

Winnetoon Southwest

Narrative Description of Structure Number C005401905P/NEHBS No. KX00-358



A photo taken in the 90s, looking west at structure.

Background

The Knox County Highway Department is replacing historic bridge, Structure Number C005401905P, which is eligible for the National Register of Historic Places. Due to the bridge's historic significance and the need for a Section 404 of the Clean Water Act permit from the U.S. Army Corps of Engineers (USACE), the project was reviewed under Section 106 of National Historic Preservation Act. Removal and replacement of the Bridge was determined by USACE, in consultation with the Nebraska State Historic Preservation Office (SHPO) to be an Adverse Effect to Historic Properties.

This webpage is one of three actions that the County, USACE, and SHPO agreed would resolve the adverse effect. This webpage will be available to the public for one-year after replacement of the bridge is completed. Photographs and scaled engineering drawings of the bridge were also completed as means to resolve the adverse effect and are on file with the County and SHPO and made part of the Nebraska State Archives.

Where was this Bridge and Why was it Significant?

Structure Number C005401905P was a World War II or post-World War II U.S. Army Surplus portable, prefabricated modular Warren deck steel truss bridge that was constructed circa 1946 and modified in 1965 (Mead and Hunt 2007: 15-6, 32, 35 and Appendix C). Bridge C005401905P crosses an unnamed tributary to Verdigre Creek as part of 520 Avenue approximately at latitude 42.50459, longitude -98.12347, in Section 10, Township 29 North, Range 7 West in Knox County, NE.

Due to increased size and weight of modern agricultural equipment and high expense/inability to rehabilitate the bridge to meet modern transportation needs, the bridge has been replaced with a triple 12-foot by 12-foot by 41-foot concrete box culvert.

The Bridge was significant under Criterion A of the National Register due to its association with important historical events or trends, in this case an economic solution to transportation and a solution to the bridge building problem (Mead and Hunt 2007: 32) in its origin as a U.S. Army portable structure and ultimate use in rural Nebraska (Mead and Hunt 2007: Appendix C). Mead and Hunt detail the Criterion A significance as:

One bridge (C005401905P, Knox County) is recommended eligible under Criterion A for its association with transportation. Bridge C005401905P is a Warren deck truss (1946/1965) that appears to be a post-World War II, prefabricated modular bridge, similar in concept and function to the well-known Bailey bridge, a military prefab bridge that continues in use today. Believed to be a military-surplus portable structure, Bridge C005401905P provided an economic solution to Knox County's transportation and bridge-building program immediately following World War II.

The Bridge was also significant under Criterion C of the National Register due to its engineering significance as the only prefabricated modular truss bridge identified in Nebraska and the Warren Deck bridge style is uncommon in the United States (2007:16). Per Mead and Hunt (2007:15-16):

Prefabricated modular designs were developed largely in the 1930s for temporary crossings, usually for military use. The most well-known example is the Bailey Bridge, patented in 1934 by Sir Donald Bailey, a British military engineer. Variations of the Bailey Bridge continue to be used today, as are other types of prefabricated trusses, some of which were developed for civilian use.

The modular truss bridge (C005401905P, Knox County) was selected for field survey under Criterion C because it is an uncommon type and is recommended eligible for the National Register under Criterion C. Bridge C005401905P is the only prefabricated modular truss identified in Nebraska. It is not a Bailey Bridge, although it is similar in concept and function. It retains integrity of materials, design, and workmanship. This bridge appears to be a World War II or post-war, prefabricated modular bridge, designed for easy assembly, disassembly, and relocation. It can be utilized in different span lengths, depending on the number of modules employed. The modules, which are manufactured as truss-end units (with one sloped chord) or as center-span units (parallel chords), are joined together with large cotter-pin connectors. The size and connection of module members allow the truss to be erected in either a deck or pony truss arrangement, thus adding to the flexibility of the design. The

Nebraska example is installed in a deck-truss arrangement, making it particularly unusual because deck trusses of any type are rare both in Nebraska and nationally. Following an informal national search among bridge historians and preservationists, similar prefab modular examples of this bridge were identified in Arkansas and Texas. The two Arkansas examples are listed in the National Register, but none of the examples have documented the original fabricator, manufacturer, designer, or date of current installation.

The Warren Deck bridge style is a very uncommon type of bridge in the United States and C005401905P was the only Warren Deck bridge style bridge identified in the State of Nebraska (2007:16). Bailey Bridges are similar to Warren Deck bridges in both concept and function, and a much more common bridge style.

