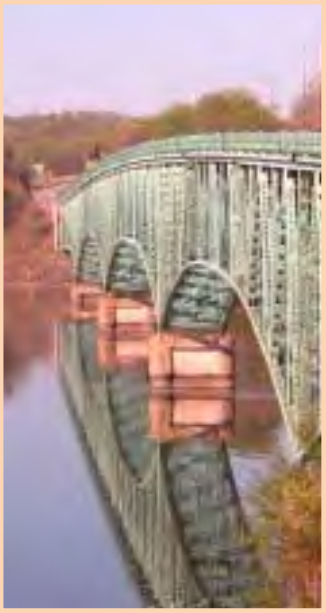
ENVIRONMENTAL ASSESSMENT



Missouri Route 5
Camden County, Missouri

Hurricane Deck Bridge
JOB NUMBER J5P2188

U.S. Department of Transportation
Federal Highway Administration

and

Missouri Department of Transportation
MoDOT

June 2011

MISSOURI ROUTE 5, CAMDEN COUNTY, MISSOURI

HURRICANE DECK BRIDGE

JOB NUMBER J5P2188

ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to 42 U.S.C. 4332(2)(c)
and 49 U.S.C. 303 by the

U.S. Department of Transportation
Federal Highway Administration

and

The Missouri Department of Transportation

COOPERATING AGENCY
U.S. Army Corps of Engineers

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Environmental Assessment/Consultation Form (NEPA)

23 CFR 771.119
Missouri Department of Transportation/Federal Highway Administration

REGION	STATE PROJECT NO.	PROJECT TITLE, ENVIRONMENTAL DOCUMENT TYPE
Missouri Division	J5P2188	Missouri Route 5, Camden County, Missouri Hurricane Deck Bridge Environmental Assessment

INCLUDES PROGRAMMATIC SECTION 4(f)

REASON FOR CONSULTATION

Missouri has just over 200 major bridges—that is, those more than 1,000 feet in length. These bridges are big and costly, both to construct and to maintain, and many are old. Protecting these significant investments through maintenance, rehabilitation, or replacement is crucial for Missouri's economic vitality.

In December 2010, the Missouri Highways and Transportation Commission approved a change to MoDOT's 2011–2015 Statewide Transportation Improvement Program (STIP). A rehabilitation project originally planned for 2011—MoDOT Job No. J5P0905, bridge improvements and painting over Lake of the Ozarks (Hurricane Deck, bridge K0961)—was removed from the STIP. MoDOT Job No. J5P2188, bridge replacement over Lake of the Ozarks (Hurricane Deck, bridge K0961), was added. See Figure 1, next page.

MoDOT requested the STIP change after weighing the cost of a bridge rehabilitation expected to extend the bridge's life only another 10 years (mainly due to built-up pack rust between the truss members) versus the cost for a new bridge with an expected 75-year life. Most of the programmed rehabilitation cost was for repainting and emergency repairs. MoDOT expects that more stringent weight restrictions probably would be required within 10 years after the rehabilitation and the bridge would likely need to be closed within 20 years. Therefore, MoDOT proposes replacing the existing bridge in 2012 as the best use of transportation dollars. The rehabilitation originally planned for 2011 was to be funded by Amendment 3; the bridge replacement will use monies previously reserved for the rehabilitation along with state fiscal year 2012 available STIP funds.

Information for the Public on Transportation Decision Making

Have you ever wondered how decisions are made about transportation projects that affect your life? How government officials decide where to put a bus stop, road, or bridge? How these and other transportation projects are planned? And how to make sure your opinions are heard and considered by the planners, road designers, elected officials, and other citizens? The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) wrote a guide[1] to answer these and other transportation-related questions.

A Record of Decision (ROD) was issued December 10, 1997, for the Final Environmental Impact Statement (FEIS) for the Route 5 Corridor in Camden, Laclede and Morgan Counties, Missouri (MoDOT Project No. J5P0694; approximately 3 miles north of Gravois Mills near the intersection of Route 5 and Route J in Morgan County to approximately 1 mile south of the Camden/Laclede county line). The FEIS proposed a 40-mile transportation improvement to address safety and system efficiency needs of existing Route 5 through the Lake of the Ozarks region.

[1] http://www.fhwa.dot.gov/planning/decisionmaking/index.htm , electronic version of Publication No. FHWA-HEP-09-034 HEPP/11-01(15M)P

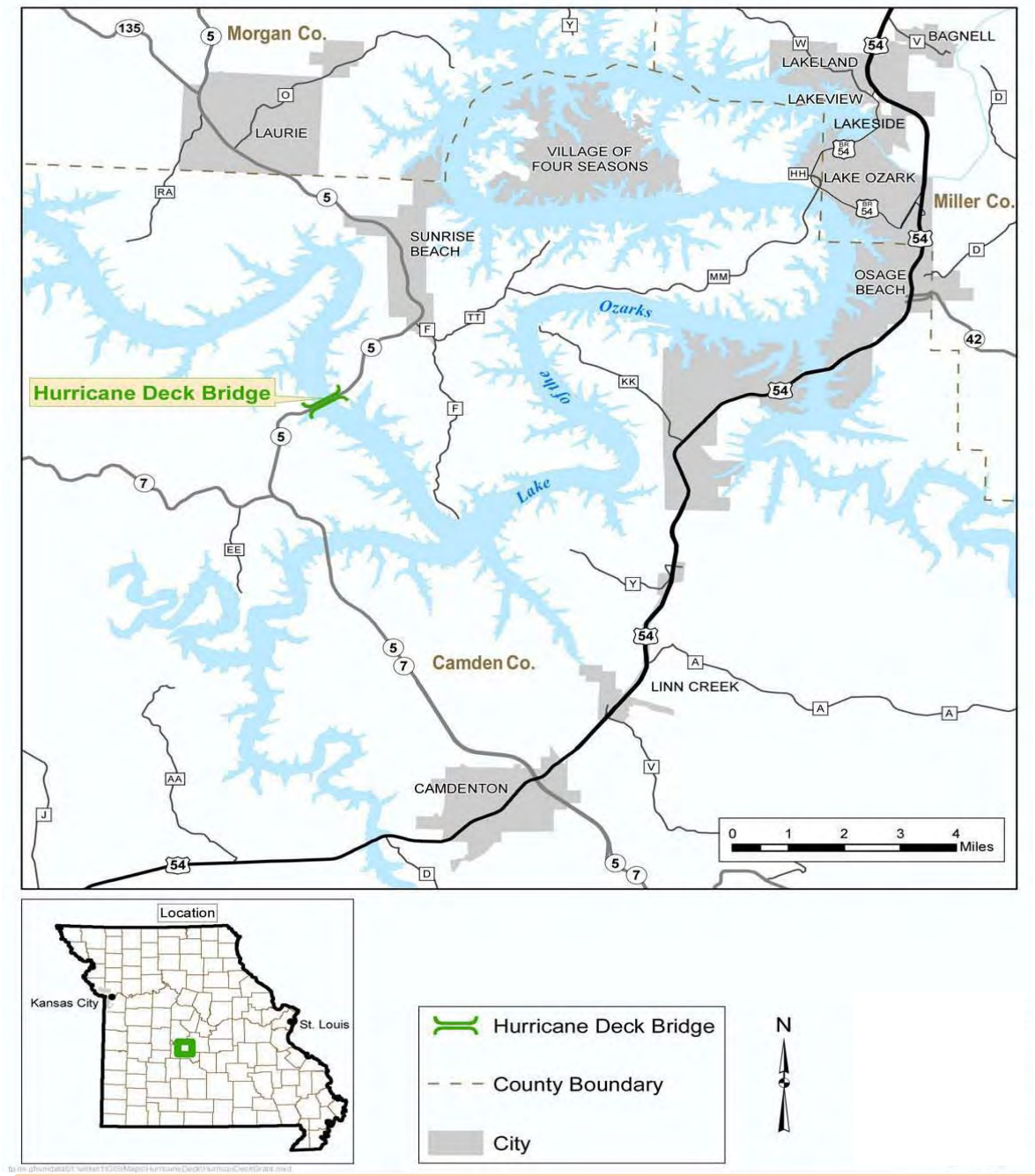


Figure 1. Missouri Route 5 Hurricane Deck Bridge Location

The ROD selected alternative—a four-lane, access-controlled expressway facility with a depressed, grassy median—was to be constructed on new location or adjacent to existing Route 5 throughout the length of the project. In the area of the proposed Hurricane Deck bridge replacement, the selected alternative would build a new, companion bridge west of the existing bridge for two, new lanes to be constructed adjacent to the existing Route 5 roadway.

The impacts of the ROD selected alternative were recently re-examined for changes that have occurred since 1997 and FHWA concurred on March 16, 2011, that the 1997 Record of Decision is still applicable, a Supplemental EIS is not required, and the project is in compliance with NEPA. Because the 1997 selected alternative intended the continued use of the existing roadway and bridge, possible demolition of

the bridge was not evaluated. The September 23, 1997, Memorandum of Agreement (MOA) signed by the Advisory Council on Historic Preservation was based on "…the obscuring of the view of the historic structure by incompatible new construction…" rather than its likely demolition. Therefore, MoDOT and FHWA originally intended that this Environmental Assessment (EA) would consider the likely demolition of the historic structure following construction of a new bridge west of the existing bridge (ROD selected alternative) in addition to examining other bridge locations within the 600-foot-wide selected alternative corridor. However, as the EA was being developed, it became apparent that the ROD selected alternative could adversely affect two archaeological sites. Since other alternatives considered in the EA avoid impacting these resources, MoDOT and FHWA decided to eliminate the ROD selected alternative from further consideration. A draft MOA detailing mitigation measures for the removal of the historic bridge is included with this EA.

Although MoDOT's current funding situation precludes constructing the Route 5 Corridor selected alternative in the foreseeable future, the four-lane divided highway remains the ultimate facility planned for this corridor. An intermediate phase, consisting of a shared four-lane facility similar to that constructed recently on south Route 5 from just south of Route 7 in Camdenton to Lebanon, could be implemented before the final, four-lane divided highway is constructed.

What is the Hurricane Deck?

Throughout the 19th century, steamboats plied the waters of the Osage River, which was later dammed to create the Lake of the Ozarks for power generation and recreation. Steamboat crewmen named prominent landmarks along the navigation channel of the river. One such landmark was a long, flat ridge that ran along the east side of the river near Porter Mill Bend. Steamboat men dubbed the long flat ridge "Hurricane Deck," using the nautical term for the uppermost deck of a steamboat, which provided a breezy place to watch the river scenery go by.

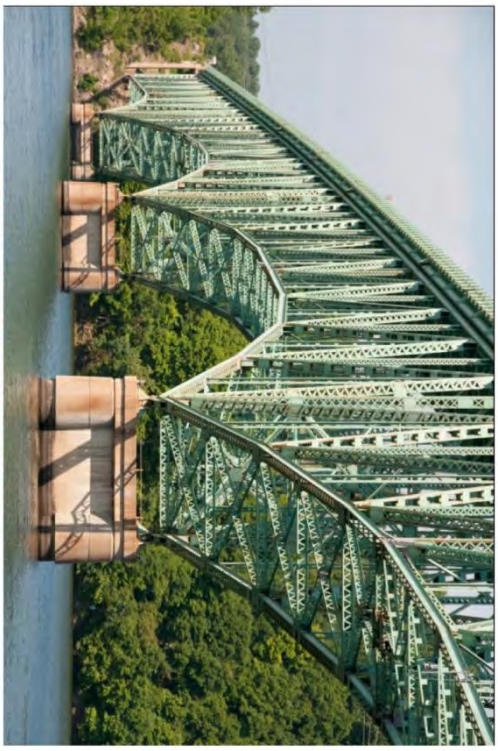
Ameren Missouri operates the Osage Hydroelectric Project (Lake of the Ozarks) under a 2007 40-year license from the Federal Energy Regulatory Commission (FERC). The utility is responsible for managing development activities for the 1,150 miles of Lake of the Ozarks shoreline within the hydroelectric project boundaries to ensure such activities are consistent with the FERC license. Article 419 of Ameren's current license for Project 459 states that "…the licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained." Per Ameren Missouri's shoreline management plan filed with FERC, the utility issues permits to manage the multiple resources and uses of the Lake's shoreline while protecting the environment and recreation values and addressing the needs of the public. The proposed bridge replacement project will require an Ameren Missouri permit prior to construction and the permit will be reported to the FERC.

Approvals from federal, state, and local consulting agencies will be obtained prior to Ameren's issuance of a bridge permit. This EA is intended to also address Ameren's permit requirements as stipulated in the shoreline management plan noted above. The utility's primary emphasis is the EA, full agency concurrence, and a determination that the historic, scenic, environmental, and recreational resources of the lake are not adversely affected. Section "15) CONSTRUCTION IMPACTS" provides a detailed evaluation of two proposed work sites that could be used for construction. Any temporary excavation or fill can be included with the bridge permit.

PURPOSE AND NEED FOR ACTION

The Route 5 Hurricane Deck Bridge over the Lake of the Ozarks in Camden County is a critical link in the transportation system at the Lake of the Ozarks, one of Missouri's most important recreation and tourism destinations. The historic steel truss bridge (Figure 2) is the western gateway for people approaching the Lake from Kansas City and other points north and west of the Lake. The average daily traffic across the bridge is 7,522 vehicles, with 10 percent being trucks. During the May to September prime vacation season, the average traffic jumps by 4,000 vehicles per day to more than 11,500.

Profile view, facing north (above)



Truss superstructure (above)

View of bottom chord (right)

Bridge road deck (below)

Figure 2. The Historic Hurricane Deck Bridge

The bridge is a deck truss design, which means the truss is located under the deck/roadway rather than above the deck/roadway as most trusses are. Maintaining the aging bridge is expensive. The structure's design makes maintenance difficult and work on the bridge often requires closing one lane, which impedes traffic flow and presents a safety concern for workers because of the structure's narrow width.

A 1985 major bridge rehabilitation included a new steel grid deck on the entire bridge and double tee girders on the approach spans, substructure repairs, and repainting the bridge. In 2006 a $416,000 minor bridge rehabilitation project consisted of deck repairs and a new asphalt overlay.

The bridge's poor condition excludes routine overweight trucks and superloads from using it to cross the Lake. Rust is eating through the steel truss members and gusset plates. Because of its condition, the Hurricane Deck Bridge is on a 12-month inspection cycle (MoDOT's typical bridge inspection frequency is 24 months) and requires increasing levels of maintenance activity. Over the last 10 years, it has been reduced to one lane or closed an average of 8–10 days per year for inspection and maintenance efforts. Over the past six years, MoDOT's average annual expenditure for the Hurricane Deck Bridge has been in excess of $115,600.

The Purpose of the Proposed Project

The primary purpose of the project is to replace the historic Route 5 bridge over the Lake of the Ozarks.

