



OTWAY COVERED BRIDGE (35-73-15) SCIOTO COUNTY

8/12/2015

County Engineer's Association of Ohio

Otway Covered Bridge History



OTWAY BRIDGE

Scioto County (35-73-15) Scioto Brush Creek

0.2 mile SW of

Otway Covered Bridge History

- 1874 - Otway Covered Bridge built by the Smith Bridge Company from Tipp City, Ohio
- 1864 - Morgan's Raiders forded the creek at the same location
- 1959 - ODOT wanted to demolish the bridge
- March 1960 – Otway Community Society for the Preservation of Historic Landmarks formed by Gladys Riley
- 1960 – ODOT builds a bypass and saves the structure
- 1960 – Otway Historical Society takes ownership

Project Goals



- Restore the Historic Otway Covered Bridge
- Repair or replace adjacent metal truss bridge
- Bring Community together

Otway Covered Bridge Funding

- In the TEA-21 Transportation Act, special funding for the preservation of historic covered bridges was established and was dedicated as National Historic Covered Bridge Preservation Program (NHCBP)
- Funding started in FY 2000
- Original Covered Bridge Construction Estimate - \$350,000
- Scioto County applied for funds and received a grant of \$280,025 in FY 2012
- Local Share of Construction Funds would be \$70,000 (80/20)
- Where will the Local share come from???

Otway Covered Bridge Funding

COMPLICATIONS:

- Bridge is located on private property
- FHWA funds only applicable to facilities on public rights-of-way
- Otway Historical Society does not own entire area
- Adjacent metal truss needs repaired or replaced if road is made public again
- Need even more funding

Otway Covered Bridge Funding

SOLUTIONS:

- Work with the Village of Otway, Brush Creek Township and the Otway Historic Society to rededicate the road Right-of-Way
- Apply for and receive State Issue 1 funding
- Apply for and receive Federal Credit Bridge funds through County Engineer's Association (CEAO)
- Receive funds from Otway Historic Society and from area Scioto County school children and residents

Otway Covered Bridge Funding

Bidding:

- First Bid – 2 bidders: RC Construction, \$491,000 and Righter Company, \$501,000
- Bids rejected due to insufficient funding by over \$150,000
- Additional funds secured through CEAO
- Second Bid – 2 bidders: Righter Company, \$421,000 and RC Construction, \$501,000
- Award contract!!!

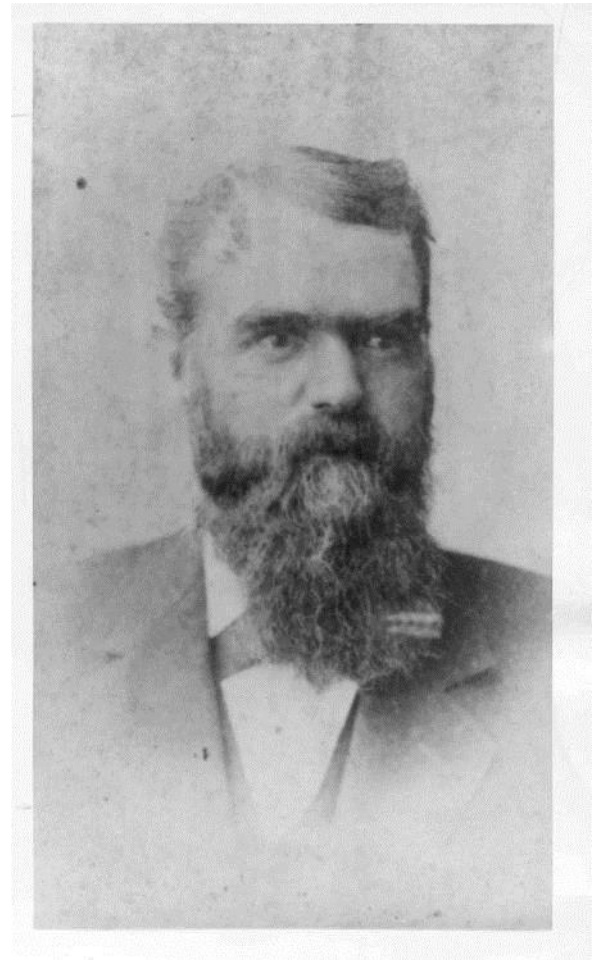
Otway Covered Bridge Funding

Funding Breakdown:

