Parsons Brinckerhoff
2333 Alumni Drive, Suite 330
Lexington, Kentucky 40517
Phone: 859.272.5400
www.pbworld.com

December 14, 2010

Mr. Joshua Rogers, PE, LSIT
PM for Ohio & Big Sandy Bridge Inspections
Kentucky Transportation Cabinet
Division of Maintenance
200 Mero Street, 3rd Floor
Frankfort, KY 40622

Re: Statewide 2008-2009 Fracture Critical Inspection
(Contract Package 5)
Cairo Bridge (US 60 & US62) over the Ohio River
Bridge No. 004B00021N
Ballard County, Kentucky

Dear Mr. Rogers,

Parsons Brinckerhoff (PB) has completed the Fracture Critical Inspection of the Cairo Bridge (US 60/62) over the Ohio River in Ballard County, Kentucky, Bridge No. 004B00021N. The inspection included the main through truss spans, the deck truss spans on the Kentucky Approach and the two-girder spans in the Kentucky and Illinois approaches. Inspection activities began on November 15, 2010 and were completed on November 20, 2010. PB completed the field inspection in accordance with the Scope of Work for the referenced project.

INSPECTION INTRODUCTION

The main through truss and the Kentucky and Illinois approaches were inspected using a 80' and 120' manlifts along with bridge climbing techniques. Traffic was maintained utilizing flaggers and a single lane closure in accordance with the Manual for Uniform Traffic Control Devices (MUTCD) from 7am to 3:30pm. The flooring system supporting the lower chord members were accessed using bridge climbing techniques. A manned safety boat was provided while inspectors worked over the Ohio River. No lane closures were used during the inspection of the Kentucky and Illinois Approaches. Traffic flaggers, equipment and lane closures were provided by Intech Contracting, LLC of Lexington, Kentucky.

DESCRIPTION OF INSPECTION

All spans of each structure were inspected in accordance with the Scope of Work and included:

- Arms-length inspection of all fracture critical members & fatigue sensitive details including category E, E' and F details in truss members, girders, and floor beams.
- Arms-length inspection of significant problems discovered during prior inspections.
- Arms-length inspection of floorbeam support connections.
- Floor system elements under deck control and expansion joints observed from each end. If evidence of deterioration was observed, an arms-length inspection of those elements was performed.
- Arms-length inspection and soundings of connection pins.
- A walk over inspection of the deck.
- Arms-length inspection of bearing assemblies.
- Visual inspection of non-fracture critical truss members from each panel point.
- Inspection of all other elements at a distance deemed practical, without requiring climbing or specialized access equipment.
- Data gathering and condition reporting for both NBI and PONTIS element level inspection reporting.

SUMMARY OF FINDINGS

FHWA condition ratings characterize the general condition of the component being rated in aggregate. They do not describe localized or nominally occuring instances of deterioration. Correct assignment of a condition rating must consider both the severity of the deterioration and the frequency of occurance. If a deficiency reduces the capacity or serviceability of a component, the rating of the component should be reduced accordingly.

Item 58 - DECK

The overall condition rating for the DECK has been assigned an FHWA overall condition rating of **Good** with a corresponding numerical rating of **7**.