Project Needs

1) The Route 5 bridge is structurally deficient (its superstructure condition is rated poor) and replacing it is a MoDOT priority.
2) Built more than 75 years ago and near or at the end of its useful service life, the bridge's age and condition create an ongoing need for maintenance, with substantial expense to taxpayers and great inconvenience for the traveling public.
3) The Hurricane Deck Bridge does not meet the current American Association of State Highway and Transportation Officials (AASHTO) standards for shoulder width.

The remainder of this section discusses the project needs in more detail.

A ***Deficient Bridge*** is one that is defined as either ***structurally deficient*** or ***functionally obsolete*** based on Federal Highway Administration criteria. A structurally deficient bridge is one in poor condition or with insufficient load capacity compared with modern design standards. A bridge that is functionally obsolete has poor roadway alignment or clearance or width restrictions that no longer meet the usual criteria for the system it serves.

Description of the Existing Bridge and Roadway

Route 5 in Camden County is classified as a principal arterial, with a posted speed limit of 55 miles per hour. Route 5 has two 11-foot lanes and 2-foot earth shoulders.

Principal Arterials are intended to serve mainly through traffic. These regional travel routes provide long-distance mobility between rural areas. In urban settings, they move large amounts of traffic between neighborhoods and other places. Principal arterials carry through traffic and link local streets with other through routes. Commercial areas of cities are often found along these roads.

The Route 5 bridge carries one lane of vehicular traffic in each direction across the Osage Arm of the Lake of the Ozarks at mile marker 35. It was built in 1934–36 and is eligible for listing on the National Register of Historic Places. The bridge is 2,280 feet long and 28 feet wide, with two 11-foot lanes and 3-foot shoulders. The speed limit on the bridge is 55 miles per hour.

The bridge has nine spans. The five main spans are continuous cantilever deck trusses. Two pre-stressed, double-tee concrete girder spans are located on each approach end. The historic bridge is classified as fracture critical because there is no structural redundancy (if a key component fails, the entire bridge could fail). There is no load posting on the bridge.

The Bridge's Current Condition

MoDOT conducts an in-depth inspection of the historic bridge every year and the substructure (piers), superstructure (truss and beams), and deck (riding surface) are each assigned a numerical condition

rating. These ratings range from nine (excellent condition) to zero (a failed condition that cannot be corrected and typically requires closing the bridge). The condition ratings from MoDOT's most recent inspection in April 2010 are substructure—good (seven), deck—satisfactory (six), and superstructure—poor (four), indicating an immediate need for repair or rehabilitation. The bridge is considered structurally deficient based on the condition of its superstructure. The 2011 inspection report is not yet completed.

While the 2010 inspection resulted in no significant new findings relating to the bridge's structural integrity or safety, the general condition of the structure continues to degrade. Typical bridge deficiencies include deteriorated steel and failing paint (Figure 3). Failing paint allows the steel corrosion to accelerate. Even though corroded steel can be cleaned and repainted, once such deterioration starts, it will continue, though at a slower rate than if the steel is not repainted. Ultimately, the main steel truss members must be replaced.

Pack rust (rust between adjacent, touching steel surfaces that tends to force the surfaces apart as the amount of rust grows) is present at most of the connections within the deck truss spans. There is a significant amount of section loss (decrease in size of a structural element's cross-section from corrosion or decay) in the primary members and cracked rivets in the secondary members. The inorganic zinc/vinyl coating applied in 1985 no longer protects the steel members as it is fading and peeling with rust present under joints and at connections. Cracked or missing guide pin and wind load transfer device nuts were replaced and most all the gusset plates and section loss on the truss portion of the bridge were treated and painted during April and May 2010.

The use of stay-in-place forms when the deck was reconstructed in 1985 and an asphalt overlay of the deck in 2006 prevent visual inspection of the deck either from above or below. However, numerous patches to the cast-in-place, reinforced concrete deck were noted prior to the installation of the overlay. The expansion devices are in poor condition. Advanced section loss was also noted throughout the double-rectangle, tubular, barrier rail.

The existing historic bridge was designed for less vehicular loading (truck weight and axle arrangements) than modern design standards require. The bridge was originally designed to meet national standards (American Association of State Highway and Transportation Officials, AASHTO) based on a 30,000-pound truck with two axles 14 feet apart—6,000 pounds on the front axle and 24,000 pounds on the rear axle. Today's design standards for new bridge construction for both AASHTO at the national level and MoDOT at the state level are based on a 72,000-pound truck with three axles combined with a 640 pound per linear foot uniform lane load. The standard uses a truck weight distribution of 8,000 pounds on the front axle and 32,000 pounds each on the second and third axles. The first and second axles are 14 feet apart and the second and third axles can vary from 14–30 feet apart.

Legal weight trucks can cross the bridge at present; however, vehicles needing overweight permits are not allowed to cross the bridge. Increased truck volume and heavier legal loads than those for which the bridge was originally designed contribute to a need for more maintenance and ultimately reduce its remaining service life.

Lane Load refers to a hypothetical line of vehicles (imagine a single-lane traffic jam) on the bridge.

Uniform Lane Load is the weight of those vehicles distributed evenly over the length of the bridge.

A 640 pound per linear foot uniform lane load would result from a uniform load of 64 pounds per square foot applied over a 10-foot width for the entire span length.

ALTERNATIVES CONSIDERED

The alternatives considered initially include the No-Build alternative, an Existing Location build alternative with four variations, and an Adjacent East Location build alternative.

MoDOT will be using a bold Alternate Technical Concept (ATC) process on the Hurricane Deck bridge project. ATC is an alternate design development and contract procurement process that uses contractor input on design to reduce costs. This process allows contractors to confidentially submit an idea for an ATC that would provide an equivalent or better product at a lower cost. MoDOT has used a small-scale version of the ATC process on several projects in the past two years.

Figure 3. Photo Collage of Bridge Condition

Any of the proposed build alternatives would satisfy the project purpose and needs. Each build alternative would provide a 38-foot-wide new bridge with two 12-foot travel lanes and two 7-foot shoulders and would eliminate the ongoing maintenance needs, expense, and inconvenience to motorists arising from the age and condition of the existing bridge. Each new bridge alternative would meet current MoDOT standards and AASHTO national standards for lane width and vehicular load and would meet AASHTO standards for shoulders. (Missouri's bridge standards for shoulders exceed the AASHTO national standard, which allows the use of shoulders narrower than 10 feet on bridges that are more than 200 feet long.) Each new bridge design would allow the future addition, if the need arises, of bicycle/pedestrian accommodations protected by a concrete barrier. Figure 4 shows a typical cross-section for the proposed new bridge. Although the width of the new bridge could accommodate striping for three travel lanes, if the need arises for construction of a shared four-lane facility on this portion of Route 5, the design team would have to determine whether or not to allow passing opportunities on the bridge. The shared four-lane facility recently constructed on Route 5 south of Camdenton provides two lanes across the bridge near Route E.

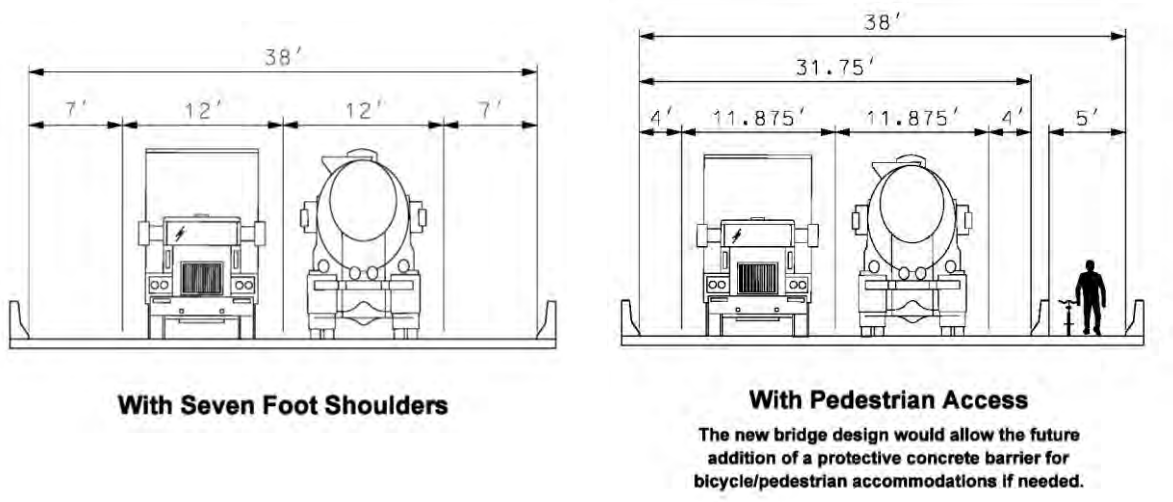


Figure 4. Typical Cross-section of Proposed New Bridge

Route 5 connects the towns of Versailles, Laurie, Sunrise Beach, Greenview, and Camdenton via the Hurricane Deck Bridge. All of the build alternatives would maintain traffic on Route 5 with only short-term disruption, whereas closing Route 5 at this location to construct a new bridge would result in a 42-mile detour. Each of the proposed build alternatives would result in removal of the existing, historic bridge.

Characteristics unique to a specific alternative along with benefits and drawbacks of each alternative are described next (comparison table on page 15).

No-Build (rehabilitation)

The No-Build alternative would carry out the original planned rehabilitation, extending the current bridge's life by up to an additional ten years. The rehabilitation would replace the railing, strengthen some of the truss members or supports, replace some of the damaged members, and repaint the entire bridge at a cost of about $6.1 million. This alternative would not include any new, major construction. The no-build alternative would retain the existing, historic bridge and would not alter the existing bridge's narrow width.

After the rehabilitation, no other improvements would occur beyond normal bridge maintenance. Normal maintenance includes washing the bridge twice a year to remove de-icing chemicals, sealing the bridge deck every three to five years, sealing and replacing the expansion joints as needed, and replacing minor portions of the steel and concrete that have deteriorated. Because of the age and condition of the

existing bridge, however, rehabilitation and even routine maintenance would be very costly and could only serve as a short-term solution. With the no-build alternative, a need for reduced load limits is likely within 10 years from the rehabilitation and the bridge would probably require closure within 20 years.

- 👍 Would retain existing, historic bridge
- 👍 No significant environmental impacts
- 👎 Would not correct existing deficiencies or meet MoDOT's current standards for vehicular load. Continued deterioration of the steel superstructure over time would decrease the bridge's load-carrying ability more and more rapidly, resulting in posted load limits or possible bridge closure
- 👎 Would not meet today's national standards or MoDOT's requiring full-width shoulders on bridges over 1000 feet long (such as this one) so disabled vehicles do not block the flow of traffic, causing traffic backups and affecting the movement of emergency responders to and through the area
- 👎 Would not allow future addition of a protective concrete barrier to accommodate bicyclists and pedestrians if needed
- 👎 Would reduce bridge to one lane during construction, causing traffic backups and delays on Route 5
- 👎 Rehabilitation cost and likelihood of bridge closure would increase as deterioration of major load-carrying elements reaches critical levels, with more frequent and burdensome impacts to the traveling public

The No-Build (rehabilitation) alternative fails to meet the project needs or address the existing deficiencies. It will be retained in this EA as a baseline for comparison with the other alternatives evaluated.

Existing Location

The Existing Location alternative would provide a new bridge where the historic bridge is now. Two variations of how the new bridge could be built are being considered. New, temporary pilings would be erected just east of the existing bridge. The temporary pilings would be placed alongside each of the existing bridge's four piers in the lake. Then either the old truss superstructure and bridge deck would be slid laterally onto the temporary pilings to carry traffic while a new bridge is built on the existing bridge piers (Figure 5) or the new bridge would be constructed on the temporary pilings while traffic is maintained on the existing bridge (Figure 6). In the first case, a temporary roadway and bridge approach would be constructed to connect the existing bridge to Route 5 after it is moved onto the temporary pilings. The existing pier caps would be removed and reconstructed for the new bridge that would then be built in place atop the existing bridge piers. The existing approach spans would be reconstructed or widened to match the new bridge width and the old bridge would be demolished once the new bridge opened to traffic.

In the second case, a temporary roadway and bridge approach would be built while the new bridge deck is being constructed on the temporary pilings. When the new bridge deck and temporary roadway are completed and open to Route 5 traffic, the existing bridge superstructure would be removed. The existing pier caps would then be removed and reconstructed for the new bridge and the existing approach spans would be reconstructed or widened to match the new bridge width. Once the reconstruction of pier caps and approach spans is completed, the new bridge would be closed to traffic and slid laterally onto the existing piers and connected to the reconstructed approaches. The new bridge would be opened to traffic as soon as it is in place and the roadway, guardrail, and pavement markings are completed. The old bridge would be demolished after the new bridge is opened to traffic.

Moving either the old truss superstructure and bridge deck or the newly built structure would require closing Route 5 at the bridge for a period of two to seven days while the slide and roadway reconnection are accomplished.

- Would satisfy the project purpose and needs
- Would reuse some existing infrastructure (the piers and/or approaches) to minimize environmental impacts to the lake and surrounding areas
- Could last at least 75 years with regular maintenance of the existing piers and new bridge deck
- Would allow for future addition of a protective concrete barrier if a need for bicycle/pedestrian accommodations develops
- Would remove existing, historic bridge, retaining only the piers

VARIATION 1—Slide the old truss superstructure and bridge deck to the west onto new, temporary piers and construct new bridge on existing piers; demolish old superstructure and bridge deck when finished.

- Would disrupt Route 5 traffic only minimally during construction, when old bridge is moved west for new bridge construction and to establish temporary connection for the old bridge
- Could adversely impact archaeological sites

VARIATION 2—Slide the old bridge to the east onto new, temporary piers and construct new bridge on existing piers; demolish old superstructure and bridge deck when finished.

- Would disrupt Route 5 traffic only minimally during construction, when old bridge is moved east for new bridge construction and to establish temporary connection for the old bridge

VARIATION 3—Construct new bridge to the west of old bridge on temporary piers; when finished, remove old bridge and slide new bridge onto existing piers.

- Would disrupt Route 5 traffic only minimally during construction, when new bridge is moved onto existing bridge piers and to establish connection with the existing approaches
- Could adversely impact archaeological sites

VARIATION 4—Construct new bridge to the east of old bridge on temporary piers; when finished, remove old bridge and slide new bridge onto existing piers.

- Would disrupt Route 5 traffic only minimally during construction, when new bridge is moved onto existing bridge piers and to establish connection with the existing approaches

As this EA was being developed, it was determined that Variations 1 and 3 (approximate cost $23 million) could result in adverse impacts on two archaeological sites. Therefore these variations will not be further evaluated and are dropped from consideration. Variations 2 and 4 (approximate cost $22.7 million) are carried forward and evaluated in this EA as the Existing Location Alternative.

