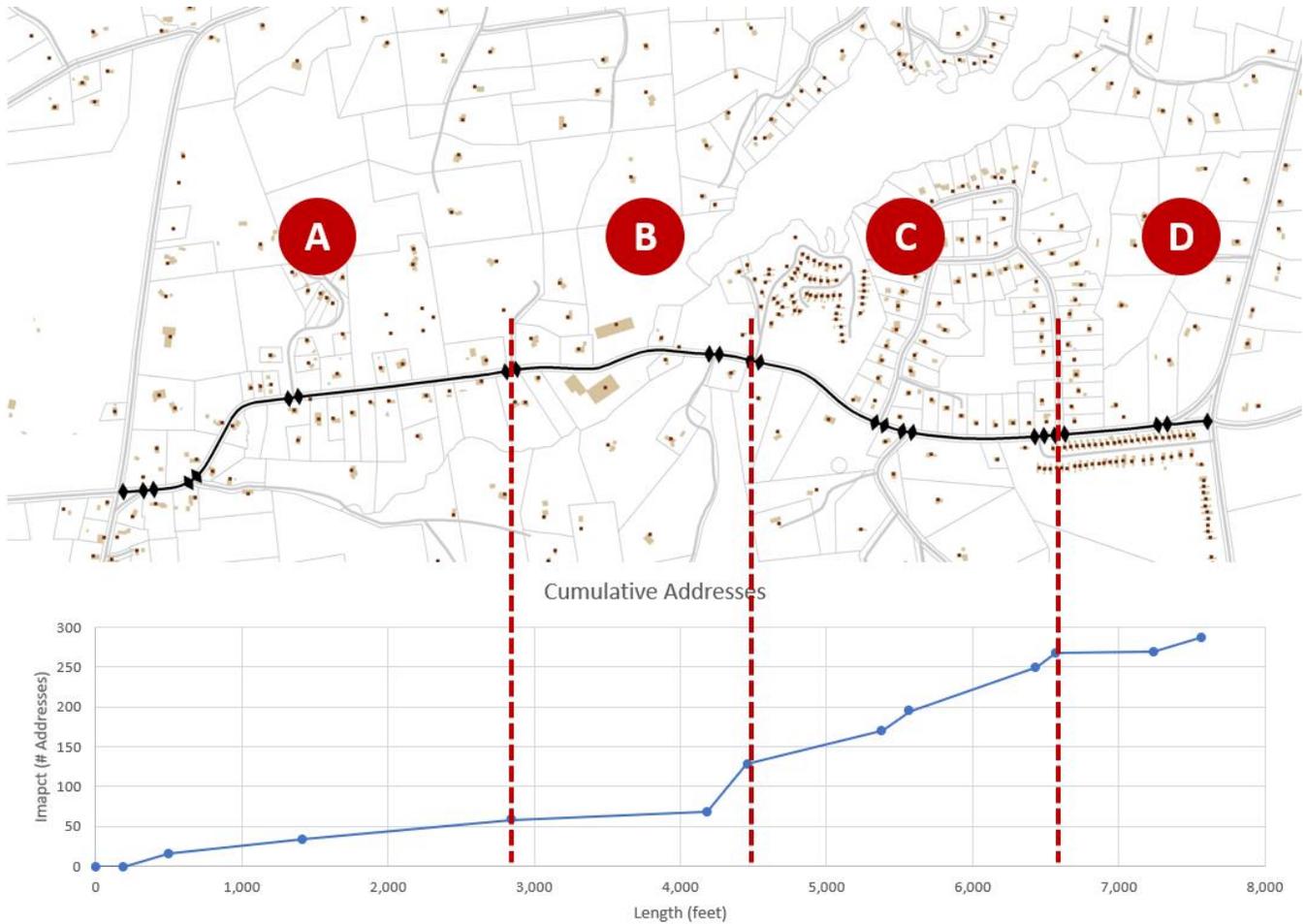
The project length of approximately 1 ½ miles was evaluated for logical end points for segments. The following considerations were included in this process:

**Logical Termini.** Typically, federal funding is provided for projects that will have independent utility, even if they are part of a longer term phased process. Segment ends are proposed at street intersections, which will provide a connection to all addresses on that street.

