



Bridge Condition Survey



Inspection Date: 21 May 2003
District: San Angelo
County: Tom Green
Highway: Irving Street
Facility Name: Lone Wolf Bridge
Structure Number: B00315-031
Load Rating: See load rating report dated 7/2/03
Sufficiency Rating: 22 according to 10/17/02 NBI
Proposed Work: Condition survey and pedestrian rating

Structure Description: The structure is composed of one Pratt through main truss span and fourteen Tee beam approach spans. The truss has a 7.5" concrete deck with a 3" asphalt overlay and is supported by steel stringers, floor beams and two masonry pier walls. The truss has 8 panels for a total truss length of 151'. The superstructure of the 14 approach spans are concrete Tee beams with 7.5" concrete deck and 1.5" asphalt overlay, which are supported by concrete columns and concrete caps. The clear roadway for the entire structure is 19'. The structure is on a 0-degree skew. All rail is non-standard. The bridge was built approximately in 1922.

Survey Observations

Foundations: The concrete columns and caps on the approach spans have spalled concrete exposing the reinforcement. The reinforcement did not have the required concrete cover causing the pop outs and spalling. The exposed steel has approximately 10-20% section loss. The masonry pier walls are in good condition. No settlement was noted.

Concrete Tee beams: The exterior beams are in poor condition with severe spalling, delaminations, numerous stirrups exposed, and unsound concrete, which is a direct result of insufficient concrete cover. The exposed reinforcement has approximately 30% section loss.

Truss Floor beams: No structural distress was noted. Minor corrosion was noted.

Truss Stringers: No structural distress was noted. Minor corrosion was noted.

Truss: The truss is in satisfactory condition with minor problems such as: corrosion, section loss, pect rust, and debris built up as illustrated in the attached pictures. The majority of the paint system is in fair condition with isolated areas with mill scale, initial states of corrosion and minor pitting.

Deck: The bottom surface of the deck is in good condition. The top surface is difficult to evaluate due to the asphalt overlay. The concrete rail has concrete spalling due to insufficient concrete cover and impact damage. The channel rail on the truss has some minor impact damage. Several panels on the sidewalk rail are missing posing safety concerns. The rail is non-standard.

Recommendations: This structure is a good candidate for a pedestrian bridge in its present location, when repaired as listed below. Two repair methods are recommended for the approach spans; however a cost analysis will have to be performed to determine the most cost effective method. If it is desired to keep the sidewalk, a new pedestrian rail and steel grid decking is required as they are in poor condition.

Truss:

1. Install new rail that meets current standards for pedestrian use. Contact BRG for assistance with the new rail selection.
2. Remove the sidewalk from the truss.
3. Repair the spalled concrete at the sidewalk deck connection (refer to photos) according to Item 429, "Concrete Structure Repair".
4. Power wash the truss with a 5000 psi pressure washer. A zero degree nozzle is required.
5. Remove debris, mills scale, corrosion, and paint rust from the bearing areas, and floor beam/ vertical connections using an approved surface preparation method.
6. Paint the truss with an over coating system. Contact BRG for assistance in selecting a system.
7. Grease all bearings.

Approach spans-Method 1:

