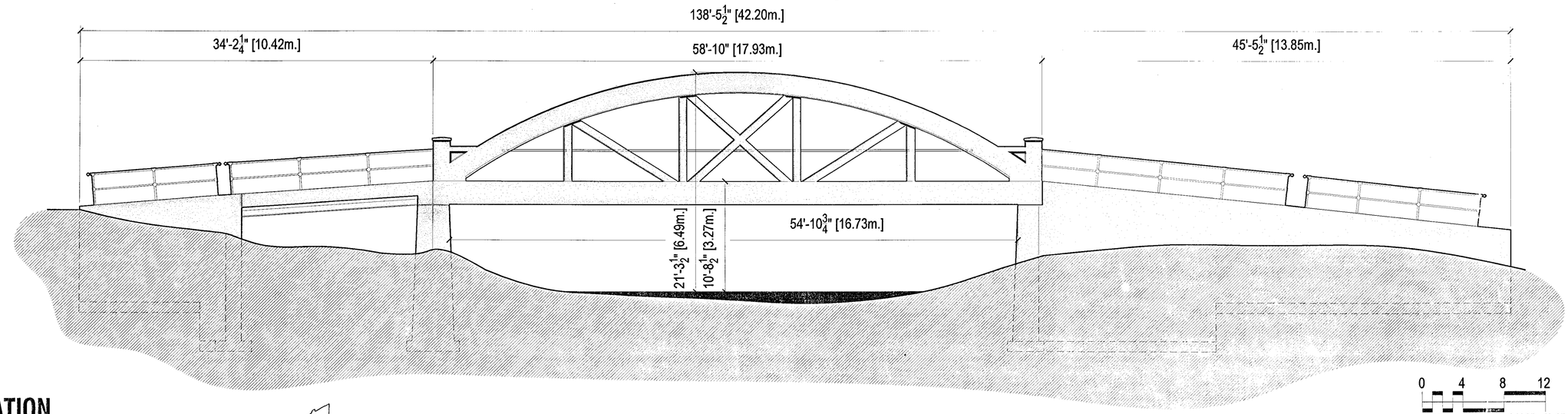
WEAVERLAND BRIDGE - 1916

Terre Hill, Pennsylvania



0 4 8 12
FEET 3/16"=1'-0"