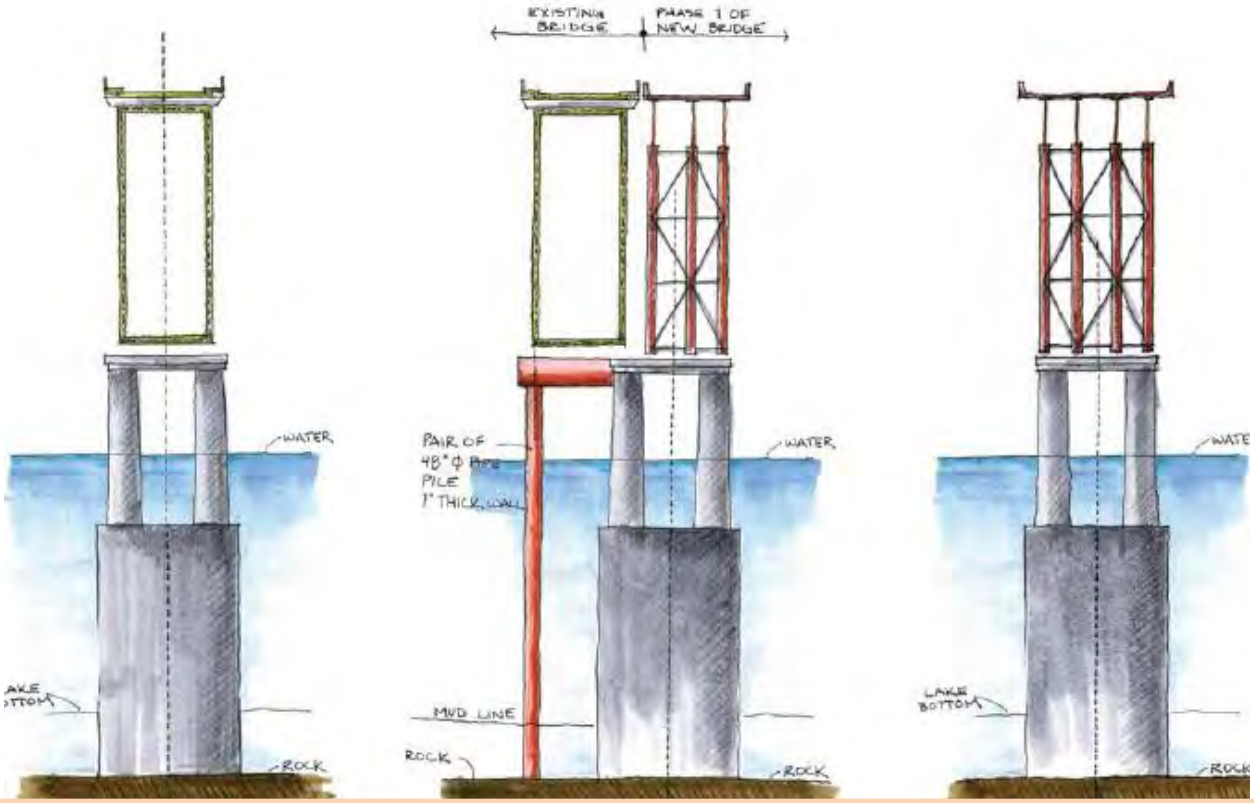


Figure 5. Existing Location, Variation 2 (slide existing bridge)

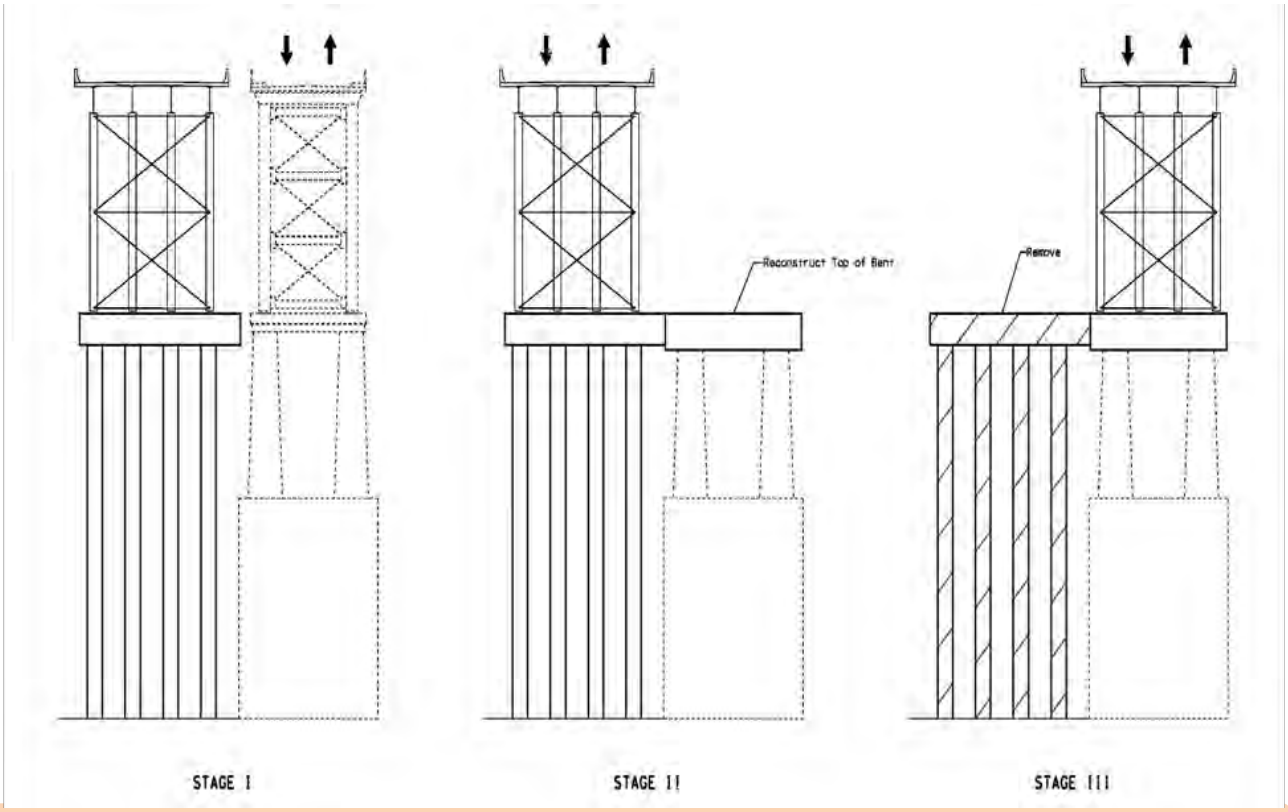


Figure 6. Existing Location, Variation 4 (slide new bridge)

Adjacent East Location

The Adjacent East Location alternative would replace the existing, deficient bridge with a new two-lane bridge located approximately 50 feet east of the current location. This alternative would cost approximately $25.2 million. When the new bridge is ready to tie into the existing roadway, the old bridge would be demolished. The new bridge would be roughly the same length as the existing bridge. However, the design would be based on the most economical distribution of spans, which would mean a greater number of piers that are spaced closer together than those of the existing bridge.

- 👍 Would satisfy project purpose and needs
- 👍 Could have 100-year life expectancy
- 👍 Would disrupt Route 5 traffic only minimally during construction, to establish connection with the new bridge
- 👍 Would allow for future addition of a protective concrete barrier if a need for bicycle/pedestrian accommodations develops
- 👎 Would remove existing, historic bridge
- 👎 Would need more new right of way to construct

Alternatives Discussion and Conclusion

The Existing Location alternative and the Adjacent East Location alternative would use different structural systems (Figures 7 and 8). The most cost-efficient design for the Adjacent East Location alternative would require new foundation and substructure units spaced considerably closer than the existing piers. The delta frame structural system is key to the Existing Location Alternative's reuse of the existing piers to support the new bridge. A delta frame is a triangular shaped truss that extends from the pier up to the bridge girders. The inverted triangular shape allows the girder to span a longer distance between piers, a necessity for re-using the existing piers without constructing additional, intermediate piers. The clean lines and arch-like look of the delta truss system are more visually appealing than a straight girder system, consistently ranking more favorably in public evaluations. Furthermore, the delta truss form mimics that of the existing, historic arched deck truss structure.

Both proposed new bridge alternatives would maintain a direct Route 5 connection across the Lake of the Ozarks during construction. The Existing Location alternative would cost about $2 million less than the Adjacent East Location alternative and would require very little new right of way acquisition.

The Route 5 Hurricane Deck Bridge underwent a major rehabilitation project in 1985 and in 2006 a minor rehabilitation project was completed. MoDOT inspects the bridge annually because of its condition; bridges without such concerns typically are inspected every two years. It requires increasing levels of maintenance activity and has been reduced to one lane, or closed, an average of 8–10 days per year for inspection and maintenance efforts in the last decade. Based on the nature of the bridge's deterioration, MoDOT expects to gain a shorter and shorter extended life expectancy with each additional rehabilitation.

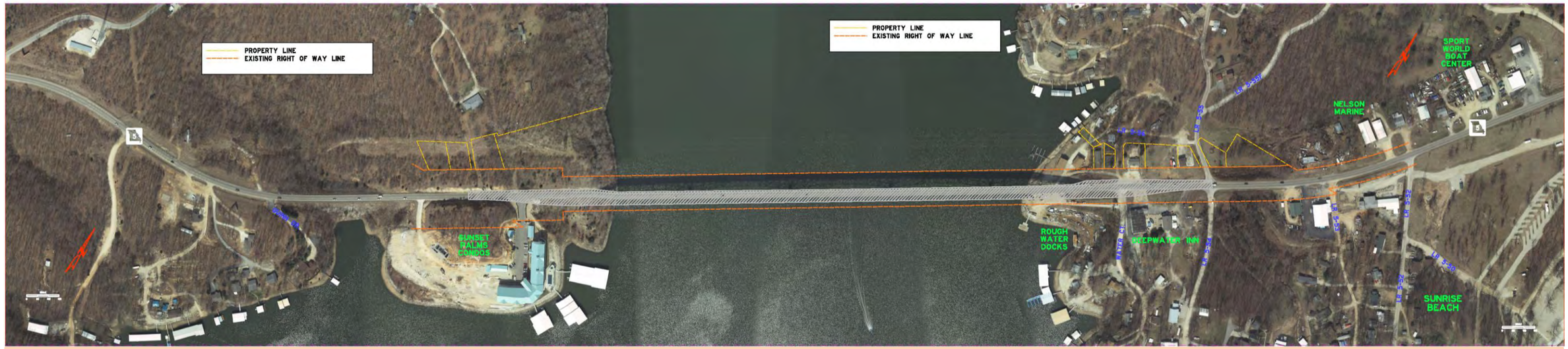
Material fatigue is an important factor in evaluating the remaining life expectancy of an aging structure. Some elements of this bridge are approaching the end of their useful life. Although some repairs may be economically realistic, others are too costly to be practical. Many areas throughout the truss have severe pack rust and section loss. The advanced stage of the pack rust has caused considerable member distortion and additional structural damage that would be too costly to correct and stabilize for the long term. Given such considerations and the age of the bridge, another major rehabilitation is not considered economically prudent.

The Existing Location and Adjacent East Location alternatives (shown on page 14) are evaluated in detail in this EA along with the No-Build (rehabilitation) alternative, which offers a baseline for evaluating the proposed build alternatives.

The conceptual images in Figures 7 and 8 are intended only to show the new bridge's potential structure and appearance. The depictions are not based on actual design and are subject to change.

Figure 7. Existing Location Alternative Concept

Figure 8. Adjacent Location Alternative Concept



Existing Location (sliding bridge) Alternative

Adjacent East Location Alternative

ALTERNATIVES COMPARISON

Screening Factor	NO BUILD (Bridge rehabilitation)	PREFERRED, EXISTING LOCATION ALTERNATIVE (New bridge on existing piers)	ADJACENT EAST LOCATION ALTERNATIVE (New bridge)
Estimated Project Costs			
Construction cost	$6,052,000	$22,377,087	$24, 274,056
Right-of-way cost	$0	$338,000	$880,000
Total cost (*rounded to nearest $1 million*)	$6,052,000	$22,715,087	$25,154,056
Right of Way (ROW) Considerations			
New ROW anticipated (*acres*)	none	0.56 acre, 0.09 acre temporary construction easement	5.1 acres, 190 sq. feet temporary construction easement
Existing ROW use (acres)	1.95 acres	6.58 acres	8.2 acres
Number/type potential displacements	none	none	none
Potential Environmental Considerations			
Floodplain (*lineal feet crossed*)	none	2200 feet	2200 feet
Threatened/endangered species	unlikely	unlikely	unlikely
Hazardous waste location	no	no	no
Wetlands	no	no	no
Other Waters of the U.S. (Lake of the Ozarks)	no	<0.5 acre permanent impacts	<0.5 acre permanent impacts
Public parklands	no	no	no
Potential Socioeconomic/Community Considerations			
Travel time (*no change, improved*)	no change	improved	improved
Emergency services (*no change, improved*)	no change	improved	improved
Public school services (*no change, improved*)	no change	improved	improved
Businesses/Employers (*no change, improved*)	no change	improved	improved
Bicycle/pedestrian access (*no change, potential future access*)	no change	potential future access	potential future access
Community access (*no change, improved*)	no change	improved	improved
Potential Cultural Resource Considerations			
Archaeological sites	none	none	none
National Register of Historic Places (NRHP) eligible/Section 4(f) bridge	no adverse effect	adverse effect	adverse effect
NRHP listed or eligible/Section 4(f) resources other than bridge	none	none	none
Cemeteries	none	none	none

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PREFERRED ALTERNATIVE

MoDOT has designated the existing location alternative as the Preferred Alternative to solve the transportation problems associated with the Route 5 Hurricane Deck Bridge. The preferred alternative would replace the historic but deficient bridge with a new two-lane bridge in the same location. This alternative would maintain traffic on Route 5 during construction with only short-term interruptions to establish temporary roadway tie-ins and to move either the newly constructed bridge (Variation 4, details below) or the existing structure (Variation 2, details below). The preferred alternative would result in removal of the existing, historic bridge after construction of the new structure.

The preferred alternative would use a delta truss structural system. Temporary pilings would be installed adjacent to the existing piers and temporary road approaches would be built while the trusses are assembled. For Variation 2, the existing bridge would be prepared for sliding and would be slid onto the temporary piers once the pilings and caps are completed. After the existing structure has been moved and opened to traffic, the existing pier caps would be removed and reconstructed. Then the new bridge girder system would be constructed, the deck poured, and the approach spans widened. The new bridge would be opened to traffic after the roadway, guardrail, and pavement markings are completed. Finally, the old bridge would be removed along with the temporary pilings.

