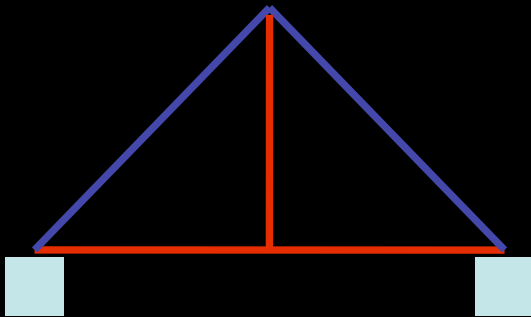
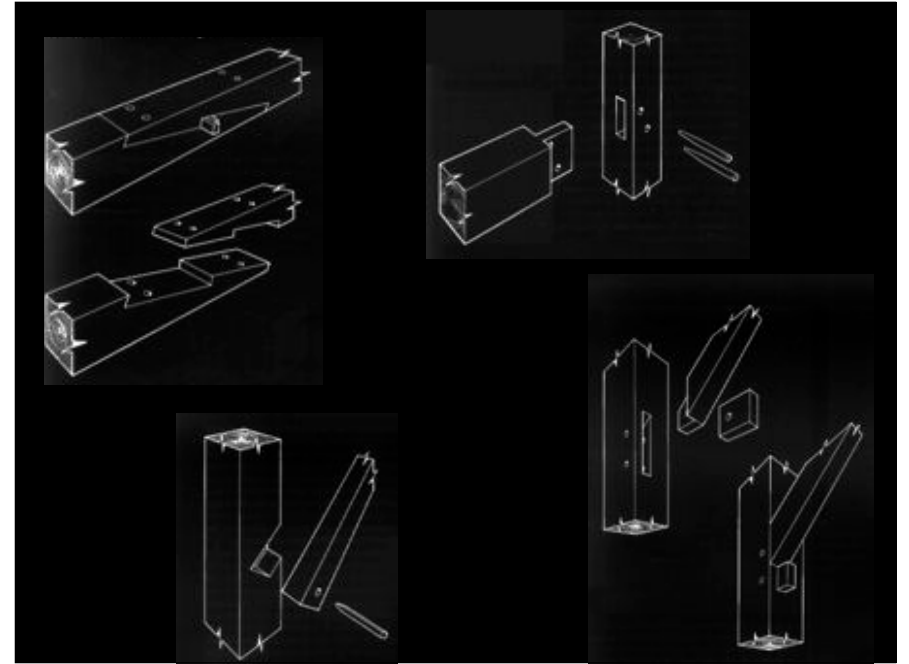


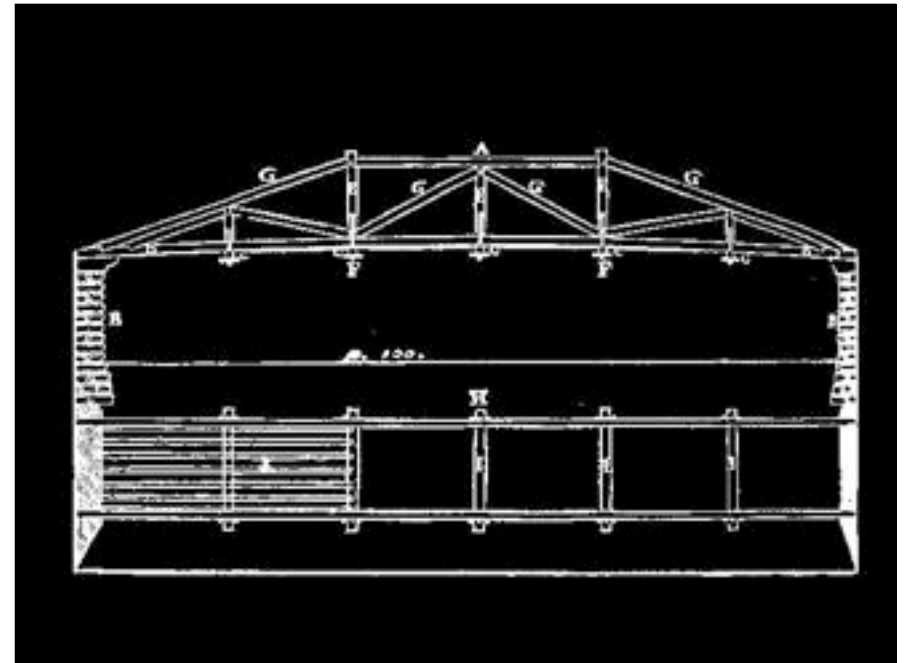
Covered Wooden Bridges

History of the wooden truss
Burr -> Town -> Long -> Howe
Evolution towards constructibility
Restoration and rehabilitation



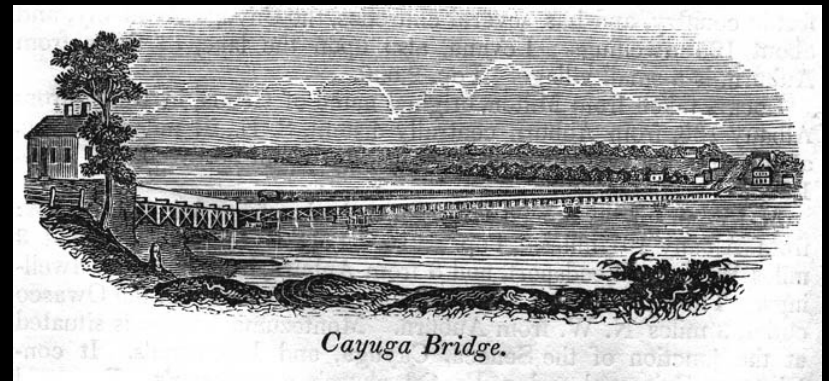


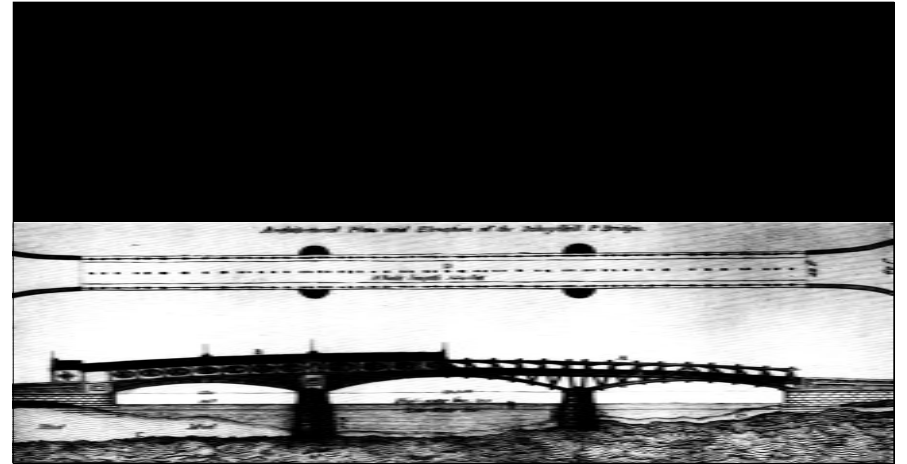
European Truss Bridges
(1570 - 1756)



