



QUALITY BRIDGE & FAB, INC.



PennDOT Messerall Bridge
Truss Restoration / Relocation

Tony Ghioldi

Introduction to QBF

- Tony Ghioldi
 - TonyGhioldi@qualitybridgeandfab.com
 - West Middlesex, PA 16159
 - AISC Certified Bridge Fabricator



Agenda

- Project Background
- History of Messerall Bridge
- Removal and Restoration
- Site Assembly / Installation
- Lessons Learned
- Questions

Project Information

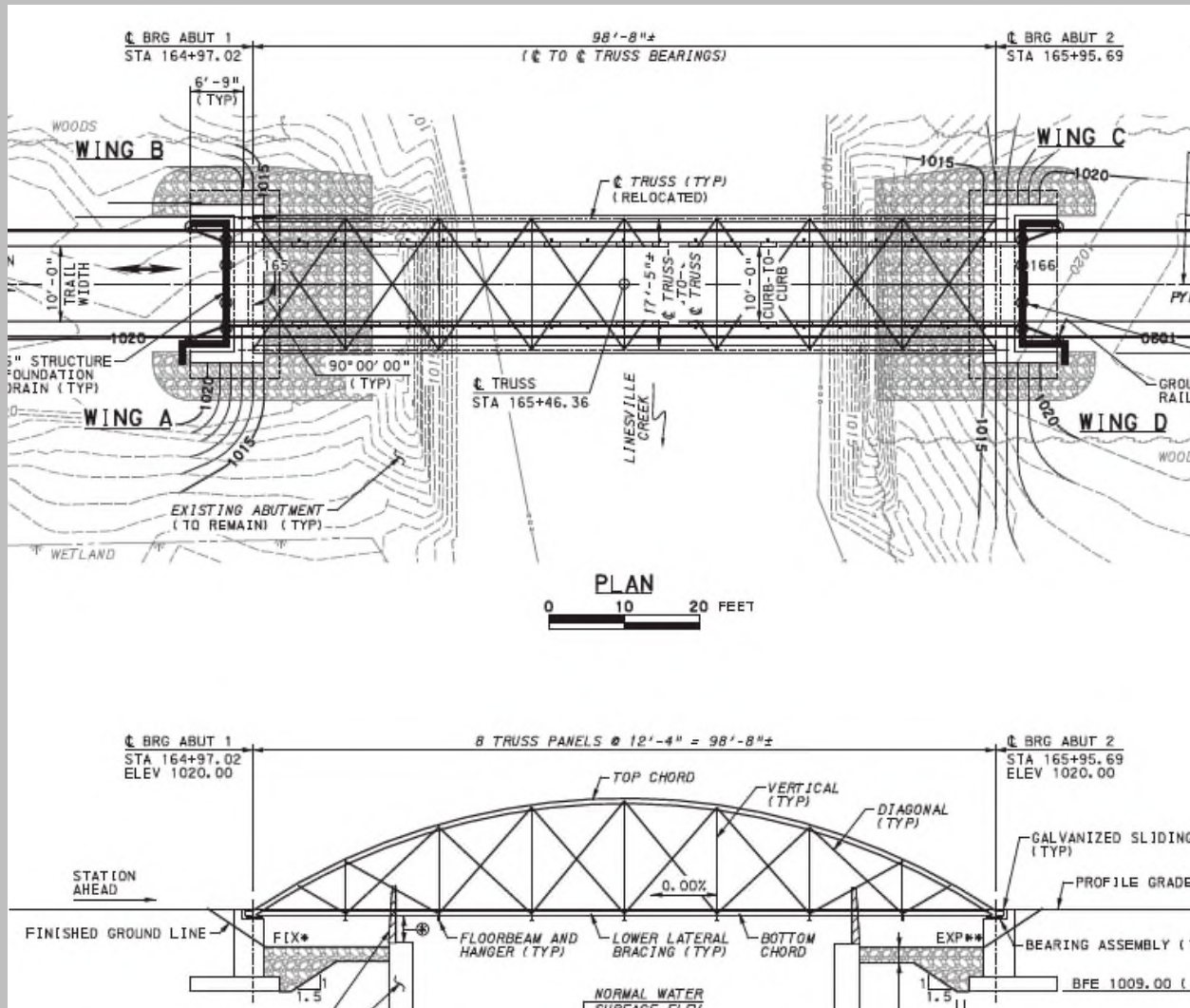
- PennDOT ECMS 111430
- Bid Date: 4/18/2021
- Pymatuning State Park Spillway Trail Extension w/ Bridge Relocation (Bike Path)
- Relocation / Restoration of 1876 Truss Bridge
 - From Oil Creek Twp, PA to Linesville, PA (50 Miles)
- Project Cost \$2,289,000
- Final Completion September 2022

