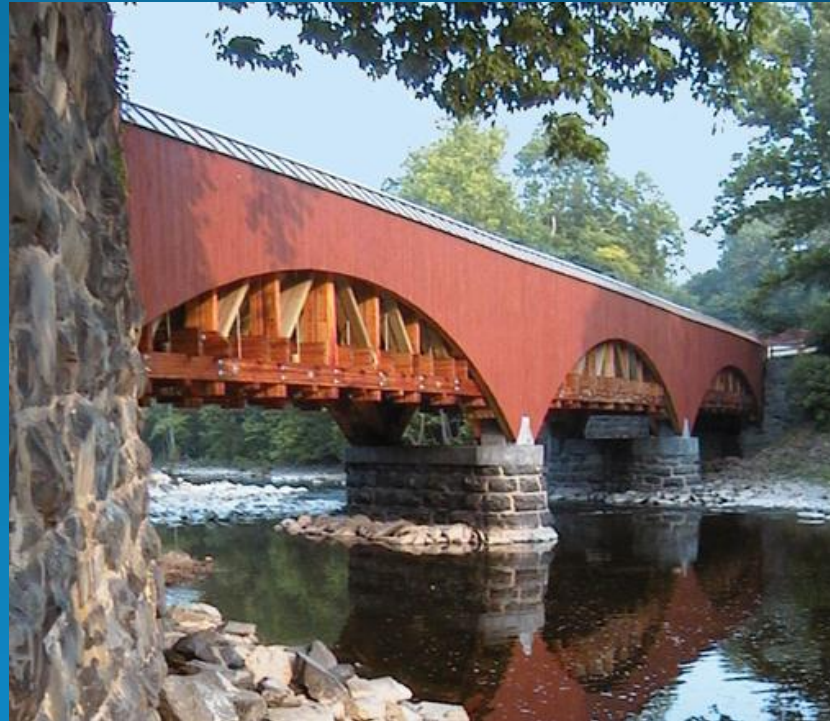


TOHICKON AQUEDUCT REHABILITATION

Delaware Canal National Landmark

1992-2001



William Collins, RLA, Simone Collins Landscape Architecture

David C. Fischetti, P.E., DCF Engineering – superstructure engineer of record



1992



before 1932



before 1932



Commercial operation 1832 - 1931