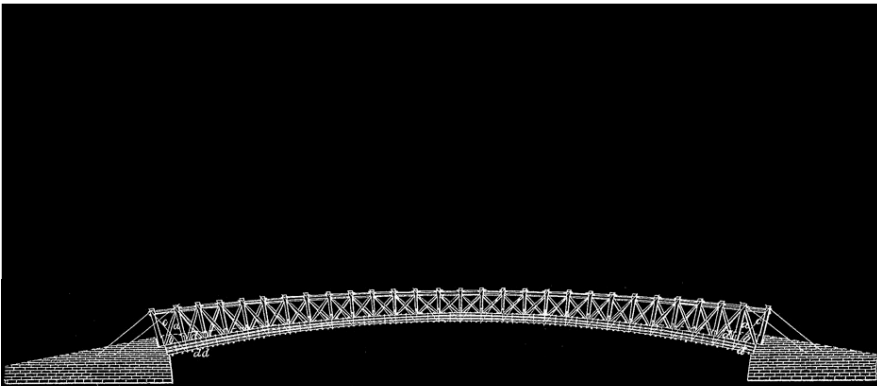


Early American Bridges



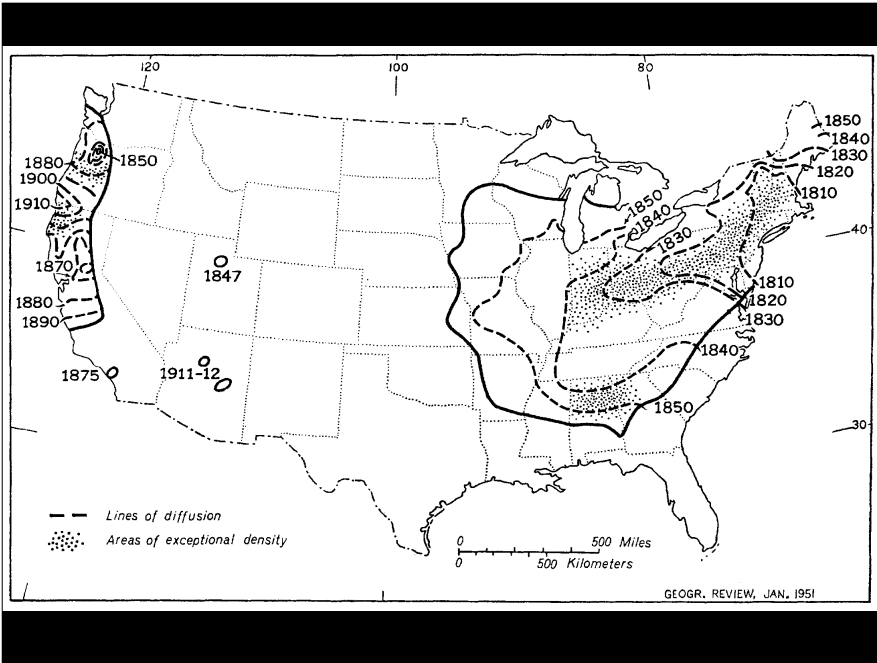


Permanent Bridge (1806)
Timothy Palmer

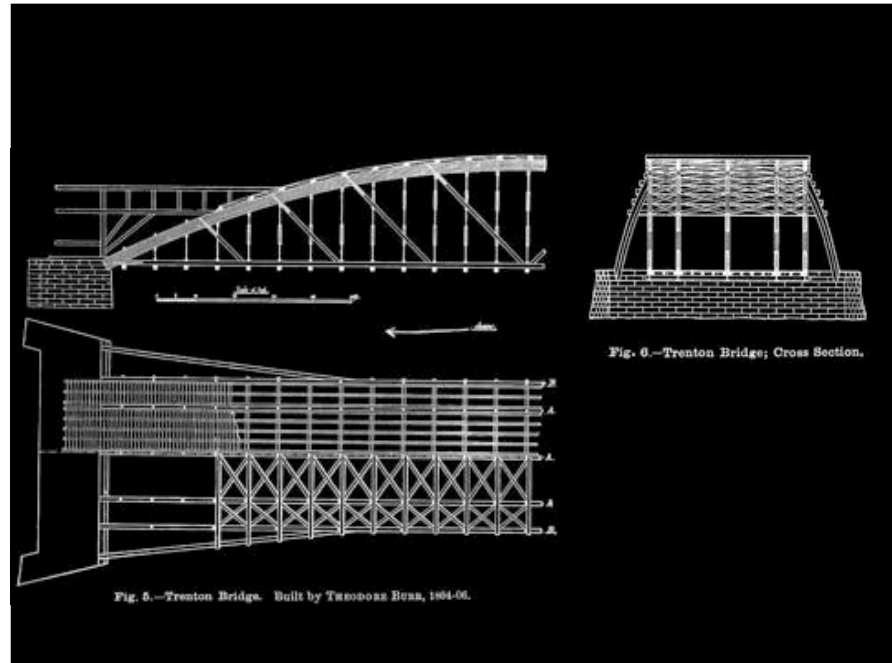
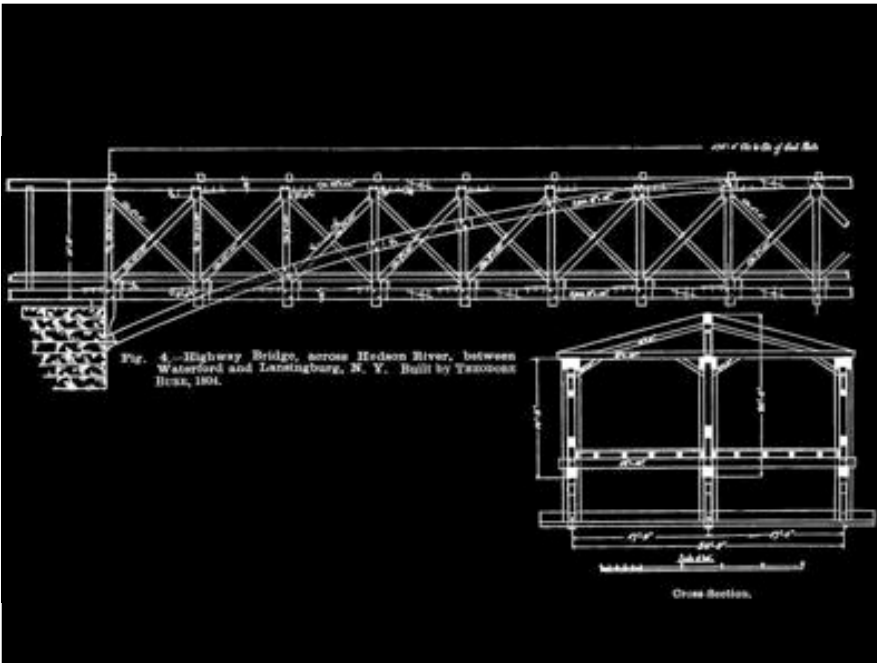