C005401905P “... appears to be a World War II or post-war, prefabricated modular bridge, designed for easy assembly, disassembly, and relocation. It can be utilized in different span lengths, depending on the number of modules employed. The modules, which are manufactured as truss-end units (with one sloped chord) or as center-span units (parallel chords), are joined together with large cotter-pin connectors. The size and connection of module members allow the truss to be erected in either a deck or pony truss arrangement, thus adding to the flexibility of the design. The Nebraska example is installed in a deck-truss arrangement, making it particularly unusual because deck trusses of any type are rare both in Nebraska and nationally. Following an informal national search among bridge historians and preservationists, similar prefab modular examples of this bridge were identified in Arkansas and Texas. The two Arkansas examples are listed in the National Register, but none of the examples have documented the original fabricator, manufacturer, designer, or date of current installation.



A photo taken in the 90s, looking northwest at structure.



A photo taken in the 90s, looking northwest at deck truss.



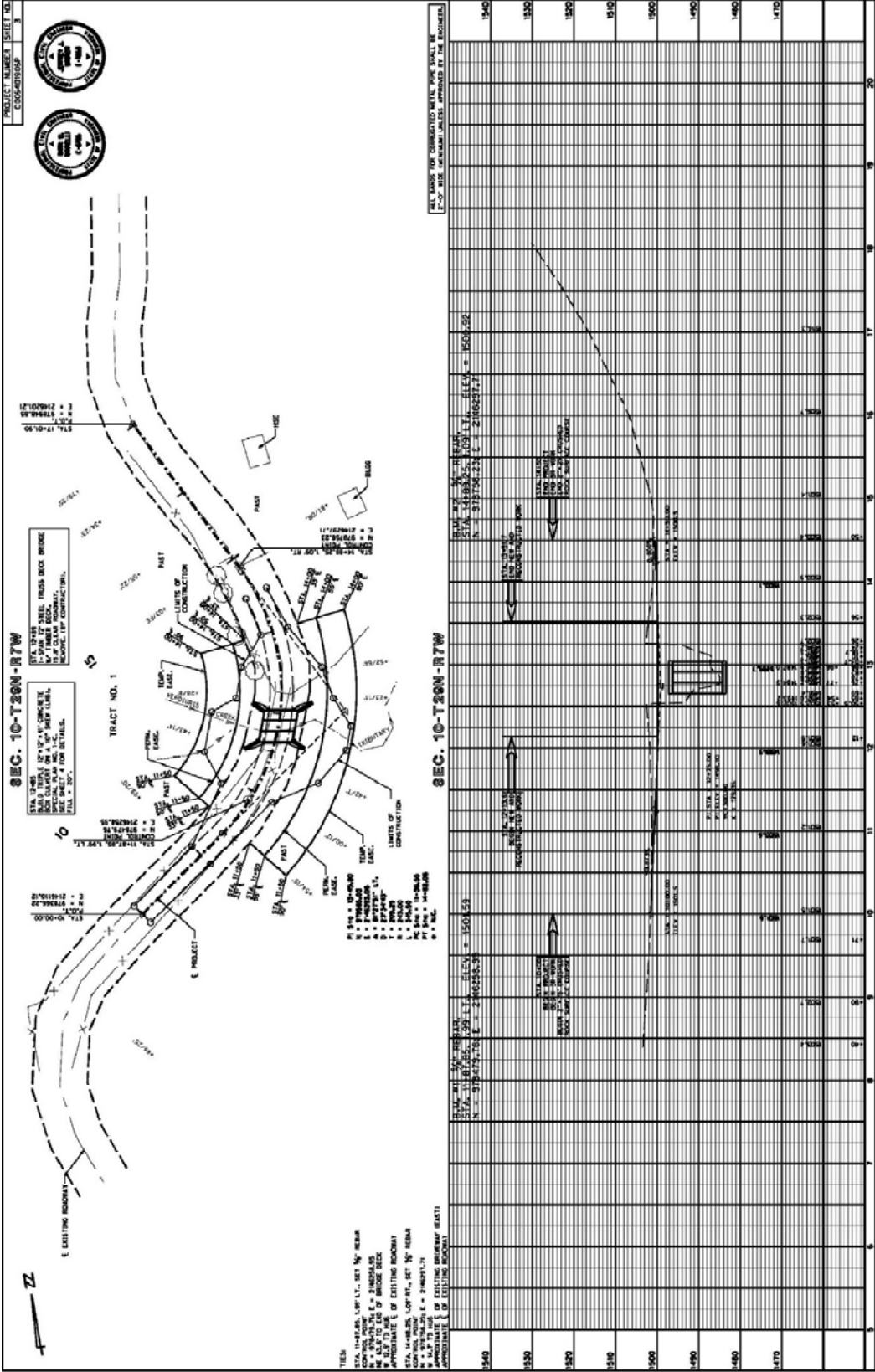
Present day photo, looking east at structure