For Variation 4, after the pilings and caps are completed, the delta trusses would be floated to the temporary piers and lifted into place. During construction of the new bridge deck atop the girders, a temporary roadway and bridge approach would be built. When the new bridge deck and temporary roadway are complete and open to traffic, the old bridge would be removed. The existing pier caps would then be removed and reconstructed for the new bridge and the existing approach spans would be reconstructed or widened to match the new bridge width. Once the reconstruction of pier caps and approach spans is complete, the new bridge would be closed to traffic and slid laterally into place on the reconstructed piers. The new bridge would be opened to traffic as soon as it is in place and the roadway, guardrail, and pavement markings are completed.

The preferred alternative was identified through public and agency involvement along with assessment of socioeconomic and environmental consequences. Selection of an alternative will not be finalized until substantive comments from resource agencies and from the public hearing are fully evaluated and addressed.

HOW THE PROPOSED PROJECT WILL AFFECT THE FOLLOWING:

1) LAND USE

Current land use in the study corridor is primarily a mix of residential and commercial with an emphasis on vacationing and the Lake of the Ozarks. As a result, many of the residences may be for temporary use. The only non-residential/commercial land use is at the south end, especially in the southwest quadrant where the land is wooded and fallow.

The no-build alternative would have no impact on existing land uses or on land use policies and decisions within the study area. The two build alternatives—the preferred, existing location and the adjacent east location—would have similar impacts to land use. Each would have limited impacts to some existing residences and/or commercial establishments. The difference between them is very minor, with little to recommend any specific alternative.

Neither build alternative (the preferred, existing location and the adjacent east location) nor the no-build alternative is expected to result in zoning changes. Although some changes to current land use would occur with the proposed project, no long-term effects are anticipated. Future land use decisions would most likely be the same and no adverse impacts to land use are anticipated.

2) PRIME AND UNIQUE FARMLAND

Recognizing the importance of protecting farmland from conversion to non-agricultural uses, Congress passed the Farmland Protection Policy Act (FPPA) in 1981. Before a federal project or federally funded program can use farmland, the farmland that would be affected must be assessed in a collaborative process with the Natural Resources Conservation Service (NRCS). NRCS classifies farmland as prime, unique, or of statewide or local importance based on soil type. If the project would convert any prime, unique, statewide, or locally important farmland to non-agricultural uses in excess of parameters developed by NRCS, then measures must be taken to minimize farmland impact.

Parts of the project area within city limits or within which the land is devoted to non-agricultural use meet the FPPA definition of ~~l~~and committed to other uses." Acreage potentially eligible for farmland impact evaluation was rated in 1997 for the Route 5 EIS. The build alternatives evaluated in this EA are located within the 600-foot-wide corridor used for rating the EIS Expressway/Alternative #2 Preferred Alternative. That alternative received a cumulative point rating of 119, which is significantly less than the 160-point threshold established for farmland protection. Therefore, farmland impact will not be re-evaluated.

3) COMMUNITY IMPACTS

The existing Hurricane Deck Bridge provides an important north-south connection on Route 5 across the Lake of the Ozarks, with easy access to the tourist-attractive lake area. Replacing the deteriorating bridge with a modern bridge and the publicity generated by its completion can only help local businesses and industry.

This socioeconomic impact assessment is based on data primarily obtained from the most recent available U.S. Census of Population and Housing. Supplemental data was obtained from the Camden County, local and regional land use plans, and development plans.

The racial makeup of the 65020 and 65079 zip code areas at the 2000 census (latest data available) was 97.3% White, 0.1% Black or African American, 0.6% Native American or Alaska Native, 0.3% Asian, less than 0.1% Pacific Islander, 0.3% from other races, and 1.3% from two or more races. The population of Hispanic or Latino of any race was 1.0%. The median income for a household in the Hurricane Deck area was $32,784 and the median income for a family was $38,202. About 10.8% of families and 15.4% of the population were below the poverty line.

Since the proposed build alternatives are either in the same location or adjacent to the existing bridge, no changes are anticipated to neighborhoods or community cohesion, travel patterns and accessibility, community facilities, or to any special groups such as elderly, disabled, minority, and transit-dependent persons. There would be few social impacts.

Economic Growth and Development

Neither considered build alternative would have any permanent, adverse impact on economic growth and development nor would either alternative negatively impact the region's competitive position. A new bridge would increase travel efficiency and reliability, thus improving the community's position for economic growth and development. Because the no-build (rehabilitation) alternative would provide only a short-term improvement (reduced load limits likely within 10 years), over time it could have negative economic consequences. The actual rehabilitation would reduce the bridge to one lane during construction, causing traffic backups and delays on Route 5, although such impacts would be temporary.

Neither build alternative is anticipated to cause negative impacts on economic development trends and viability, employment opportunities, highway-dependent businesses, existing and planned business development, or tax revenues.

Pedestrian and Bicycle Traffic

Section 652.5 Policy of 23 CFR 652--PEDESTRIAN AND BICYCLE ACCOMMODATIONS AND PROJECTS directs that the safe accommodation of pedestrians and bicyclists be given full consideration

during the development and construction of federal-aid highway projects. However, there is no evidence of existing use of the Hurricane Deck Bridge as a pedestrian or bicycle facility. Furthermore, a review of existing maps fails to identify existing destinations within a reasonable distance from the bridge. Nonetheless, either new bridge alternative would be designed to allow the future addition of barrier-separated accommodation for bicyclists and pedestrians, should such need arise.

3a) RIGHT-OF-WAY ACQUISITION AND EASEMENTS

Each build alternative would require some amount of new, permanent right of way. Should any additional temporary easements be needed to provide contractor access for machinery and personnel, impacts will be addressed as the bridge and roadway details are finalized.

The preferred (existing location) alternative would require slightly more than half an acre of new right of way and easements, impacting 3 parcels, and would use an additional 6.58 acres of existing right of way (see Table 1). The preferred alternative would not result in any residential displacements. The adjacent east location alternative would need 5.1 acres of new right of way, impacting 3 parcels, and would use an additional 8.2 acres of existing right of way. No displacements would be required for the adjacent east location alternative.

Table 1. Right-of-Way Impacts

MEASURE	NO-BUILD ALTERNATIVE	PREFERRED (EXISTING LOCATION) ALTERNATIVE	ADJACENT EAST LOCATION ALTERNATIVE
Number of parcels impacted	0	3	3
Residential relocations	0	0	0
Commercial relocations	0	0	0
Acres new right of way	0	0.6 + 0.09 TCE*	5.1
Acres existing right of way	1.95	6.58	8.2
Right-of-Way cost	0	$338,000	$880,000

*TCE=temporary construction easement

MoDOT will acquire all properties needed for this project in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 as amended (Uniform Act; 42 U.S.C 4601), and other regulations and policies as appropriate. The Uniform Act, as well as Missouri state laws, requires that just compensation be paid to the owner(s) of private property taken for public use. The Uniform Act is carried out without discrimination and in compliance with Title VI (the Civil Rights Act of 1964), the President's Executive Order on Environmental Justice, and the Americans with Disabilities Act. MoDOT will provide relocation services to all impacted households without discrimination under guidance of the Uniform Act.

An appraisal of fair market value is the basis for determining just compensation to be offered the owner for property to be acquired. The Uniform Act defines an appraisal as a written statement independently and impartially prepared by a qualified appraiser setting forth an opinion of defined value of an adequately described property as of a specific date, supported by the presentation and analysis of relevant market information. MoDOT will give fair market compensation to individuals who are partially or totally displaced by this project, as the Uniform Act requires.

The Uniform Act further requires that comparable, decent, safe, and sanitary replacement housing within a person's financial means be made available before that person may be displaced. MoDOT also offers a relocation assistance program, and both MoDOT and FHWA policies require that no one can be relocated

until at least one comparable replacement residence has been offered. The new residence must be similar to the existing residence, affordable to the individual, safe, decent, and sanitary. Relocation and compensation are made without discrimination based on race, color, national origin, religion, and age. The MoDOT's relocation program is designed to provide uniform and equitable treatment for those persons who are displaced from their residences, businesses, or farms.

3b) ENVIRONMENTAL JUSTICE

Title VI of the 1964 Civil Rights Act prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance. Title VI seeks to ensure that all groups and individuals have the right to access and participate in the transportation decision-making process. Executive Order 12898, issued in 1994, directs federal agencies to take steps to ensure that minority or low-income neighborhoods are not subjected to disproportionate project impacts. Disproportionate adverse effects are those either mainly affecting a minority and/or low-income population or that the minority and/or low-income population will bear and that are recognizably more severe or of greater significance than the adverse effect that the non-minority and/or non-low-income population will bear.

Environmental justice seeks to:

- avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- ensure full and fair treatment of all people and their involvement in the transportation decision-making process regardless of race, color, national origin, age, or income.
- prevent the denial of, reduction in, or significant delay in benefits received by minority and low-income populations.

The U.S. Census of Population and Housing is conducted every 10 years and the most recent census data available as this EA was prepared is from 2000. The census provides detailed information on the nation's social, household, racial, demographic, and economic composition. The 2000 census recorded racial information at the census Block level, whereas information on poverty and disabilities was recorded at the much larger Block Group level, which in some cases can cover several miles and contains a nationwide average of 39 blocks.

Census Tracts, Block Groups, and Blocks

Census data is broken down to geographic areas that include the nation, state, counties, cities, and divisions within cities.

- The **Census Tract** is a geographic unit for which detailed data are tabulated. The Census Tract is divided into Block Groups and, sometimes, individual Blocks.
- A **Block Group** is made up of a number of city blocks that are combined for reporting purposes.
- Some data for the project area is tabulated at the Block level, composed of individual city blocks.

The majority of the census blocks within the project area had no minority residents during the 2000 census. The majority of the residents north of the bridge are identified as Caucasian, with less than 2.5% minority identified as being of 2 or more races. This is consistent with the general makeup of Camden County, which is composed of 0.3% African-American, 0.9% Hispanic, 0.3% Asian, 0.5% Native American or Alaska Native, 1.0% two or more races, and 0.0% Native Hawaiian or Other Pacific Islander.

The primary difference between the census blocks in the project area versus the state and national records is age. Census blocks within the project area contained almost twice the number of residents 65 years and over (19.8%) compared with the state average (13.5%) or nation (12.4%). Another difference was the number of vacant housing units. The census blocks within the project area contained three times the number of vacant housing units (34.2%) as the average for the state (10.1%) or nation (9.0%). One obvious explanation for these differences is the use of the Lake of the Ozarks for retirement and vacation home location.

The percentage of families within the larger block groups whose income falls below the poverty level (10.8%) is very close to that found across the state (8.6%) or nation (9.2%). The percentage of residents listed as having a disability (22.2%) is also very close to that for the state (19.0%) or nation (19.3%).

No disproportionate number of any protected minority or low-income group will be affected by the replacement of the bridge. No established low-income units or other housing complexes associated with government assistance would be displaced. No minority neighborhoods, business districts, or business clusters catering to any particular group of minorities would be displaced. Since there are no identified statistically significant concentrations of minorities or low-income persons in the area and the demographic profile mirrors that of Camden County, any such impacts are considered to be evenly, or at least reasonably, distributed throughout the project area.

3c) PUBLIC SERVICES

The Camdenton R-III School District is located on both sides of the Hurricane Deck Bridge, with one elementary school located in Osage Beach and one located just north of the project area in Sunrise Beach. The hospital closest to the bridge is Lake Regional Hospital in Osage Beach. Other hospitals in the region are located in Camdenton and Versailles. Emergency medical services are available within a few miles of either end of the project, in Sunrise Beach and just south of the Niangua Bridge. The nearest fire services are also found on either side of the bridge, again at Sunrise Beach and a few miles south on Route 5.

A new bridge, with wider shoulders to help prevent disabled vehicles from blocking the traffic lanes, would enhance emergency services as well as trips for both routine and acute medical care by improving travel efficiency and reliability at the Hurricane Deck crossing.

Although temporary disruptions in travel patterns and travel time may occur during construction, the long-term benefits of a new bridge should far outweigh short-term impacts. Overall, either build alternative would benefit access to public services by eliminating delays from traffic stoppages to accommodate oversized vehicles and agricultural equipment and decreasing closures due to maintenance. With the no-build alternative, delays would continue and closures for maintenance would increase over time.

3d) COMMUNITY COHESION

The proposed build alternatives are either in the same location or adjacent to the existing bridge; therefore, no changes are anticipated to neighborhoods or community cohesion, travel patterns and accessibility, community facilities, or to any special groups such as elderly, disabled, minority, and transit-dependent persons.

Conclusion

Neither the preferred (existing location) alternative nor the adjacent east location alternative is anticipated to result in any long-term negative effects within the vicinity of the Hurricane Deck Bridge. Local traffic patterns may be disrupted during construction and there may be short-term, localized impacts to noise and air quality, but inconvenience to residents and the traveling public will be minimized. The surrounding region will benefit from a new bridge improving travel efficiency and reliability at the Hurricane Deck crossing. The no-build alternative would provide only a short-term improvement and thus may have negative social and economic consequences over time.

4) WATER QUALITY

Water quality is defined for a particular body of water by comparing the physical, chemical, and biological characteristics of the water with a set of standards. The U.S. Environmental Protection Agency (EPA) sets water quality standards based on what the water is being used for. Some uses are drinking, swimming, and keeping fish and other aquatic animals alive.

In the proposed project area, the Lake of the Ozarks is the water resource that could experience water quality impacts. In general, potential impacts to water quality include increased sediment and low dissolved oxygen levels. The no-build alternative's potential water quality impacts are associated with the operation (bridge stormwater runoff) and maintenance of the existing bridge. Potential impacts to water

quality from the build alternatives are associated with constructing (sediment and low dissolved oxygen), operating (stormwater runoff), and maintaining a new Route 5 bridge over the Lake of the Ozarks.

Bridge construction at the Lake's edge makes it possible for soil to wash into the Lake. Over time, increased amounts of soil washed into the Lake can damage the aquatic ecosystem by lowering oxygen levels and covering food sources and fish spawning areas. The Lake is currently designated as restricted for activities occurring in the Lake during spawning season. Because construction projects disturb large areas of land, thus increasing the possibility of erosion, they have potential to cause environmental harm. The Clean Water Act (CWA) of 1972 requires construction sites to put controls in place to prevent pollution from being discharged with stormwater into nearby waterways. Without on-site pollution controls, sediment-laden runoff from construction sites could flow directly to the nearest waterway and degrade water quality. In addition, stormwater could pick up other pollutants such as concrete washout, paint, used oil, pesticides, solvents, or other debris and the polluted runoff could harm or kill fish and wildlife, degrade aquatic habitat, and affect drinking water quality.