Project Scope

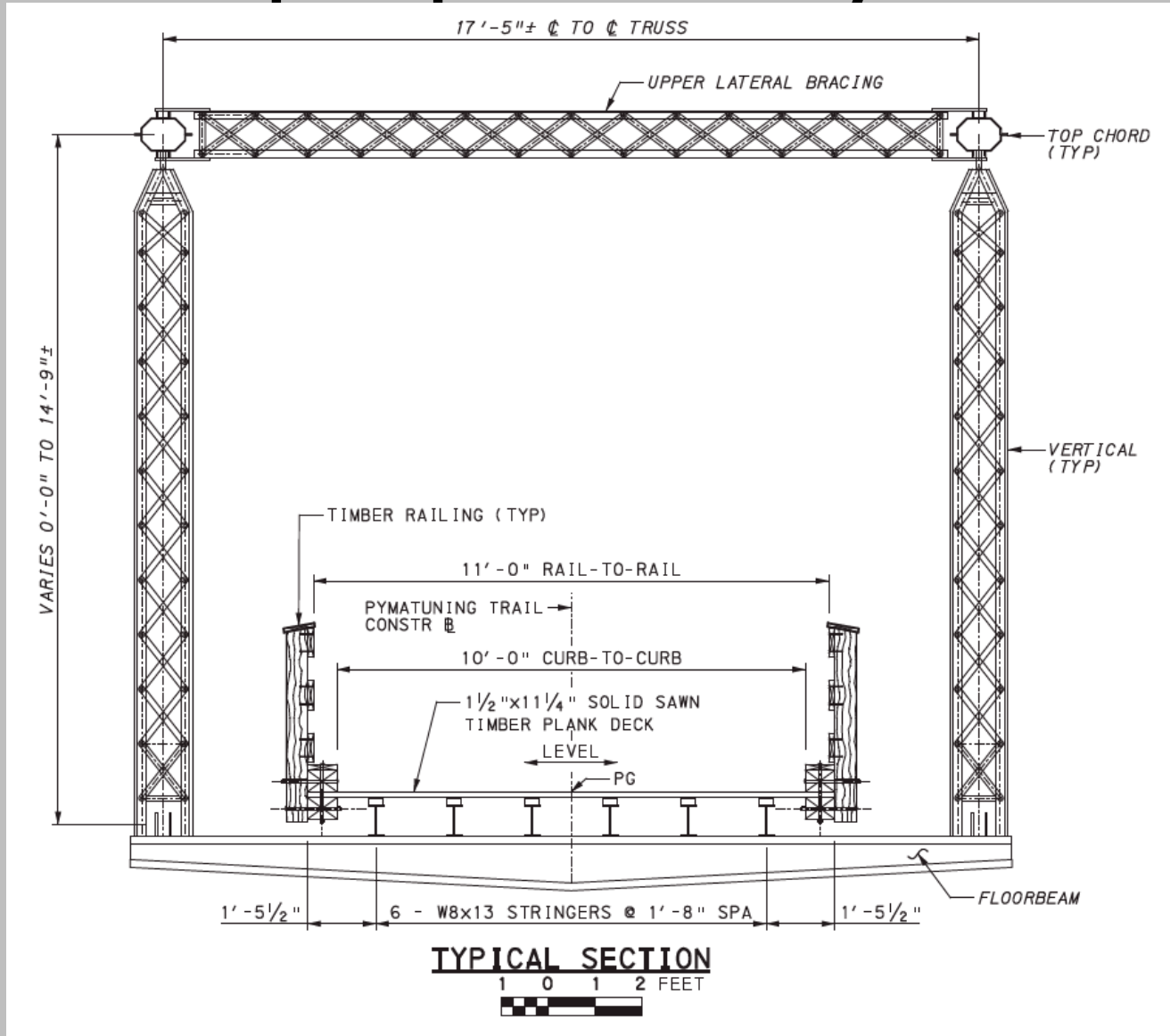
- Rehabilitate Structural Components as Indicated
- New Stringer / Diaphragms to Support Trail
- New Fixed / Expansion Bearings
- Unforeseen Repairs
- All New Steel Grade 50
- 3 Coat Paint System



