PACKANACK LAKE

PENINSULA FOOTBRIDGES
SUBCOMMITTEE

Replacement
Footbridges Report and
Recommendations

JULY • 2020
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2020 Footbridges
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Overview

IN JANUARY OF 2020, the footbridges subcommittee was established with the objective to plan, review, and make recommendations to the membership as it pertains to the peninsula footbridges. The bridges, originally constructed in 1949, are comprised of timber stringers supporting a wood deck and founded on timber piles and concrete abutments. In 2006, EIC engineering performed a cursory inspection, prepared and executed a soil boring program, and recommended that the bridges be replaced. Sometime after 2006, repairs were performed on the bridges including replacement of the decks and stringers. However, the piling and supporting elements on the piers were not repaired nor replaced. In 2019, EIC performed an updated inspection and evaluation. As reported in their letter dated May 31st, 2019, the piers are considered in critical condition due to advanced decay, misalignment and significant lateral movement that can be induced by pedestrian loading. A structural analysis indicated that the pier caps are severely overstressed. As a result of their updated inspection and analysis, immediate complete replacement was recommended. The footbridges were closed in January, 2020 to pedestrian traffic.

The footbridges subcommittee met for the first time on February 5, 2020. Investigations began shortly thereafter to look for a contractor to raze the footbridges. At the time of this writing, the contractor is in–place, and the deconstruction of the footbridges is to begin shortly.

The subcommittee researched, spoke and met with a number of potential companies over the last five months to find a cost effective and aesthetically pleasing replacement option for the footbridges. Exploration for replacement included timber construction, single span steel, and fiberglass options. The subcommittee’s three final options are encapsulated in this document.

Many thanks to the members of the committee for their professional input, research, suggestions, and recommendations.
The recommendation and additional considerations for the replacement of the footbridges are presented on the following pages. The committee has recommended a fiberglass option by LINKS BRIDGES as the replacement for the peninsula footbridges. The recommendation is based on cost, overall design, maintenance, and bridge lifespan. The committee has also included timber and single span steel truss alternatives in this document.

Subcommittee Recommendations
1st Choice

The “WOODY” fiberglass bridge by Links Bridges
Committee Recommendation

Links Bridges would install six fiberglass bridges (three per side), to make two replacement bridges, with the installation of four helical piles (end embankments and lake piles). Per the company that makes the piles, Goliath Tech, “there are zero issues with galvanized piles — the piles are inert and do not have any complications with water/lake installations. Since the lake is a fresh water lake, the corrosiveness is much less as compared with a salt water or ocean application. These piles also contain a polyurethane core material that creates a solid core to prevent freezing and corrosion issues on the inside of the piles. Additionally, the outside of the piles are galvanized — which will not corrode.” This bridge could potentially serve the Packanack community for 70 years, or more. There is little or no maintenance with this bridge option.
East Side Bridge details
‘Woody’ Fiberglass Bridge

113’-0” Long Crossing (EAST SITE)
Three (3) Fiberglass Bridges
(Requires Lake Inlet Piles)
One (1) Middle Bridge, 45’-0” long x 6’-0” wide
Two (2) End Bridges, 35’-0” long x 6’-0” wide
100% Fiberglass Decking, Natural Wood Color
42” High Fiberglass Hand-Railings and Safety Rails
Profile: ARCHED

SHIPPING: SideBeamer bridge shipped un-assembled to job site as a “kit” bridge. Bridge assembled at site and lifted in place with a crane onto the finished foundations. The three (3) Fiberglass bridges shipped fully-assembled and lifted and placed on foundations from the truck.

CAPACITY: Pedestrian live load = 60 PSF. Vehicle live load = 2,500 lbs.

Engineering: $ 2,000
(3) Fiberglass Bridges $ 73,160
Cost per Linear Foot = $650
Delivery: $ 1,000

TOTAL: $76,160

West Side Bridge details
‘Woody’ Fiberglass Bridge

109’-0” Long Crossing (WEST SITE)
Three (3) Fiberglass Bridges
(Requires Lake Inlet Piles)
One (1) Middle Bridge, 39’-4” long x 6’-0” wide
Two (2) End Bridges, 35’-0” long x 6’-0” wide
100% Fiberglass Decking, Natural Wood Color
42” High Fiberglass Hand-Railings and Safety Rails
Profile: ARCHED

SHIPPING: SideBeamer bridge shipped un-assembled to job site as a “kit” bridge. Bridge assembled at site and lifted in place with a crane onto the finished foundations. The three (3) Fiberglass bridges shipped fully-assembled and lifted and placed on foundations from the truck.

