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Memorandum

To: Corey York, Town of Acton Engineering Department

From: Jennifer A. Shemowat, Fay, Spofford & Thorndike

Date: September 7, 2006

**RE: ARRT Bridge over MBTA Rail Corridor
Construction Cost Estimate – Grant Application**

As requested, we have looked into the estimated construction cost of a new bicycle / pedestrian bridge over the rail corridor, parallel and adjacent to the Main Street (Route 27) roadway bridge. This bridge would serve to connect the proposed Assabet River Rail Trail (ARRT) with the South Acton MBTA Commuter Rail Station. The costs provided below are not based on detailed tasks and related work efforts but rather ballpark estimates intended for preliminary planning purposes.

Based on the pictures provided by the Town, it does not appear that the existing wingwalls were designed for vertical loads. Available plans will need to be looked at during the design phase to verify this assumption. Therefore, new bridge abutments on piles will need to be constructed to support the new bridge. These abutments will be placed behind the existing wingwalls, therefore lengthening the bridge span to approximately 110 feet.

On a long span bridge such as this bridge, the pedestrian loading is greater than an H10 vehicle loading. (An H10 is a light truck, such as a standard maintenance, construction, emergency or patrol vehicle, with a rear axel weighing 18,000 pounds.) Therefore, the pedestrian load will govern.

Based on cost estimates for other rail trail bridges, it is estimated that a prefabricated bridge with new abutments at this location will cost approximately \$400,000. This magnitude of cost estimate includes the prefabricated bridge; excavation, demolition, piles and abutment construction; and other incidental work. The Town could select a prefabricated bridge to complement the historic district.

A 'switch-back' ramp connection will be required on the north side of the MBTA rail corridor to transition the rail trail from the elevation of Main Street (Route 27) to the commuter lot approximately 20 feet below. Based on bid costs for similar ramp systems designed by FST, it is estimated that this ramp will cost approximately \$400,000. This magnitude of cost estimate includes the cost of excavation, concrete, aluminum railings, and an architectural façade treatment.

The constructability issues related to this grade-separated rail trail connection will need to be further looked into as part of the preliminary design phase.

The design fee for a pedestrian / bikeway bridge at this location will be approximately 15% if the bridge is included as part of the overall bicycle path project. The fee will increase to approximately 20% of the construction cost if the bridge is included as a separate project.