The Missouri Department of Natural Resources (MDNR) regulates the control of runoff from land disturbance and issues a permit for the work to MoDOT, although the contractor is responsible for complying with the permit conditions. To protect water quality and reduce impacts during and after construction, MoDOT will comply with MDNR's stormwater regulations (found at 10 CSR 20-6.010), which are intended to prevent soil from leaving the construction site. These regulations require erosion control measures to be put in place when land clearing begins on the project. In accordance with the National Pollutant Discharge Elimination System (NPDES) requirements of the CWA, MoDOT operates under the provisions of Missouri State Operating Permit No. MO-R100007, effective May 31, 2007, a general permit issued for road construction projects statewide. This permit, included in Appendix A, requires using erosion control measures and limits the amount of pollutants that can leave a job site.

MoDOT will implement its Soil and Water Pollution Prevention Plan to prevent or minimize adverse impacts to streams, water courses, lakes, ponds, or other water impoundments within and adjacent to the project area. This MDNR-approved plan is a component of MoDOT's five-year MDNR-issued stormwater permit and was designed to reduce suspended solids, turbidity, and downstream sedimentation that may degrade water quality and adversely impact aquatic life. The plan provides for temporary erosion and sediment control measures that will be included within construction contract specifications.

Erosion and sediment controls may include a combination of ditch checks, silt fence, berms, sediment basins, temporary and permanent seeding, slope drains, etc. MoDOT's best management practices for selecting and using these various measures relate to the topography and the type of work being done. Best management practices are generally applied when land disturbance activities include construction of ditches, slopes, and bridge slopes.

Preventing water quality impacts on a major bridge project presents some slightly different challenges than a road construction project. Although erosion control during construction of the roadway approaches is important, work in the Lake itself warrants special attention. Any project that involves discharge into navigable waters of the U.S. requires a Section 401 Water Quality Certification from MDNR that is linked to the U.S. Army Corps of Engineers (COE) issuance of a CWA Section 404 permit.

This project will require obtaining a Section 401 water quality certification to ensure that the proposed activity does not exceed state water quality standards. The Lake of the Ozarks, Osage arm, is currently on the proposed 2010 303(d) list of impaired waterbodies for its nitrogen levels. Although the Missouri Clean Water Commission has approved the 2010 list, the EPA has not yet approved it and the existing 2008 list is currently in effect. The proposed construction activities will not impact levels of nitrogen in the Lake. All construction activities will comply with the existing rules and regulations of governmental agencies having jurisdiction over streams and water supplies in the area.

Operating and maintaining a highway can adversely affect water quality, vegetation, and associated aquatic life if stormwater runoff washes chemical pollutants from the roadway surface to the Lake during normal roadway operation. These pollutants come from motor vehicles as well as roadway deicing salts.

Pollutants from vehicles can include grease and petroleum from lubricant spills or leaks, antifreeze and hydraulic fluid, and zinc, which is used in tires and motor oil.

The water quality effects from such pollutants would be greatest at locations where stormwater runoff directly enters waterways. Generally the amount of pollutants would be low volume and would have only a localized impact, at most. The shape of MoDOT ditches and the vegetative cover of stormwater runoff areas limit the effects of stormwater and road surface pollutants on water quality.

5) WETLANDS AND WATERS OF THE U.S.

Water resources perform essential biological functions in the environment. Wetlands store water and dissipate energy during storm events, helping reduce flooding and erosion. They remove excess nutrients and some pollutants from surface water runoff and reduce sediment before it reaches open water. Streams support animal and plant community types and are an integral part of the hydrologic cycle. In addition to these functions, public water resources offer aesthetic benefits as well as recreational opportunities including fishing, canoeing, etc.

Executive Order 11990 (Wetlands Protection) established a no-net-loss of national wetlands policy and requires that projects using federal funds avoid the destruction or modification of wetlands wherever possible. Missouri's Executive Order 96-03 calls for similar wetland protection at the state level. The Clean Water Act (CWA) of 1972 requires an evaluation of every project in order to determine whether the project could have a negative impact on any waters of the U.S. including wetlands, streams, ponds, and special aquatic sites. Under the Sections 401 and 404 of the CWA, no action can be taken that will fill waters of the U.S. without first obtaining authorization under a nationwide or individual permit, based on the amount of impacts to water resources.

Section 404 of the CWA authorizes the U.S. Army Corps of Engineers (COE) to regulate impacts to wetlands and waters of the United States through a permitting process. Waters of the U.S. is an inclusive term that covers streams, rivers, wetlands, and other aquatic sites that are under the COE's jurisdiction. All federal, state, and public entities must obtain a permit from the COE before placing dredged or fill materials into waters of the U.S. (as defined in 33 CFR Part 328 –Definition of Waters of the United States"). Section 401 of the CWA requires that water quality certifications be obtained for any activity that results in discharges into streams or jurisdictional wetlands. The Missouri Department of Natural Resources (MDNR) administers the parallel Section 401 certification process. This certification generally requires that several water quality best management practices (detailed in preceding section, –4) WATER QUALITY") be followed. In general, mitigation for impacts is required as a part of the permit if permanent impacts are greater than one-tenth of an acre.

The COE also administers Section 10 of the Rivers and Harbors Act, which controls construction activities in navigable waters of the U.S. Any work in the designated navigational waterway triggers Section 10, which generally allows only the absolute minimum of temporary obstruction to the navigable channel and requires that there be no permanent impacts to the channel.

In general, MoDOT project concerns relating to waters of the U.S. (streams, wetlands, ponds, and special aquatic sites) include potential stream impacts at linear crossings, filling of jurisdictional wetlands, stream channelization, filling of ponds, and filling of designated special aquatic sites. All regulated stream impacts are those that take place below the designated ordinary high water mark (OHWM).

Streams, wetlands, and ponds were initially identified using U.S. Fish and Wildlife Service's National Wetland Inventory (NWI) maps, Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle maps, and aerial photography (2009). A minimal amount of field reconnaissance was conducted to confirm mapped resources and identify any additional unmapped resources.

The Camden County Route 5 Hurricane Deck bridge replacement will impact minimal water resources regardless of the alternative evaluated. There are no wetlands, ponds, or springs in the project area.

Both considered build alternatives would impact only one water resource—Lake of the Ozarks (Figure 9; historically the Osage River, as identified on the 7.5-minute USGS quadrangle map for Green Bay Terrace in the project area). Impacts are similar, if not identical, for each new bridge alternative, relating only to the number of piers placed in the Lake of the Ozarks and temporary impacts associated with accessibility to the Lake and, for the preferred existing location alternative, temporary piers to support new construction.

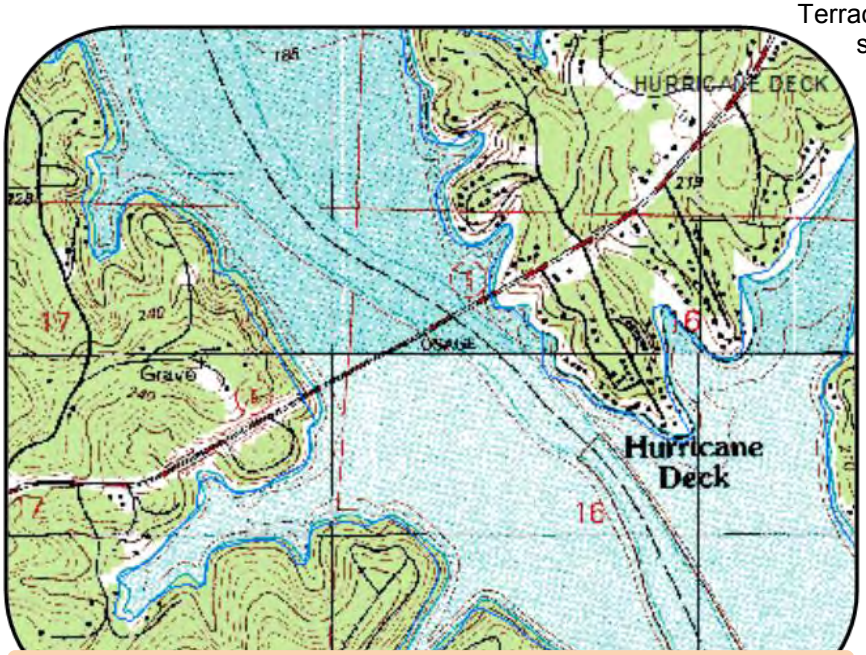

Figure 9. Existing Bridge Location

The preferred (existing location alternative) and the adjacent east location alternative are each anticipated to result in less than 0.5 acre of permanent impacts to wetlands/waters of the U.S. and either alternative is expected to qualify for a Nationwide Permit 14. Based on consultation with the Corps, no mitigation is expected for pier placement only at this time, regardless of the alternative.

6) NAVIGABLE WATERWAYS

Construction of either new bridge alternative would be conducted so as not to unreasonably interfere with navigation on the Lake. A temporary reduction in channel width is anticipated but will not require USCG review and approval. Navigation will be maintained through one span of the bridge for the duration of construction. The Lake of the Ozarks is a navigable waterway by definition for the purposes of regulation under Section 404 of the CWA. The USCG has determined that even though the Lake is a navigable waterway, they do not need to issue a Section 10 permit.

Either considered build alternative would involve demolition of the existing bridge, with potential impact to waterway users associated with blocking the channel through the span for short period of time. The spans would be dropped into the Lake and then salvaged. If the existing bridge is demolished during the summer season, use of the Lake in the vicinity of the bridge would be slowed during demolition, but one span of the bridge would always remain open for navigation. The Water Patrol monitors the demolition on site to provide a safe environment during the span blasting and salvage and this operation is anticipated to have minimal impact on through traffic on the Lake.

Recreational use of the Lake near the bridge may be reduced both during construction and demolition activities, as recreational users may avoid the construction site for safety concerns.

7) FLOODPLAINS

Floodplains are the low lands adjoining the channel of a river, stream, or watercourse—or adjoining the shore of an ocean, lake, or other body of standing water—that have been or may be inundated by flood water. Floodplains provide a number of important functions in the natural environment—creating wildlife habitat, providing temporary storage of floodwater, preventing heavy erosion caused by fast-moving water, recharging and protecting groundwater, providing a vegetative buffer to filter contaminants, and accommodating the natural movement of streams. Executive Order 11988—Floodplain Management, Federal Highway Administration (FHWA) policy and procedures in 23 CFR 650, and other federal floodplain management guidelines direct agencies to evaluate floodplain impacts for proposed actions.

Engineering analyses of floodplain impacts will be conducted during the project's design to avoid and reduce impacts wherever possible.

Floodplains can be described by the frequency of flooding that occurs. With Executive Order 11988, the base, or one percent annual chance, flood was formally adopted as a standard for use by all federal agencies. The base flood is the flood that has a one percent chance of being equaled or exceeded each year. Thus, the base flood can occur more than once in a relatively short period of time. The base flood is commonly labeled the ~~"o~~ne percent flood" and often inappropriately referred to as the ~~"1~~00-year" flood. Larger floods may, and often have, occurred but the one percent flood is the generally accepted regulatory standard. Figure 10 shows a typical floodplain diagram.

The National Flood Insurance Program (NFIP) uses the base flood as the standard for floodplain management and to determine the need for flood insurance. When available, NFIP flood hazard boundary maps and flood insurance studies for the project area are used to determine the limits of the base floodplain and the extent of encroachment (an action within the limits of the base floodplain). The base floodplain is the area of one percent flood hazard within a county or community—that is, the area in which the flood has a one percent chance of being equaled or exceeded in any given year.

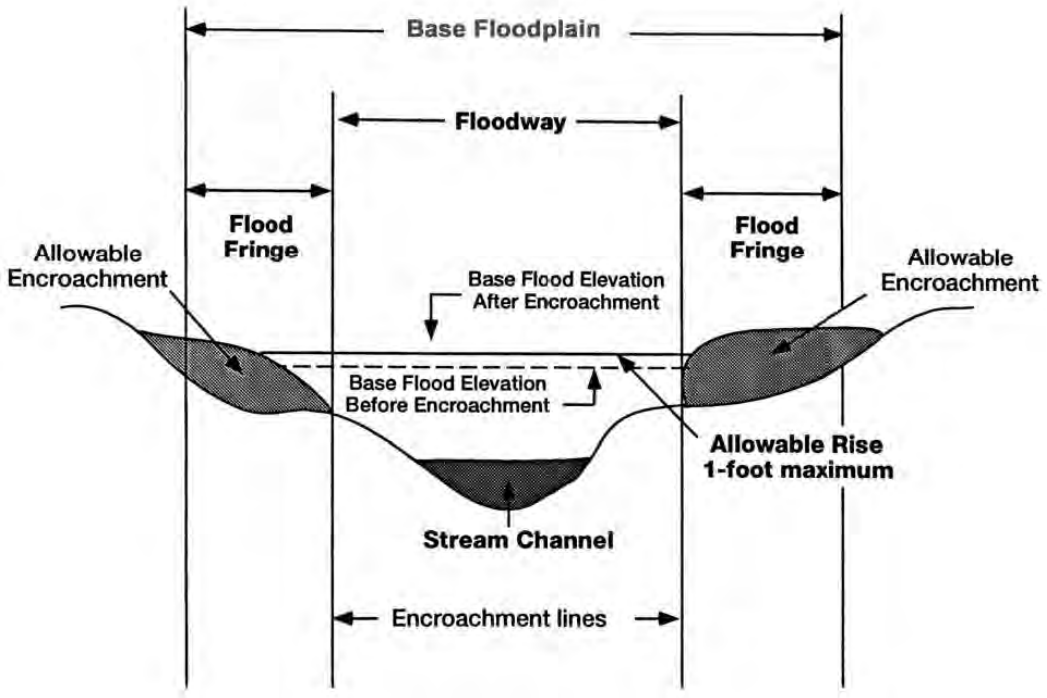

Figure 10. Diagram of Typical Floodplain

The regulatory floodway is the area of a stream or river channel plus any adjacent floodplain areas that must be kept open to convey floodwaters from the base flood without increasing the height of the flood more than a certain amount. Federal Emergency Management Agency (FEMA) restrictions do not allow projects to cause any rise in the regulatory floodway and no more than a one-foot cumulative rise may result from all projects in the base floodplain. The Missouri State Emergency Management Agency (SEMA) issues floodplain development permits for projects involving the State of Missouri. For projects proposed within regulatory floodways, a "no-rise" certificate, if applicable, must be obtained before a permit is issued.

Both considered build alternatives—the preferred, existing location and the adjacent east location—would cross approximately 2200 feet of the Lake of the Ozark's 1% (base) floodplain. MoDOT will obtain the necessary floodplain development permit.

FEMA Buyout Properties

The Flood Disaster Protection Act of 1973, as amended by the Disaster Relief and Emergency Assistance Act of 1988 (The Stafford Act), identified the use of disaster relief funds under Section 404 for the Hazard Mitigation Grant Program (HMGP), including the acquisition and relocation of flood damaged property. The Volkmer Bill further expanded the use of HMGP funds to ~~b~~buy out" flood damaged property affected by the Great Flood of 1993. FEMA has jurisdiction over these buyout properties.

