



Bancroft Pedestrian Bridge over the Brandywine River

Presenter: Barry Benton, P.E. (GPI)

Date: February 10, 2022



Engineering | Design | Planning | Construction Management



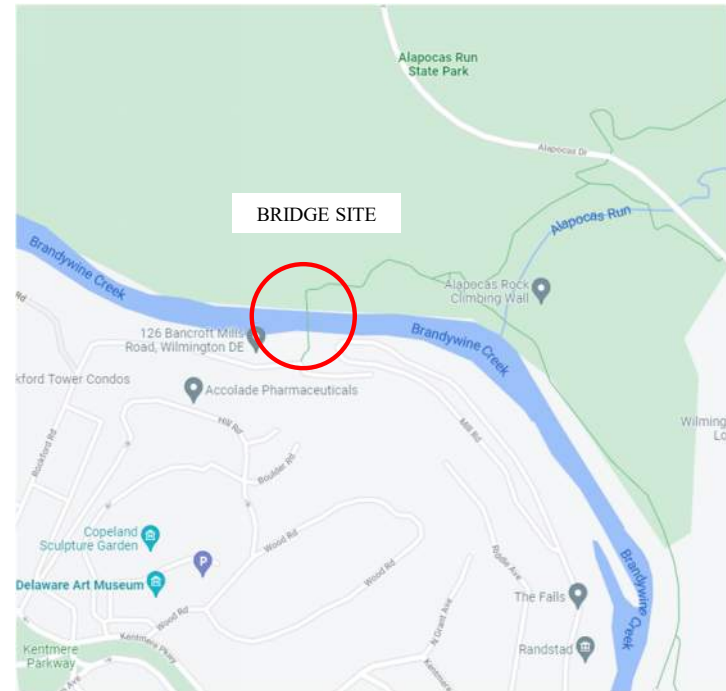
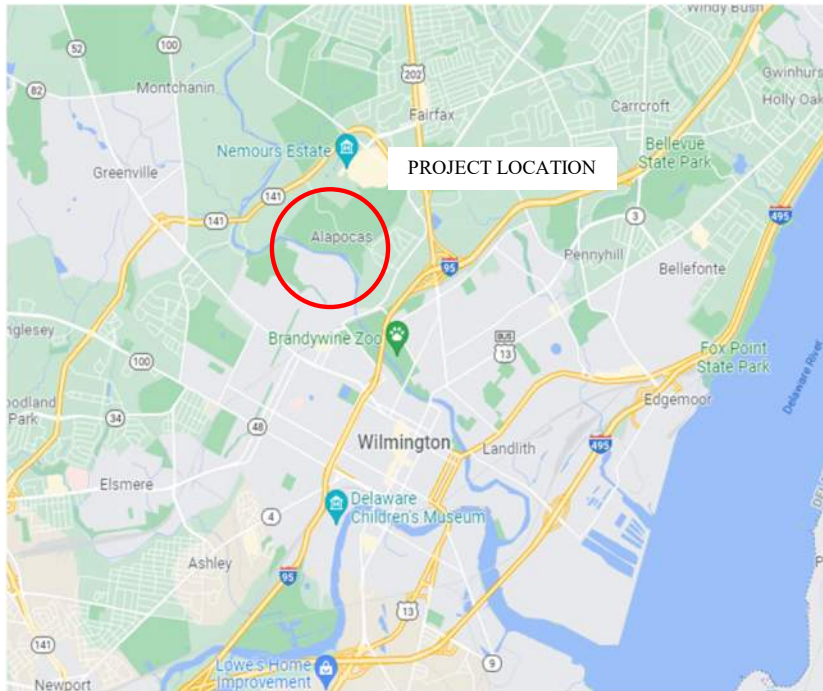
Bancroft Pedestrian Bridge over the Brandywine River

- **Bridge Location and Type**
- **Storm Damage and Current Condition of Bridge**
- **Results of Bridge Repair/Replacement Study**
- **Recommended Alternative**
- **Projected Schedule**



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Bancroft Pedestrian Bridge over the Brandywine River