Repurposed Layout



Repurposed Layout



Truss History

- Built in 1876 by Wrought Iron Bridge Company (146 Year Old Bridge)
- Bowstring Truss
- 103' Span / 17'-6" Truss Width
- Installed in Oil Creek Township, PA
- Owned / Maintained by Crawford County, PA until bridge closed in 1987



Truss History



Photo Courtesy of Library of Congress, Prints & Photographs Division

Site Conditions 4/2021



Site Conditions 4/2021



Site Conditions 4/2021



Site Conditions 4/2021



Site Conditions 4/2021

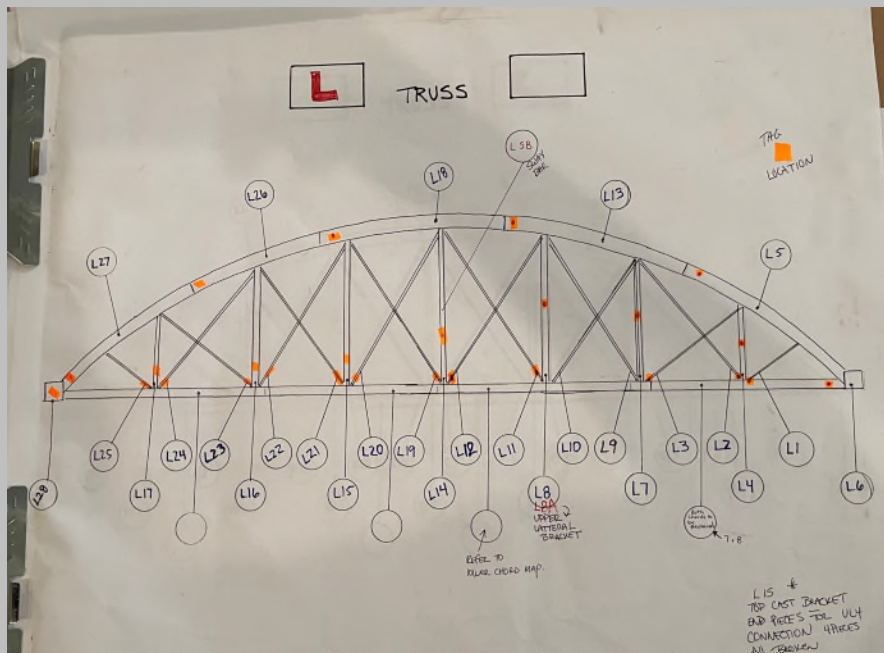


Site Conditions 4/2021



Removal / Restoration

- Bridge Removed from Oil Creek Township
Disassembled on site by Blacksmith / Contractor
- Tagging and Layout of each part