There are no FEMA buyout properties within the project limits.

8) WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act, signed into law October 2, 1968, (P.L. 90-542) was intended to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. Passage of the act created the National Wild and Scenic Rivers System, with eight rivers or river segments initially designated as components of the system and 27 rivers authorized for study as potential components. Subsequently, 195 rivers or river segments have been added to the system (203 total).

Among the eight rivers initially designated a part of the National System was a 44.4-mile section of the Eleven Point River in Missouri (extending downstream from Thomasville to State Highway 142). The Gasconade River (265 miles) was among the 27 rivers authorized for study. The Bureau of Outdoor Recreation's study report transmitted to Congress on May 23, 1977, recommended state preservation of the Gasconade River.

There are no streams or rivers within the project area that are either part of the system or under study for designation to the system. Therefore, the proposed project would not impact any part of the National Wild and Scenic Rivers System or potential candidates to the system.

9) AIR QUALITY

The Clean Air Act (CAA) requires the adoption of air quality standards, quality control regions, and state implementation plans. The federal government established the National Ambient Air Quality Standards (NAAQS), to protect public health, safety, and welfare from known or anticipated effects of sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, ozone, and lead. In addition to these pollutants, the State of Missouri established additional criteria for hydrogen sulfide and sulfuric acid.

Transportation can contribute to four of the six NAAQS pollutants: ozone, carbon monoxide, particulate matter, and nitrogen dioxide. Transportation conformity with the NAAQS, as required by the CAA, ensures that federally funded or approved transportation plans, programs, and projects conform to the air quality objectives established in State Implementation Plans.

MoDOT is responsible for implementing the conformity regulation in nonattainment and maintenance areas. However, the Route 5 study area is located in a non-classified area as defined by the EPA through the CAA. Therefore, the transportation conformity requirements do not apply to this project. Any of the studied alternatives including the no-build alternative would generate only minimal air quality impacts and are not subject to any other air quality analysis.

10) NOISE

MoDOT's noise policy is based on the Federal Highway Administration's (FHWA) noise policy. These policies require that potential noise impacts be considered for Type I projects. Type I projects involve construction of new highways or new alignments, lane additions, or significant changes to vertical or horizontal alignments of existing facilities. A change in vertical or horizontal alignment is considered significant if it causes a highway noise increase of at least three decibels, roughly the threshold at which the human ear perceive a change in noise levels. Normally, halving the distance between a noise source (the roadway) and a noise receiver (such as a residence) causes a three-decibel increase in noise level.

There is no significant change in vertical or horizontal alignment with either alternative. Although the adjacent east location alternative would result in a slight horizontal alignment change, it is not significant. The proposed build alternatives would connect with the existing Route 5 alignment very close to the bridge, shifting the travel lanes only slightly from their existing alignment. None of the alternatives require noise analysis and will therefore not be further evaluated for noise impacts.

11) THREATENED AND ENDANGERED SPECIES

The Endangered Species Act (ESA) of 1973 attempts to ensure that proposed activities do not jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of species habitat. As provided in the ESA, the Fish and Wildlife Coordination Act (as amended) also applies to projects that affect water resources including wetlands, groundwater, impoundment, diversion, deepening, controlling, modifying, polluting, dredging, or filling of any stream or other body of water. The U.S. Fish and Wildlife Service (FWS) administers both of these acts.

Endangered Species Act
- Mandates federal protection for species listed nationally as **endangered**, **threatened**, or **candidate** for listing.
- Federally designated **critical habitat** has been officially identified as critical for the species' protection or survival and is afforded federal protection.

Migratory Bird Treaty Act confers federal protection on migratory birds.

State-listed species are labeled "endangered" at the state level. State-designated critical habitat is identified by the state as important for the protection of state-listed species.

MoDOT has initiated contact with the FWS and Missouri Department of Conservation (MDC) to evaluate the potential for this project to impact any rare species. In addition, MoDOT environmental staff also reviewed MDC's Heritage Database and conducted a site visit to survey the area. The proposed bridge replacement has a small footprint, much of which has been previously disturbed by other developments in the area, including the existing bridge. Several rare species that could occur in the project area are discussed next.

Gray and Indiana Bats

Gray bats (*Myotis griscscens*) use caves year round, for hibernation during the winter months and in the summer to give birth and raise young. The species uses streams, rivers, lakeshores, and wetland areas to travel to and from caves and for feeding at night. Mature vegetation along streams is important to this species as it provides cover for the bats and it also provides habitat for insects which this species preys upon. Removing mature vegetation from the shoreline of the lake could be detrimental to the species.

The closest known gray bat cave is approximately 3.8 miles away from the project site, so neither build alternative would have a direct impact to any caves used by this species. Both alternatives would require removal of some mature trees along the shoreline. However, the amount of riparian habitat that would be removed by either alternative is minimal and has already been disturbed by the existing bridge and other development in the area. Also, there will still be miles of mature trees remaining along the Lake of the Ozarks shores.

Indiana bats (*Myotis sodalis*) also use caves for hibernation, but unlike gray bats, they use forested habitat for maternity and bachelor colonies during the summer breeding season. Suitable Indiana bat summer habitat contains living, dead, or damaged trees with loose or sloughing bark, splits, or cavities. The FWS considers the entire state of Missouri to be within the breeding range of this species and thus any tree clearing activities could impact this species.

Both build alternatives would involve some tree clearing. MoDOT environmental staff conducted a site visit during the winter of 2010. The amount of tree clearing necessary with any of the alternatives is minimal and there are no known records of Indiana bats within five miles of the alternatives (MDC Heritage Database) so the potential to impact this species is low. A survey of the entire area that needs to be cleared will be conducted during the design phase of the project and if any suitable trees need to be removed for construction, MoDOT will only allow those trees to be cleared between November 1 and March 31, while the bats are hibernating in caves.

Bald Eagle

Bald eagles (*Haliaeetus leucocephalus*) were removed from the endangered species list in 2007 and have also been removed from the state endangered list based on increasing population size. Protections provided by their listing under the Endangered Species Act can be credited in part for this recovery. Despite its removal from the ESA, the species is still federally protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Bald eagles return to Missouri around December to form pairs and begin mating and nest building. Eggs are usually laid by mid-February and one or two nestlings hatch by early April. Young usually leave the nest (fledge) in June or July. Bald eagles are most sensitive to disturbance during the early part of the breeding season (courtship and nest building), but they are still vulnerable until the young eaglets leave the nest.

No bald eagle nests were observed near the project corridor during any site visits. However, MDC's Heritage Database does show a record of a nest approximately 1.5 mile southeast of the existing bridge. Both build alternatives for this project are well outside the protection zone for this species so no impact is expected on any known bald eagle nests. New nests are constructed every year and one could potentially be constructed closer to the project limits between now and the time construction begins. If that occurs, MoDOT will conduct the appropriate consultations with the FWS and MDC.

Migratory Birds

Also administered by the FWS, the Migratory Bird Treaty Act (MBTA) protects nesting birds in their summer breeding and foraging habitats. This may include any nesting location used by migratory birds. Transportation projects that affect bridges during migratory bird breeding season could impact species such as swallows that use bridge structures for nesting sites. If migratory birds are nesting on a bridge, the nests cannot be disturbed until the young have fledged and left the area.

MoDOT environmental staff conducted a survey of the existing bridge and did not observe any nests on the structure. That is likely due to the style of the existing bridge, which has no rough surfaces for swallows to attach their nests. Since no birds are nesting on the existing bridge, none of the alternatives should have any impact on migratory birds.

Other Wildlife

The Lake of the Ozarks has a healthy aquatic community that includes numerous species of fish. Most of these species breed in shallow water during the spring and early summer. Any disturbance along the shores or shallow water habitats of the lake during this time period could be detrimental to these species.

The proposed build alternatives have similar impacts along the shores of the lake and thus basically equal potential impacts. Most of the work for either alternative will occur from barges out in deep water. Water levels under this bridge are deep, in places up to 85 feet. There will be minimal work in the shallow water along the shoreline and thus there should be minimal impact to aquatic species, especially spawning fish.

12) HISTORIC AND ARCHAEOLOGICAL SITES

Cultural resources are the physical remains of human activity. They can include archaeological sites, buildings, structures, and objects that show evidence of human activity. Before a federal agency approves spending money or issues a permit or license for a project, Section 106 of the National Historic Preservation Act of 1966 requires the agency to consider how the project would affect historic properties. Section 106 defines historic properties as resources eligible for listing on the National Register of Historic Places (NRHP). The agency must involve the State Historic Preservation Office (SHPO) and other consulting parties in the Section 106 process for the project.

Section 106 encourages, but does not require, the preservation of historic properties. When adverse effects on historic properties are unavoidable, those adverse effects must be mitigated. A Memorandum of Agreement (MOA) is prepared specifying the mitigation measures that will be completed. The MOA is legally binding on all signing parties.

Section 4(f) of the Department of Transportation Act of 1966 [discussed in greater detail in the next section, –13) PUBLIC LANDS & POTENTIAL SECTION 4(f)/SECTION 6(f) PROPERTIES"] also protects certain kinds of NRHP-eligible and listed historic sites. Federally funded actions cannot impact Section 4(f) eligible sites unless there is no feasible and prudent way to avoid the site.

Adverse effects are changes that damage the character-defining feature of a historic property. Demolition, alteration of significant features, and introduction of new elements that detract from the historic property are examples of common adverse effects associated with MoDOT projects.

To comply with Section 106 and Section 4(f), MoDOT first identifies the cultural resources present and then evaluates those resources to determine whether any are eligible for listing on the NRHP. MoDOT makes every reasonable effort to avoid impacts to NRHP-eligible properties. MoDOT staff review previous cultural resource surveys to determine what resources already have been identified in the project area before conducting a survey.

The ***National Register of Historic Places (NRHP)*** is the official list of buildings, structures, objects, sites, and districts that are significant in American history, architecture, archaeology, engineering, and culture. An eligible resource is significant at the national, state, or local level and also must be:

- associated with events significant to the broad patterns of our history; or
- associated with significant persons; or
- significant for its design or construction; or
- provide important information about our history or pre-history.

Previous Surveys

A statewide bridge survey was completed in 1996 (Fraser, Clayton B., 1996, –The Missouri Historic Bridge Inventory: Draft Inventory Report" 5 Vols. Missouri Department of Transportation Project BR-NBIH (6). Loveland Colorado: Fraserdesign, Inc.). The bridge is on the Missouri Historic Bridge List and in a May 20, 1996, opinion the Missouri SHPO determined it —.eligible for *[NRHP]* listing under Criterion C in the Area of Significance ENGINEERING to wit: It is an impressive multiple-arched, cantilevered bridge built to span the Lake of the Ozarks.…The bridge received the 1936 American Institute of Steel Construction's Most Beautiful Bridge Award. Along with its beauty and attractiveness of setting, the bridge is an outstanding long-span example of a bridge-type uncommon in Missouri."

Architectural surveys conducted from 1993–1997 for the previously referenced Route 5 Corridor Draft and Final EIS (MoDOT Project No. J5P0694) assessed some, but not all, of the properties associated with the proposed build alternatives. None of the previously evaluated architectural resources in the project area were determined eligible for the National Register of Historic Places (NRHP). In 1996 and 1997, the State Historic Preservation Office (SHPO) concurred that none of the properties comprising Groups 97, 98, and 102 on the west side of Route 5 (Figure 11) fulfilled eligibility criteria for listing on the NRHP. MoDOT revisited the previously evaluated properties in 2010 for the EIS re-evaluation, and through informal consultation with the SHPO on December 21, 2010, both agencies agreed that the past NRHP evaluations were still valid and the properties were not eligible for the NRHP.

Five archaeological investigations—two power line surveys, a cell tower survey, a MoDOT survey, and subsequent testing of several archaeological sites along Route 5—were conducted during the past 30 years in the general project vicinity. As a result of those previous investigations, there are four archaeological sites (23CM40, 23CM72, 23CM73, and 23CM74) recorded in the vicinity of the Hurricane Deck Bridge. Further investigations at 23CM40, 23CM73, and 23CM74 occurred in 1994 as part of the testing noted above. As a result of that investigation, 23CM40 and 23CM72 were determined to be eligible for listing on the NRHP. Based on the nature of these sites, either proposed build alternative (the preferred, existing location alternative or the adjacent east location alternative) can and will be designed to prevent negative impacts to either 23CM40 or 23CM72.

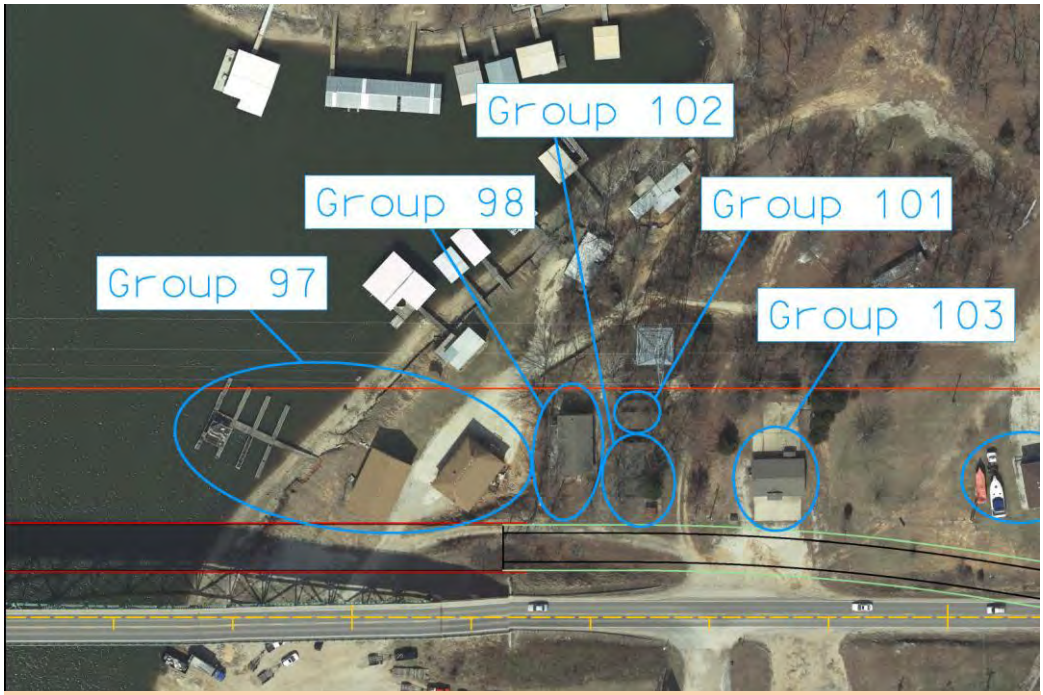

Figure 11. Previously Surveyed Architectural Resources

Route 5 Survey Results

All potential new right of way and easements that would be needed for either the preferred, existing location alternative or the adjacent east location alternative were surveyed for cultural resources. MoDOT historic preservation staff documented the survey results for the State Historic Preservation Office (SHPO) in a Section 106 Project Information Form titled "Phase I Cultural Resources Survey, Camden 5, J5P2188," which was submitted to the SHPO for review and comment. MoDOT staff recommended that the Route 5 Hurricane Deck Bridge K0961R is eligible for listing on the NRHP, the preferred alternative will have an "adverse effect" to the bridge, and that no other historic properties were identified in the area of potential effects (APE). The survey results are summarized below.