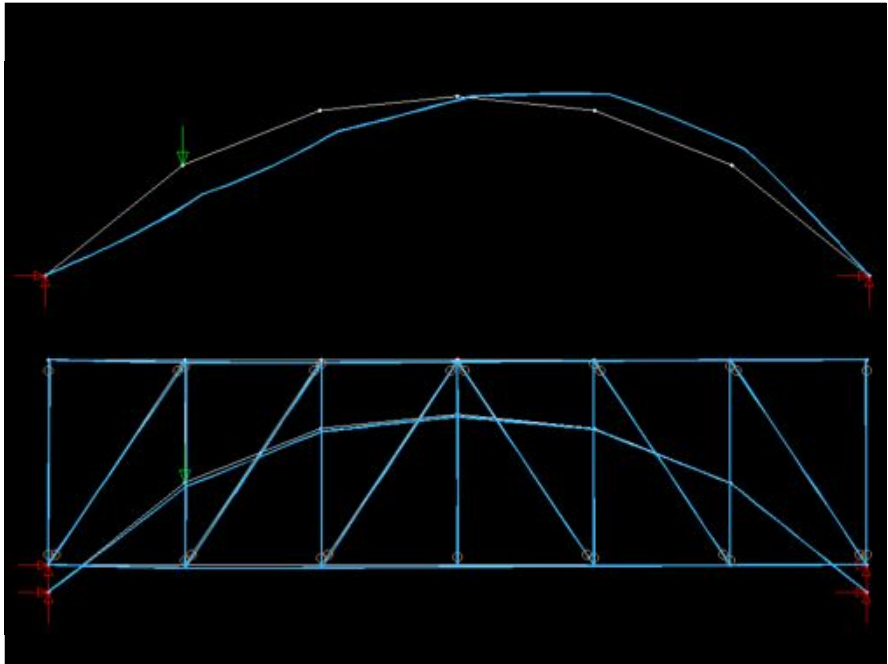
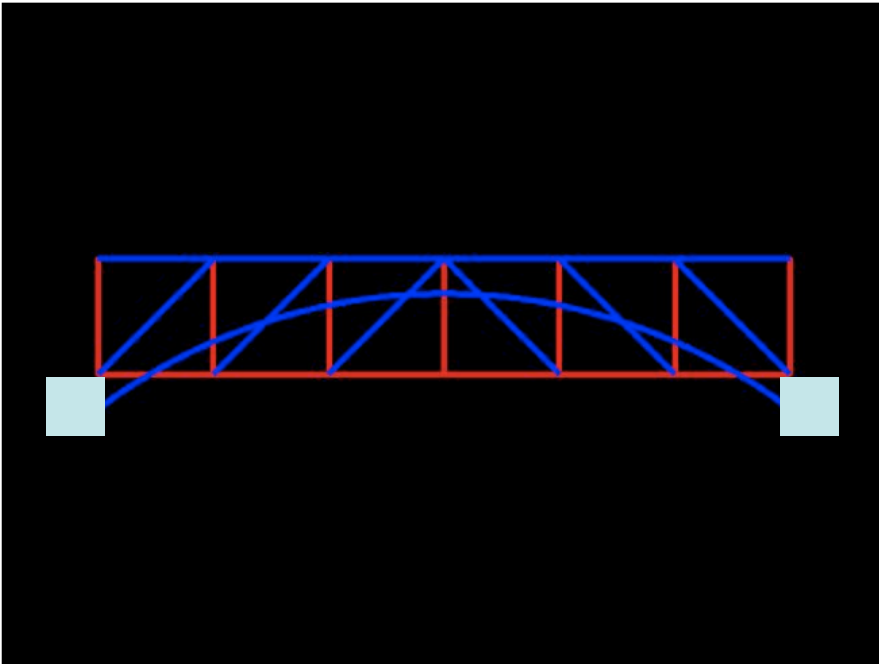
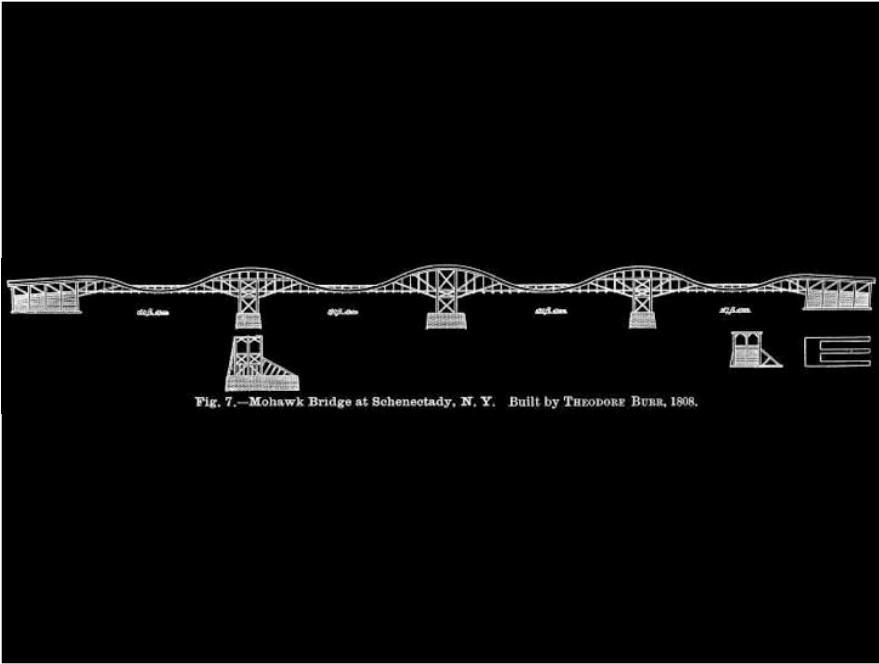
"The Colossus" (1812)
Lewis Wernwag