Removal / Restoration

- Entire Structure was sandblasted
- Shipped to Lockhart Ironworks (Logan, OH)



Removal / Restoration

- Initial Inspection Meeting:
 - PennDOT
 - McCormick Taylor (Design Engineer)
 - Horizon Construction (Prime Contractor)
 - Quality Bridge & Fab (Steel Fabricator)
 - Lockhart Ironworks (Blacksmith)
- Reviewed Restoration Locations per plan
- Complete Review of all parts

Removal / Restoration



Removal / Restoration



Removal / Restoration



Removal / Restoration



Removal / Restoration



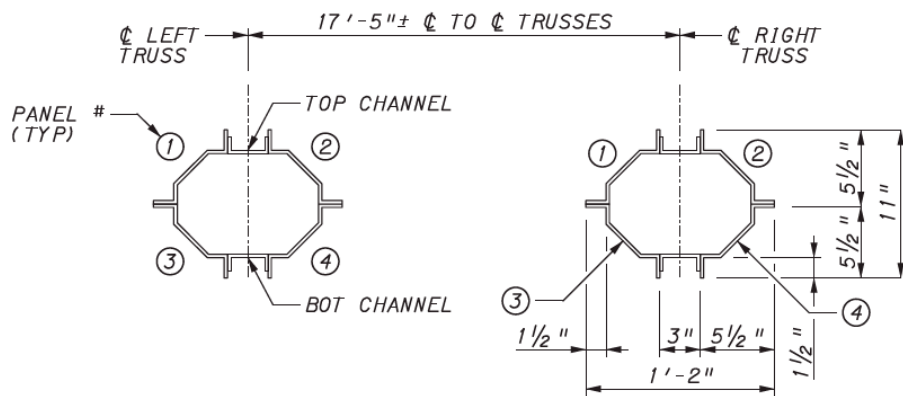
Removal / Restoration



Removal / Restoration

- Shop Detail Drawings
- R&D for Hot Rolled Shape Truss Chord
- Drawing Approval
- Fabrication

Box Section Components



NOTES: ALL PANELS MADE OF BENT 1/4" THICK PLATE.
 ALL DIMSNEIONS ±.
 FIELD VERIFY ALL DIMENSIONS PRIOR TO SHOP DRAWING
 SUBMISSION.