- *58.2 Wearing Surface* - Overall, the wearing surface was in good condition. The transverse tines were visible with only minor polishment in the wheel lines. Transverse and longitudinal cracking was observed in the overlay along the majority of the bridge and approach length. Several spalls typically adjacent to the expansion joints were observed. There is approximately a three (3) foot section near the center of bridge that appears to be a closure pour or deck retrofit extending the length of bridge.
- *58.3 Joints* - The strip seal and styrofoam backer rod with hot-poured sealant joints were in overall poor condition. The joints are typically filled with moderate to heavy debris and water ponding across the joint. There were signs of leakage at Piers I1, I2, I4, Pier K7, K8, K12, K16 and K20. The armored edge angles has missing sections and broken splice welds at several locations. Backer rods with hot-poured sealant are beginning to separate from the angle supports at a few locations possibly due to seasonal changes.
- *58.4 Drains* - The scuppers were in overall fair condition. The scuppers were observed to be typically partially to fully clogged with debris for the main truss spans and the Kentucky and Illinois approaches.
- *58.5 Expansion Devices* - The open finger tooth expansion devices are in satisfactory condition. There are no troughs located below the finger tooth expansion dam opening. This introduces leaking of salt-laden water runoff and debris collection accelerating the corrosion to the supporting superstructure below the joint opening. The supporting superstructure below the opening exhibits heavy pitting from previous section loss and deterioration. There is a slight vertical misalignment ranging up from 1/16” to 1” at PP15, PP27, PP44 and PP61. The upper and lower chord expansion pins appear to be in good condition with noticeable rotation and staining. There is 3/8” of loose pack rust within the splash zone between pin retainer and vertical gusset plates at PP61, East Truss.
- *58.6 Curb, Sidewalks, Medians* - The concrete curbs were in overall fair condition. The curbs exhibit vehicular collision damage, vertical and longitudinal cracks and spalling. Large concrete spalls have exposed rebar and electrical wiring and conduit. The armored plate cover for protecting the curb is missing at the finger tooth expansion dam at PP15. The guardrail post support blisters exhibit sizable vertical cracks and completely spalled sections exposing anchor bolts with heavy rust and corrosion. Inadequate concrete cover is the probable cause to excessive spalling and cracks. These deficiencies are consistent throughout the total bridge length.
- *58.7 Railings* - Some guardrail posts are in poor condition with cracked welds at lower post connections. Numerous guardrail post and railings have moderate size perforations with heavy rust and moisture on the downstream side.
- *58.8 Lighting &/or Utilities* - The navigational lighting units are in overall good condition. Several electrical box cover plates were open or missing with exposed electrical wiring becoming a snag hazard. There are several electrical junction boxes in the bridge curbing that are open and filled with heavy debris. Ladder to aviation lights on the upstream truss for Piers C and E have broken rungs. Ladder to expansion bearings for the deck truss is loose and not properly anchored to Pier F.

Item 59 - SUPERSTRUCTURE

Overall, the good condition for the SUPERSTRUCTURE has been assigned an FHWA condition rating of **Satisfactory** with a corresponding numerical rating of **6**.

- ***59.1 Stringers, Girders, Beams*** - Typically the stringers were in overall satisfactory condition. Active deterioration and 100% section loss along stringer flanges and expansion device connection brackets were observed. Several existing stringer cracks, noted in previous inspection reports, were observed at PP15 and PP61. These cracks appear to be in arrest, however, future activity is a good possibility. The upstream cantilevered girder has impact damage to stiffener angle in Span 24.
- ***59.2 Floorbeams*** - The floorbeams were observed to be in overall good condition. Minor pitting to the top flange of the floorbeams under the finger tooth expansion dam locations.
- ***59.3 Trusses - Main Members***

  Illinois Approach (Spans 1 to 6) - The main truss members of the deck truss spans were found to be in good condition with minimal localized paint failure and minor deterioration.

  Main Spans (Spans 7 to 11) - The main truss members of the main spans were found to be in overall satisfactory condition. Collision damage to the sway frame strut was noted at PP71 exhibiting paint scapes to bottom flange along with a slight buckle to the top flange. The lower chord has pack rust (up to 1/2") between side plate built-up members, typically worse on the downstream chord. The vertical gusset platet at the lower chord connection exhibits up to 1/2" pack rust while bending the gusset plate in splash zone area. The pins for both the upper and lower chord were visually inspected noting wear to side plates from thermal movements.

  Kentucky Approach (Spans 12 to 20) - The main truss members of the deck truss spans were found to be in good condition with minimal localized paint failure and minor deterioration. The top flange of the lower transverse strut is bent at Pier K6. The diagonal members of the deck truss exhibit random pack rust up to 1/2" between the main member and cover plate creating a wave pattern.
- ***59.3A Trusses - Bracing, Portals***

  Illinois Approach (Spans 1 to 6) - The bracing members were found to be in overall good condition.