EAST ELEVATION

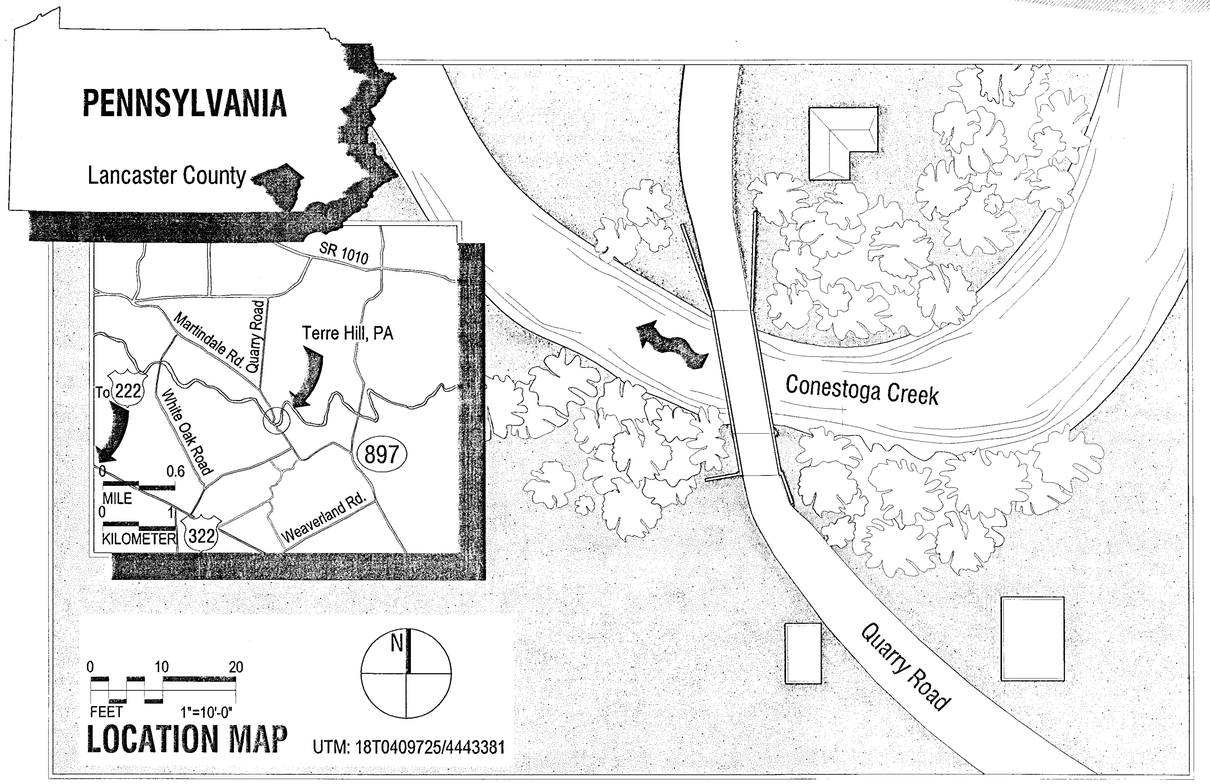
The Weaverland Bridge was designed by Frank Harold Shaw and fabricated by John T. Brubaker in 1916 over Conestoga Creek in East Earl Township, Lancaster, Pennsylvania. It caries a two-lane road (Township Road 894) called Quarry Road. Situated in Weaverland, Swiss Mennonite and German Reformed settlers were the first Europeans to settle and map out his land south of Blue Ball. The Mennonites formed their first congregation here in 1730.

Although there are no structures standing in the immediate vicinity of the bridge, historically, the Weaverland location once was a busy mill processing location with living quarters, a store, a post office, an electric generating facility, and a trolley line station to Terre Hill that ran across a near-by iron bridge. During Eli Martin's ownership of the milling facilities in the 1880's, the trolley company's rotary also operated Martin's gristmill machinery, the first mill in the locality to use electric power.

It was during the Abraham Rupp ownership of the mill site that the old ford was replaced by its first bridge, a 58-foot high iron structure built by the Continental Bridge Company in 1870 on the Terre Hill trolley road (now Quarry Road).

The Weaverland Bridge project is a continuation of the Historic American Engineering Record (HAER) of the National Park Service and the Commonwealth of Pennsylvania Department of Transportation's (PennDOT) historic bridge documentation program that has been in effect since 1986.

Measured drawings of the bridge were prepared during May-August 2002 by Marcy Ann Giannunzio. Richard Vidutis, Engineering Historian, prepared the historical report accompanying the drawings.



LOCATION MAP UTM: 18T0409725/4443381

The Pennsylvania Historic Bridges Recording Project III is part of the Historic American Engineering Record (HAER), a long-range program documenting historically significant engineering, industrial, and maritime sites in the United States. The National Park Service, U.S. Department of the Interior, administers the HAER program. The Pennsylvania Historic Bridges Recording Project III was co-sponsored during the summer of 2002 by HAER under the general direction of E. Blaine Cliver, Chief; and the Pennsylvania Department of Transportation (PENNDOT), Bureau of Design, Dean A. Schreiber, Director; and the Pennsylvania Historical and Museum Commission, Brent D. Glass, Executive Director and State Historic Preservation Officer. Ms. Kara Russell of the Bureau of Design's Environmental Quality Assurance Division served as principal liaison.