**Impact.** The impact of different segment options can be evaluated by the number of residences and businesses that are connected to the Hinesburg bicycle and pedestrian network.

It is proposed to divide the project into 4 segments, as illustrated below. This allows for greater flexibility in establishing costs for a grant application.

**Figure 1: Recommended Project Segments**



The table below shows the segment boundaries, lengths, and number of addresses that each segment will connect to the shared use path. Residents are not equally distributed along Richmond Road, but rather are more concentrated in the eastern portion of the project.

**Table 1: Project Segment Data**

Segment	From	To	Addresses Served	Length (feet)
A	Pond Road	Longmeadow Road	58	2,844
B	Longmeadow Road	Jourdan Street	73	1,612
C	Jourdan Street	Birchwood Street	122	1,979
D	Birchwood Street	Texas Hill Road/N Road	37	1,133
<b>TOTAL</b>			<b>290</b>	<b>7,568</b>

The construction costs by segment were calculated using the same methodology as in the 2016 report, but updated with the most recent available unit cost information. The design files were used to determine the quantity of each item in each project segment. The following table shows the distribution of quantities that was used to develop estimates for each project segment. These quantities were developed from the proposed conceptual design as outlined in the 2016 report, and are subject to change once survey is collected and the project design is developed in greater detail.

**Table 2: Project Segment Quantities**

DESCRIPTION	UNIT	A	B	C	D
Clearing and Grubbing	ACRE	1	1	0.5	0.5
Unclassified Excavation	CY	1,670	840	1,040	550
Solid Rock Excavation	CY	-	60	-	-
Subbase Gravel	CY	1,120	560	700	370
Subbase Sand Borrow	CY	570	280	360	190
Culvert Replacement	EA	1	-	1	-
Shared Use Path Bridge	SF	-	1,500	-	-
Bituminous Concrete	TON	430	220	260	150
Remove and Reset Guardrail	LF	-	80	-	-
Accessible Ramps	EA	6	4	4	2
Detectable Warning Surface	EA	6	4	4	2
Durable 4" Yellow Line, Type 1 Tape	LF	1,500	800	800	600
Durable 12" White Line, Type 1 Tape	LF	280	220	180	80
Hydrant Relocation	EA	1	-	-	-
Utility Pole Relocation	EA	18	5	3	-
Traffic Signs & Posts	EA	10	8	8	6
Loam & Seed	SY	2,540	1,440	1,760	1,020
Tree Plantings	EA	36	-	9	-

These quantities were applied to the most recent available unit prices available from VTrans to develop a segment construction cost. Details on the cost estimates are attached to this memorandum. In addition, allowances for the following items were included based on typical cost factors.

- Erosion Control was estimated to be 5% of the total construction cost. While this is higher than typical, it was considered appropriate for this context, due to the prevalent drainage courses along the north side of Richmond Road and stream crossings.
- Traffic Control was estimated to be 10% of total construction cost, which is a typical factor for projects located on a narrow, heavily trafficked corridor.
- Mobilization was estimated to be 6% of the project construction cost, which is in the typical range.
- A 25% contingency was applied to the construction cost to reflect items for which there is insufficient design to provide a cost estimated, such as drainage infrastructure, curbing, guardrail or higher utility relocation costs than anticipated.
- Design Engineering fees are estimated to be 22% of the total construction cost (inclusive of all the above items).
- Construction Engineering fees are estimated to be 14% of the total construction costs (inclusive of all the above construction items, but not the design engineering fee allowance)
- An allowance for right-of-way acquisition costs are estimated based on likely area and property values, and include an allowance for legal and engineering services that are required for the acquisition.

A project management fee was not included, but the Town of Hinesburg may wish to retain a municipal project manager to oversee the project. These fees are eligible for reimbursement. If the Town elects to provide these services in house, the staff costs can be included in the local match. However, project funding applications with full cash matches are often considered more favorably by VTrans. The following table summarizes the cost estimates for all four project segments. Details for each segment are included in the appendix.