  Main Spans (Spans 1 to 6) - The bracing members were found to be in overall good condition with the lower lateral gussets and lateral bracing members governing this rating. Previous section loss and pitting was observed at the ends of the lateral bracing connection to the lateral gusset.

  Kentucky Approach (Spans 12 to 20) - The bracing members were found to be in overall good condition with minimal localized paint failures and rust stains.
- ***59.4 Bearing Devices***

  Illinois Approach (Spans 1 to 6) - The bearings were found to be in satisfactory good condition. The fixed bearing deficiencies observed 1/8" to 1/2" pack rust between sole and masonry plates, missing anchor bolts and moderate surface rust.

  Main Spans (Spans 1 to 6) - The main span fixed and expansion bearings are in overall good condition. The bearings were observed to be functioning properly with moderate surface rust on bearings at Pier F.

  Kentucky Approach (Spans 12 to 20) - The bearings were found to be in overall good condition. The fixed expansion bearings deficiencies observed were 1/8" to 1/2" pack rust between sole and masonry plates, fretting from contact between bottom flange of girder and keeper angles and light surface rust.

Item 59a - PAINT

The overall condition rating for the PAINT has been assigned an FHWA overall condition rating of **GOOD** with a corresponding numerical rating of **8**.

The paint system exhibited areas of failing paint accompanied by active corrosion and rust pack on members primarily located within the splash zone. Failed areas were commonly observed on the main through truss members. Deficiencies observed on top surface of lateral gusset plates at inner strut to vertical members, vertical gussets, and top side of diagonal members.

Item 60 - SUBSTRUCTURE

The overall condition rating for the SUBSTRUCTURE has been assigned an FHWA overall condition rating of **GOOD** with a corresponding numerical rating of **7**.

- *60.1 Abutments, Wingwalls* - The abutments and wingwalls were observed to be in overall good condition. Noted deficiencies included cracking with heavy efflorescence and spalls with exposed reinforcement. Heavy debris and moisture was observed to the cap of each abutment. Heavy vegetation was observed to the wingwalls for each abutment.
- *60.2 Piers &/or Bents* - Overall, the piers were observed to be in satisfactory condition. Noted deficiencies include moderate cracking with heavy efflorescence and spalling to the main river pier caps and columns at Piers I3, I4, C, E, K3, K14, K15, K18 K19 and K20. The top mat at Pier D has begun to deteriorate and exhibit signs of crumbled concrete near the main bearing. Piers I1, I3, I4, K3, K5 and K7 approach piers caps exhibit patch retrofits which are starting to debond. Several approach piers observed minor to moderate debris and moisture runoff under damaged expansion joints.

CONCLUSIONS AND RECOMMENDATIONS

The Cairo Bridge (US 60 & US 62) over the Ohio River was found to be in overall Satisfactory Condition, with the superstructure governing this rating. This rating was primarily due to: (1) major cracks to main span stringer ends; (2) the condition of several damaged and failing expansion joints; (3) heavy section loss and perforations to superstructure supporting expansion joint. PB recommends the following maintenance and repairs be made in order to maintain and extend the useful service life of the structure.

- Repair stringer cracks at expansion dam locations.
- Repair leaking joints, remove debris and damaged armored angles.
- Develop a means for water to drain properly away from superstructure below finger tooth dams.
- Repair bridge railing and post support blisters.
- Monitor Kentucky approach keeper angles for possible lateral movement.
- Repair ladder anchorage near East Truss of Pier F to access deck truss bearings.
- Repair broken ladder rungs at Piers C and E on upstream truss.
- Repair or missing rungs to ladder at U32-L32 and U66-L66 West Truss.
- Repair missing curb plates at expansion dam locations.
- Repair broken electrical conduit in bridge deck curbing.
- Replace electrical utility covers in bridge curbing.
- Clean and repair all deck drain scuppers.

Please advise if there are any concerns, questions or need for any additional information.