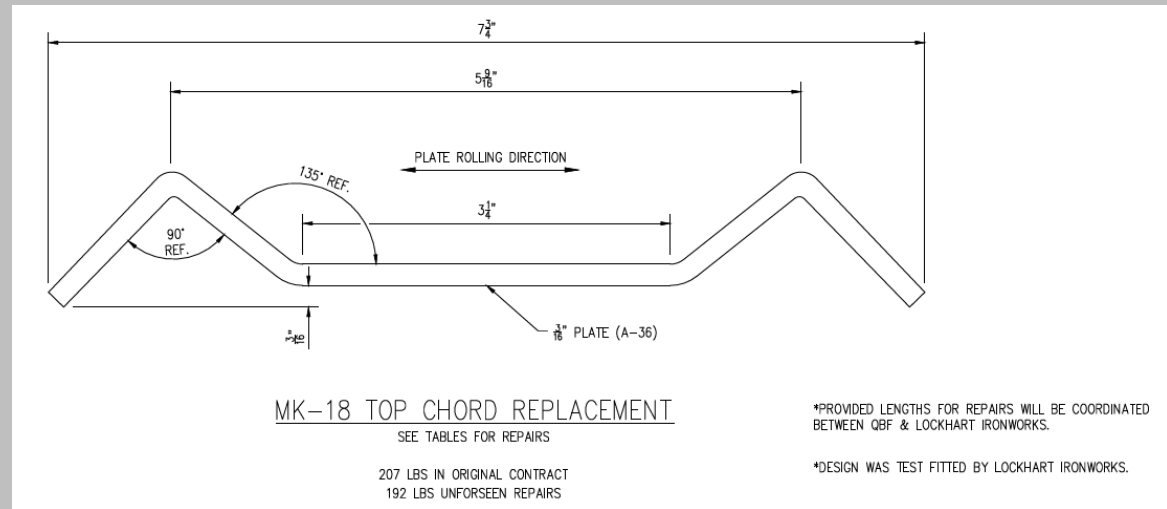
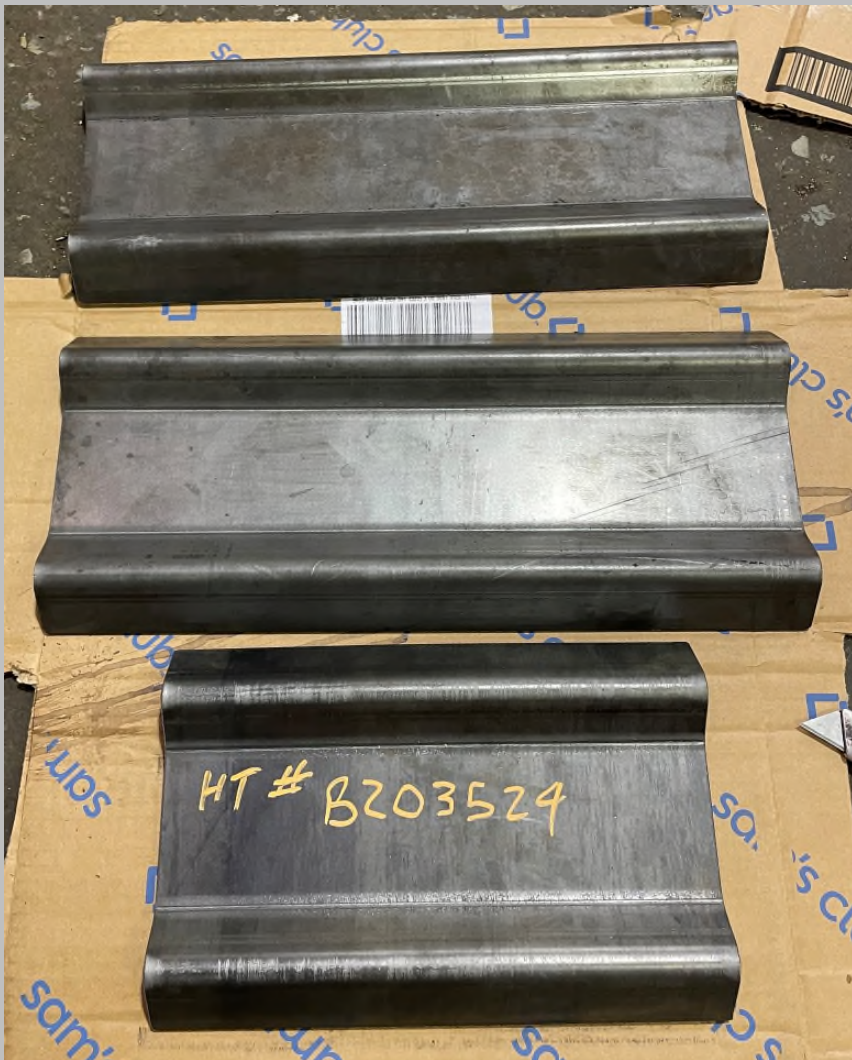
TRUSS TOP CHORD - TYPICAL SECTION