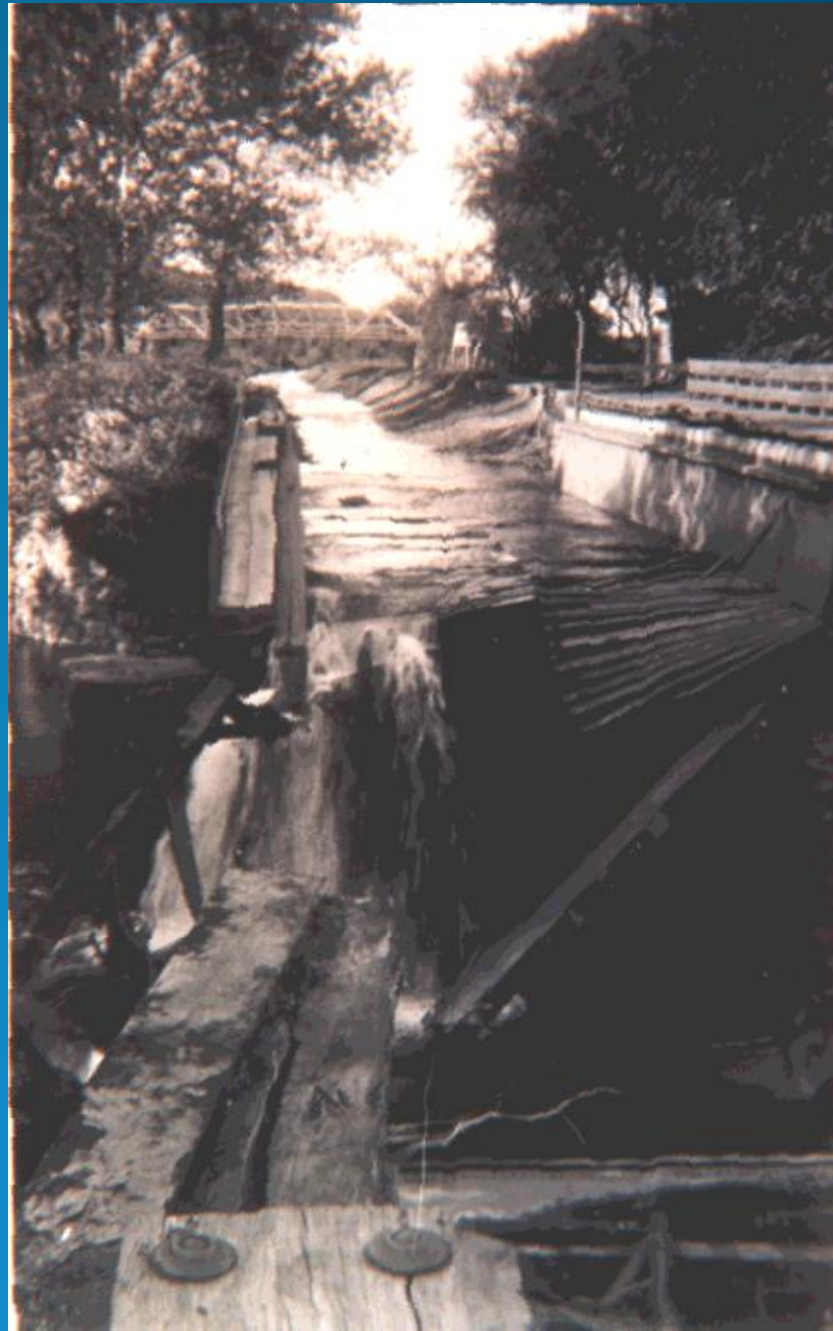
Ole swimmin' hole on Labor Day, 1931



Two days after Labor Day, 1931



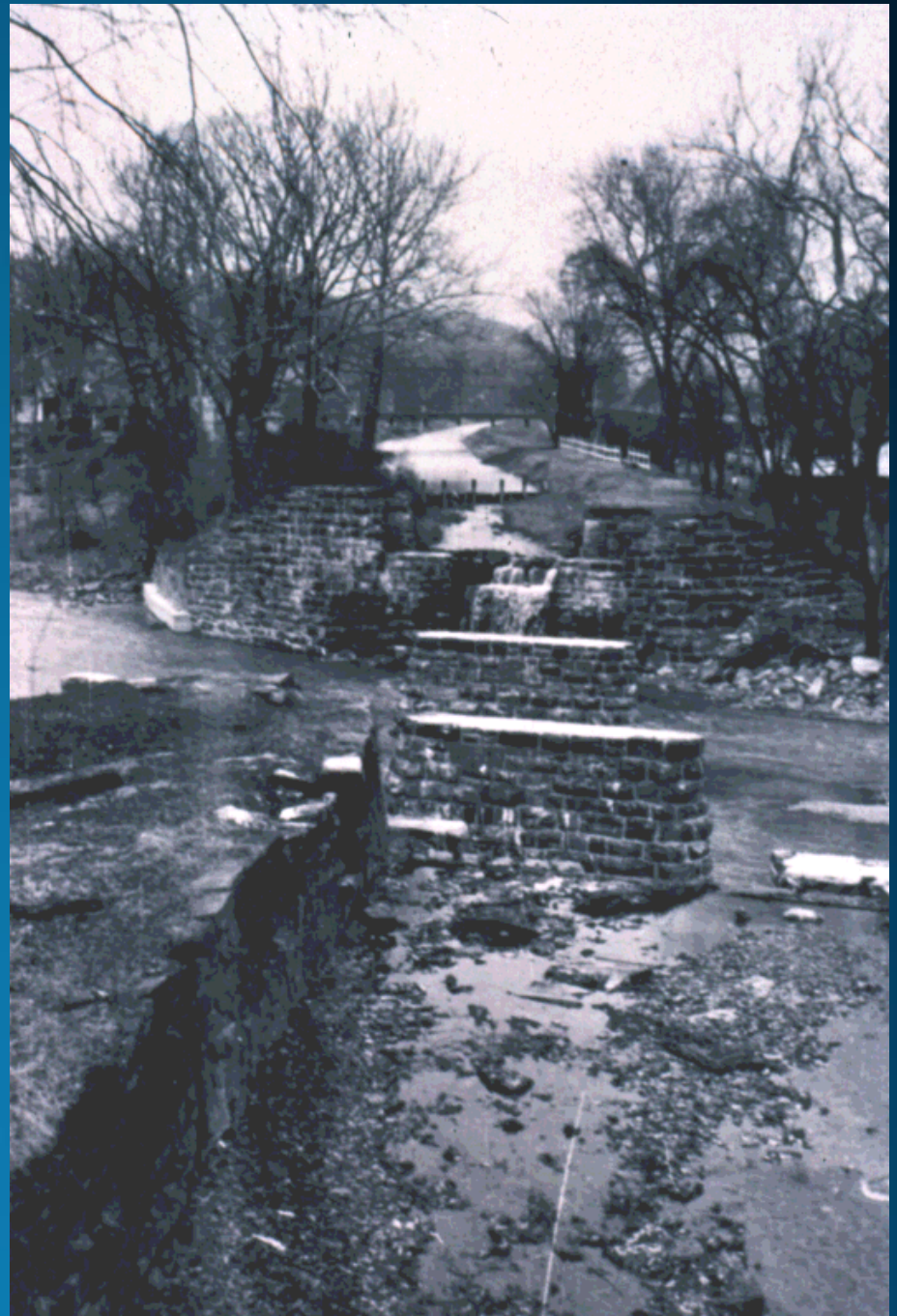
Catastrophic failure of upstream truss



View downstream of failure



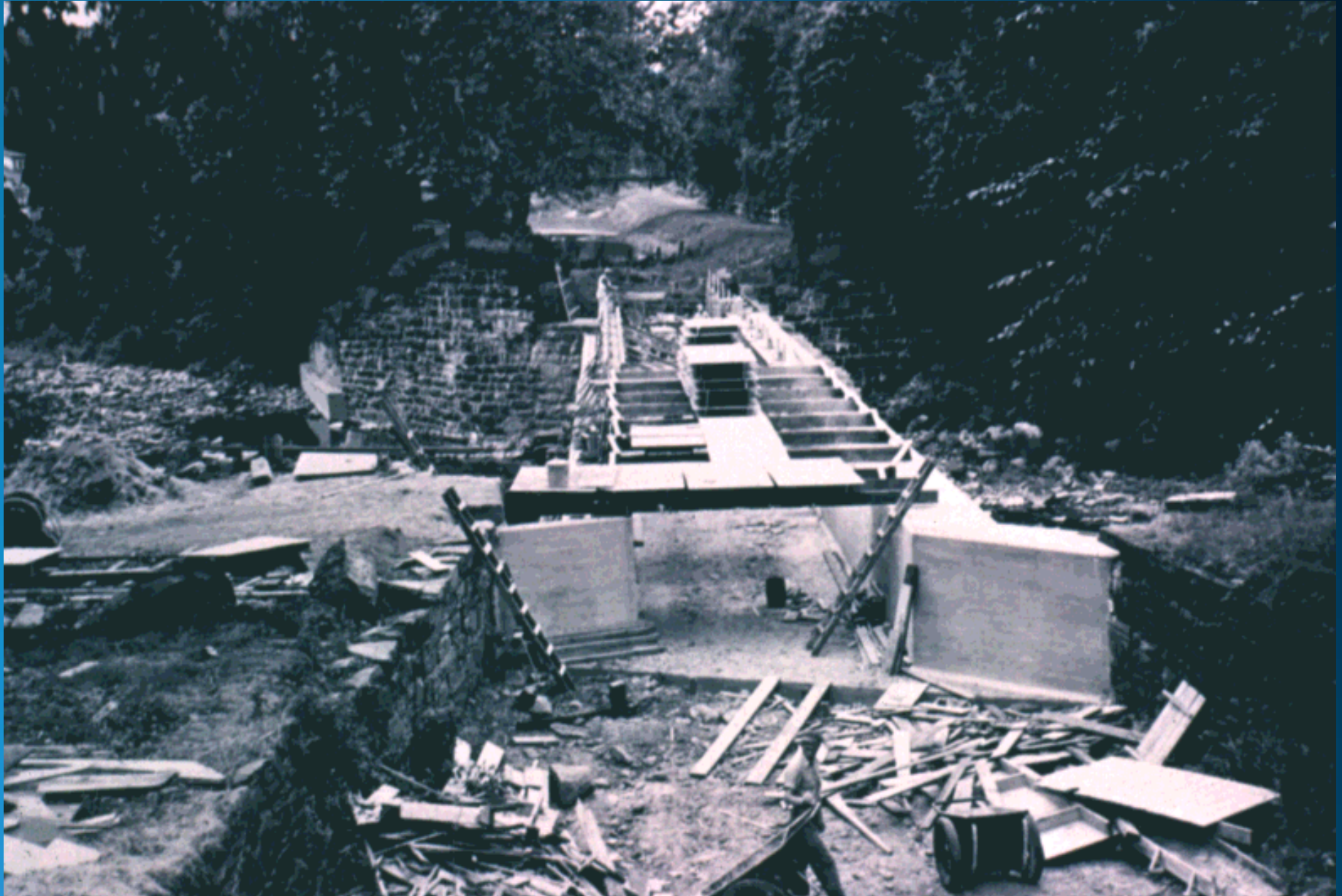
After WW2



Managing water flow during construction



New state park aqueduct



Conditions by 1992



30-35 years useful life



Inspiration



Gift Bridge, Guelph Ontario, Timber Framers Guild, 1992

Inspiration



Gift Bridge, hand raising

Inspiration



Gift Bridge, *completed* – 120 span

Inspiration



Roebling Aqueduct – former Delaware & Hudson
Canal Lackawaxen, PA
Rehabilitation by NPS