LOCATION



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Bancroft Pedestrian Bridge - Existing Structure Layout



South Span



Main Span



North Span



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Damage from Storm in September 2021

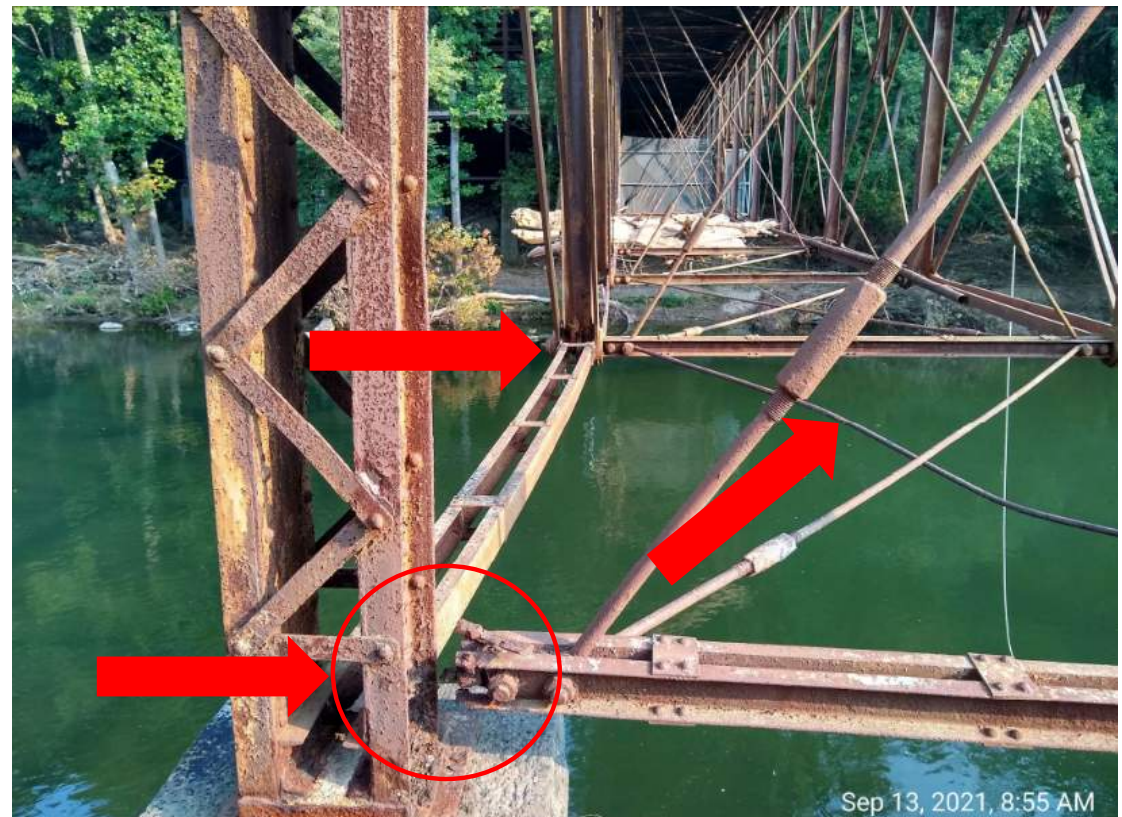
- **Storm Damage Assessment Report prepared by Century Engineering (9/16/22)**
- **Main bridge span is pushed 18” to the east.**



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Damage from Storm on September 2021

- **Truss bows to the East.**
- **Bottom member separated from west post.**
- **Bottom diagonal members bent**



Sep 13, 2021, 8:55 AM



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Damage from Storm on September 2021

- Large tree limbs and debris hung in truss.
- Diagonal tie-rod connecting top and bottom chords is broken



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Damage from Storm on September 2021

- **Vertical post shifted 4.5” to the East**
- **Anchor bolts sheared off.**



Damage from Storm on September 2021

- **Vertical posts leaning to the east.**



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Damage from Storm on September 2021