The fieldwork, measured drawings, historical reports, and photographs were prepared under the direction Eric DeLony, Chief of HAER. The team consisted of: Architects-Todd A. Croteau, Project Leader (HAER Architect), Roland S. Flores, Field Supervisor (HAER Architect), Marcy Ann Giannunzio (University of Michigan, Ann Arbor), Katherine Marie Kozarek (University of California, Berkeley), Sara Kryda (Illinois Institute of Technology), Jenna Michelle Murphy (University of Detroit-Mercy), Sandra Cristina Pires (ICOMOS-Portugal); Dr. Linda S. Phipps and Dr. Richard Vidutis served as project historians under the direction of D. Richard O'Connor (HAER Senior Historian), and Professor Thomas E. Boothby, PhD, PE, RA, (Pennsylvania State University, State College), was the Consulting Engineer, Jose C. Colon (Pennsylvania State University, State College) was the project engineer. Jet Lowe (HAER photographer) took all large format photography.

LIBRARY OF CONGRESS HAER PA-589

HISTORIC AMERICAN ENGINEERING RECORD PA-589

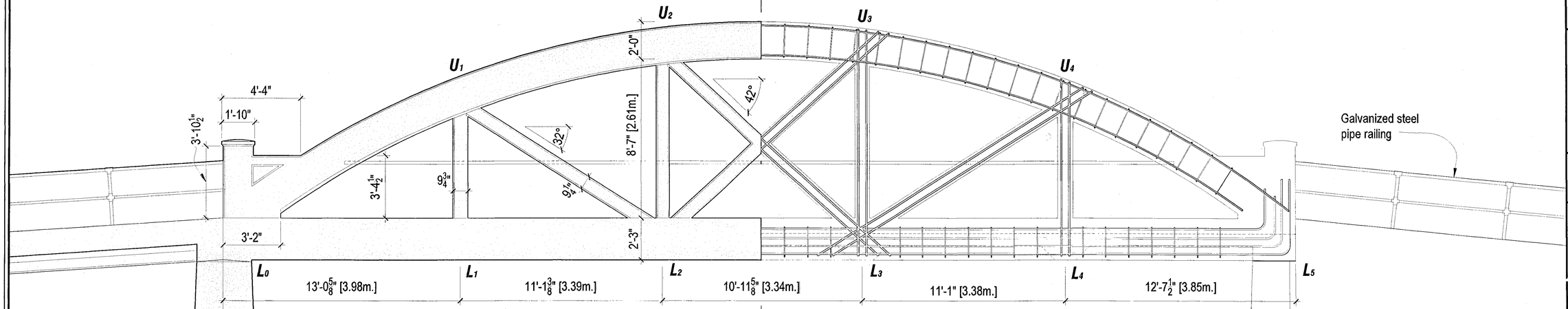
SHEET 1 OF 3

WEAVERLAND BRIDGE - 1916
QUARRY ROAD OVER CONESTOGA CREEK
LANCASTER