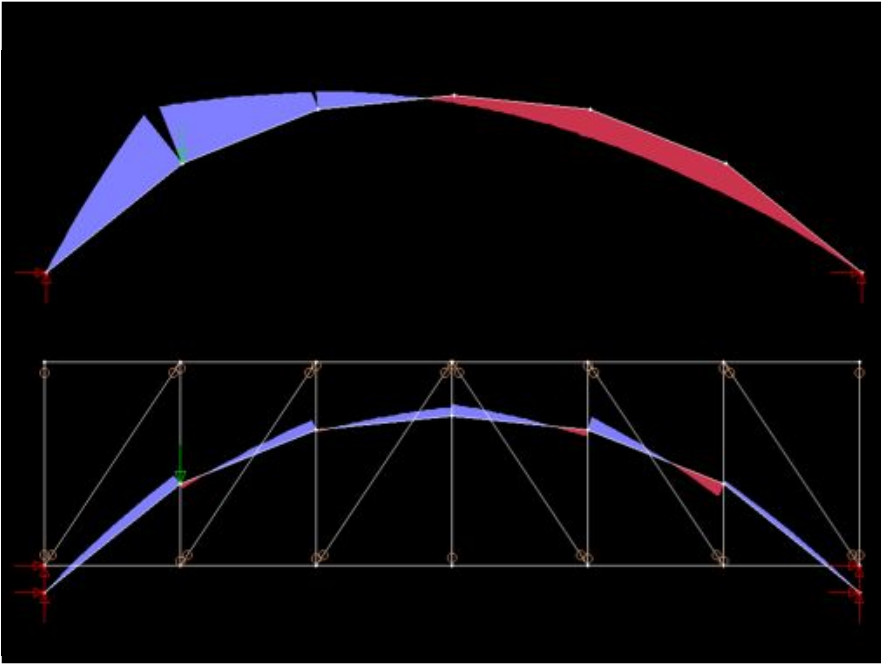




Theodore Burr and the Burr Arch-Truss



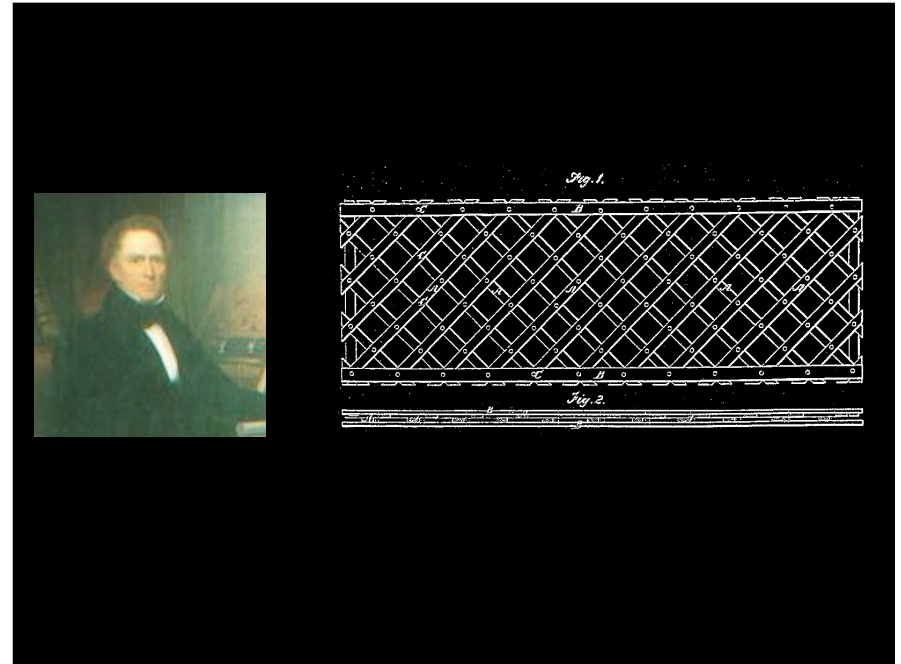


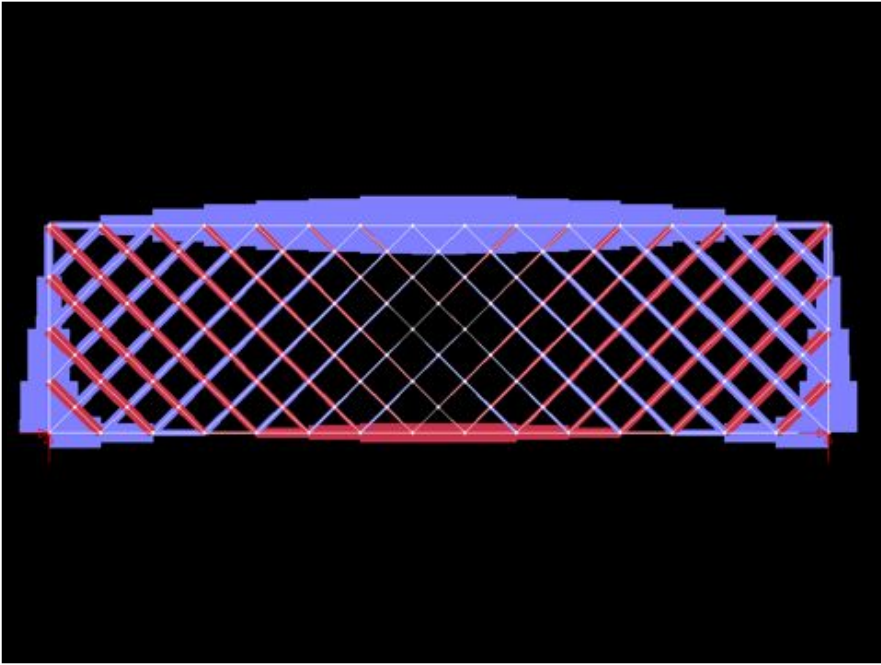






Ithiel Town and Town Lattice Truss

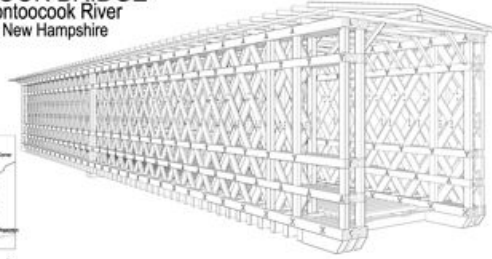






CONTOOCCOOK BRIDGE

Spanning Contoocook River
Contoocook, New Hampshire



Double-Web Town Lattice Truss - 1889

In 1888, the Concord & Merrimack Railroad was chartered to build a double-track line from Concord to Merrimack, New Hampshire. As Concord Village is located on the line, the railroad was required to build a bridge over the Contoocook River. In 1889, Hubert & Oliver Northrup took over the line, and in 1890, replaced the line with a new single-track line. The railroad was required to build a bridge over the Contoocook River. The railroad was required to build a bridge over the Contoocook River. The railroad was required to build a bridge over the Contoocook River.

Plans for the bridge were prepared by the Merrimack Railroad Bridge Company, which was organized in 1888. The bridge was designed by the Merrimack Railroad Bridge Company, which was organized in 1888. The bridge was designed by the Merrimack Railroad Bridge Company, which was organized in 1888.

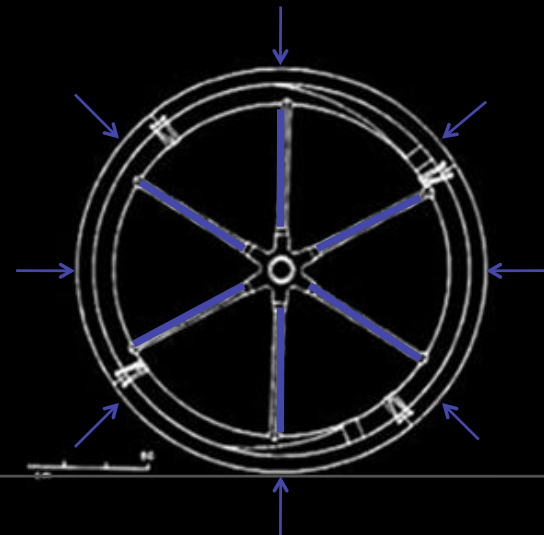
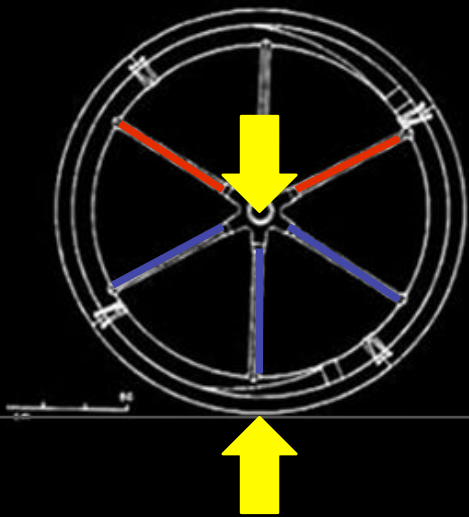
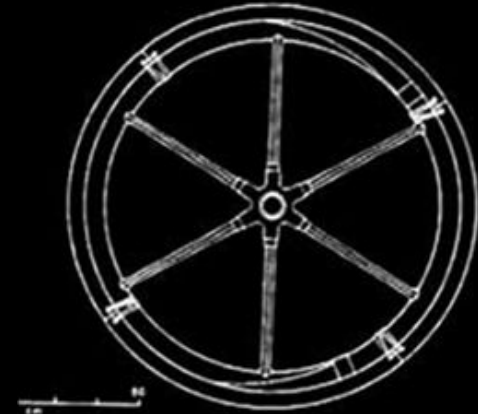
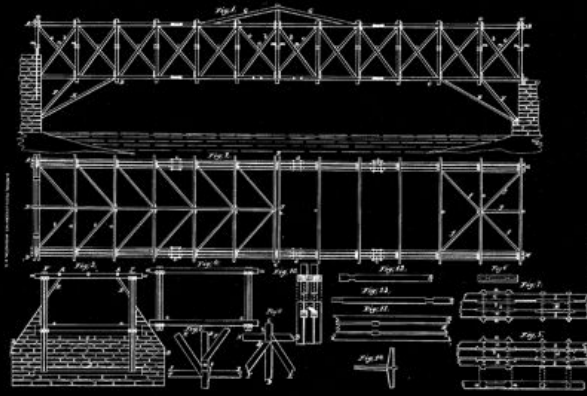
The bridge was built by the Merrimack Railroad Bridge Company, which was organized in 1888. The bridge was built by the Merrimack Railroad Bridge Company, which was organized in 1888. The bridge was built by the Merrimack Railroad Bridge Company, which was organized in 1888.