Sincerely,

PARSONS BRINCKERHOFF

Steve Slade, PE, PLS

Project Manager

Transporation Cabinet
Division of Operations

TC 71-118
Rev. 1/96

BRIDGE INSPECTION REPORT

Reviewed By:
Review Date:

Two Yr.		Substd.		Underwater		In-Depth		Fracture Critical	Y

Project No: **004B00021N** NBI Location: **1.4 MI WEST OF JCT US 51**

Local-ID: **BRIDGE OVER THE OHIO RIVER AT CAIRO, ILL.**

Structure Description: **THROUGH STEEL TRUSS AND RIVETED STL PLATE GIRDER APPR. SPANS**

Milepoint: **007.327** Inspectors Initials: **BKL** Inspection Date: **11** **20** **2010**

Inspector's Signature Bunny K. Louie **PARSONS BRINCKERHOFF**

58	Deck	7
1	Structural Condition	7
2	Wearing Surface	7
3	Joints	6
4	Drains	6
5	Expansion Devices	6
6	Curbs, Sidewalks, Medians	6
7	Railings	4
8	Lighting or Utilities	6

59	Superstructure	6
1	Stringers, Girders, Beams	6
2	FloorBeams	7
3	Trusses - Main Members	6
3a	Trusses - Bracing, Portals	7
3b	Trusses - Inspection Walk	N
4	Bearing Devices	6
5	Alignment/Structural members	7
6	Deflection/Vibration under Load	7
7	Debris on Members	8

59a Paint Condition				8
Color	Gray	Date Painted	11	2007

60	Substructure	7
1	Abutments, Wingwalls	7
2	Piers &/or Bents	6
3	Algnment &/or Settling	7
4	Scour, Erosions	7
5	Debris on Seats, Caps	7
6	Protection System	N
7	Abutments, Windwalls (S.Z.D.)	N
8	Piers/or Bents (S.Z.D.)	N
9	Alignment or Settlings Due to Scour	N

61	Channel/Channel Protection	7
1	Channel Scour	7
2	Embankment Erosion	7
3	Drift	7
4	Channel Alignment	8
5	Vegetation	7
6	Erosion Control System	N
7	Rip-Rap	N

62	Culvert-Retaining Walls	N
1	Barrel	N
2	Wingwalls, Headwall	N
3	Debris	N
4	Scour Under Footings (Underwater)	N
5	Erosion at Wingwalls (Underwater)	N
6	Drainage Adequacy (Underwater)	N

10 Inventory Route Vertical Clearances

Over 19 **FT** 00 **IN** **36 Traffic Safety**
Under 21 **FT** 09 **IN** 0 0 0 0

71	Waterway Adequacy	5
72	Approach Roadway Alignment	6

113	Scour Critical Bridge Rating	6

108	Wearing Surface/Protective System

Type:	3	Membrane:	0	Protection:	0

OVERLAY No: Yes: X Date: 1980
TYPE Latex: PCC: X Asphalt: Depth:

RECOMMENDED LOAD CAPACITIES (tons) I: II: III: IV: Gross:
FIELD POSTINGS N/E NO N/E NO II: III: IV: Gross:

ITEM NO. **ADDITIONAL COMMENTS**

58.1 Deck - Structural Condition

The top of the deck is covered with a concrete overlay wearing surface. The deck is in overall good condition. Heavy surface rust and efflorescence was observed on the stay-in-place deck forms.

Photo 1
10”x3”x2” deep popout in overlay with ponding water in deck overlay.

58.2 Deck - Structural Condition

Overall, the wearing surface was in good condition. The transverse tines were visible with only minor polishment in the wheel lines. Transverse and longitudinal cracking was observed in the overlay along the majority of the bridge and approach length. Several spalls were observed typically adjacent to the expansion joints. There is approximately a three (3) foot section near the center of bridge that appears to be a closure pour or deck retrofit extending the length of bridge.

Photo 2
Typical longitudinal cracking in deck overlay.

ITEM NO. **ADDITIONAL COMMENTS**

58.3 Deck - Joints

The strip seal and styrofoam backer rod with hot-poured sealant joints were in overall poor condition. The strip seal joints are typically filled with moderate to heavy debris and water ponding across the joint. There were signs of leakage at Piers I1, I2, I4, Pier K7, K8, K12, K16 and K20. The armored edge angles has missing sections and broken splice welds at PP23 several locations.

