

August 13, 2014

Hon. Kenneth J. Ronk, Jr.
Ulster County Legislature
244 Fair Street, P.O. Box 1800
Kingston, New York 12402

Re: Ulster and Delaware Railroad
Analysis of Cornell Street to US Route 209

Dear Minority Leader Ronk:

Barton & Loguidice, D.P.C., (B&L) has been retained by the Open Space Institute (OSI) for engineering services to study the Ulster and Delaware Railroad section along the Ashokan reservoir from Basin Road to NY Route 28A. The study includes surveying mapping assessment of existing conditions and development of concepts for a public multi-use trail along this segment.

In addition, B&L has been asked to explore options of connectivity between trail systems. The OSI has requested a preliminary cost analysis of developing a trail from Cornell Street in Kingston, to US Route 209. This study includes the existing steel truss bridge (known as the C9 bridge) that crosses the Esopus Creek. Two options were studied along this approximately 2.4 mile segment; These include a rail with trail along side option, as well as, a conversion of the railroad bed to a trail only.

When developing a rail with trail system, single track corridors (such as this section) present much greater challenges than double track corridors primarily due to the lack of adequate width for the required offset distances between the trail and the rail. To provide the additional width required for offsets and proper trail construction retaining walls and thousands of yards of material fill would need to be installed along the 2.4 mile section. The major differences between the two options studied are as follows:

- In order to accommodate rail with trail at Albany Avenue and Elmendorf Street, the trail would need to transition in elevation from the rail bed to the elevated roadways and then transition back to the rail bed after utilizing an at-grade crossing. The retaining walls required for both crossings are estimated to cost a total of \$1.5 million with the at-grade crossing adjustment along these streets adding an additional \$200,000. B&L investigated utilizing a shared railroad/trail path through the underpasses at Albany Avenue and Elmendorf Street. However, such co-location of rail and trail through the constrained underpasses path is not recommended due to safety concerns for users of the system including children and limited mobility.
- Structurally, the existing C9 bridge over the Esopus Creek can accommodate a trail and with rehabilitation, likely accommodate light rail use. However, it cannot accommodate both at the same time. A new pedestrian bridge would need to be constructed adjacent to the through truss bridge to accommodate a rail with trail scenario. The cost of this bridge is based on similar bridges in the 300' to 350' in length recently constructed and is approximately \$925,000. Other options explored include adding a trail system to the side of the bridge using overhanging structural members. This is not recommended since this option would side load the structure in a way the bridge was not designed for requiring costly bracing and additional steel members that are not practical considering the other options available. Suspending the trail beneath the bridge would

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encroach into the floodplain and present serious safety issues and serious risk of washout during heavy rains and high creek flow.

- The rail with trail option would require approximately 11,000 feet of fencing to provide the necessary safety barrier between the trail and the rail. This cost is estimated to be approximately \$480,000 as compared to \$48,000 of fencing for the trail only option.
- Since the rail bed width is too narrow to accommodate both rail and trail, the earthwork and earth retaining systems (retaining walls, gabions, excavation and embankment) required to establish the proper trail to track offset and a 10' wide trail, will be an expensive and time consuming task to the approximate cost of \$3.0 million. A notable part of these costs is related to difficult site access and additional costs for moving materials along the narrow corridor. The use of track based equipment in lieu of conventional heavy equipment could improve efficiency, however, that type of equipment has a cost factor all its own. In any scenario, the cost of this work will be more than conventional projects with reasonable access by a factor of up to 33%.
- Asphalt costs for each option are relatively the same. However, the rail with trail option would require a new trail section consisting of subbase material and the excavation of material required to construct the trail. This is a cost not required by the trail option since it can be placed on the existing and remaining ballast. This work will total more than \$400,000.
- Engineering costs would expected to be approximately \$500,000 more for the rail with trail option, since each of the many walls, the new bridge, additional crossings, permitting, survey, right of way investigations and historic and cultural resource tasks that would be required.

In summary, B&L has estimated that the total project costs for the two options assessed from Cornell Street to US Route 209 are as follows:

| | | |
|--------------------------------|---|----------------------|
| Rail alongside Trail Concept | = | \$8.0 - 10.0 million |
| Convert Railroad to Trail Only | = | \$1.7 - 2.0 million |

Please note that the scope of this preliminary assessment does not include additional rail along trail costs related to resolution of encroachments and mitigation to wetlands and farmland that may be impacted.

If you have any questions or would like to discuss this matter further, please do not hesitate to contact me.

Very truly yours,

BARTON & LOGUIDICE, D.P.C.

Thomas C. Baird, P.E., CPESC
Senior Managing Engineer

TCB/dmd

cc: Robert Anderberg, Open Space Institute