Inspiration



Duck Creek Aqueduct – Burr Arch Truss
Swiftwater Canal, Matamoras, IN

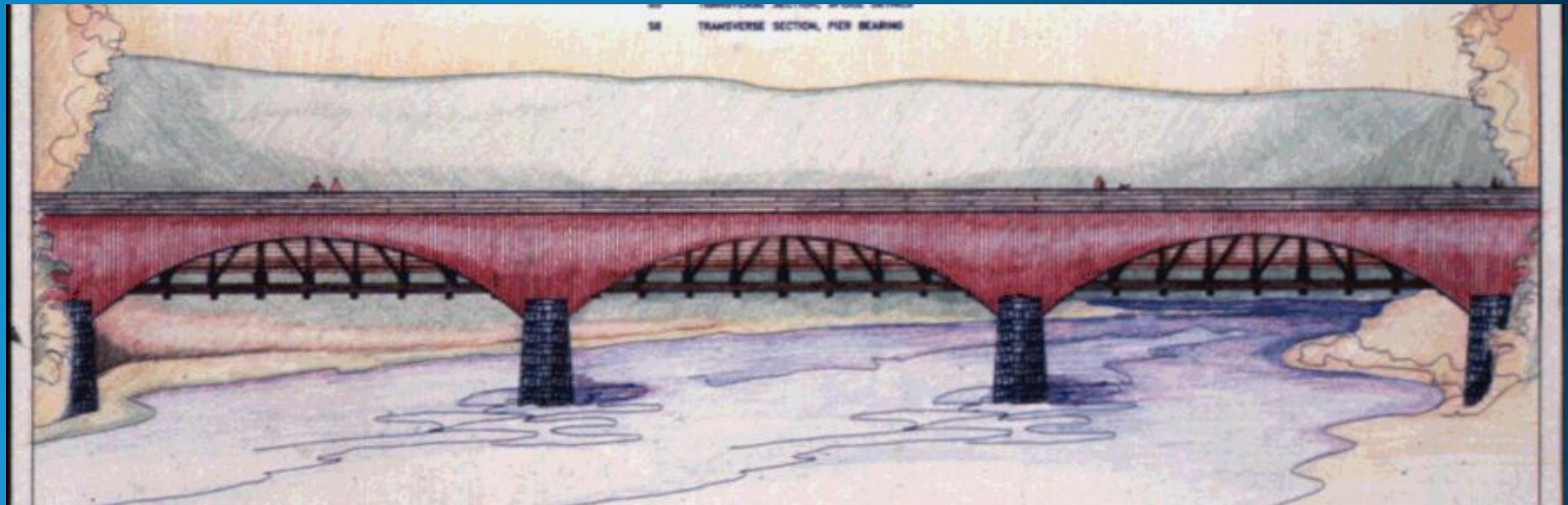


Duck Creek Aqueduct – Burr Arch Truss

Tohickon Aqueduct - Engineering and Architecture



Superstructure engineering – DCF Engineering