PENNSYLVANIA

TERRE HILL VICINITY

DELINEATED BY: MARCY GIANNUNZIO, 2002

PENNSYLVANIA HISTORIC BRIDGES RECORDING PROJECT III
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

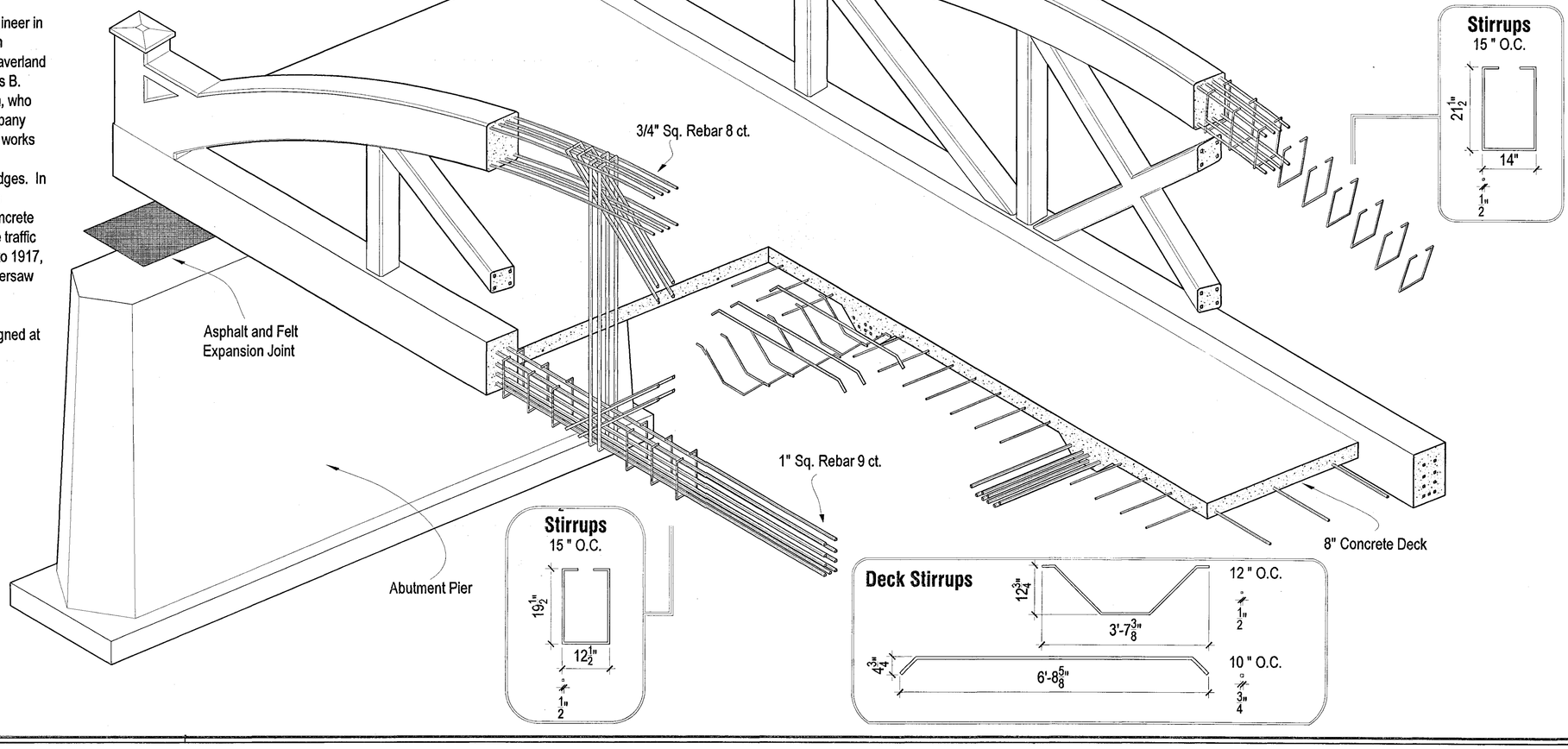


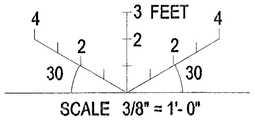
Elevation **Section Elevation**

PARTIAL EAST ELEVATION

Frank Harold Shaw (1872-1950), a civil engineer in Lancaster County, designed the single span reinforced concrete tied arch bridge for Weaverland based on a bridge type developed by James B. Marsh, a civil engineer in Des Moines, Iowa, who patented his creation in 1912. Shaw's company specialized in hydraulic, sanitary and water works engineering projects in reinforced concrete including the design and construction of bridges. In 1908, Lancaster County began replacing its wooden covered bridges with reinforced concrete spans in response to increasing automobile traffic over less traveled local roads. From 1909 to 1917, while Lancaster County Engineer, Shaw oversaw the construction of Lancaster County's first reinforced concrete bridges while leading a bridge-building campaign for which he designed at least 40 of the bridges.