- **West vertical post contains crack at top gusset plate.**



Bridge Condition Photos



**Corroded Tie Rod
and Coupler**



**Section Loss on
Truss Members**



**Corroded Truss
Connections**



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Alternatives Analysis - Options

Option 1: Repair the Existing Bridge

Option 2: Replace with a Historic Truss owned by DNREC

Option 3: Replace with a new prefabricated truss bridge

Alapocas Park Pedestrian Bridge (Bancroft Bridge) over Brandywine Creek
Wilmington, Delaware

Bridge Alternatives Report



Submitted to:
Delaware Department of Natural Resources and Environmental Control (DNREC)



Submitted by:
Greenman-Pedersen Inc. (GPI)
550 South DuPont Boulevard,
Suite F
Milford, DE 19963

January 2022



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Alternatives Analysis - Key Considerations

**Fast-track opening
of the bridge to
pedestrians**

WEIGHT = 25%

**Improve Bridge
Resiliency
and Durability**

WEIGHT = 25%

**Minimize design
and construction
cost**

WEIGHT = 15%

**Work within the
constraints of
access and
constructability**

WEIGHT = 15%

**Improve bridge
aesthetics**

WEIGHT = 10%

**Improve Bridge
Functionality**

WEIGHT = 10%



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Alternatives Analysis - Results

Key Issue	Weight	Option 1		Option 2		Option 3	
Fast-track opening of the bridge to pedestrians	25%	Not favorable	1	Not Favorable	1	Most favorable	3
Improve bridge resiliency and durability	25%	Not addressed	0	Favorable	2	Most favorable	3
Minimize design and construction cost	15%	Favorable	2	Not favorable	1	Most favorable	3
Work within the constraints of access and constructability	15%	Favorable	2	Not favorable	1	Favorable	2
Improve bridge aesthetics	10%	Favorable	2	Not favorable	1	Most favorable	3
Improve bridge functionality	10%	Favorable	2	Favorable	2	Most favorable	3
Weighted score (out of 3.0)	100%	1.25		1.35		2.85	

0 Not Addressed
 1 Not Favorable
 2 Favorable
 3 Most Favorable



Alternatives Analysis - Results

Cost and Schedule	Option 1 (Repair Existing)	Option 2 (Historic Truss)	Option 3 (New Prefab Bridge)
Design Cost	\$0.6 to \$0.7 Million	\$0.6 to \$0.7 Million	\$0.3 to \$0.4 Million
Construction Cost ¹	\$2.2 to \$2.6 Million	\$3.4 to \$4.1 Million	\$1.5 to \$1.8 Million
Total Cost	\$2.8 to \$3.3 Million	\$4.0 to \$4.8 Million	\$1.8 to \$2.2 Million
Time to reopen the bridge ²	2.5 to 3.0 years	2.5 to 3.0 years	1.5 to 2.0 years