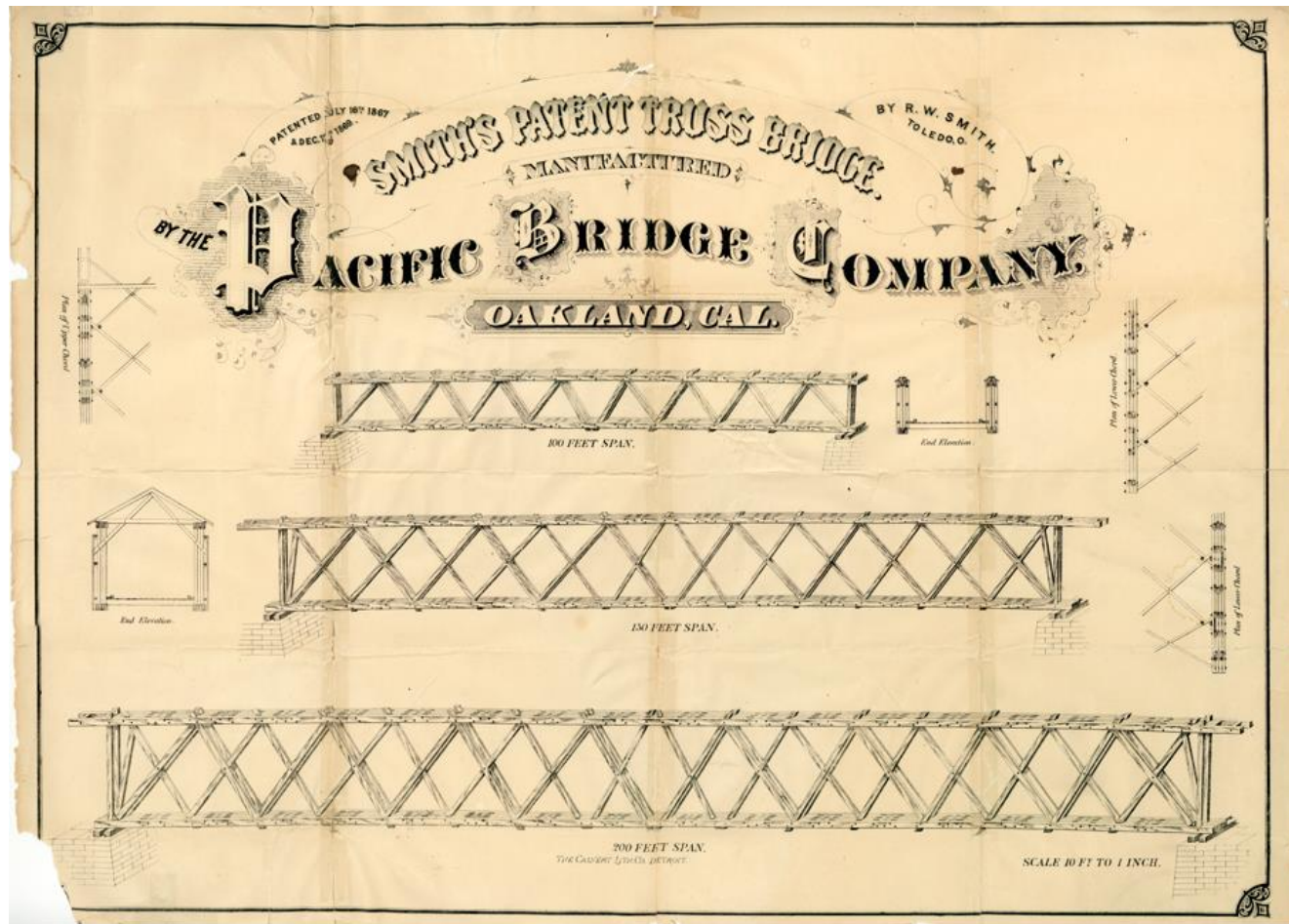
- \$224,020 – FHWA NHCBP
- \$205,143.24 – Additional Federal Bridge Funding
- \$107,290.81 – County Bridge Credits
- \$44,937.00 – Ohio Public Works Commission (Issue 1)
- Remaining by Otway Historical Society fundraising including other locals
- Total cost of Covered Bridge: \$536,454.05
- Total cost of metal truss: \$45,403.02

Otway Covered Bridge Design

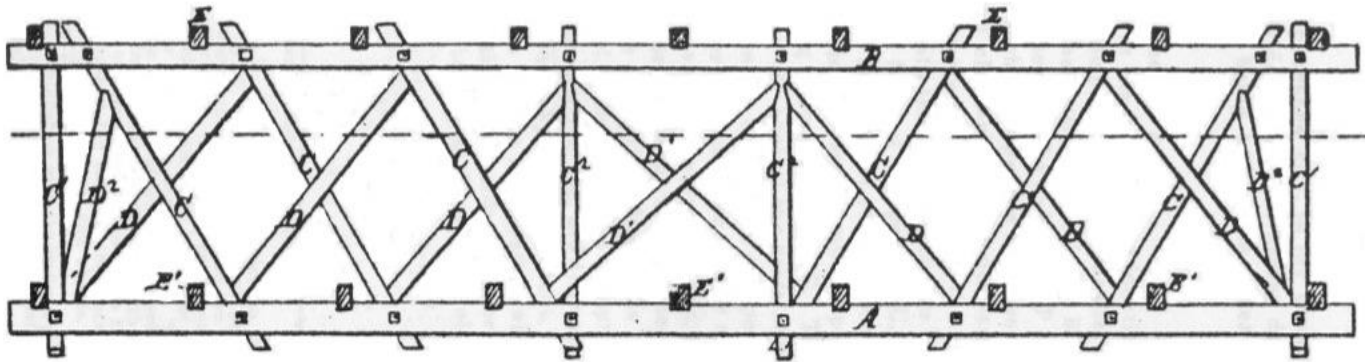
- Built 1874 by Smith Bridge Company
- Trusses are Smith Type
- Patented by Robert W. Smith of Tipp City, Ohio
- First Patent July 1867 for the truss arrangement
- Second Patent 1869 for the portal bracing system and castings anchoring diagonal lateral braces