CONCRETE TRUSS AXONOMETRIC





PARTIAL SECTION ELEVATION
(Exposing Reinforcing)

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SHEET 2 OF 3

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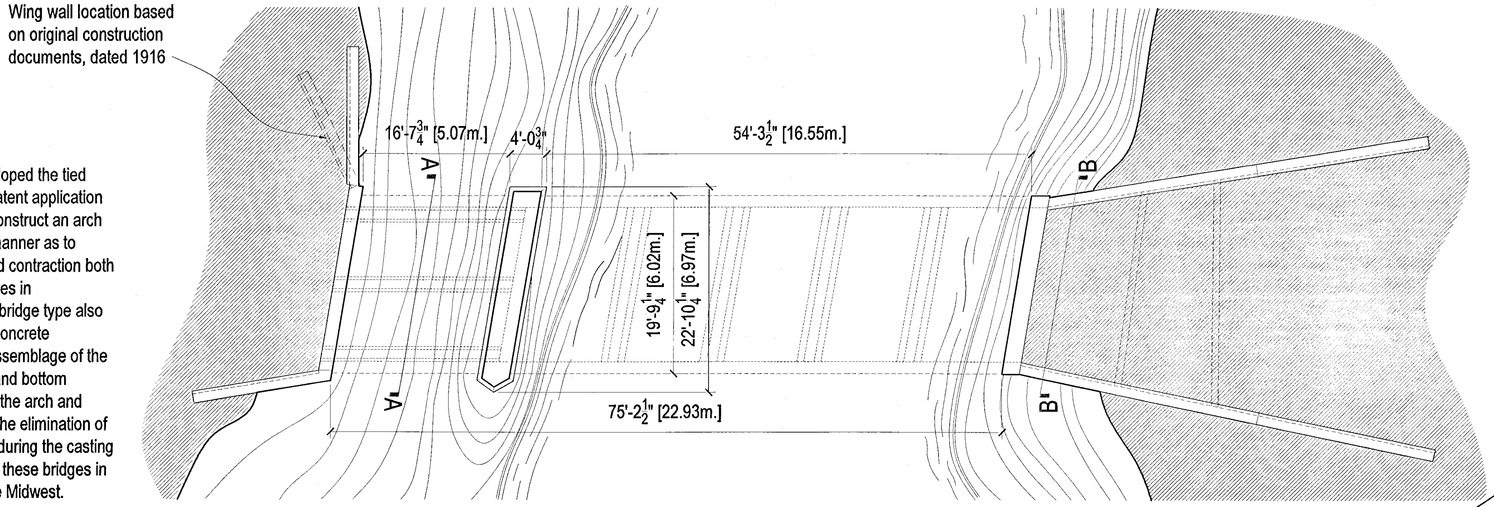
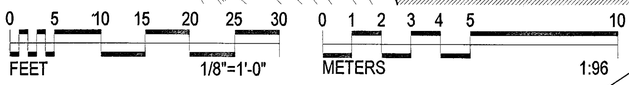
James B. Marsh (1856-1936), who developed the tied through arch bridge type, stated in his patent application that the object of the invention was "to construct an arch bridge of reinforced concrete in such a manner as to permit a limited amount of expansion and contraction both of the arches and the floor" during changes in temperature and moisture. But the new bridge type also presented innovative and cost effective concrete construction methods, such as on-site assemblage of the reinforcing metal trusses for the arches and bottom chords; the deck suspended from ribs in the arch and resting on hangers and abutments; and the elimination of a large portion of the formwork required during the casting of the concrete. Marsh built hundreds of these bridges in the 1910s - 1930s, mostly throughout the Midwest.