Photo 3
Missing armored edge and damage to deck joint at Pier K16. Note: Bituminous asphalt within limits of joint opening.

The hot-poured sealant has separation from the angle supports at a few locations possibly due to seasonal changes. This separation allows surface water and debris to drain through the openings to superstructure members below the joint.

Photo 4
Close up of hot-poured sealant pulling away from armored edge angles at Pier K16.

ITEM NO. **ADDITIONAL COMMENTS**

58.3 Deck - Joints (Continued)

The strip seal neoprene joints are in overall satisfactory condition. The joints are typically filled with debris across the full width of the deck with water pooling along the gutterlines. The joints appear to be functioning properly, however, there are signs of deck joints leaking on both approaches.

Photo 5
Debris and ponding water in strip seal at Pier I3.

Photo 6
Strip seal turn-up at Pier K7.

ITEM NO. **ADDITIONAL COMMENTS**

58.4 Deck - Drains

The deck scuppers were observed to be partially or fully clogged with debris minimizing proper drainage from the deck surface.

Photo 7
Typical condition of deck scuppers on the Illinois and Kentucky approaches.

Photo 8
Typical condition of deck scuppers in the main truss spans.

ITEM NO. **ADDITIONAL COMMENTS**

58.5 Deck - Expansion Devices

The open finger tooth expansion devices are in satisfactory condition. The expansion dams appear to be functioning properly however, there is no anti-skid studs at any location. There are no troughs located below the finger tooth expansion dam opening. This introduces leaking of salt-laden water runoff and debris collection accelerating the corrosion to the supporting superstructure below the joint opening.

Photo 9
Typical finger tooth expansion dam for the main through truss.

There are slight vertical height differential between adjacent fingers ranging up to 1” at PP15, PP27, PP44 and PP61. This alignment differential could possilby be due to wear to the sole plate from the stringer connection brackets.

Photo 10
Close up of vertical height differential between expansion dam fingers of at PP0.

ITEM NO. **ADDITIONAL COMMENTS**

58.5 Deck - Expansion Devices (Continued)

Photo 11
Close up of vertical height differential between expansion dam fingers at PP15.

Photo 12
Typical debris in strip seal joints in main truss spans. Note: PP27 shown.

ITEM NO. **ADDITIONAL COMMENTS**

58.5 Deck - Expansion Devices (Continued)

Photo 13
Close up of vertical height differential between expansion dam fingers at PP44.

Photo 14
Close up of vertical height differential between expansion dam fingers at PP61.

ITEM NO. **ADDITIONAL COMMENTS**

58.6 Deck - Curbs

The concrete curbs were in overall fair condition. The curbs exhibit vehicular collision damage, vertical and longitudinal cracks and spalling. Large concrete spalls have exposed rebar, conduit and electrical wiring.

Photo 15
Typical cracks and spalling with exposed rebar to deck curbing.

The armored plate cover for protecting the curb is missing at the finger tooth expansion dam at PP15. The missing curb plate and spalls have exposed electrical conduit and wiring.

Photo 16
Missing expansion plates for concrete curb at PP15, East Truss.

ITEM NO. **ADDITIONAL COMMENTS**

58.7 Deck - Railing

The steel bridge railing is in overall poor condition. Random locations of guardrail post are in poor condition with cracked welds at lower post connections. Numerous guardrail post and railings have moderate size perforations with heavy rust and moisture on the downstream side of the bridge. The concrete barrier wall in the curve on the Kentucky approach exhibited vertical cracks and vehicular impact damage.

Photo 17
Railing exhibiting 100% deterioration mainly on downstream side.

The guardrail post support blisters exhibit sizable vertical cracks and completely spalled sections exposing reinforcement and anchor bolts with heavy rust and corrosion. Inadequate concrete cover is the probable cause to excessive spalling and cracks. These deficiencies were noted at numerous locations within the entire bridge length.

Photo 18
Typical cracks and spalling with exposed anchor bolts to guardrail support blisters.

