MAJOR BRIDGE INSPECTION REPORT
BRIDGE L0623 (FENTON)
I-44 WB, ST. LOUIS COUNTY
OVER THE MERAMEC RIVER

An inspection of Bridge L0623 was performed on July 5th, 2011, by bridge inspection crew 7NI4, under the direction of Bridge Maintenance Supervisor Kevin Raithel and assisted by Bridge Inspection Engineer Tom Allen. This detailed inspection serves as the general, in-depth and special pin plate inspection. An Aspen Aerial 40 Under Bridge Inspection Unit was used to access the underside and profile sides.

The structure was built in 1954 with a 28' roadway. It was widened to the north in 1972 to a 58' roadway. The structure length is 1,103 feet long. The facility carries 5 lanes of westbound I-44 traffic, and is situated just west of I-270. The load posting on the bridge is 65 tons. The ADT is 59,222.

The condition ratings (items 58, 59 & 60) for the bridge are 6-5-5. In 2009, the substructure was lowered from a '5' to a '4', due to major disintegration at bent 3, precautionary blocking was installed at the bearing seat on the south end at girder 9. This was identified as a FAR with this inspection, it was repaired on 7/21/11 and the substructure rating was raised from '4' to '5'.

The most recent underwater inspection was last performed on July 21, 2010. This inspection consisted of wading and probing to check for scour, nothing was found.

Item 58 - Deck Rating: 6-Satisfactory Condition –map cracking with efflorescence and patches in the overhang

The deck consists of cast in place reinforced concrete. The asphalt overlay conceals the deck condition. Past projects include deck repair and a wearing surface in 1997, deck repair in 2004, and the current wearing surface was placed in 2006. Throughout the overhang areas, there is moderate random cracking with efflorescence and few patches.

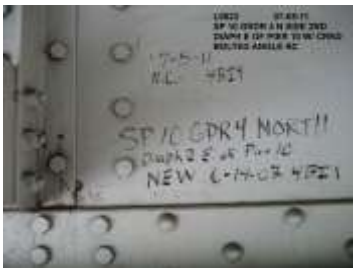
Item 59- Superstructure Rating: 5 - Fair Condition- pack rust bulging hanger pin plates and crack at hanger pin plate

The superstructure of the bridge consists of 15 spans with individual span lengths arranged as follows: simple span 30" WF beams (42'-41'), continuous span 36" WF beams (61'-83'-61'-61'-83'-61'), simple span 54" PL girder (62'), continuous span 72" PL girders (132'-132'-132'), simple span 54" PL girder (62'), simple span 33" WF beams (46'- 46'). There are three plate girder lines and four wide flange beam lines that were added in 1972 for widening the bridge to the North. The original construction had four plate girder lines, with five wide flange lines. The bridge runs from west to east.

In February 2004, six locations of cracking were noted, in the web of the original girders. This cracking was observed where the diaphragms for the widened girders are bolted to the webs of the existing girders. Also at this 2004 inspection, a crack was observed in an older replaced diaphragm connection angle. These cracks were repaired in 2005.

During the June 2009 inspection, three cracks were documented, no change has occurred:

- (New in 6-19-07) Diaph conn angle Sp 10, G4
- (New in 6-09-09) Diaph conn angle (9") Sp 11, G5
- (New in 6-11-09) Hanger plate (1-1/4") Bt 13, G2



Hanger plates on all girders at bent 13 are bulging and rusting. Most of the plate bulging is less than 1", the maximum is 1 ¼". Plate thickness readings were taken, most readings

range from 0.460” to 0.609”. The thinnest reading is 0.357”, located at bent 13, girder 1, north exterior plate.

Item 60-Substructure Rating: 5 -Fair Condition, major deterioration of concrete units

The substructure units are in fair condition overall, with the exception of bent 3. The south end of the step cap is deteriorating under the exterior girder and blocking was installed under diaphragms two years ago. This inspection deemed bent 3 to be a “Follow-up Action Required”, in need of immediate repair. The regional crew completed repairs on July 21st, 2011.

Heavy cracking and leaching is common among most of the bents. Previous concrete repairs are map cracked and are delaminating. Extensive repairs of the substructure are needed in the near future.

Rockers are tipped and need to be reset at bents 6 & 14.

Bank and Channel Information
Item 61-Channel Condition Rating: 7, Minor Damage – Some minor damage to bank
Item 113- Overall Scour Condition Rating: 8- Stable for calculated
Item 71- Waterway Adequacy Rating: Deck Above Flood Elevations

Wearing Surface Condition: Fair

In 2006, a 1-1/2" Ultrathin Bonded Asphalt Wearing Surface overlay was applied. There are open cracks mainly over the joints.

Expansion Devices:

Location	Type	Condition	Comments
Bt 2	Closed	Fair	Failing, Leaking- Needs 'Hot Poured'
Bt 3	Closed	Fair	Failing, Leaking- Needs 'Hot Poured'
Bt 6	Closed	Poor	Failing Strip Seal, debonding, steel nosing needs repaired (1 5/8" gap @ 85 degrees)
Bt 9	Closed	Fair	Strip seal (1 ½" gap @ 85 degrees)
Bt 10	Closed	Fair	Failing(about 50% of asphalt missing), Leaking- Needs 'Hot Poured'

Bt 13	Closed	Fair	Failing(about 50% of asphalt missing),, Leaking- Needs 'Hot Poured'
Bt 14	Closed	Poor	Silicone 90% failing- Needs replaced
Bt 15	Closed	Fair	Failing, Leaking- Needs 'Hot Poured'

Paint Condition Good. Rust Code- 6(1.0% 0f surface rusted)

Existing paint systems includes System S (Calcium Sulfonate over lead), Gray, painted in 2006, good condition. The girder ends under the expansion devices are System G (Inorganic Zinc), Gray, painted in 2006, good condition. There is general rust staining at hanger pin locations and rusting at diaphragms and bearings under joints.

Programming:

- Future needs – Total surface hydrodemolition of deck, replacement of expansion devices, large scale repairs / replacement to various substructure units.
- There is a project to repair substructure units in the 'scoping' section of the draft 2012-2016 STIP.

Past Rehabilitation / Painting Work:

- Project No. J6I1919, March 2006- Calcium Sulfonate overcoat / System G at joints and seal deck outlets
- Project No. J6I1919, January 2006- 1.5" UBAWS
- Project No. J6I1853, December 2004- deck repair
- Project No. L06233, October 1997 deck repair, wearing surface (EPO), substructure repairs, fatigue crack repairs
- Project No. L06232, December 1983 expansion devices
- Project No. L0623R, February 1972- widen bridge

Maintenance Work:

- Clean & seal pin connector plate areas with "anti rust" gel
- Repair expansion joints, bents 6 & 14
- Hot Pour/Seal missing asphalt overlay at expansion joints (pave mend), bents 2, 3, 10, 13 & 15
- Cut trees/brush, spray vines
- Clean, paint, reset rockers at bents 6 & 14
- Remove drift at bent 12