Architecture design – Simone Collins Landscape Architecture



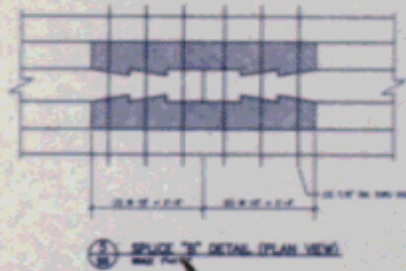
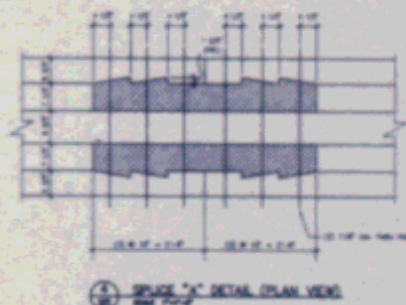
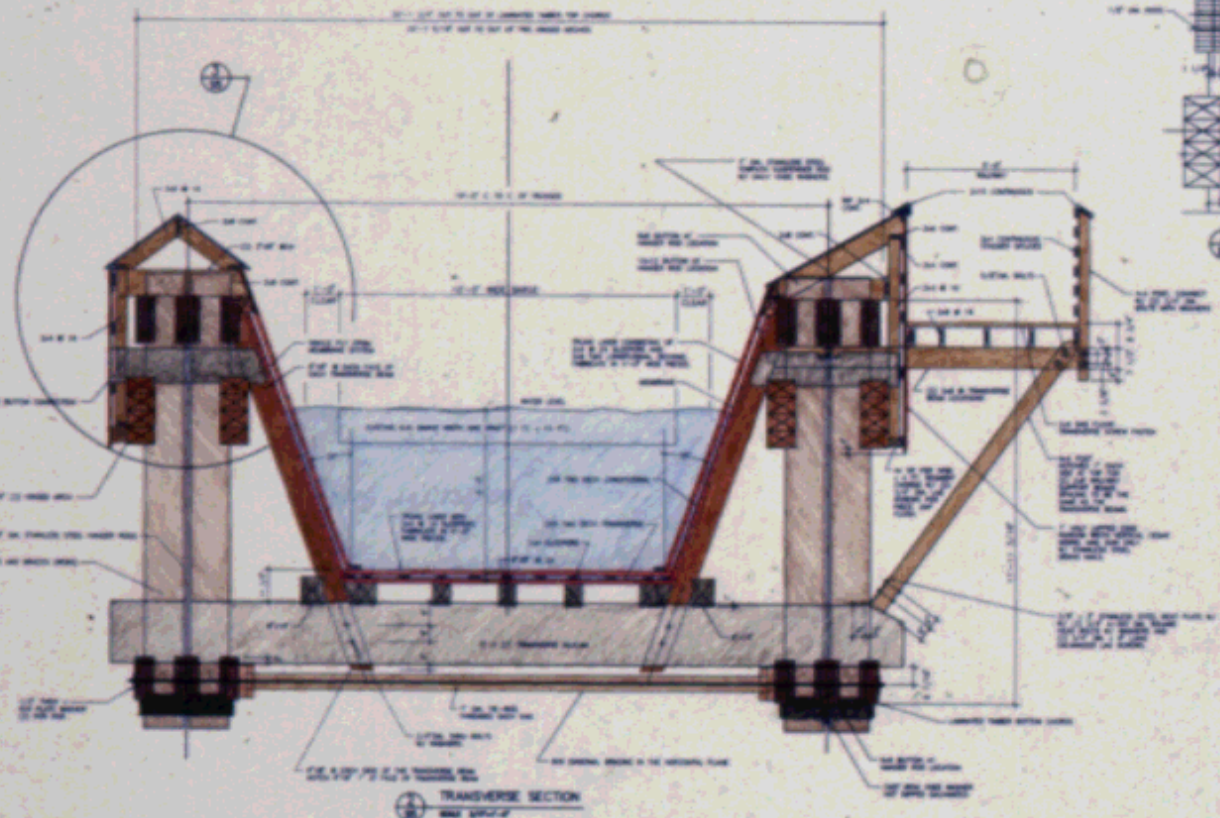
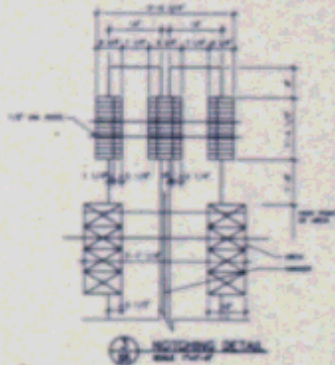
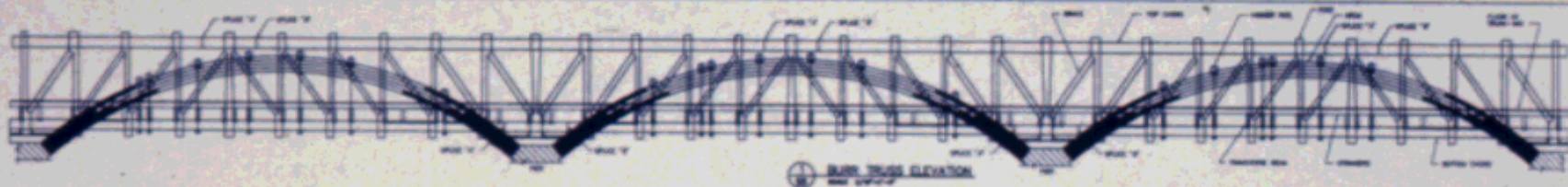
New superstructure on rehabilitated substructures