CAPACITY: Pedestrian live load = 60 PSF. Vehicle live load = 2,500 lbs.

Engineering: $ 2,000
(3) Fiberglass Bridges $ 70,580
Cost per Linear Foot = $650
Delivery: $ 1,000

TOTAL: $73,580

Site Services, Assembly, & Installation
Budgetary Quote (additional contractor):

Six (6) Fiberglass Bridges
Site mobilization
Foundation site services, installation of helical piles (end embankments and lake piles)
Crane rental
Installation

TOTAL: $58,130

TOTAL ESTIMATED COST FOR FOOTBRIDGES REPLACEMENT

$207,870.00

Does not include any permit costs
“Woody” Fiberglass Footbridge
Preliminary Engineering Details (continued)
“Woody” Fiberglass Footbridge
Preliminary Engineering Details (continued)
“Woody” Fiberglass Footbridge
Preliminary Engineering Details (continued)

**REAR ELEVATION**

**SIDE ELEVATION**

*NOTES:
FIBERGLASS PLATE BEAM COVERS ARE ATTACHED TO BEAMS AFTER BEAMS ARE COMPLETELY SECURED TO THE FOUNDATIONS.*
“Woody” Fiberglass Footbridge
Preliminary Engineering
Details: decking and rails
Two Additional Replacement Considerations

A. Single Span Steel Truss
By Bridge Brothers

Per Bridge Brothers: Our estimate defines our full scope of work as a turn-key solution for the pedestrian bridges on the project. Bridge Brother’s scope will include all structural & civil engineering associated with the bridges and foundations and issue a WI PE stamped design package. In addition, Bridge Brothers will handle all site construction associated with the bridges, manufacturing of the bridges, and onsite erection of the bridges. The bridge structures and all associated designs will be in adherence to AASHTO design guide for bridge structures. See below for further breakdown of our scope of work:

Structural & Civil Engineering:

- PE Stamped Design & Calculation Package for the Bridges
- PE Stamp Design & Calculation Package for the Abutments/Anchors

Manufacturing: $110,802 (per bridge)

- Qty (1) 6’ x 115’ Pedestrian Bridge
- Self-Weathering Steel Finish
- X-Truss Bridge Profile
- IPE Rub rail
- IPE Top Chord Cladding
- Freight to project site

Site Construction & Bridge Installation: $81,766

- Site Grading for Bridge Footings
- Form and Pour Bridge Foundations
- Rip-rap, piles, and wingwalls excluded
- Backfill Bridge Foundations
- Freight of Bridges to Site
- Unload and Splice Fit-Up Bridges
- Erect Bridges & Install Bridge Anchors

Abutments are not included.

Estimated abutment costs: $40,000 to $70,000 (per abutment — four required).

ESTIMATED COST

$400,000 to $500,000

Pros and Cons

PROS:
Single span — no in-lake pilings
Limited maintenance
Long lifespan

CONS:
Cost
Rusting
Aesthetic (can look industrial)
B. Timber Bridge Construction
By FifthRoom

This timber option is essentially a complete updated replacement of the existing bridges. The FifthRoom company is located outside Pittsburg, Pa., and the bridge(s) would be delivered on site in five sections per bridge. Like the existing bridges, in-lake pilings are required. Existing abutments could potentially be used. The timber option can also include composite decking for additional cost.

**Manufacturing:** $68,000 (per bridge)
**Stain Option:** $4,000 (per bridge)
**Shipping:** $4,000

Does not include site construction.

**Site Construction & Bridge Installation: Roughly $50,000 to $70,000**

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**Pros and Cons**

**PROS:**
- Same aesthetic look as original bridges
- Cost
- Could use existing abutments

**CONS:**
- High maintenance
- Number of piles in the water
- Potentially shorter lifespan
- More install work required

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**ESTIMATED COST**

$205,000 to $230,000
Timber Construction
Would be a near identical replacement
(existing bridge shown)
Additional Site Considerations
Pathway replacement and landscaping

Members of the subcommittee have explored options for the refurbishing of the pathways leading to the footbridges. This includes paver options once the replacement footbridges are installed. Fundraising and donations are possible with the addition of family names on pavers leading to the new footbridges.

**Estimated cost for pathway replacement with pavers and additional landscaping:**
* $45,000 to $50,000
  (Costs could be decreased with fundraising and donation opportunities).