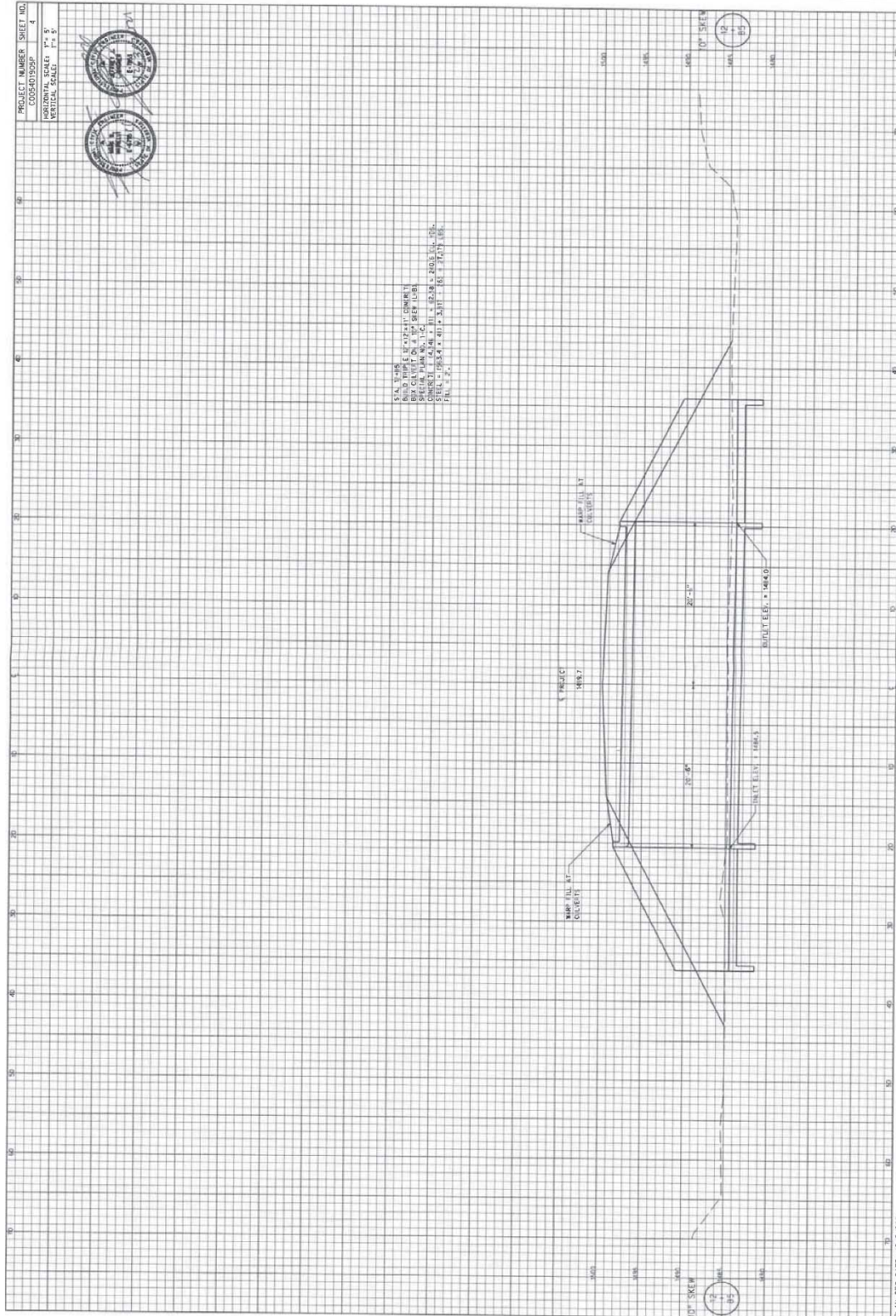
Present day photo, looking northeast at deck truss.



Present day photo, looking southeast at bridge.



Plan set of replacement box culvert.



Plan set of box culvert cross section.

References Cites

Mead and Hunt

2007 National Register Evaluation of Nebraska Bridges, 1947 to 1965 (include the reassessment of select pre-1947 bridges). Report prepared for Nebraska Department of Roads (now the Nebraska Department of Transportation). May. Accessed on 1 November 2022 at:

<https://dot.nebraska.gov/media/3942/historicbridgereportfinal.pdf>

Additional Info about Historic Bridges in Nebraska can be found:

<https://history.nebraska.gov/>

<https://dot.nebraska.gov/projects/environment/preservation/>

<https://www.fhwa.dot.gov/nediv/bridges/>