Otway Covered Bridge Design

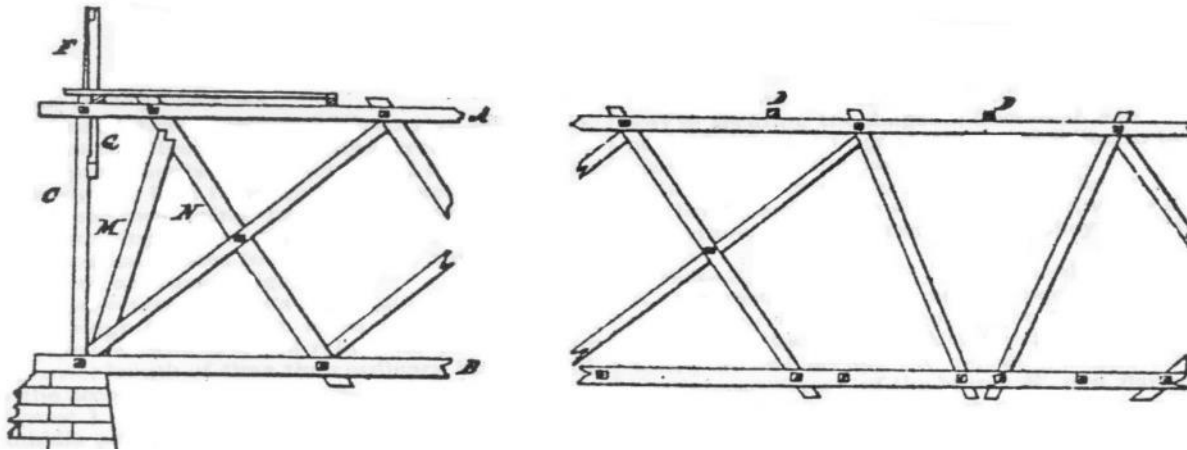


Otway Covered Bridge Design



"Type 1" Smith Truss, from patent drawings of 1867

Otway Covered Bridge Design



" Type 2" Smith Truss, from patent drawings of 1869

Otway Covered Bridge Design

- Arches were added in 1896
- Metal diagonal tension rods added 1944 +/-



Otway Covered Bridge Design



Otway Covered Bridge Design



Otway Covered Bridge Design



Otway Covered Bridge Design



Otway Covered Bridge Design



Otway Covered Bridge Design



Otway Covered Bridge Design



Otway Covered Bridge Design



Otway Covered Bridge Construction



Otway Covered Bridge Construction



Otway Covered Bridge Construction

- After the steel bridge and walkway built, the siding was removed and contractor began to straighten the bridge and to Jack it up to get camber back in the bridge
- The lower Chord was out of alignment by nearly 6"
- Deck was sagging ~ 5 1/4"
- Straightened bridge using cables and come-a-longs and placed blocking under the lower chord and slowly began jacking the bridge
- Jacked up to +9" of camber (bridge would settle after making all repairs and new roof and siding. The bridge was jacked 14+ inches at the center

Otway Covered Bridge Construction



Otway Covered Bridge Construction



Otway Covered Bridge Construction

- Once bridge was straight and camber placed, began replacing and repairing members along the lower chords. This is where most of the deterioration of the bridge was located. Took right around 2 months for this work
- Originally planned to replace 7 lower chord members
- Total replaced 13. Other members were discovered when removing members scheduled for replacement. Once we could see in inside face of these members, they had to be replaced
- Additionally 3 upper chord members were replaced

Otway Covered Bridge Construction



Otway Covered Bridge Construction



Otway Covered Bridge Construction



Otway Covered Bridge Construction



Otway Covered Bridge Construction



Otway Covered Bridge Construction



Otway Covered Bridge Construction



Otway Covered Bridge Construction

- Overall total 29 members replaced – includes X braces, spacer blocks, fish plates arch pieces, 1 tension member, and the upper and lower chords
- Also discovered that the lower chord bolts that hold the 3 members together were failing. We had to replace nearly all of these bolts. Total of 132
- Another unique portion of this bridge is the tension rods. The contractor had a time with these!! Replaced 31 of these rods. Took nearly 3 weeks to install and tighten

Otway Covered Bridge Construction

- New roofing system and new timber support system underneath was part of the project
- New siding on the bridge is western red cedar taking about 2 ½ weeks to install
- No windows were installed
- 125 gallons of fire retardant was added – covered everything
- Safety LED Rope lighting was installed along the top chord to allow for indirect lighting of the bridge when it's dark out

Otway Covered Bridge Construction



Otway Covered Bridge Construction



Otway Covered Bridge Construction



Otway Covered Bridge Construction



Otway Covered Bridge Opening Day



August 30, 2014

Otway Covered Bridge Winter 2015



Otway Covered Bridge



Questions????