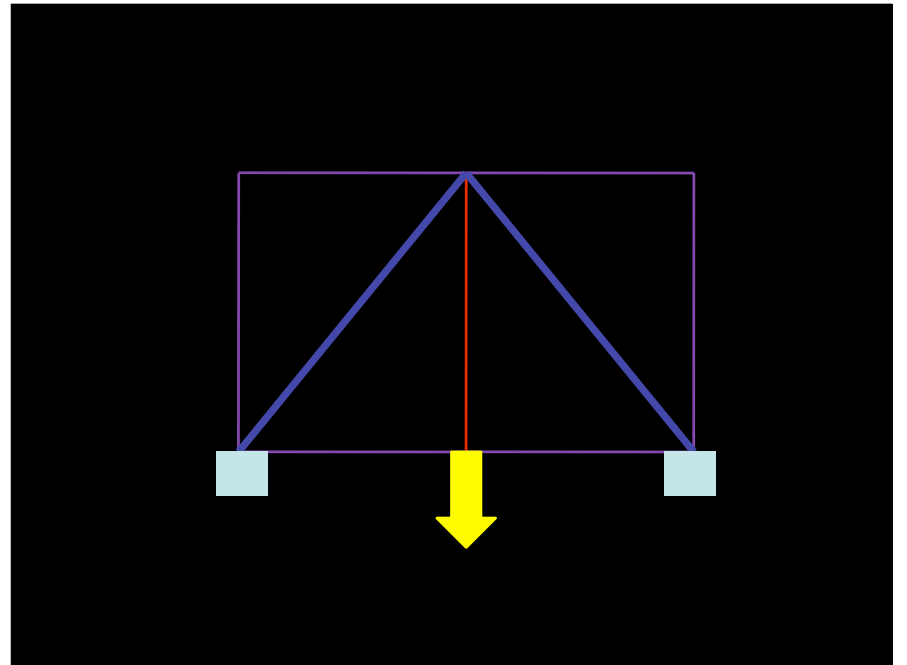
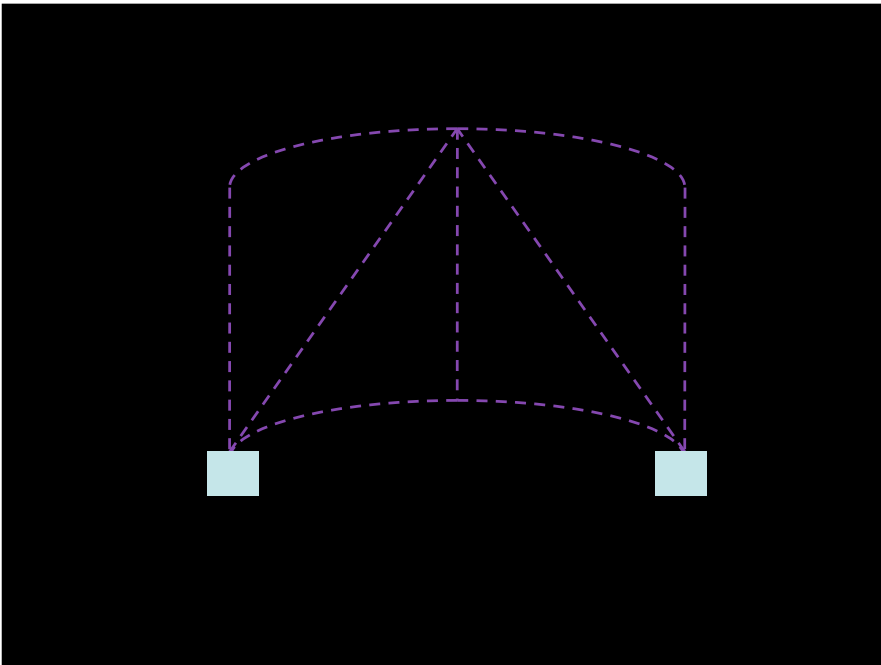
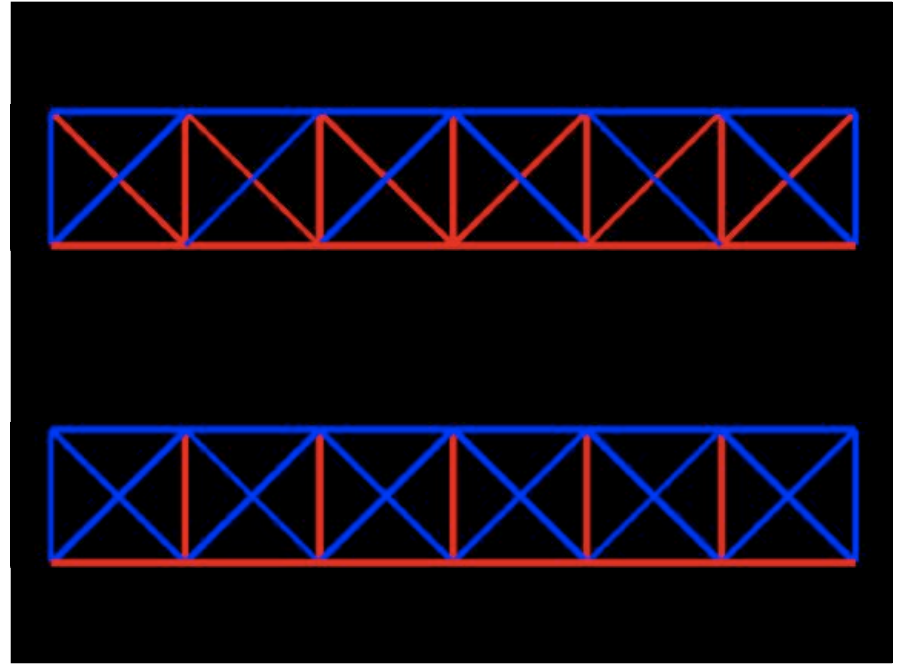
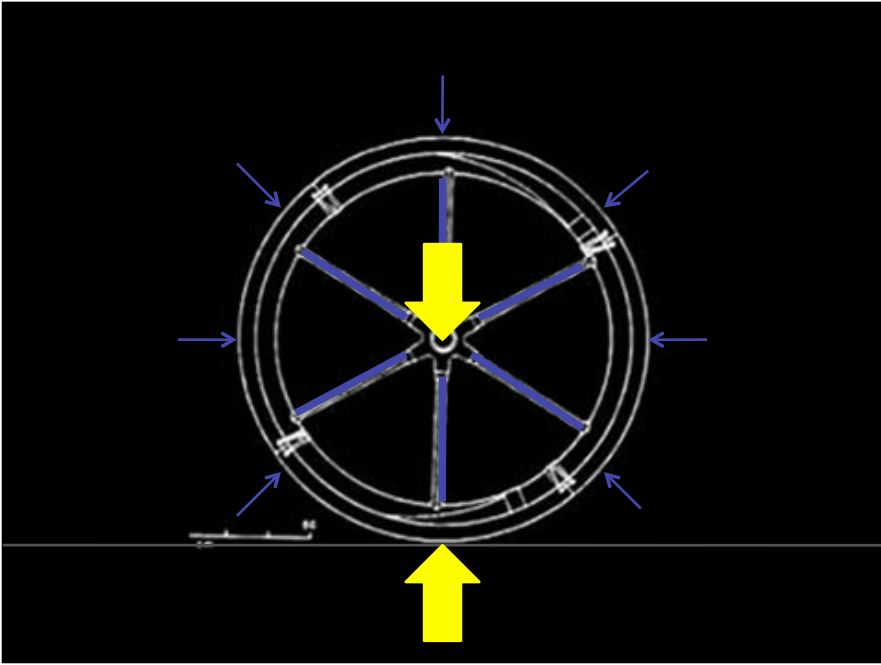
The bridge was built by the Merrimack Railroad Bridge Company, which was organized in 1888. The bridge was built by the Merrimack Railroad Bridge Company, which was organized in 1888. The bridge was built by the Merrimack Railroad Bridge Company, which was organized in 1888.