David C. Fischetti, P.E. - Engineer of Record (superstructure)



Detail – upper truss chord



PRELIM-NOT FOR CONSTRUCTION



Structural Analysis & Preliminary Engineering
DOF ENGINEERING, INC. 1400 BAYVIEW COURT, SUITE 100, DALLAS, TEXAS 75207-1400
Concept Design & Project Management
Wm. COLLINS DESIGN & CONSTRUCTION
400 N. FORT HENDERSON, SUITE 100, DALLAS, TEXAS 75207
Timber Bridge Consultants
JAN LEWANDOWSKI, P.E. and Associates, INC. 10000 DALLAS, TEXAS 75224-1000

A RECONSTRUCTION PARTNERSHIP

- Design Grant provided by USGS Forest Service - Northeastern Area, Forest Development Program
- Engineering for Northeastern Department of Environmental Resources, Bureau of State Parks
- Administration by Tusculum Community, TN
- Design and Project Management: Point Pleasant Community Association

POINT PLEASANT AQUEDUCT
(OVER THE TONGUE CREEK)

ALABAMA (DALE COUNTY ROAD, POINT PLEASANT, POINT PLEASANT)

DATE: 10/1/94
BY: JLC/MLH
CHECK: JLC/MLH
SCALE: 1/4" = 1'-0"

BURR TRUSS ELEVATIONS

Detail – transverse systems





Detail – trunk and truss cap sheathing



Detail – trunk liner system (ultimately modified)