Hurricane Deck Bridge Crossing the Osage Arm of the Lake of the Ozarks at mile marker 35, Bridge K0961R is a five-span steel continuous Warren cantilevered deck-truss with two concrete deck-girder approach spans at each end. Built in 1934–36 at a cost of $650,000, it measures 2,280 feet long with a roadway width of 28 feet curb-to-curb. Constructed by the W.A. Ross Construction Company and the Stupp Brothers Bridge and Iron Company, the Hurricane Deck Bridge is the last of its kind in the state and one of only three steel deck-truss bridges built at Lake of the Ozarks. The other two, the Grand Glaize Bridge (J0832) and the Niangua Arm Bridge (K0510A), were replaced with new structures.

The ***area of potential effects (APE)*** is the geographical area or areas where a project may, directly or indirectly, cause changes in the character or use of any historic properties that may be present. The APE is influenced by the scale and nature of the project. Different kinds of effects have different APEs—for example, there is a different APE for archaeological resources than for architectural resources.

Both proposed build alternatives would result in the removal/demolition of the Hurricane Deck Bridge, thus having an ~~"a~~dverse effect" on the historic structure. The no-build alternative is anticipated to have ~~"n~~o adverse effect" on the historic bridge. This EA includes a draft MOA detailing the mitigation measures that MoDOT will complete before the bridge is removed. The MOA also identifies how any unanticipated discoveries would be handled.

Architecture The preferred, existing location alternative would not impact any buildings or structures. The adjacent east location alternative would directly impact buildings or structures located at one parcel within the project footprint. The right of way needed for this alternative would require relocating or removing one commercial outbuilding and a dock, both estimated to be less than 50 years old. The right of way acquisition would encroach on two additional buildings but would not require their removal.

The properties on the east side of Route 5 associated with the adjacent east location alternative were not evaluated for their historic or architectural significance in conjunction with the Environmental Impact Statement (1993–1997). MoDOT Historic Preservation staff conducted field surveys in February 2011 and it is MoDOT's opinion that neither the preferred, existing location alternative nor the adjacent east location would impact any historic architectural resources. The majority of the buildings and structures in the project area are less than 50 years old and none are considered historic or architecturally significant. MoDOT submitted information and eligibility recommendations for all properties with architectural resources in the project area to the SHPO.

Archaeology While no archaeological sites were identified within the project area, the locations of 23CM40 and 23CM72 were carefully examined to ensure that the project will be designed to prevent any adverse effects.

Summary

The FHWA and MoDOT notified and consulted with tribal governments that have expressed historic interest in the project area. Section 106 consultation with tribes and other parties is described in "COMMENTS AND COORDINATION" (page 39).

The SHPO concurred on March 8, 2011, with the MoDOT's recommendations about the eligibility of resources and project effects on those resources. A copy of the SHPO letter is included in Appendix A. A draft MOA among the Federal Highway Administration, MoDOT, and SHPO on how MoDOT will mitigate the adverse effect to the Route 5 Bridge is included with this EA. An executed MOA will accompany the NEPA decision document.

13) PUBLIC LANDS & POTENTIAL SECTION 4(f)/SECTION 6(f) PROPERTIES

Section 4(f) is part of the Department of Transportation (DOT) Act of 1966 that was designed to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. A Section 4(f) eligible property must be publicly owned, except for historic sites, which could be either public or privately owned. Federally funded DOT actions cannot impact Section 4(f) eligible sites unless there is no feasible and prudent alternative.

Section 6(f) is part of the Land and Water Conservation Fund (LWCF) Act of 1965, which was designed to provide restrictions for public recreation facilities funded with LWCF money. The LWCF Act provides funds for the acquisition and development of public outdoor recreation facilities that could include community, county, and state parks, trails, fairgrounds, conservation areas, boat ramps, shooting ranges, etc. Facilities that are LWCF-assisted must be maintained for outdoor recreation in perpetuity and therefore require mitigation that includes replacement land of at least equal value and recreation utility.

Available references do not indicate any public lands within the project limits.

The Route 5 Hurricane Deck Bridge is a historic property, that is, eligible for listing on the National Register of Historic Places (NRHP). Since both considered build alternatives—the preferred, existing location and the adjacent east location—would have an "adverse effect" on the bridge, a programmatic Section 4(f) evaluation will be included with the NEPA decision document.

There are no other Section 4(f) or Section 6(f) issues associated with this project.

14) HAZARDOUS WASTE SITES

MoDOT environmental staff conducted a records review for the project area. The following sources were searched for potential hazardous and solid waste concerns: Federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS); National Response Center Hotline database; Missouri Department of Natural Resources (MDNR) Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites in Missouri; MDNR Missouri Hazardous Waste Treatment, Storage, and Disposal Facilities List; MDNR Solid Waste Facilities List; MDNR Underground Storage Tank (UST) database; Center for Agricultural, Resource and Environmental Systems; and Missouri Petroleum Storage Tank Insurance Fund database.

Based on the sources reviewed, no sites were found within the project area. The potential to encounter wastes from sites unknown to MoDOT is always a consideration. Any previously unknown sites that are found during project construction will be handled in accordance with federal and state laws and regulations.

If regulated solid or hazardous wastes are found during construction activities, the MoDOT construction inspector will direct the contractor to cease work at the suspect site. The construction inspector will contact the appropriate environmental specialist to discuss options for remediation. The environmental specialist, the construction office and the contractor will develop a plan for sampling, remediation, and continuation of project construction. Independent consulting, analytical, and remediation services will be contracted if necessary. The Missouri Department of Natural Resources will be contacted for coordination and approval of required activities.

There will be no lead paint removal from the superstructure prior to demolition. Any major bridge work or demolition requires asbestos inspection and notification and demolition notice to MDNR. MoDOT conducted an asbestos inspection April 15, 2010, and no materials containing asbestos were found.

15) CONSTRUCTION IMPACTS

Although the no-build (rehabilitation) alternative would not involve any new, major construction, vehicular traffic stoppages and idling of vehicles because of lane closures would be the most notable impacts from the actual rehabilitation in the short term and for required maintenance activities on the existing bridge over time. Even routine maintenance of the existing, narrow bridge could be expected to cause a greater impact than maintenance of the build alternatives. Since this type of work necessarily disrupts traffic whenever one lane on the bridge is blocked, reduced traffic flow/increased travel time can be expected to exceed that for maintenance of the wider build alternatives. Short-term impacts such as noise, dust, and pollutant discharges from maintenance activities associated with the no-build would be mitigated in a similar manner to those from the build alternatives.

During construction of either proposed build alternative, the preferred, existing location alternative or the adjacent east location alternative, there would be some short-term, temporary adverse impacts near the proposed action, including noise, dust, and pollutants discharged by construction equipment as well as impacts to motorized and non-motorized traffic and to businesses in the area. Although it would be virtually impossible to totally avoid the kinds of short-term impacts typically associated with the construction phase of a highway project, generally these are among the most readily mitigated impacts. Pollution control measures outlined in the Missouri Standard Specifications for Highway Construction will be used to minimize impacts associated with the construction of any alternative; these measures pertain to air, noise, and water pollution as well as traffic control (e.g., detours) and safety measures. Best management practices will be employed to minimize or mitigate potential impacts.

Ameren Missouri operates the Osage Hydroelectric Project (Lake of the Ozarks) under a 2007 40-year license from the Federal Energy Regulatory Commission (FERC). The utility is responsible for managing development activities for the 1,150 miles of Lake of the Ozarks shoreline within the hydroelectric project boundaries to ensure such activities are consistent with the FERC license. Per Ameren Missouri's shoreline management plan filed with FERC, the utility issues permits to manage the multiple resources

and uses of the Lake's shoreline while protecting the environment and recreation values and addressing the needs of the public. The proposed bridge replacement project will require an Ameren Missouri permit prior to construction.

Work site options

Because the preferred, existing location alternative would re-use the existing bridge piers, its design would be based on a delta frame truss. A delta frame is a triangular shaped truss that extends from the pier up to the bridge girders. The triangular shape allows the girder to span a longer distance between piers, a necessity for re-using the existing piers without constructing additional, intermediate piers. The delta truss design would reduce the number of piers needed for the bridge, which is one reason it could be used for the new Hurricane Deck Bridge. The delta truss construction would only be considered if the new bridge uses the existing bridge piers. Since the adjacent east location alternative would not use the delta truss system, the work site would be similar but smaller than that needed for the preferred.

The delta trusses would be assembled on the lakeshore near the project site (Figure 11), requiring a larger than normal temporary staging/assembly area or work site. Once a truss is completed, it would be floated on a barge to the existing bridge location. The truss would then be jacked onto the existing piers into its final position and the remainder of the bridge would be constructed.

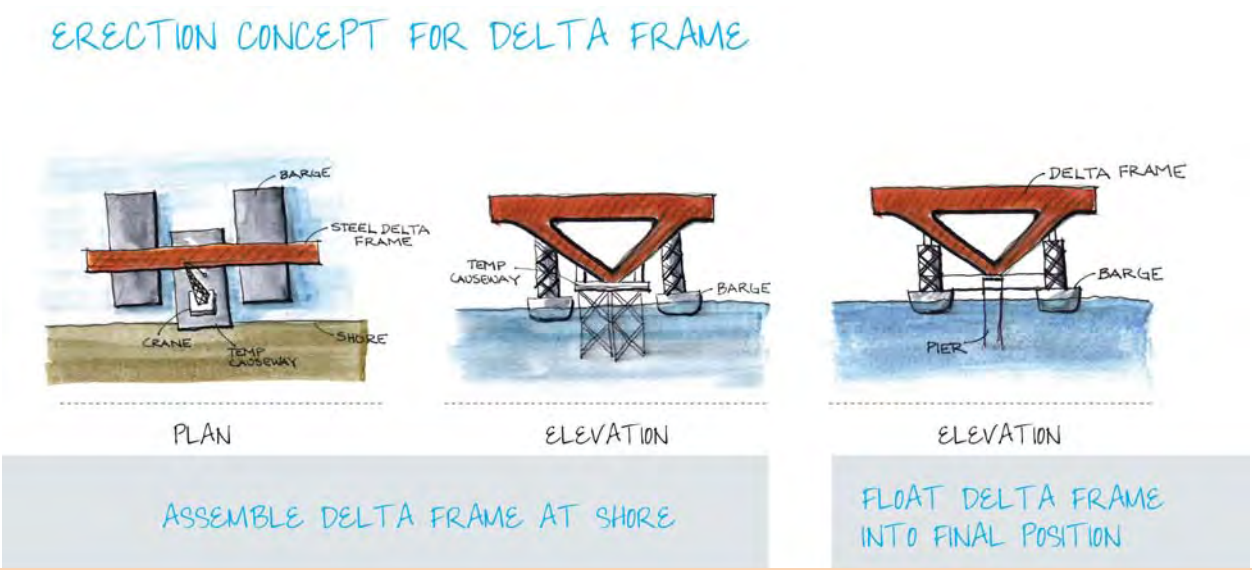

Figure 11. Delta Truss Assembly

Two potential work sites for delta truss construction have been identified, one on the north shore and one on the south shore. MoDOT has discussed with the affected property owners the possible use of these properties via a temporary easement and the property owners are agreeable with that possibility. The contractor would negotiate the easement details with the property owners. Although these areas near the existing bridge are included in this EA, use of either one is optional and the contractor may pursue other locations at their cost. Use of areas outside MoDOT right of way for work sites would be temporary and the areas would be restored to their original contours and revegetated after completion of the project.

The delta truss staging areas would be constructed using sheet piling with clean rock fill behind the piling to form a causeway approximately 400 feet long and 40 feet wide. The causeway would allow a 40-foot barge to dock on each side and the delta frame would be assembled on the two barges. The causeway would likely extend in shallows to the shoreline for easy cleanup and would be removed from the lake after construction is completed. Possible minor dredging for the barges may occur adjacent to the shore to minimize the area of work platform in the lake. Any dredged material would be disposed of outside

MoDOT right of way and away from the shoreline. Impacts to the Lake would be temporary and the shoreline would be restored to its original contours and revegetated.

Construction of the work platform is expected to take a couple of weeks and would be scheduled during normal working hours, with no night work. The construction contract will contain a provision that will not allow construction in the water during spawning season.

The south shoreline option for a work platform is located in a cove and would be visible only from the north shore of the Lake, for a distance of 1.0 mile east of the site. The north shoreline work platform would be visible from the Lake for a distance of 1.3 mile west (upstream) and 2.0 miles east (downstream). Since the work pads would be located along the shore, they would likely blend into the background at distances greater than 1 mile. The delta frame assemblies would extend approximately 70 feet above the work platform and would be around 250–280 feet long with girders attached.

The proposed north shoreline option for a work site is located south of the northeast corner of the existing Hurricane Deck Bridge. The work platform would likely be situated along the shoreline as shown in Figure 12.

Figure 12. North Shoreline Work Site—Concept subject to change

Rough Waters Docks Inc owns a dock assembly business adjacent to the north shoreline option. Using this location for the work platform would require removing docks along this property owner's shoreline,

with potential for temporary minor impacts to the dock business. However, the docks are portable and can be relocated if needed. There are no permanent structures on this property; everything is on trailers or is portable. There is a boat ramp 86 feet north of the proposed work platform. Rough Water Docks Inc also owns a second piece of property in this cove. Figure 12 shows a dock along the shoreline that has since been removed and was not found when the field surveying was conducted. It is anticipated that no more than 0.90 acre of temporary easement would be needed from this property for the north shoreline work site.

Osage Bridge Property Owners owns a piece of property along the back side of this cove. There are no improvements on this property.

K & B Adventures Inc. owns a piece of property across the cove. The homes on the property are located 125 feet and 215 feet from the work pad location. The closest docks on the shoreline of this property are 93 feet and 246 feet from the proposed work platform.

The maximum water depth in the area of the proposed north shoreline work platform is 51 feet (calculated for normal pool elevation of 660 feet and 609 feet minimum lake bottom elevation) at approximately 150 feet off of the shoreline. As indicated on Figure 12, the depths at each corner of the proposed work platform are zero at the northwest corner, seven feet at northeast corner, fifty feet at southeast corner, and fifty-one feet at the southwest corner. Approximately 12,500 cubic yards of fill would be needed to construct the work platform. This area of the lake is used primarily for recreation.