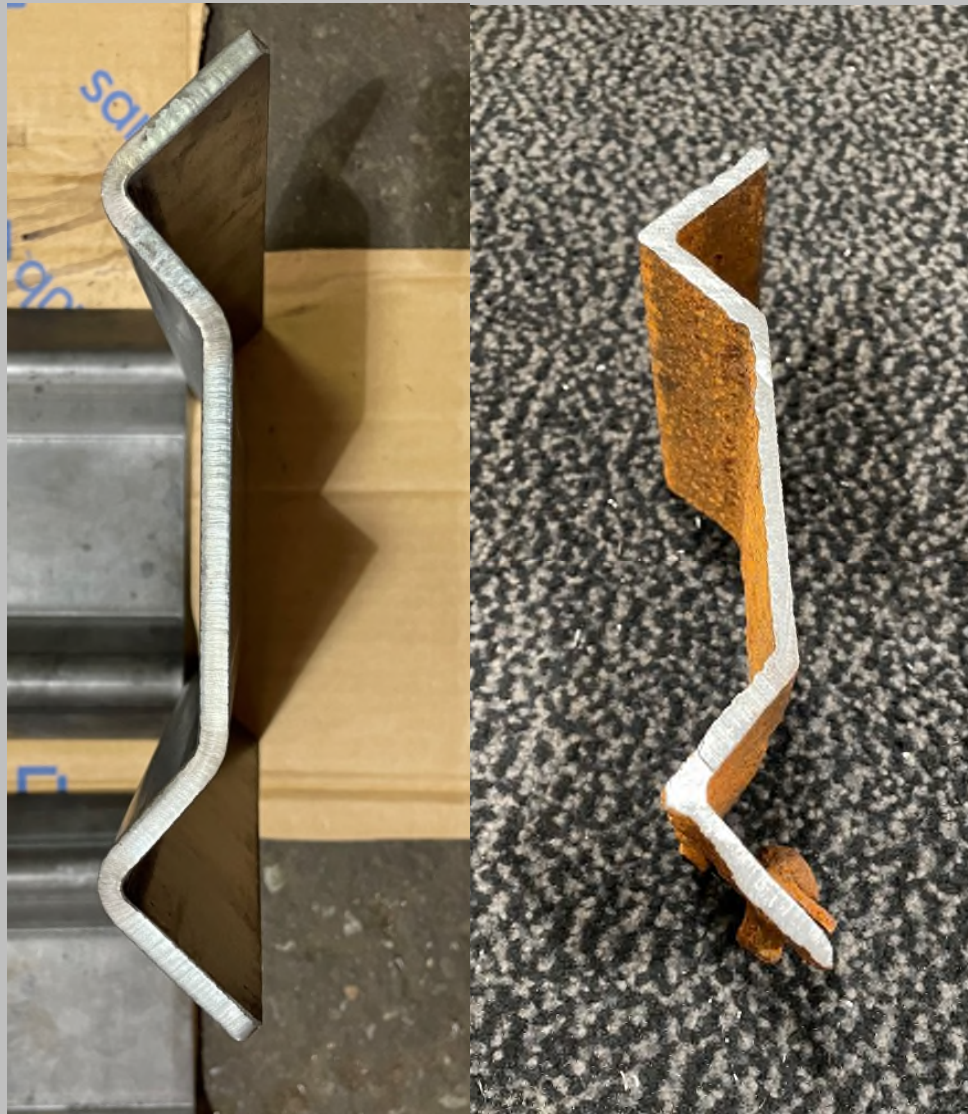
Box Section Components



Box Section Components



New Chord Section Components



Hanger Components



Site Assembly / Installation

- Shop Painted New and Existing Components
- All Shipped to Site for re-assembly
- Approximately 6,000 Rivets on Bridge
 - 2,500 +/- Replaced during Restoration
 - 150 +/- Field Installed
- Approximately 75% of Original Components Salvaged

Site Assembly / Installation



Site Assembly / Installation



Site Assembly / Installation



Installation (9/13/2022)



Installation (9/13/2022)



Completed Project



Completed Project



Completed Project



Completed Project



Completed Project



Completed Project



Completed Project



Lessons Learned

- Open Dialog from Project Team
- Hands On Team
- Fabricator & Blacksmith
 - Communication / Coordination
- Budget (Financial & Schedule) for the unexpected

Questions





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