

## 4.0 Construction Estimate and Phasing

Based on the existing condition assessment discussed in sections 1-3 of this report, the conversion of the existing U&D RR Corridor to a multi-use trail is feasible from an engineering and environmental perspective. The existing conditions of the corridor closely resemble the pre-construction conditions found on other rail-to-trail projects developed by Ulster County. The recommended scenario to construct the trail is to construct the entire 5.0 miles of trail from Highmount to Big Indian. This would allow for one contractor to perform all of the necessary work and provides for greater efficiency for the contractor on the project. However, B&L understands that constructing the trail in its entirety may be cost prohibitive and therefore recommends constructing the project in two or three phases progressed in logical sections based on ease of construction, access, trailhead construction, and associated costs. A complete cost estimate spreadsheet is included in Appendix C which allows for costs to be further phased and analyzed.

To convert the existing U&D corridor to a trail system, the existing railroad infrastructure such as the steel tracks and hardware, and wooden ties will need to be removed. A crushed stone base course will need to be installed throughout the entire corridor due to the poor existing railroad ballast conditions. A crushed stone top course will also need to be installed to provide a smooth ADA compliant riding and walking surface while also providing durability and minimal maintenance for the County in the future. An asphalt surface course was considered but not progressed. Asphalt surfaces are 100% impervious and DEP watershed regulations require post construction stormwater management practices are installed to collect the stormwater runoff from the asphalt surface. This would add significant cost to the project and was not considered further. Drainage improvements are necessary in various locations throughout the corridor to repair erosion damage and to rehabilitate or replace existing drainage infrastructure such as swales, drainage pipes, and the large stone culverts that carrying the various streams and storm conveyances under the corridor. A complete list of the recommended improvements to the existing drainage infrastructure is included in Appendix D. Local community connections are recommended in Pine Hill and Big Indian, however, the majority of users of the trail are anticipated to be visitors, thus requiring vehicle parking areas. Three trailheads are recommended: They are in Highmount, the Belleayre Beach DUA in Pine Hill, and at the Big Indian Town Park in Big Indian.