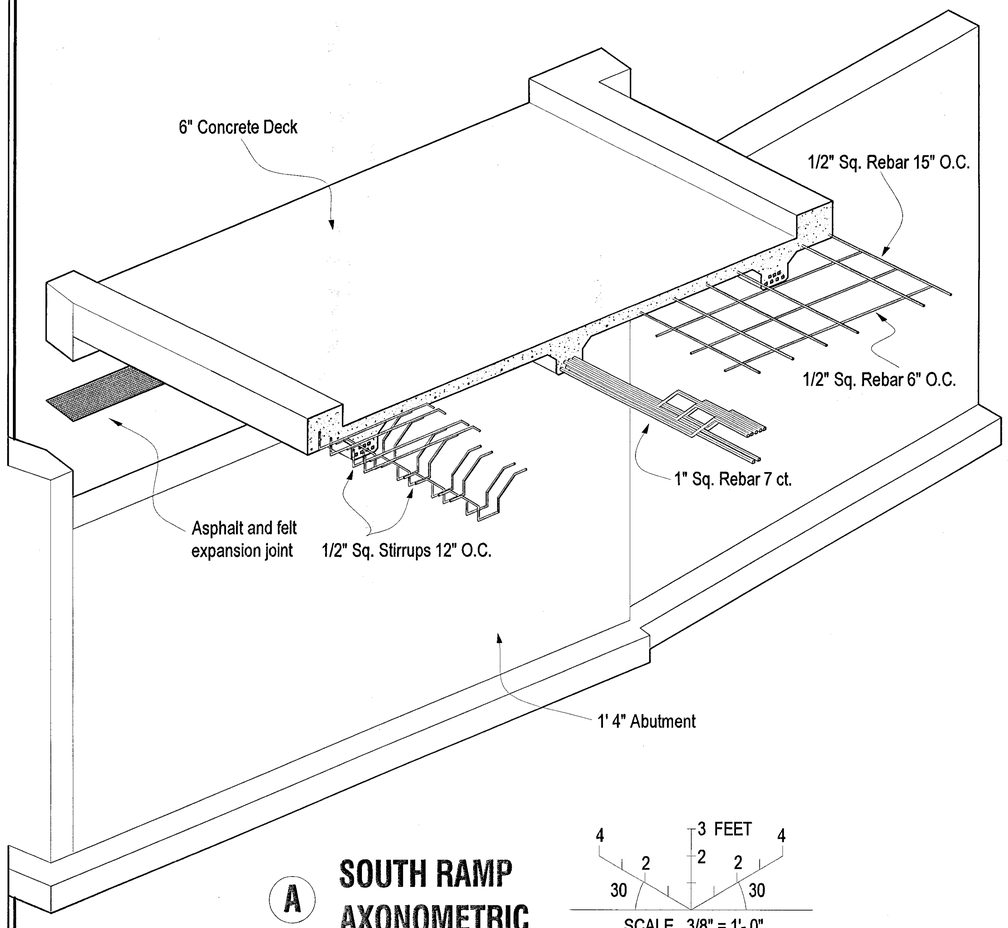


ABUTMENT/PIER PLAN



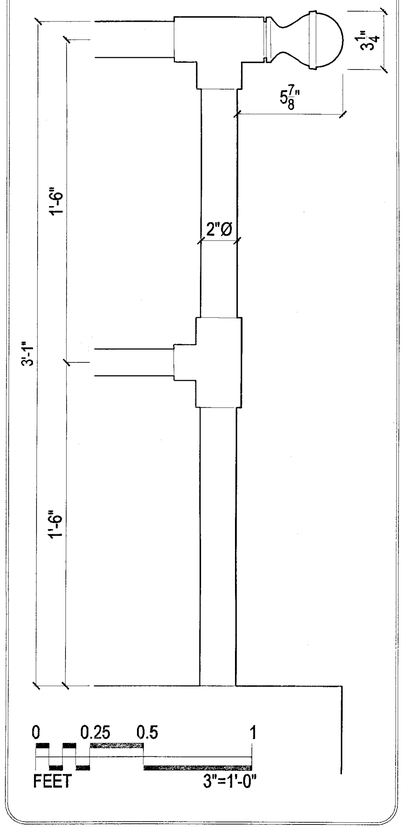
Perhaps not to infringe on Marsh's 1912 patent for the Rainbow bridge, Shaw's version of the reinforced concrete tied arch bridge at Weaverland has the unusual detail of diagonal suspension ribs in the center of the arches in this slab deck bridge with cross beams.