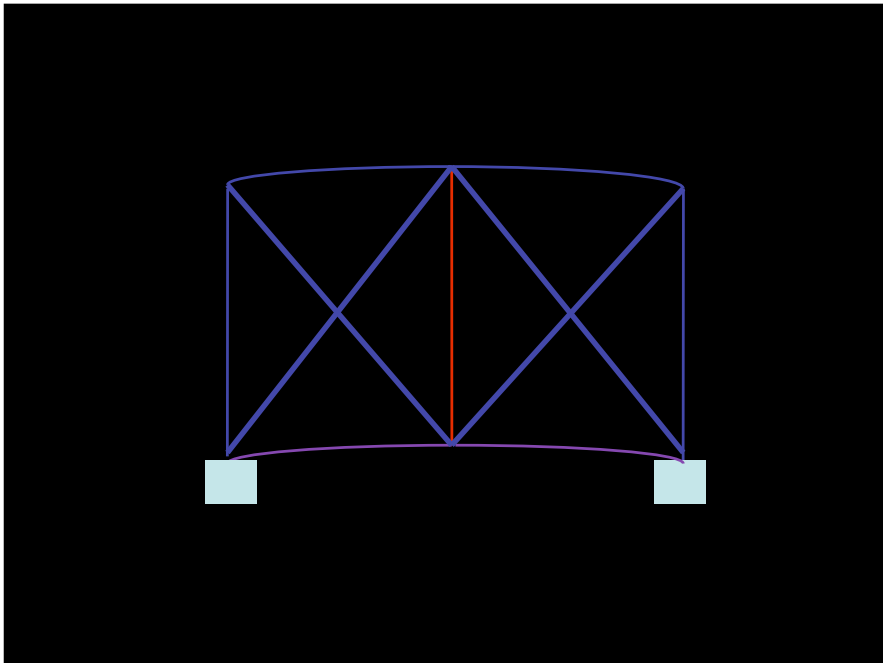
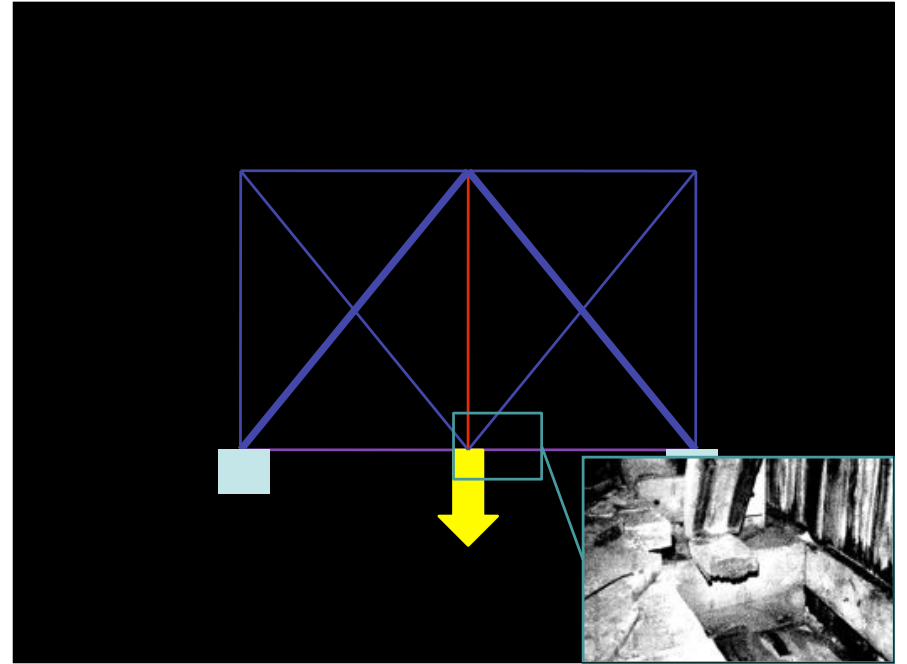
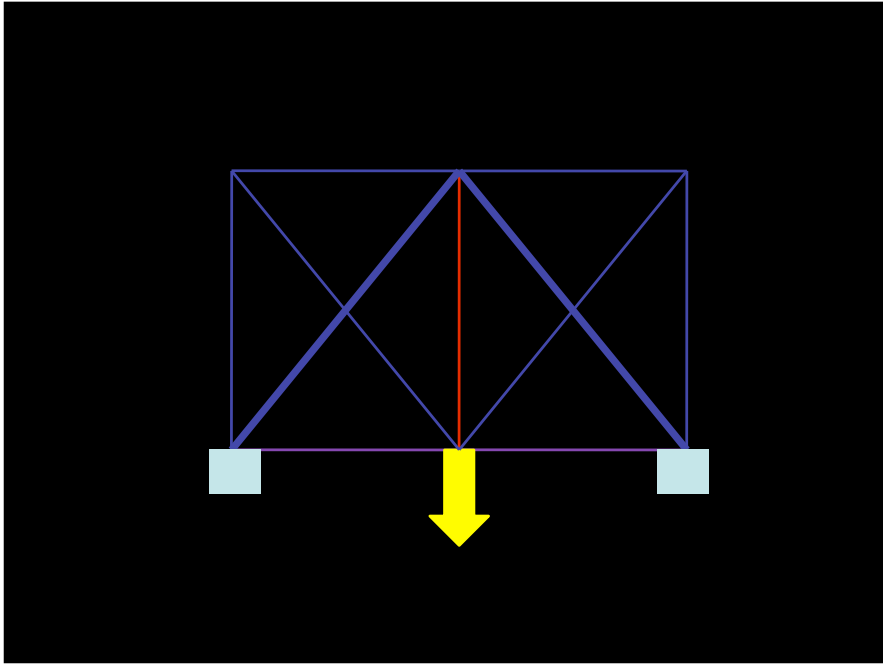