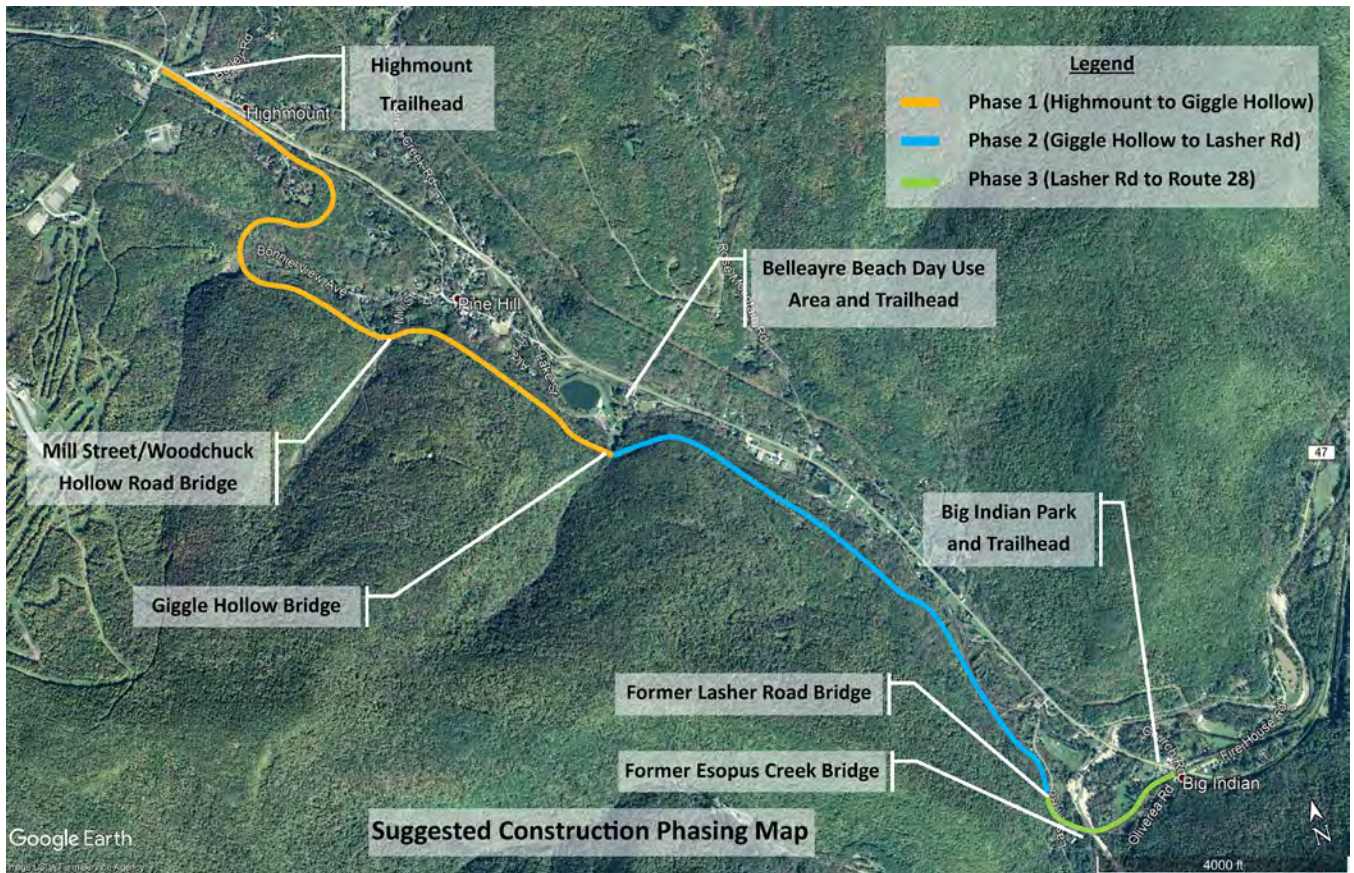
### 4.1. Suggested Construction Phasing

Constructing the trail in separate phases may be an attractive option to the County depending on funding for the project. There are logical construction termination points that may serve as limits of work for a phased project development. Under phased development, portion(s) of the trail can be built when funds become available and phases already constructed can be opened to the public and used while other sections are under construction. Constructing the trail in different phases may cost more overall, however, it would not be enough to be cost prohibitive and may be beneficial to construct a portion of the trail while funding from alternative sources is secured.

To maintain logical terminations, the most readily apparent way to split this project is geographically based on the locations of the trailheads. The table below shows three segments of the trail from Highmount to the Giggle Hollow Bridge, The Giggle Hollow Bridge to Lasher Road, and finally Lasher Road to Route 28.

## 4.2. Trail Construction Costs:

	HIGHMOUNT TO BIG INDIAN	HIGHMOUNT TO GIGGLE HOLLOW	GIGGLE HOLLOW TO LASHER ROAD	LASHER ROAD TO ROUTE 28
MAJOR CONSTRUCTION (ITEMS):	COST	COST	COST	COST
CLEARING & GRUBBING:	\$377,000	\$52,000	\$294,000	\$35,000
RAIL, HARDWARE & TIE REMOVAL	\$721,000	\$369,000	\$291,000	\$63,000
EARTHWORK:	\$173,000	\$88,000	\$70,000	\$15,000
TRAIL STONE:	\$979,000	\$501,000	\$395,000	\$85,000
RAILING & FENCE	\$411,000	\$182,000	\$152,000	\$57,000
DRAINAGE	\$760,000	\$478,000	\$258,000	\$17,000
ACCESS ROAD IMPROVEMENTS	\$280,000	\$190,000	\$190,000	\$0
EROSION CONTROL:	\$90,000	\$46,000	\$37,000	\$8,000
LANDSCAPING, BENCHES, SIGNS/PANELS:	\$172,000	\$88,000	\$70,000	\$15,000
WOODCHUCK HOLLOW BRIDGE	\$430,000	\$430,000	\$0	\$0
GIGGLE HOLLOW BRIDGE	\$510,000	\$510,000	\$0	\$0
SHORT SPAN STRUCTURE #1	\$50,000	\$0	\$50,000	\$0
LASHER ROAD CROSSING	\$200,000	\$0	\$200,000	\$0
ESOPUS CREEK CROSSING	\$1,800,000	\$0	\$0	\$1,800,000
SHORT SPAN STRUCTURE #2	\$50,000	\$0	\$0	\$50,000
HIGHMOUNT TRAILHEAD CONCEPT	\$107,000	\$107,000	\$0	\$0
BELLEAYRE CONCEPT C	\$143,000	\$143,000	\$0	\$0
BIG INDIAN PARK MODIFICATIONS	\$49,000	\$0	\$0	\$49,000
<b>SUBTOTAL CONSTRUCTION ITEMS</b>	<b>\$7,302,000</b>	<b>\$3,184,000</b>	<b>\$2,007,000</b>	<b>\$2,194,000</b>
FIELD CHANGE ORDER (USE 5% of total)	\$365,100	\$159,200	\$100,350	\$109,700
SURVEY	\$73,020	\$31,840	\$20,070	\$21,940
MOBILIZATION (4%)	\$292,080	\$127,360	\$80,280	\$87,760
<b>CONSTRUCTION (2023 DOLLARS)</b>	<b>\$8,032,200</b>	<b>\$3,502,400</b>	<b>\$2,207,700</b>	<b>\$2,413,400</b>
INFLATION (3%/yr)	\$481,932	\$210,144	\$132,462	\$144,804
<b>TOTAL PROJECT CONSTRUCTION COSTS (2023 DOLLARS):</b>	<b>\$8,520,000</b>	<b>\$3,720,000</b>	<b>\$2,350,000</b>	<b>\$2,560,000</b>
ENGINEERING	\$600,000	\$270,000	\$170,000	\$180,000
CONSTRUCTION INSPECTION & ADMIN	\$1,030,000	\$450,000	\$290,000	\$310,000
ROW INCIDENTALS AND ACQUISITIONS	\$0	\$0	\$0	\$0
<b>TOTAL COSTS:</b>	<b>\$10,150,000</b>	<b>\$4,440,000</b>	<b>\$2,810,000</b>	<b>\$3,050,000</b>