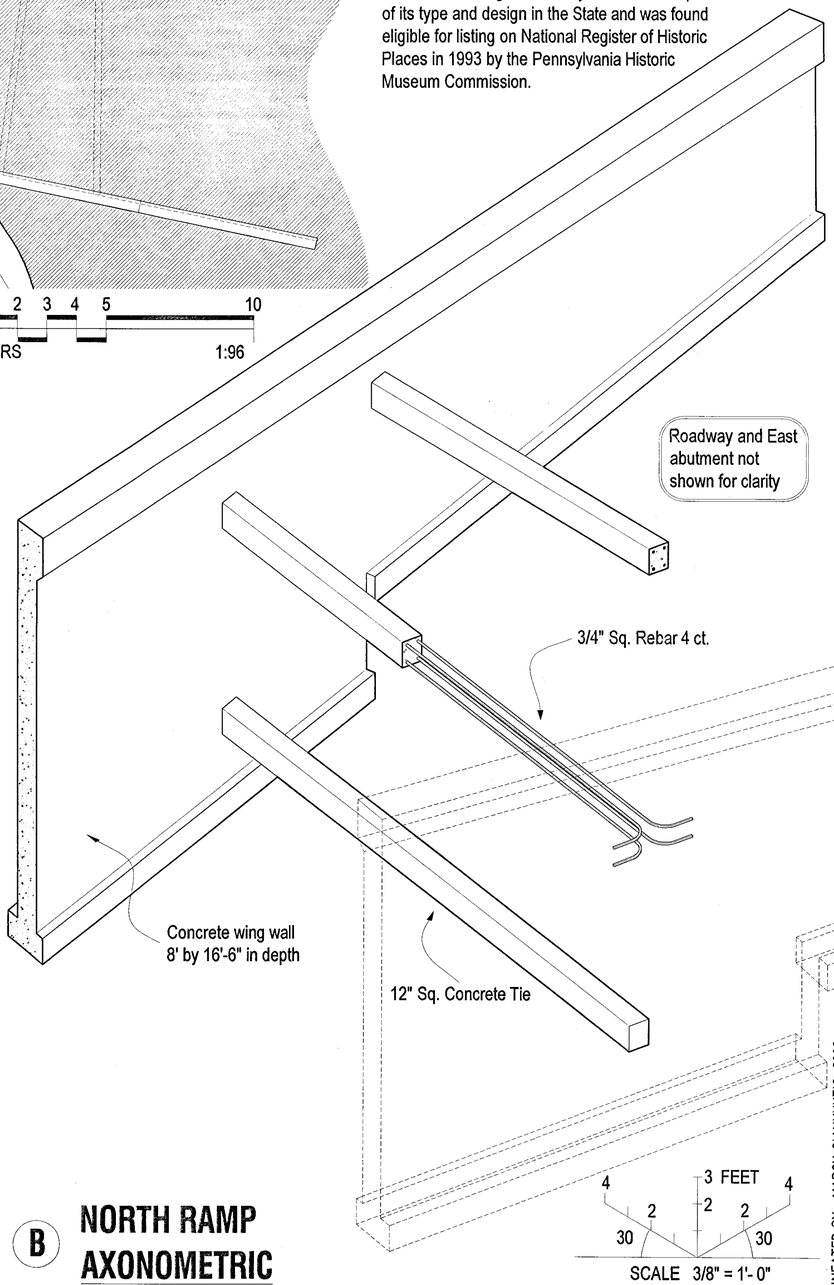
In Pennsylvania there are seven reinforced concrete through arch bridges left. The Weaverland Bridge is an early and rare example of its type and design in the State and was found eligible for listing on National Register of Historic Places in 1993 by the Pennsylvania Historic Museum Commission.



A **SOUTH RAMP AXONOMETRIC**

Galvanized Steel Pipe Railing





B **NORTH RAMP AXONOMETRIC**

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