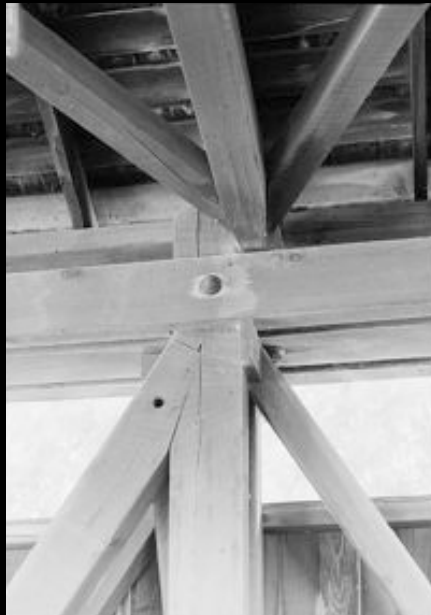
Stephen H. Long and the Long Truss





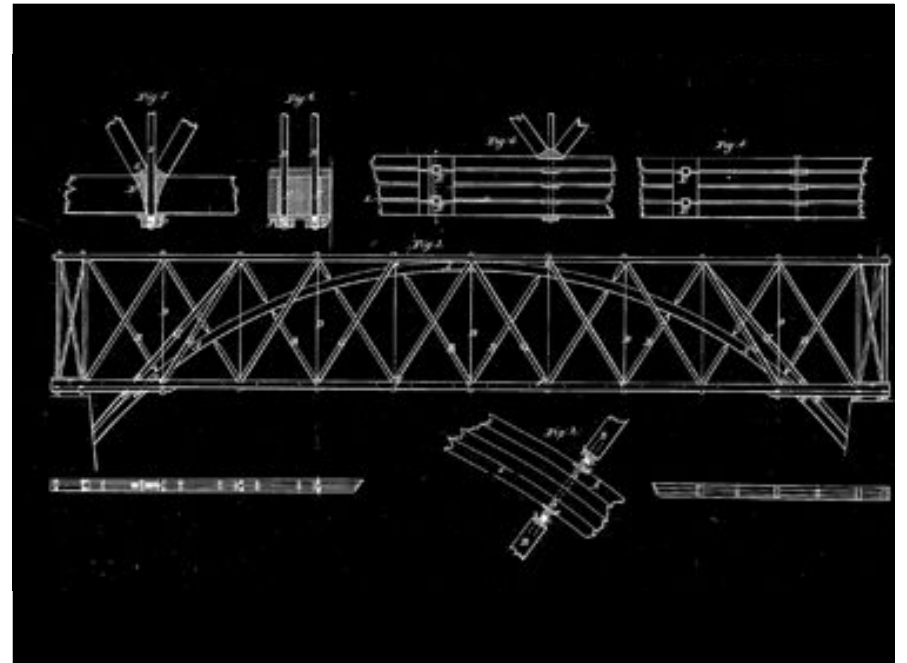


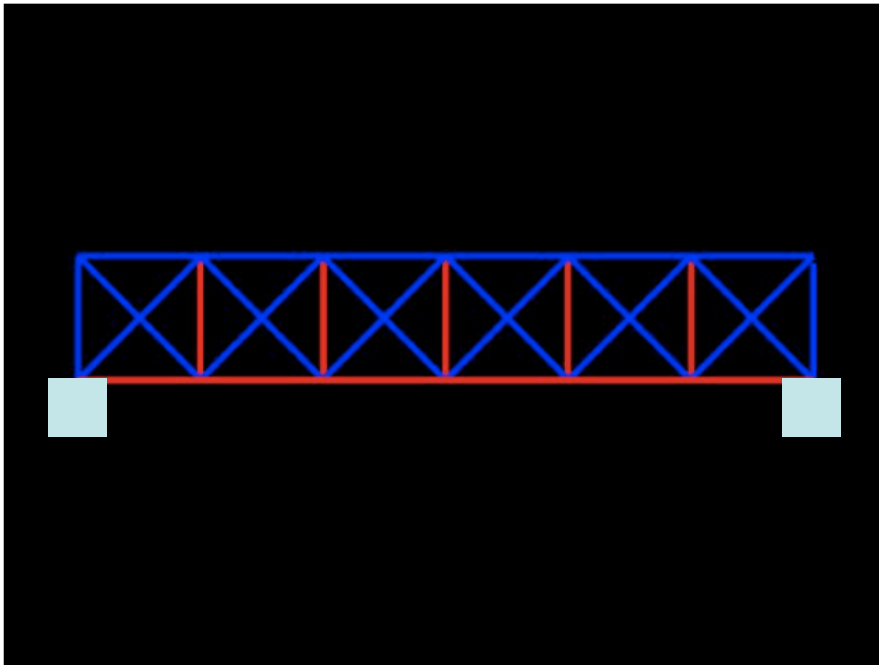
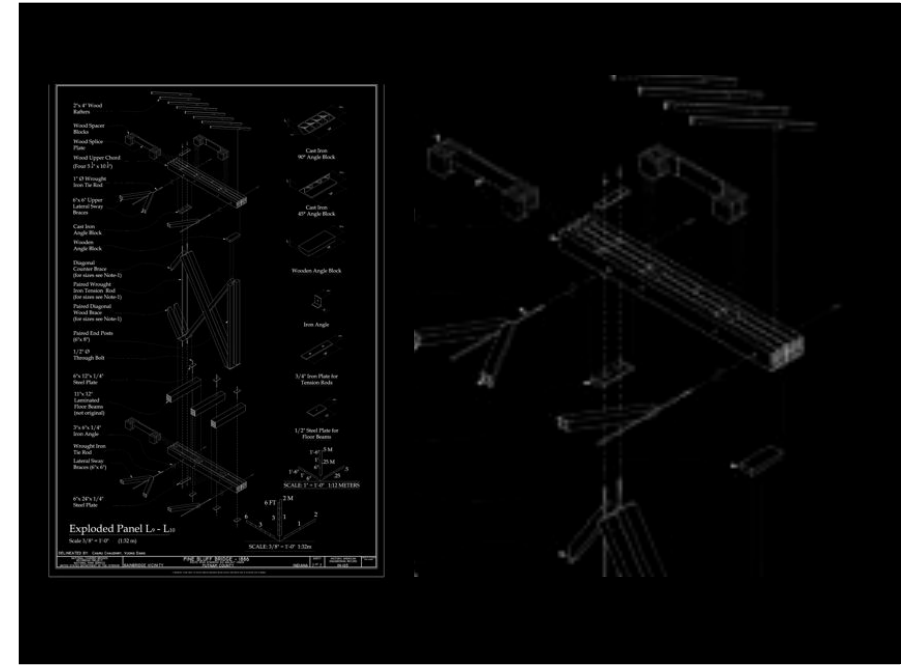
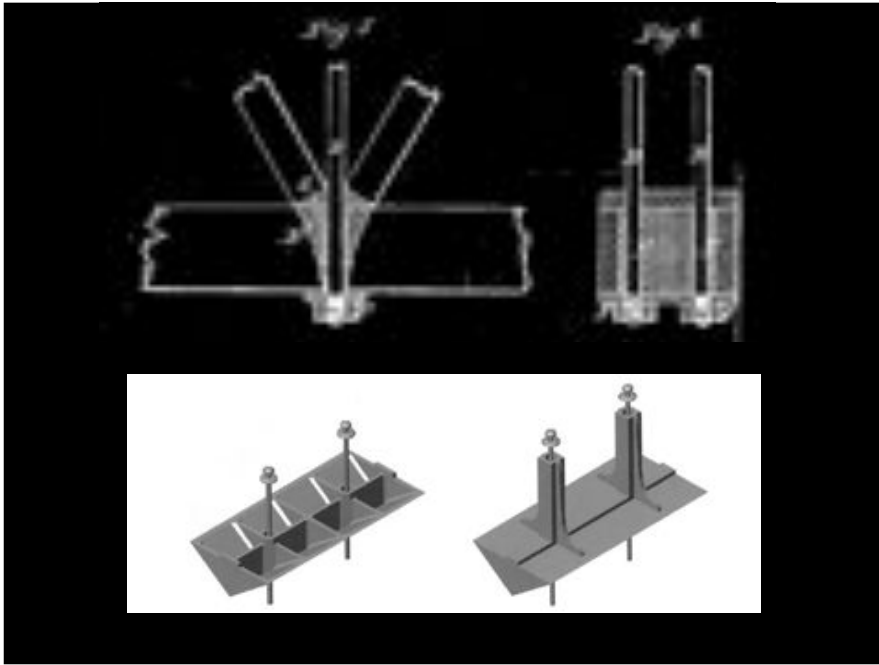