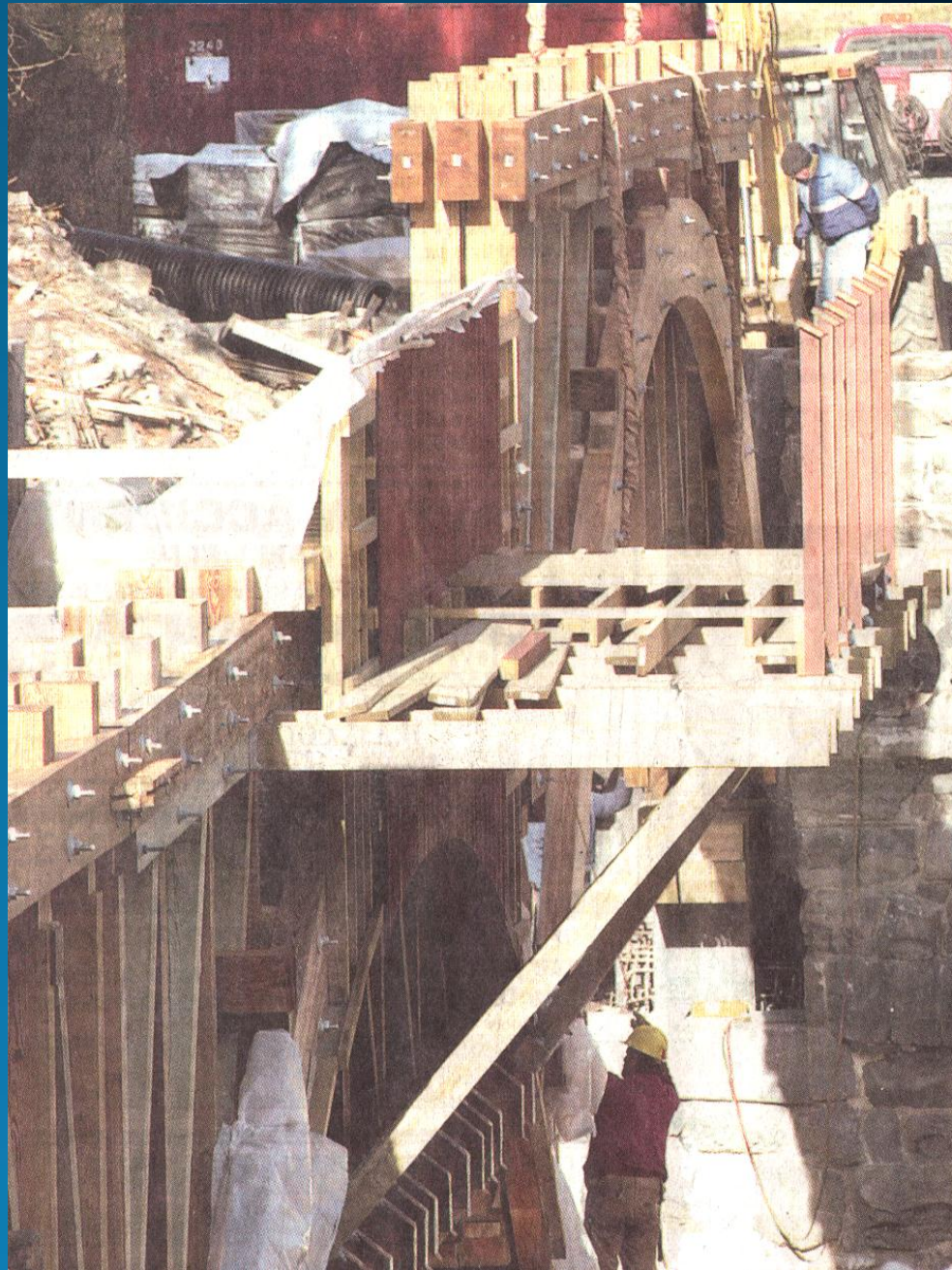


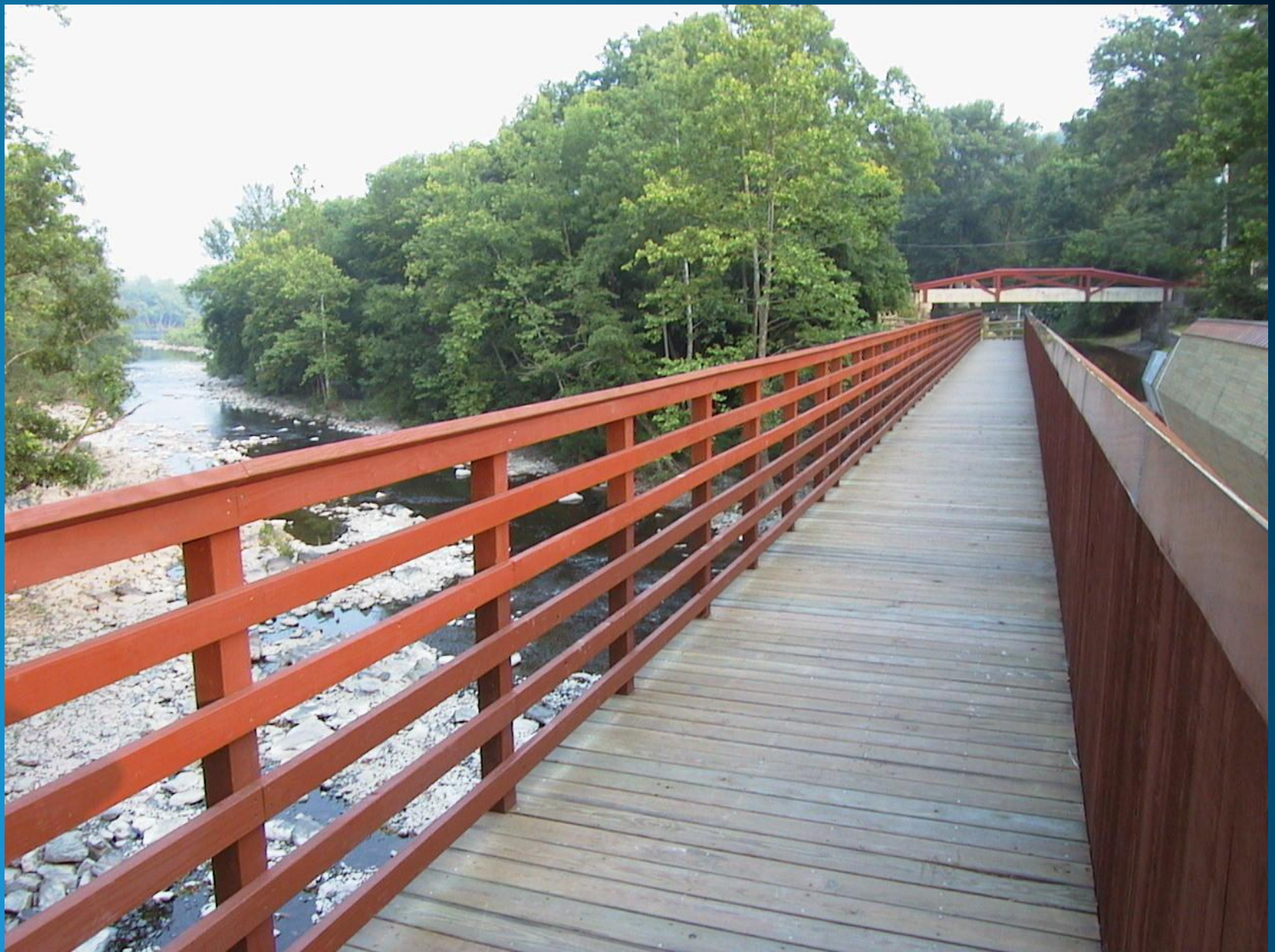
Detail – trunk liner system – welding seams