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Recommended Alternative

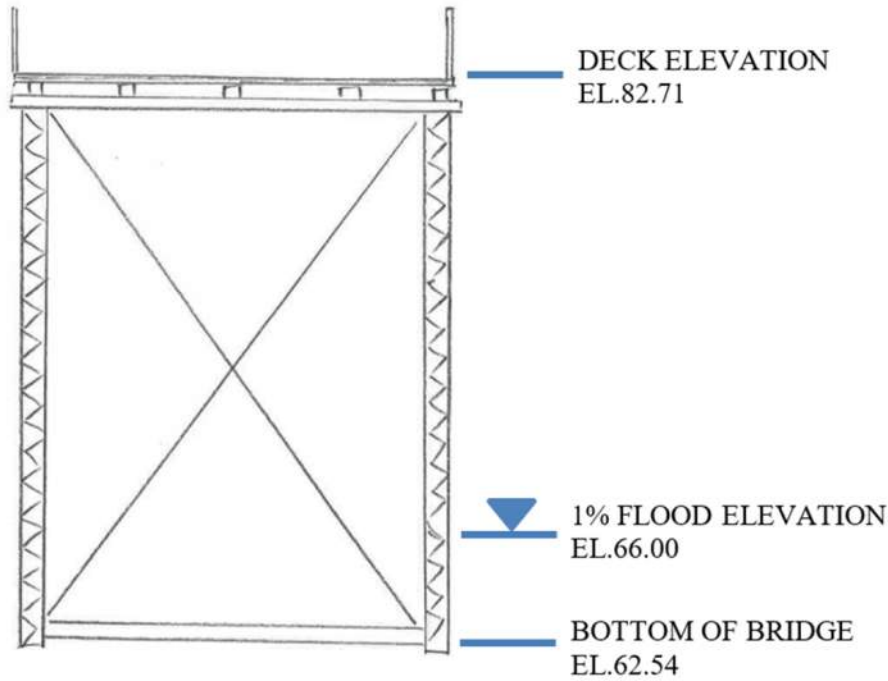


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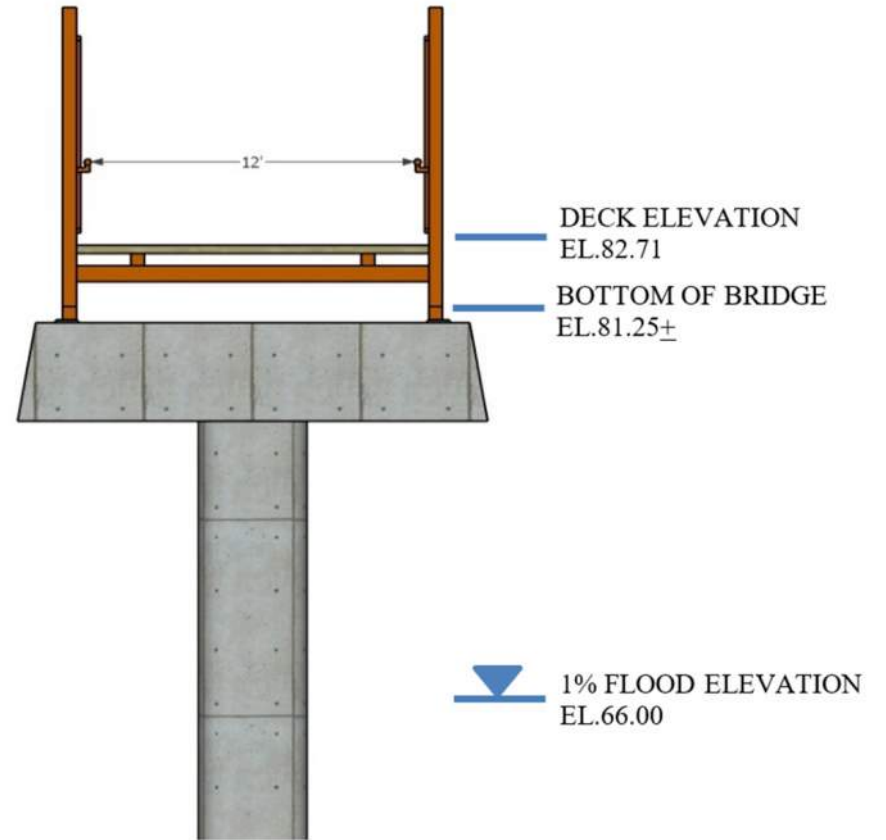


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Recommended Alternative



Existing Typical Section



Proposed Typical Section



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Recommended Alternative



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Projected Schedule

Preconstruction Activities

- Detailed field survey and property lines mosaic
- Geotechnical data (soil boring)
- H&H Report
- Structural Design and Plan Preparation
- Permitting (Wetlands, Subaqueous, Cultural Resources, Rare, Threatened and Endangered Species, NCC Floodplain, etc.)
- Plans, Specifications, and Estimate

Procurement

- Advertisement
- Award
- Notice to Proceed

Construction

- Demo existing bridge
- Construct foundations/piers
- Install superstructure
- Path connections

March 2022
(Begin Design)

January
2023

April
2023

March 2024
(Open Bridge)



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Questions?

Contact Information

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