**Figure 4-1: Suggested Construction Phasing Map**

The Access Road Improvements line includes the costs for establishment of the temporary access roadways that in B&L’s opinion, will benefit the project the most. Section 1.4.4 further outlines the potential access routes that the contractor could utilize to access different portions of the project. The routes selected for inclusion with the project costs and the cost of the routes are as follows:

Access Road Construction Costs:

From Location	To Location	Cost
Lake Ave in Pine Hill	Giggle Hollow Bridge/RR Corridor	\$190,000
Route 28	Winding Mountain Road/RR Corridor	\$150,000
Lasher Road	Cross Roads Ventures, LLC property/ RR corridor	\$40,000
Bonnie View Ave/ Pine Hill	Double Horseshoe Curve/RR Corridor	\$180,000**

\*\* Not included in cost estimate



In B&L’s opinion, the cost to construct a temporary access road on Bonnie View Ave in Pine Hill would not be of value for the contractor to construct at the County’s cost. The corridor can be accessed via Station Road near by the Woodchuck Hollow Bridge. The double horseshoe curve is 0.5 miles from the Woodchuck Hollow Bridge along the railroad alignment. This roadway could be included as an option to be constructed at the contractor’s own cost if they see it as beneficial.

In addition to the trail construction, gravel parking areas will be necessary to be constructed for the trail. The anticipated costs for the trailheads are shown below. Conceptual drawings of the trailheads are included in Appendix A. The cost estimate for the Concept D trailhead in Big Indian was selected for inclusion in this report because it is the only feasible option that does not include ROW takings or agreements with other property owners. These proceedings can be unpredictable and costly to pursue. Ideally, the existing park in Big Indian would be used the parking area for trail access and a trail connecting the park to the rail trail would be constructed.