Detail – façade liner, watered aqueduct

*Detail – outrigger towpath
(under construction)*





Detail – completed towpath



Detail – Bearing at north abutment



CATHERINE MEREDITH / The Morning Call

Workers for J.D. Eckman contractors stand at the refurbished Tohickon Aqueduct near Point Pleasant. Students and professors of the University of Maine are testing a new polymer that is supposed to reinforce the timber construction.

Tohickon Aqueduct project becomes college experiment

UMaine AWEC assumes FRP responsibilities



Detail – FRPs were applied to transverse beams



Detail – Catwalk installed to read gauges



Detail – Gauge and monofilament lines



Tohickon Aqueduct – watered





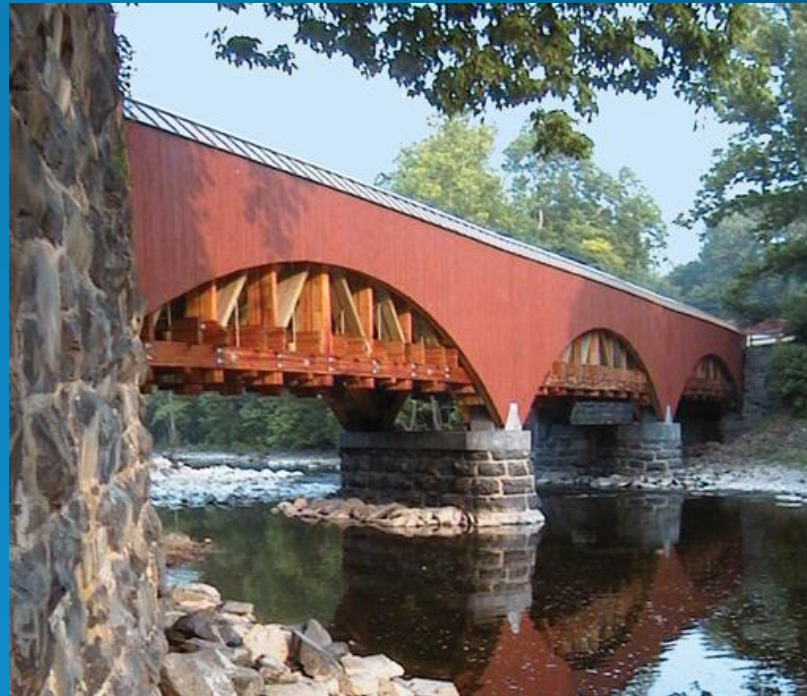


COSTS

\$100,000 **US FOREST SERVICE** timber engineering

\$ **PA DCNR / PA DEP** civil engineering

\$2.1M **PennDOT / FHWA** construction



Acknowledgements

Point Pleasant Community Association.

Pennsylvania Dept. of Conservation and Natural Resources - Bureau of Facilities Design and Construction

Pennsylvania Department of Environmental Protection - Bureau of Flood Protection

USDA Forest Service – Wood in Transportation Program

USDA Forest Service – Economic Action Program

Pennsylvania Rural Development Council.

UMaine – Advanced Wood Engineering Center

Pennsylvania Forestry Association.

National Canal Museum.

Friends of the Delaware Canal.

Opening Day
“Aqueducky” race



AWARDS

- 2003 HONORABLE MENTION – Rail Trail Design Recognition**
Bridges/Tunnels Rehabilitation
*Rails to Trails Conservancy,
American Society of Landscape Architects*
- 2003 HONOR AWARD**
American Society of Landscape Architects, PA/DE Chapter
- 2002 1st PLACE – NATIONAL TIMBER BRIDGE AWARD**
Rehabilitation of an Existing Bridge
*APA Engineered Wood Association,
Federal Highway Administration, US Forest Service*
- 2002 EXCELLENCE IN DESIGN Franklin Wood Award -**
Central Bucks AIA / Chamber of Commerce

Contact



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