**Table 3: Project Segment Cost Summary**

Segment	A	B	C	D	TOTAL
Length (feet)	2,844	1,612	1,979	1,133	7,568
Construction Cost	\$689,000	\$667,000	\$338,000	\$170,000	\$1,864,000
25% Contingency	\$172,000	\$167,000	\$85,000	\$43,000	\$467,000
Design Engineering	\$189,000	\$183,000	\$93,000	\$47,000	\$512,000
Construction Engineering	\$121,000	\$117,000	\$59,000	\$30,000	\$327,000
Right of Way Costs	\$59,000	\$34,000	\$41,000	\$24,000	\$158,000
Traffic Calming Allowance	\$150,000	-	-	-	\$150,000
<b>TOTAL</b>	<b>\$1,380,000</b>	<b>\$1,168,000</b>	<b>\$616,000</b>	<b>\$314,000</b>	<b>\$3,478,000</b>
Cost/Linear foot	\$485	\$725	\$311	\$277	\$460

The cost per linear foot are generally within the wide range of typical VTrans shared use path projects. Segment B has a higher cost per foot due to the combined factors of the path bridge and ledge excavation. Additionally, utility relocation costs are relatively higher in both segments A and B.

### Funding Strategies

The most likely funding source at this time for project implementation would be the VTrans Bicycle-Pedestrian program. In reviewing the VTrans recent grant awards from the past three years, the largest construction grant award was \$1,452,500 for the Intervale Road Path in Burlington, and the average award was about \$600,000.

However, it is quite common for larger projects to receive additional funds beyond their initial award as more accurate cost estimates are developed in the design process. Therefore, it is possible that higher cost projects have been funded through this program.

A review of the STIP shows that statewide funding, not including MPO projects, ranges from \$4 million to \$6 million per year. The CCRPC TIP shows that an average of \$2.4 million per year has been put toward bicycle and pedestrian projects. Larger projects are often designed and constructed over several years.

With the possibility of recent infrastructure bill providing significantly increased funding for bicycle and pedestrian projects, it may be more realistic for this entire project to be funded with one grant than previously thought.

Some communities have successfully assembled funding for large bicycle-pedestrian projects by applying to both the Bicycle and Pedestrian program, and the Transportation Alternative Program (which caps awards at \$375,000 with a 20% match).

While the Richmond Road shared use path will be a high-cost project, there are efficiencies gained by going through the federal permitting and procurement process just one time, or as few times as possible. Additionally, a larger project could attract more interest from contractors and result in more favorable unit prices. For these reasons, the Town of Hinesburg should consider pursuing funding for as long a segment as possible, to both enjoy the benefits of the completed project sooner, and minimize the administration resources that are required to use federal funding.

The Town of Hinesburg will need to consider options for funding and sequencing this project. One possible strategy is to apply for funding with the VTrans Bicycle Pedestrian Program for segments A and B. If only partial funding is awarded, the Town can pursue other sources, such as the Transportation Alternatives program, or elect to use a higher share of local funding than required. If additional funds are not secured, the Town can proceed with only Segment A.

## **Recommendations**

A significant concern for constructing the project in segments is that construction of the first segment may encourage more walking and bicycling on the remaining segments, where conditions are not safe. As full funding of the entire project is unlikely, we recommend including traffic calming measures to mitigate risk to people walking or biking by reducing speeds and carving out more space for people walking and biking along the road. The cost estimate above includes an allowance of \$150,000 in the segment A cost to account for this. Possible design strategies include:

- Signage
- Radar feedback sign
- Narrowing travel lanes and providing shoulder striping (9 or 10 ft lanes)
- Removing the center line (allowable on roads with AADT less than 3,000)
- Install speed humps or lumps to reduce traffic speeds
- Closure of slip lanes at North/Texas Hill Road and Mechanicsville Road to reduce speeds entering corridor