1 August 2023

Ms. Rebecca Miller
Executive Director
DC Preservation League
641 S Street NW, Suite 300
Washington, DC 20001

Project Pro-Bono – Foundry Branch Trolley Trestle Rehabilitation and Reuse Feasibility

Dear Ms. Miller:

This letter summarizes our preliminary observations and recommendations regarding the feasibility of rehabilitating the Foundry Branch Trolley Trestle Bridge and adapting its use to a pedestrian and bike path.

1. BACKGROUND

The Foundry Branch Trolley Trestle Bridge is a historic bridge between the Georgetown and Palisades neighborhoods in Washington, DC. The bridge was constructed in 1897 as part of the trolley system that serviced the corridor between Western DC and Glenn Echo, Maryland. Since the trolley stopped running in 1962, other portions of the trolley system have been repurposed as bike or pedestrian paths, but this segment has remained unused.

2. OBSERVATIONS

On 13 July 2023, Matthew Daw, Senior Principal, and Erica Inmacolato, Project Consultant, of Simpson Gumpertz & Heger Inc visited Foundry Branch Park and observed the suspended truss portion of the trestle from outside the fenced area set up by the National Park Service (NPS). The suspended truss appeared to be in fairly good condition while the approach trestles were largely overgrown with vegetation and more difficult to observe. We attempted to visit the approach trestle from the east or Georgetown side of the bridge, but the thick summer vegetation made the area impassable. Without a path or clear markings, we were unable to locate the abutment.

3. DOCUMENT REVIEW

We (Simpson Gumpertz & Heger Inc) were provided a feasibility memorandum prepared by Jacobs dated December 2019. The memorandum documents the condition of the structure at the time Jacobs observed the bridge, analysis of the structure, repair options and considerations, and order of magnitude cost estimates.

3.1 Observations of the Bridge

Jacobs' observations of the bridge in 2019 are consistent with what we observed in July 2023. Jacobs performed a much more extensive hands-on investigation including 3D scanning the bridge. In general, Jacobs found the suspended truss was in generally good condition while the approach trestles showed more signs of deterioration and were overgrown by vegetation. The concrete abutments were beginning to show their age through small concrete spalls and cracks but were in generally stable condition. The approach trestle foundations vary in their condition. Many of the foundations on the west side were completely buried and, therefore, not visible. Others showed signs of concrete deterioration including cracking and spalling. And still others had been undercut or the soil had begun to erode below the footing. A geotechnical study was not performed in conjunction with Jacobs' assessment, therefore, actual foundation bearing conditions are unknown. Bedrock appears to be near the surface at this site as there are locations where the bedrock is visible.

3.2 Analysis of the Structure

The analysis done by Jacobs was based on the most current building code at the time, AASHTO Guide Spec for the Design of Pedestrian Bridges. This current code uses a design method known as Load and Resistance Factor Design or LRFD. The original structure was likely designed using a method know as Allowable Stress Design or ASD. For any rehabilitation project, we would recommend evaluating the structure following current codes when possible, therefore, we would have approached the analysis the same way. This analysis was done assuming no corrosion or significant section loss.

The analysis showed the maximum deflection for the reused structure was well within the code- prescribed allowable limits. From a strength perspective, the truss and deck members are also well within the allowable code limits. They are generally carrying a maximum of 70% of the load the code allows them to carry. For the approach trestles, the analysis shows a few members are overstressed for the reused condition. As the analysis is preliminary, we recommend finalizing the analysis in this area and, if necessary, providing local strengthening at these select locations.

3.3 Renovation Options and Considerations

Jacobs provided four renovation options and the positives and negatives of each.

1. Option 1 – Rehabilitation of the approach trestle. This option involves dismantling the approach trestles, cataloging each member, clean the members and re-assemble. This reuses as much of the historic fabric as possible.

2. Option 2 – Replace the approach trestles to match the existing. This option involves dismantling the approach trestles and fabricating and constructing new trestles in their place. This keeps the original aesthetic while reducing some of the labor required for Option 1 and, therefore, cost.

3. Option 3 – Replace the approach trestles with new long spans. This option involves removing the approach trestles and replacing them with longer span beams that bear on concrete piers. This changes the aesthetic of the bridge on the ends, maintains the aesthetic for the main portion that is most easily visible, and reduces life cycle cost.

4. Option 4 – Retain the approach trestle as facades. This option involves the same process as Option 1 but provides a new steel or concrete structural support and the re-assembled historic pieces simply act as a facade around the new support.

3.4 Order of Magnitude Cost Estimate

Jacobs provided a cost estimate for option 2. Unfortunately, because this estimate was done in 2019, it is likely the estimate is no longer accurate and should be reassessed.

4. FEASIBILITY RECOMMENDATIONS

Based on our field observations and review of Jacobs' feasibility study in December 2019, we believe the bridge could be rehabilitated and repurposed as a pedestrian and bike path with a few structural repair and strengthening details. The Glenn Echo Trolley Bridge that was part of the same trolley system and rehabilitated would act as a precedent for this project.

Because the bridge was built in 1897 and given its good condition, we believe the structure is comprised of wrought iron. Wrought iron has less impurities than steel, therefore, it tends to be much more corrosion resistant. The structure has received little to no maintenance since 1962, so some corrosion is expected but it is generally in good condition. We would expect that, given the low level of corrosion, the structure could be easily cleaned and coated in place. The available analysis showed there were only a few select members that may overstressed in the reuse scenario. We believe these areas could be easily addressed with local strengthening if necessary. Some of the concrete foundations show signs of spalling, but concrete repairs could be executed to address this issue. It would be recommended to engage a geotechnical

consultant to confirm the soil composition. However, based on borings completed nearby for the watermain project in 1981 and visible outcropped bedrock, it is likely that the foundations bear on suitable soils or bedrock.

Our recommendation would be to rehabilitate the historic structure in place in preparation for a proposed pedestrian reuse. All overgrown vegetation should be removed to clearly view and assess the structure. Ultimately, the wrought iron structural could be cleaned in place and painted with a protective coating. Localized reinforcement at any overstressed members and at any original members that are severely corroded could be performed. Some repairs may also be needed at connections where gusset plates have corroded. Concrete repairs at the spalled concrete on the foundations and abutments should be completed at deteriorated concrete locations. Foundations that have been undercut should be backfilled. To complete an adaptive reuse for pedestrian access, a new deck and railings to support the pedestrian and bike path will be necessary.

In conclusion, by implementing a fairly straightforward wrought iron and concrete repair campaign, we believe that the historic Foundry Branch Trolley Trestle could be easily rehabilitated and transformed into a pedestrian and bike path.

Sincerely yours,

Matthew J. Daw, P.E.
Senior Principal
DC License No. PE901523 (Structural)

Erica N. Inmacolato
Project Consultant

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