



February 4, 2016

Stephen F. Norcini, P.E.  
Public Works Director  
Radnor Township  
301 Iven Avenue  
Wayne, PA 19087

Dear Steve:

Bridge/Culvert Inspections and Evaluations

In accordance with the scope of work and cost proposal to provide engineering services for the evaluation of five (5) bridges/culverts submitted to Radnor Township on July 1, 2015, Gannett Fleming completed the field view and prepared a summary report for each bridge. The reports summarize the findings from field view and recommend the appropriate option to replace or rehabilitate the deteriorated structures. A conceptual construction cost estimate and estimate of engineering cost for the recommended work is prepared for each structure for your budgeting purposes. Actual engineering costs will be developed based on the final scope of services for each task.

The recommended Replacement/Rehabilitation for each bridge and associated costs are summarized below:

**South Devon Avenue**

Based on the field assessment and finding, it is recommended to replace the deteriorated superstructure and substructure of the north pedestrian bridge and rehabilitate the remaining structure. Major work includes the following:

- Replace superstructure and substructure of north pedestrian bridge.
- Repoint missing mortar joints in remaining abutments and wingwalls.
- Repair/Repaint the south pedestrian bridge, update railing to meet the current standards.
- Fill the scour hole at outlet and in front of concrete apron of wingwalls B & C with riprap.
- We will discuss with the township about the need for updating safety features of roadway bridge and pedestrian bridges.
- Install the missing hazard marker at northwest corner.

The cost of engineering services:	\$84,300
<u>The estimated construction cost:</u>	<u>\$116,000</u>
Total Cost:	\$200,300

**Gannett Fleming, Inc.**

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**Chamounix Road**

Based on the field assessment and finding, it is recommended to rehabilitate the existing culvert and replace the entire downstream retaining wall. Major work includes the following:

- Replace the existing masonry spandrel walls and barriers at both ends of the culvert to meet current PennDOT Standards.
- For consistency with roadway cross section with nearby newly constructed bridge, extend the existing arch barrels to accommodate a 5'-0" wide sidewalk.
- Provide formliner on headwalls and barriers to aesthetically blend with the newly constructed adjacent bridge.
- Remove and rebuild the downstream retaining wall.
- Underpin the footings and fill the scour hole at the inlet with riprap.
- Remove the tree at northeast corner.
- Install guide rail on non-sidewalk side if directed by the Township.
- Install Type M inlet and drainage.

The cost of engineering services:	\$100,500
<u>The estimated construction cost:</u>	<u>\$233,000</u>
Total Cost:	\$333,500

**Earles Lane**

Based on the field assessment and finding, it is recommended to rehabilitate the existing culvert. Major work includes the following:

- Underpin the undermined footings on the original structure.
- Repoint masonry abutments on the original structure.
- Remove railing and pillars on the east fascia and provide curbing and signing.
- Remove the inlet and associated structure and extend the original slab bridge to satisfy the minimum lane width requirement and construct upstream wingwalls.
- Relocate drainage inlet behind the bridge abutment
- Fill the scour hole at the inlet with riprap.

The cost of engineering services:	\$83,900
<u>The estimated construction cost:</u>	<u>\$124,000</u>
Total Cost:	\$207,900



**Eagle Road**

Based on the field assessment and finding, it is recommended to replace the existing twin-cell corrugated pipe culvert. Major work includes the following:

- Replace the deteriorated corrugated pipe with a single cell precast box culvert.
- Install structure mounted guide rail.

The cost of engineering services:	\$98,300
<u>The estimated construction cost:</u>	<u>\$168,000</u>
Total Cost:	\$266,300

**Sawmill Road**

Based on field assessment and findings, it is recommended to rehabilitate the structure as follows:

- Repair spalls/cracks in fascia of arch ring
- Remove trees and provide riprap protection at downstream left bank to prevent further bank erosion.
- Relocate the pedestrian crosswalk to the west, away from the structure, to the intersection with Earles Lane. The trails within the parks could be reconfigured with minimal earth disturbance to affect this change. This will allow vehicles to better observe pedestrians in the crosswalk and will allow pedestrians to see oncoming traffic from the bridge.
- Provide painted yield bars on the roadway at both bridge approaches with adjacent signing "YIELD TO ONCOMING TRAFFIC". This will allow vehicles on either approach to yield to a vehicle already on the structure.
- Provide guide rail or crash worthy end treatments on all four corners of the structure.

The cost of engineering services:	\$28,100
<u>The estimated construction cost:</u>	<u>\$27,000</u>
Total Cost:	\$55,100

If you have any questions concerning this information, please contact me.

Very truly yours,

GANNETT FLEMING, INC.

Roger A. Phillips, P.E.  
Senior Project Manager