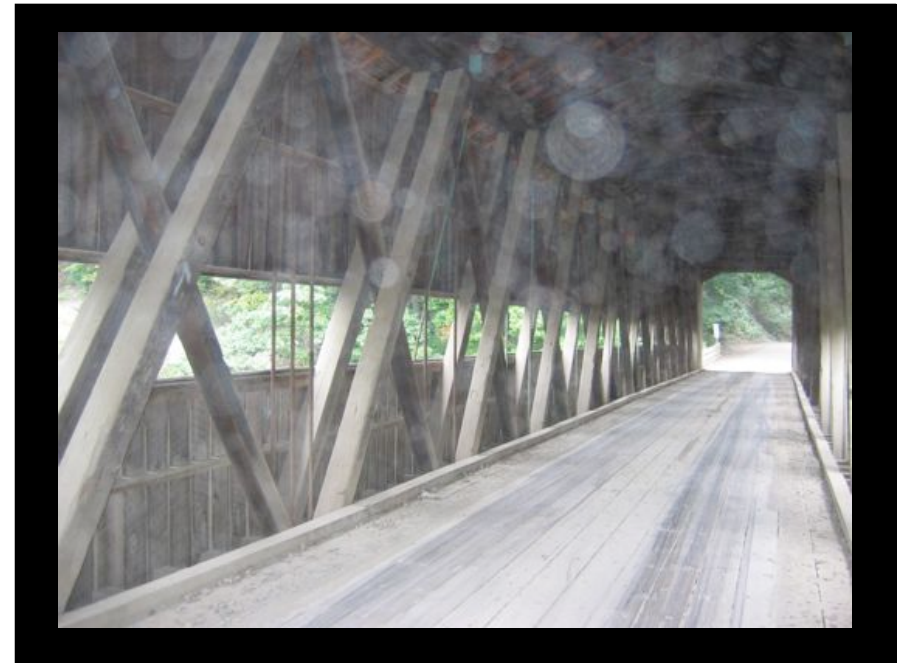




William Howe and the Howe Truss









Future of Covered Wooden Bridges





TAFTSVILLE BRIDGE

1836

Spanning Ottauquechee River
Taftsville, Vermont

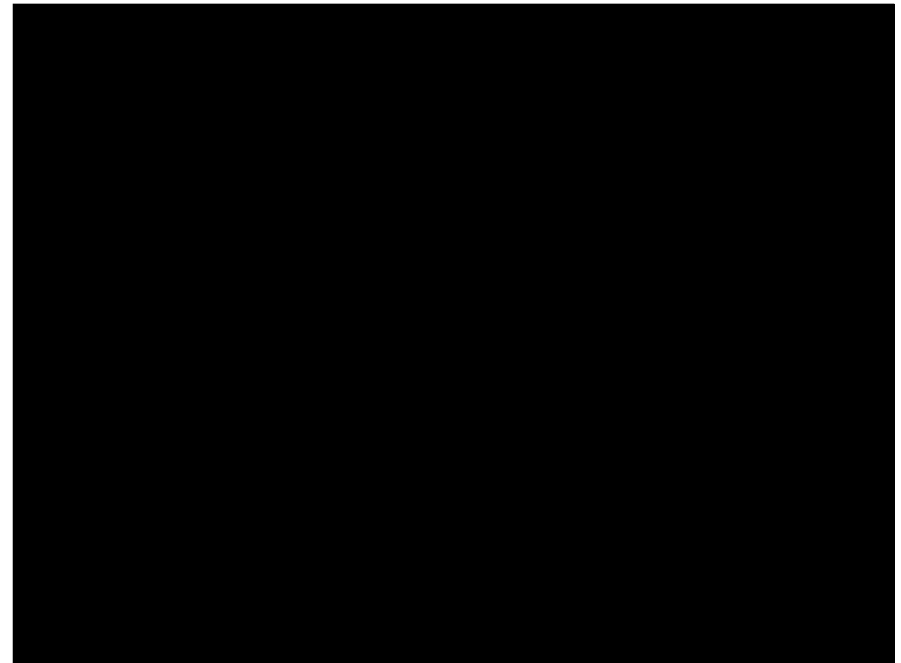
Around 1793, Stephen Tall built a dam and mill facility near this site on the Ottauquechee River, and a small industrial Hamlet, later known as Taftsville, sprung up around it. The date of the first bridge at this location is not known, but there are records of at least three bridges existing here prior to 1836, when Solomon Estess III built this structure at a cost of \$1,000. The bridge underwent major flood repairs in 1867, structural repairs were added as an extension date and small pieces modified in 1924, but the main structure appear to be mostly original.

The Taftsville Bridge represents the early tradition of wood truss bridge construction and can be described as an elaborate multiple kingpost truss with a horizontal wood arch. Most American builders favored simpler trussing styles, but the Taftsville Bridge appears to show the influence of British precedents. Given the basic multiple kingpost truss, the bridge has a set of eight-arranged arch-like members, which form an alternate stress path. Solomon Estess may have thought up his bridge design on his own, but it is possible that he was influenced by designs that he had seen in contemporary literature. The Taftsville Bridge still carries vehicular traffic and is a rare surviving example of the early tradition of wood truss bridges.

Phase II of the National Covered Bridges Recording Project was undertaken during the summer of 2013 by the Historic American Engineering Record (HAER), a long range program to document historically significant engineering and industrial works in the United States. HAER (Eric DeLoach, Chief) is a part of the NATIONAL ARCHIVES, LEGAL SERVICES, Division of Cultural Resources, National Park Service, U.S. Department of the Interior. The Federal Highway Administration funded the project. The University of Vermont (Prof. Tom Viner, Director, Historic Preservation) and Prof. Jane Gray Roberts, Chairman of Civil & Environmental Engineering) formed the field team. Woodwork notes manager Phil Brennan, Charles Wilson (owner of the Taftsville Covered Bridge), Lisa Wilson and Peter Pelletier (New River Ottauquechee Regional Commission) provided assistance.

The measured drawings, historical reports, engineering reports and photography were completed under the direction of Christopher Mattern, Project Leader, Nancy Hornbacher, Survey Team Supervisor and Richard O'Connor, Senior Historian. The Burlington field team consisted of Field Supervisor Paul De, Philip S.C. Carter (CCREB), Commenter, Architecture (Roy Smith James E. of Johnson, Young Dong U. of Johnson, William Dickinson E. of Pennsylvania), Arnold Kiesel and John Nathan Bower (both CCREB), Commenter, Michelle Tanaka (CCREB, Japan), and Dong Parker U. of Oregon) and Historical Lela Berman (Stee, MA) and Mark Brown (State College, PA). Engineering analyses were produced by Francesco Lanza (CCREB), aided working with Paul John Unsworth (METS, Drexel University, Philadelphia), writing with Justin M. Sperry (Robert Wilson Assoc., NY), Megan Bower working with Paul, Charles Gumpert (both of Case Western Reserve U.). Large format photography was produced by Jon Linn, HAER Photographer, Joseph Corbett under the HAER historical report.

**Modified Multiple Kingpost Truss
(with an added horizontal wood arch)
Builder Solomon Estess III**







Oakland Bay Bridge

- Read the article
- Identify issues of permanence, safety, economy, elegance, social, constructibility, efficiency regarding the bridge
- Sketch the form and draw a load path diagram for a load to the right of the main tower

Oakland Bay Bridge

- Read the article
- Identify issues of permanence, safety, economy, elegance, social, constructibility, efficiency regarding the bridge
- Sketch the form and draw a load path diagram for a load to the right of the main tower
- In groups of three, discuss issues of efficiency, economy and elegance
- Report to the class