ITEM NO. **ADDITIONAL COMMENTS**

58.8 Deck - Lighting &/or Utilities

Several electrical box cover plates were open or missing with exposed electrical wiring becoming a snag hazard. There are several electrical junction boxes in the bridge curb that are open and filled with heavy debris.

Photo 19
Missing cover plate with exposed electrical wiring.

The navigational lighting units are in overall good condition.

Photo 20
Typical condition of bridge lighting for navigation.

ITEM NO. **ADDITIONAL COMMENTS**

59.1 Superstructure - Stringers, Girders, Beams

Typically the stringers were in overall fair condition. Active deterioration and 100% section loss along stringer flanges and expansion device connection brackets was observed. Several existing stringer cracks, noted in previous inspection reports, were observed at PP15 (Stringers 2, 3 & 4) and PP61 (Stringer 4). There is no indication of activity, however, there is a good possiblity of these cracks turning down into the bottom flange of the stringers. Stringer 4 at PP27 appears to have “non-recordable indication” of an existing crack. This location should be tested further to determine any significant findings.

Photo 21
Transverse crack in bottom flange of Stringer 3 at PP15.

Photo 22
Longitudinal crack in web near bottom flange of Stringer 2 at PP61.

ITEM NO. **ADDITIONAL COMMENTS**

59.1 Stringers, Girders, Beams

Typical condition of stringers under expansion dam locations with previous perforations and pitting from section loss. Many stringers exhibit localized rust and light corrosion along the top flange and to the expansion brackets connected to the stringer webs.

Photo 23
Typical pitting, perforations and corrosion to superstructure under expansion dam.
Note: No collection trough present under any finger tooth expansion dams.

Photo 24
Close up of previous perforation in web of Stringer 3 at PP27.

ITEM NO. **ADDITIONAL COMMENTS**

59.3 Trusses - Main Members

Kentucky Approach (Spans 12 to 20) - The main truss members of the deck truss spans were found to be in good condition with minimal localized paint failure, pack rust and minor deterioration. The diagonal from U3 to L2 has a buckle to the top flange. The top flange of the lower transverse strut is bent at L2-U3 West truss and Pier K6.

Photo 25
Random pack rust to diagonal members of the Kentucky deck truss.

Main Spans (Spans 7 to 11) - The main truss members of the through truss spans were found to be in good condition with minimal localized paint failure, pack rust and minor deterioration. The pins for both the upper and lower chord were visually inspected noting wear to side plates from thermal movements. Light fretting and staining was observed to assembly for pins in the upper and lower chords.

Photo 26
Expansion pin showing expected wear to vertical built-up plates PP27 - East Truss.

ITEM NO. **ADDITIONAL COMMENTS**

59.3 Trusses - Main Members (Continued)

The vertical gusset platet at the lower chord connection exhibits up to 1/2” pack rust while bending the gusset plate in splash zone area.

Photo 27
Typical pack rust at vertical gusset plate connections in the splash zone.

Overall the diagonals for the deck truss in the Kentucky approach were in good condition. However, at some locations the diagonal members exhibit random pack rust up to 1/2” between the main member and cover plate creating a wave pattern.

Photo 28
Typical rust pack to downstream lower chord.

ITEM NO. **ADDITIONAL COMMENTS**

59.3A Trusses - Bracing, Portals

Overall both wind lock struts were found to be in good condition. Minor deficiencies included light surface rust and corrosion at Pier A and Pier F.

Photo 29
Light surface rust and pigeon debris to wind lock strut at Pier A.

Collision damage to the sway frame strut was noted at PP71 exhibiting paint scapes to bottom flange along with a slight buckle to the top flange.

Photo 30
Vehicular impact damage to transverse strut at PP 72.

ITEM NO. **ADDITIONAL COMMENTS**

59.4 Bearing Devices

Illinois Approach (Spans 1 to 6) - The bearings were found to be in satisfactory good condition. The fixed bearing deficiencies observed 1/8" to 1/2" pack rust between sole and masonry plates and light to moderate surface rust at Piers I2, I4, K15, K17 and K19.

Photo 31
Typical fixed bearing at Pier I4 with pack rust between sole and masonry plates.