	HIGHMOUNT CONCEPT	BELLEAYRE CONCEPT A	BELLEAYRE CONCEPT B	BELLEAYRE CONCEPT C	BIG INDIAN CONCEPT D
MAJOR CONSTRUCTION ITEMS:	COST	COST	COST	COST	COST
CLEARING & GRUBBING:	\$0	\$0	\$0	\$0	\$5,000
EARTHWORK:	\$21,000	\$122,000	\$32,000	\$47,000	\$12,000
SUBBASE:	\$56,000	\$55,000	\$32,000	\$47,000	\$16,000
DRAINAGE IMPROVEMENTS:	\$5,000	\$25,000	\$25,000	\$25,000	\$8,000
EROSION CONTROL:	\$8,000	\$9,000	\$10,000	\$9,000	\$0
LANDSCAPE IMPROVEMENTS	\$17,000	\$19,000	\$19,000	\$15,000	\$8,000
FOUNTAIN REMOVAL:	\$0	\$100,000	\$0	\$0	\$0
SUBTOTAL CONSTRUCTION ITEMS	\$107,000	\$330,000	\$118,000	\$143,000	\$49,000
FIELD CHANGE ORDER (USE 5% of total)	\$5,350	\$16,500	\$5,900	\$7,150	\$2,450
SURVEY	\$1,070	\$3,300	\$1,180	\$1,430	\$490
MOBILIZATION (4%)	\$4,280	\$13,200	\$4,720	\$5,720	\$1,960
CONSTRUCTION (2021 DOLLARS)	\$117,700	\$363,000	\$129,800	\$157,300	\$53,900
INFLATION (3%/yr)	\$7,062	\$21,780	\$7,788	\$9,438	\$3,234
TOTAL CONSTRUCTION COSTS (2023 DOLLARS):	\$124,762	\$384,780	\$137,588	\$166,738	\$57,134
ENGINEERING	\$10,000	\$30,000	\$10,000	\$20,000	\$10,000
CONSTRUCTION INSPEC- TION & ADMIN	\$20,000	\$50,000	\$20,000	\$30,000	\$10,000
ROW INCIDENTALS AND AC- QUISITIONS	\$0	\$0	\$0	\$0	\$0
TOTAL COSTS:	\$155,000	\$465,000	\$168,000	\$217,000	\$78,000

### 4.3 Funding Opportunities

Potential funding opportunities for the design and construction of the Shandaken trail consist of the following:

- ▶ NYS OPHRP – Recreational Trails Grant Program. Funding source is FHWA and is capped at \$250k
- ▶ NYS OPRHP – Environmental Protection Fund Grant Program for Parks, Preservation and Heritage. Program is typically capped at \$600k. However, if total project is over \$4 Million, up to \$1 Million may be requested. (Both OPHRP grants are applied for and awarded through the CFA program which is typically due annually at the end of July.)
- ▶ NYS DEC and ORDA by contacting the local legislatures and governor’s office to allocate state funds for the construction of the trail. Both agencies operate facilities adjacent to the trail and would benefit greatly from its construction.
- ▶ Catskill Park Coalition
- ▶ FHWA funding administered through the NYSDOT Locally Administered Federal Aid Program.
- ▶ Private donations from organizations such as the Open Space Institute (OSI).

### 4.4 Potential Benefits

Over the past year, recreational trail usage and other outdoor activity throughout the US has skyrocketed due to the COVID-19 pandemic and associated lockdowns that limit indoor activities. People have flocked to outdoor facilities such as parks and trails. The nearby Ashokan Rail Trail, recently opened in October of 2019, saw over 200,000 users in 2020.

The Catskill Mountain Rail Trail Economic Impact Analysis published in 2013 by Camoin Associates assessed the economic benefits of the conversion of the entire 38 mile U&D Railroad Corridor to a Trail. The study concluded that the entire 38 miles U&D corridor would generate 140,000 annual visitors (if converted to a trail) and would account for an average of \$3.1 Million in spending, or roughly \$22 per visit per person. This average cost includes local users and those who visit the trail from more urban areas who would rent a bike, eat at local restaurants, and stay in local hotels for a weekend. Assuming that the trail generates 50,000 visitors annually (25% of the nearby Ashokan Rail Trail 2020 visitation), the conversion of the 5 mile corridor between Big Indian and Highmount would result in \$1.1 Million in spending. This number is an interpolation using recent studies to highlight the potential benefit to converting this corridor to a trail and includes more anticipated visitors than anticipated in the Camoin Study due to the COVID pandemic.

In addition to providing an outlet for people to enjoy the outdoors, recreational trails have proven to provide both economic and health benefits to the surrounding community. In terms of health benefit, a report prepared by Stone Consulting in 2015, assessed the health benefits of the conversion of the entire U&D corridor into a trail system. The report concluded that a trail will have a \$3.29/trip-mile benefit per user. For the 5 mile section between Big Indian to Highmount, the trail would account for a \$411,000 benefit to the County using the \$3.29/person/trip/mile and assuming an average of 2.5 miles traversed per person.