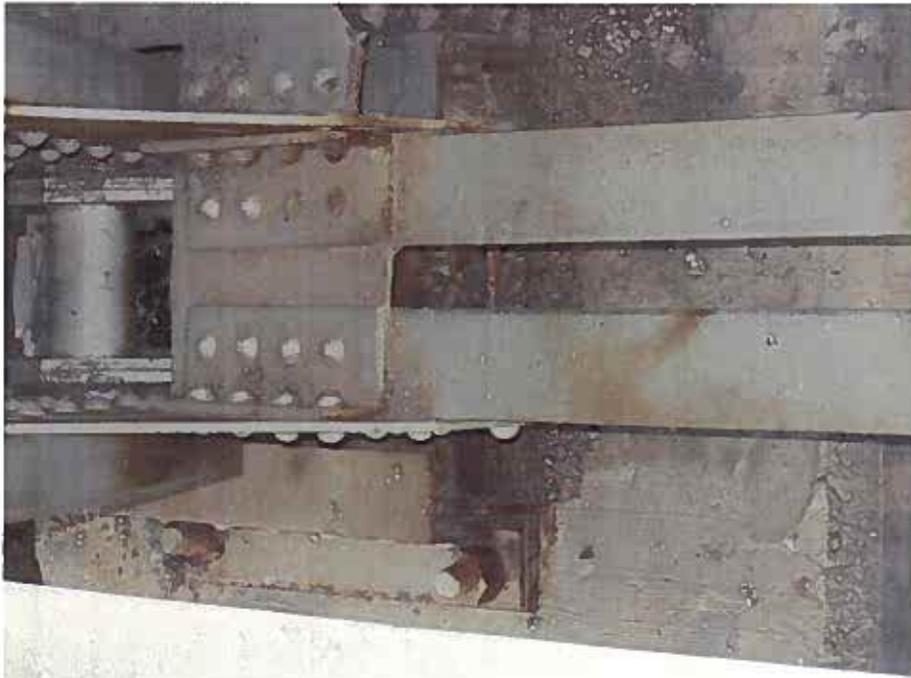
1. The exterior beams, curb, and concrete rail are in very poor condition with significant amounts of exposed reinforcement, corrosion, and concrete spalling. Therefore, I recommend removing the exterior beams, curb, concrete rail and the sidewalk, which is no longer required. This will reduce the pedestrian roadway to the three interior beams.
2. Repair the spalled concrete on the columns, bents and abutments according to Item 429, "Concrete Structure Repairs".
3. Install new pedestrian rail that meets current standards. Contact BRG for assistance with the new rail selection.
4. Clean all joints and reseal as required.
5. Treat the remaining beams, exposed bents and abutments with a penetrating concrete surface treatment such as silane.

Approach spans-Method 2:

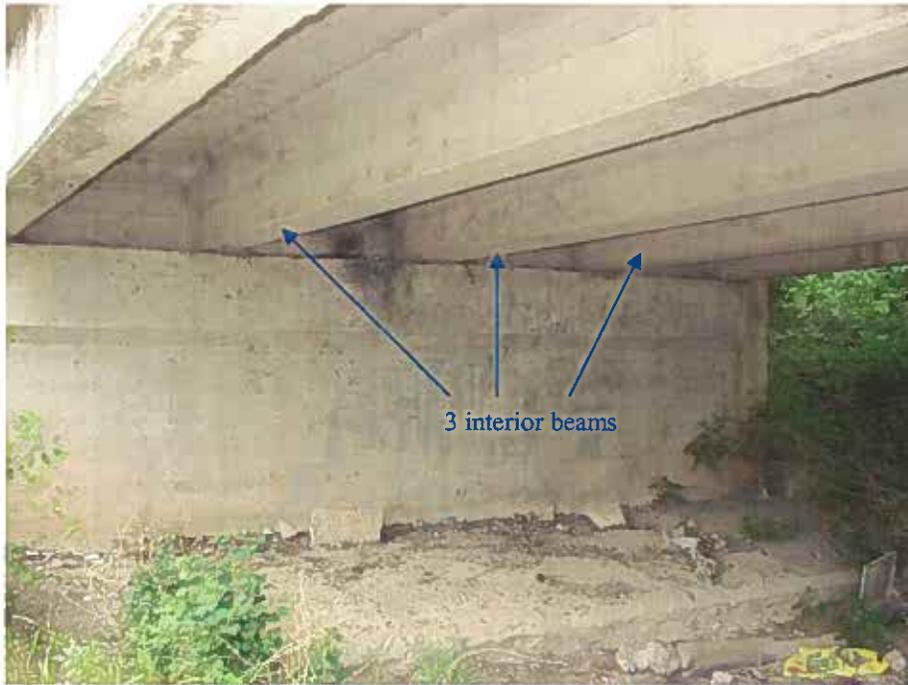
1. Remove the sidewalk.
2. Repair exterior beams, concrete curb, columns, bents and abutments according to Item 429, "Concrete Structure Repairs".
3. Install new pedestrian rail that meets current standards. Contact BRG for assistance with the new rail selection.
4. Clean all joints and reseal as required.
5. Treat the remaining beams, exposed bents and abutments with a penetrating concrete surface treatment such as silane.