Main Spans (Spans 1 to 6) - The main span fixed and expansion bearings are in overall good condition with surface rust. The expansion bearings were observed to be functioning properly.

Photo 32
Typical expansion main span bearing at Pier C - side view.

ITEM NO. **ADDITIONAL COMMENTS**

59.4 Bearing Devices (Continued)

Kentucky Approach (Spans 12 to 20) - The bearings were found to be in overall good condition. The fixed expansion bearings deficiencies observed 1/8" to 1/2" pack rust between sole and masonry plates. Elastomeric bearings exhibit wear and cracking near edge of shim plates.

Photo 33
Typical Kentucky deck truss expansion bearing with surface rust at Pier K8.

Photo 34
Typical deck truss rocker at Pier F with corrosion and minor pack rust.

ITEM NO. **ADDITIONAL COMMENTS**

60.1 Abutments, Wingwalls

The abutments and wingwalls were observed to be in overall good condition. Noted deficiencies included cracking with heavy efflorescence and spalls with exposed reinforcement. Heavy debris and moisture was observed to the cap of each abutment. Heavy vegetation was observed to the wingwalls for each abutment.

Photo 35
Illinois Abutment backwall showing vertical cracks with minor spalling to bridge seat support column.

Photo 36
Illinois Abutment wingwall with heavy vegetation to west wingwall.

ITEM NO. **ADDITIONAL COMMENTS**

60.1 Abutments, Wingwalls (Continued)

Photo 37
Kentucky Abutment showing cracking with efflorescence to backwall.

Photo 38
Kentucky Abutment wingwall showing vertical cracking with efflorescence.

ITEM NO. **ADDITIONAL COMMENTS**

60.2 Piers & Bents

Overall, the piers were observed to be in satisfactory condition. Noted deficiencies include moderate cracking with heavy efflorescence and spalling to the main river pier caps and columns. The cap at Pier D has deteriorated while the top mat has began to crumble. Several main through truss and Kentucky approach piers caps exhibit patch retrofits which are starting to debond. Several approach piers observed minor to moderate debris moisture runoff under leaking expansion joints.

Photo 39
Existing patch to vertical crack in Pier I2 (N.F.) on the Illinois Approach.

Photo 40
Existing patch to spall on N.F. of Pier I4 on the Illinois Approach.

ITEM NO. **ADDITIONAL COMMENTS**

60.2 Piers & Bents

Photo 41
Concrete deterioration and crumbling to top mat of Pier D near bearing.

Photo 42
Previous patching to numerous cracks in S.F. of Pier E. Pier F similar.

ITEM NO. **ADDITIONAL COMMENTS**

60.2 Piers & Bents

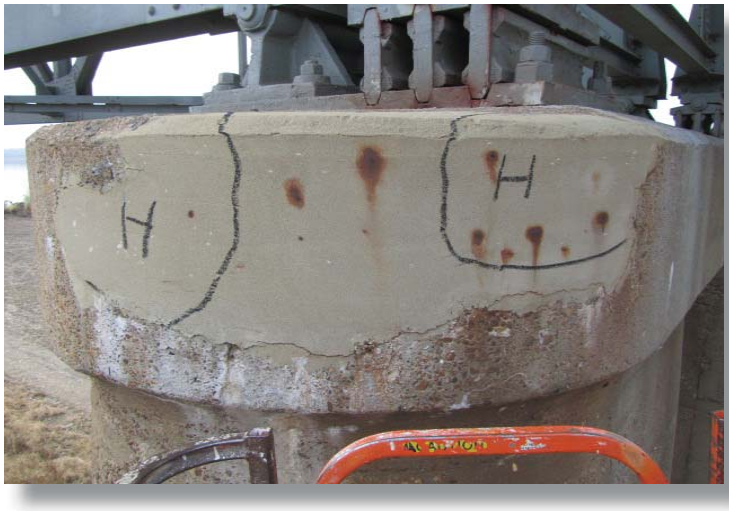

Photo 43
Existing patch to cap at Pier K3, East Truss has began to debond.

Photo 44
Moderate vegetation to cap and side of Pier K20.