Minor impact damage

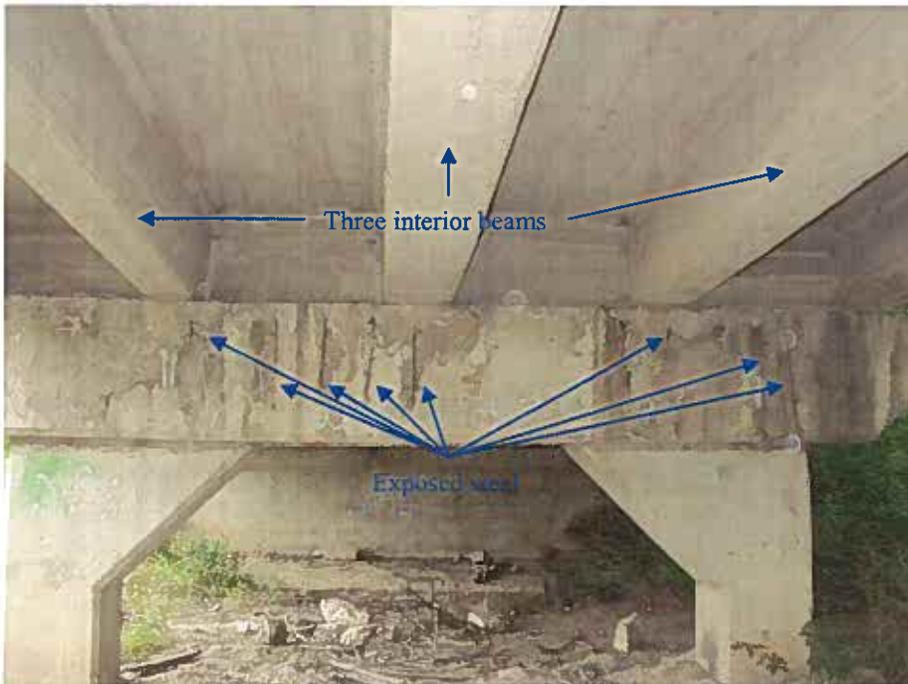


**Bearing at the end post connection
Debris and pack rust is typical at these four bearings**

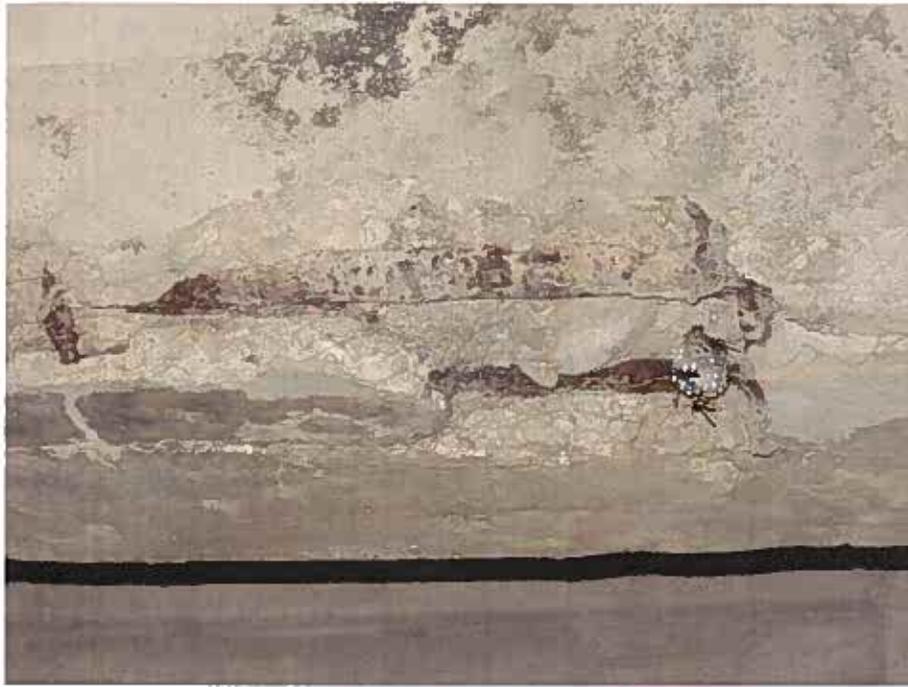


East Abutment

**The abutments are in good condition
The three interior beams are also in good condition
The exterior beams are in poor condition**



**Typical concrete spalling and exposed reinforcement on the concrete caps
The spalling is attributed to the reinforcement steel having insufficient cover
There are 8 exposed stirrups**



**East side approach spans
Exterior beam @ South side
Typical spalled concrete due to insufficient concrete cover
Approximately 30% section loss**



**East side approach spans
Approximately 10' of exposed reinforcement
Typical of exterior beams**



Exterior beam
Spalling is also occurring at the bearing of the exterior beams



Exterior beam
Spalling of the bent cap
Note the lack of concrete cover on the reinforcement on the beam



The sidewalk requires a lot of repairs



**The steel plates on top of the steel grid are not securely tight
The steel plate poses a safety concern**