The proposed south shoreline work site option is located south of the southeast corner of the existing Hurricane Deck Bridge. The work platform would likely be situated along the shoreline as shown in Figure 13.

A condominium development owned by Sunset Palms LLC is adjacent to this work site option. The closest condominium building would be 88 feet from the work platform. There is also a walkway along the shoreline that would be 52 feet from the work platform. It is anticipated that no more than 2.75 acre of temporary easement would be needed from this property for the south shoreline work site. The closest structures on the water are docks, one located 256 feet away to the northeast and one 268 feet away to the southwest. The next closest property is located across the cove, 385 feet from the proposed work platform.

The maximum water depth in this area is 33 feet (based on normal pool elevation of 660 feet and minimum lake bottom elevation of approximately 627 feet) at approximately 95 feet off the shoreline. Figure 13 shows the depths at each corner of the proposed work platform—26 feet at the northwest corner, 25 feet at northeast corner, 12 feet at southeast corner, and 4 feet at the southwest corner. Construction of this work site would require approximately 12,000 cubic yards of fill. Recreation is the primary use for this area of the lake.

Traffic Control/Safety

One of a contractor's first tasks on a construction job is to set up traffic control, that is, the warning signs, channelizers, and barricades needed to keep traffic safely in the right place and out of the way of the contractor's operations. With the proposed bridge project over the Lake of the Ozarks, water traffic is a concern in addition to highway traffic. The project would require controlling lake traffic as well as highway traffic. Some disruption is inevitable; however, minimizing it and planning ahead for its impact is key to a successful project.

Because MoDOT plans to maintain traffic on the old bridge—either in its existing location or on an adjacent temporary alignment—during construction of the new bridge, there should be only minimal disruptions to vehicular traffic. Some day- or night-time lane closures would be needed to construct roadway connections between Route 5 and the new bridge location (either temporary or permanent), but MoDOT will require the contractor to flag traffic during these times and to keep back-ups to a minimum. If the alternative ultimately selected for construction incorporates a bridge slide, moving the structure would

require closing Route 5 at the bridge for a period of two to seven days. To protect the traveling public, short-term road closures may also be needed when the old bridge is demolished.

Constructing a new bridge would have some impact on traffic in the immediate area as the contractor's personnel work around the project site. Vehicles bringing materials in and out would add to the existing traffic. A Traffic Management Plan (TMP) will be developed during project design. A TMP lays out a set of coordinated traffic management strategies to manage the work zone impacts. Proposed strategies for managing traffic on this project include staging construction to impact traffic as little as possible, conducting active public information and outreach, scheduling high-impact work for hours of off-peak traffic, installing temporary traffic control devices, and possibly enlisting the help of law enforcement, if necessary.

Figure 13. South Shoreline Conceptual Work Site

Prior to each week's scheduled work, MoDOT will send a news release out to local newspapers and radio stations giving local commuters information about construction activities that could impact their daily travels. MoDOT also publishes construction-related news releases and information on its web site at www.modot.org for those who have Internet access. Work zone impacts and issues would vary through the different stages of construction, making these timely announcements a valuable part of the Traffic Management Plan.

Barges would be used on the Lake throughout the bridge construction work. The contractor would be responsible for obtaining the actual permit for use of navigational controls (buoys and signing) from the Missouri State Water Patrol. Two sets of buoys will be used to control navigation during construction. One set, marked as "No Wake" buoys, will require boats to idle through the work area and minimize the boat wakes. The No Wake zone would extend under the bridge and about 1500 feet on each side of the bridge to protect the work area in the Lake. The other set of buoys, marked as "Keep Out," will establish a 500-foot safety buffer on each side of the bridge around the actual construction area. The Keep Out zone will be adjusted for construction of specific spans and to accommodate passage under the bridge for water traffic. Based on the volume of boat traffic, some additional informational signs and arrows to clearly mark the boat lane are expected.

Construction is expected to take two years to complete. It is anticipated that with the exception of halting water traffic for demolition of the old bridge, one span will be open to traffic throughout the construction period. MoDOT will coordinate with the Water Patrol to schedule the time and duration of any closures.

Air Quality

Air quality concerns associated with bridge construction typically arise from the operation of construction equipment such as barges and cranes. Similarly, equipment such as bulldozers, haul trucks, and pavers are used in the construction of the roadway approach to the bridge. All of these types of equipment use diesel engines that put out exhaust gases similar to those from commercial river barges and over-the-road trucks. The level of contaminants in the exhaust can vary greatly depending on the condition of the equipment, thus making it important to keep equipment in good operating condition. Emissions from construction equipment will be controlled in accordance with emission standards prescribed under state and federal regulations.

Materials resulting from clearing and grubbing, demolition, or other operations (except materials to be retained) will be removed from the project, burned, or otherwise disposed of by the contractor. Open burning of trees and brush cleared from construction areas is a potential air quality concern. MoDOT has changed its construction specifications and no longer permits open burning except for small quantities as described in the contract. In lieu of open burning, the contractor will attempt to harvest marketable timber, use mulched timber for erosion control, and compost excess mulch. Any burning, when permitted, will be conducted in accordance with applicable local laws and state regulations. Contractors are no longer allowed to burn construction debris such as plywood or cardboard containers, and they must monitor their brush fires. Man-made waste must be hauled to a landfill, so the smoke generated by this activity is little different from that of a natural forest fire.

Under dry conditions, heavy traffic or strong winds can cause dust from the soil itself to become airborne (fugitive dust), resulting in air quality impacts. Contractors are required to control this fugitive dust to keep it from leaving the project limits, just as they must make efforts to control soil particles that stormwater tends to carry away. This is typically accomplished by watering the ground during dry periods to keep the dust down.

Contractors must comply with all federal, state, and local laws and regulations. They must also work within the requirements of their operating permits issued through the Missouri Department of Natural Resources.

Noise

Probably the most noticeable noise generated during construction will be during the installation of the temporary bridge piers. The installation of the steel piers will require the use of a pile driver. Driving pile

is much like ringing a bell, in that the sound travels long distances. Because this operation would probably be heard very well along the lakefront adjacent to the bridge, MoDOT will prohibit pile driving at night. In any case, pile-driving activity would be relatively short in duration, lasting days or weeks until the work is completed. Possible nighttime activities could include pouring concrete deck (to avoid excessively high daytime temperatures) and, for the preferred, existing location alternative, sliding the bridge.

Noise could also be expected from the operation of equipment such as cranes, bulldozers and other typical earth-moving equipment like excavators or front-end loaders, and trucks. To reduce the impacts of construction noise, MoDOT has special provisions in the construction contract requiring that all contractors comply with all applicable local, state, and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. Construction equipment will be required to have mufflers constructed in accordance with the equipment manufacturer's specifications.

Use of explosives could be expected for demolition of the trusses and bridge piers. These blasts would be expected to be limited in number and will be scheduled for daytime occurrence to avoid disrupting residential night-time quiet.

Protected Habitat

Certain trees offer roosting opportunities for the federally endangered Indiana bat in the summer. Suitable roosting trees will be removed during the period between November 1 and March 31 to avoid possible direct impacts to Indiana bats during the summer maternity season.

Water Quality

Preventing water quality impacts on a major bridge project presents some slightly different challenges than a road construction project. Controlling erosion during construction of the roadway approaches is certainly important but work in the Lake itself must be given special attention. Bridge construction uses barges and when the water level drops too low, the area adjacent to the work platform may be dredged to maintain access for the barges. Any dredged material would be disposed of in an upland location off MoDOT right of way. All necessary measures to control turbidity will be undertaken.

The Missouri Department of Natural Resources (MDNR) regulates the control of runoff from land disturbance and issues a permit for the work to MoDOT, not to the contractor. Erosion control measures must be put in place before land clearing begins. As discussed earlier in ~~4~~) WATER QUALITY," MoDOT's Pollution Prevention Plan provides for temporary erosion and sediment control measures that will be included within construction contract specifications. Careful refueling practices will limit spills of gasoline and diesel fuels. Oil spills can be minimized by frequent checks of construction equipment.

Utilities

A Central Electric power transmission line is located west of the existing Hurricane Deck bridge. There will be no impact to the line from the project; however, the contractor will have to maintain awareness of the line's location during construction.

Various utilities are located either within or outside the right of way off either end of the bridge. Local utility lines (electric, telephone, and cable usually share poles) cross Route 5 on the north end of the project. The preferred, existing location alternative would have minimal to no impact on the existing utilities. The adjacent east location alternative would require the existing utilities' poles and lines to be relocated. Details of utility disposition will be determined during project design.

A utility line that crosses the bluff beyond the southern project limit will not be impacted. MoDOT's electrical service line on the bridge for navigational lighting will be disconnected and reconnected to the new structure. Temporary power or lights will be needed to maintain navigational lighting.

MoDOT's utility engineer and representatives of the utilities will work out details of individual utility adjustments on a case-by-case basis.

Anticipated construction sequence

The construction sequence described is based on the preferred alternative's delta truss design. The sequence for each of the two variations would be somewhat different and potential start dates are based on a January 2012 award. Upon completion of the project, all temporary structures, roadway, work pads, and piers will be removed and affected areas will be restored to their original, pre-construction contours and revegetated.

For Variation 2, preparation of the existing bridge for sliding, installation of navigational control devices, construction of the temporary piers and the work pad for assembling the delta trusses, and construction of the temporary roadway and approach spans could begin at the project site as early as March 2012. When these activities are completed, the bridge would be moved onto the temporary piers. After the existing structure has been moved and opened to traffic, the caps on the existing piers would be removed and reconstructed. The new bridge girder system would be constructed, the deck poured, and the approach spans widened. The new bridge would be opened to traffic after the roadway, guardrail, and pavement markings are completed. Finally, the old bridge would be removed along with the temporary approaches and piers and the work pads.

With Variation 4, construction of the work pad for assembling the delta trusses and installation of the navigational control devices are the first activities anticipated at the project site and would likely not occur until summer 2012 or later. As steel begins arriving, the temporary pilings and temporary roadway approaches would be installed adjacent to the existing piers while the delta trusses are assembled. After the pilings and caps are completed, the delta trusses would be floated to the temporary piers and lifted into place. While the new bridge deck is being constructed atop the girders, a temporary roadway and bridge approach would be built. When the new bridge deck and temporary roadway are completed and open to traffic, the old bridge would be removed. The existing pier caps would then be removed and reconstructed for the new bridge, and the existing approach spans would be reconstructed or widened to match the new bridge width. Once the reconstruction of pier caps and approach spans is completed, the new bridge would be closed to traffic and slid laterally onto the reconstructed piers. The new bridge would be opened to traffic as soon as it is in place and the roadway, guardrail, and pavement markings are completed.

16) OTHER

Missouri Gas Utility, Inc. is currently conducting a feasibility study on expanding natural gas into the Lake of the Ozarks region. This study consists of obtaining franchise agreements, permits, and easements. One possibility being considered would involve boring beneath the Lake near the existing Hurricane Deck Bridge for the gas line. If this were to be implemented before or during construction of a new bridge, MoDOT would coordinate with the utility to minimize impacts.

There are no other additional impacts to consider.

WILL THE PROPOSED PROJECT RESULT IN ANY CONTROVERSY? YES [ ] NO [X]
(If yes explain):

Overall, comments from the February 28–March 15, 2011, on-line public meetings are supportive of this project. Although any project offers potential for controversy, MoDOT proposes using an innovative concept that will minimize the road closure during construction and result in cost savings.

COMMENTS AND COORDINATION

All written communications referenced in this section are included in the appendices.

Early Agency Coordination

MoDOT Bridge personnel contacted the USCG by telephone and e-mail in November 2010, requesting a jurisdictional determination regarding the bridge replacement. The agency responded via e-mail, —.pursuant to the Coast Guard Authorization Act of 1982, the Hurricane Deck Bridge replacement over the Lake of the Ozarks does not involve bridges over a commercially navigable waterway of the United States. Therefore, a Coast Guard bridge permit is not required for this project."

In January [and February] 2011, project information packets and invitations to attend an interagency scoping meeting for the Hurricane Deck Bridge EA were sent to the following agencies: U.S. Army Corps of Engineers (COE) Kansas City District, U.S. Coast Guard (USCG), U.S. Environmental Protection Agency (EPA), Federal Emergency Management Agency (FEMA), U.S. Fish and Wildlife Service (FWS), Missouri Department of Conservation (MDC), [Missouri Department of Economic Development (MDED)], Missouri Department of Natural Resources (MDNR), Missouri State Emergency Management Agency (SEMA), [Missouri State Historic Preservation Office (SHPO)], Missouri State Water Patrol (MSWP), and Camden County. Ameren Missouri, although not an agency per se, was also invited to the scoping meeting because the company is responsible for shoreline management and permit issuance per its FERC operating license. The COE was also asked to accept cooperating agency status for the EA. Sample cover letters are included in the appendices.

The COE agreed to serve as a Cooperating Agency for the project in a February 10, 2011, e-mail.

Tribal Consultation

Tribal governments of the Choctaw Nation of Oklahoma, Delaware Nation of Oklahoma, Ponca Tribe of Nebraska, and Osage Nation of Oklahoma were contacted in January 2011 and provided with project information packets, additional information relating to site 23CM40, and an invitation to attend the interagency scoping meeting. These tribes had each previously indicated tribal interest in the project area.

The Delaware Nation requested further information on the project in a February 16, 2011, e-mail. A CD containing the 1993 Phase I Survey Report for the Route 5 Corridor EIS (MoDOT Project No. J5P0694; Camden, Laclede and Morgan Counties, Missouri), the 1994 Phase II testing of sites, and MoDOT's 2011 Section 106 submittal to the SHPO was sent. A subsequent Delaware Nation response dated April 28, 2011, iterated the Nation's commitment to protecting sites important to tribal heritage, culture, and religion, particularly archaeological sites that may contain human burials, remains, and associated funerary objects. The response also stated that the location of the project does not endanger known sites of interest to the Delaware Nation and may continue as planned. The Delaware Nation requested, however, that the appropriate state agencies be contacted immediately as well as the Nation itself (within 24 hours) in the event the project inadvertently uncovers an archaeological site or object(s). Additionally, all construction and ground disturbing activities should be halted until the tribe and state agencies are consulted.

The Osage Nation responded to the scoping meeting invitation by e-mail and hard copy dated March 1, 2011. In response to the invitation statement that the alternatives being considered would not impact any known sites, the Osage Nation pointed out that they were not consulted regarding the potential impact that the proposed project may have upon either the known or unknown locations in the project vicinity. The Osage Nation requested —.consulting party status in all agreements regarding historic preservation made as a result of this undertaking" as well as —. an opportunity to participate in a one-on-one consultation concerning the referenced project." They further requested —.copies of all documents related to the undertaking including… Cultural Resource Surveys." The Nation additionally expressed a belief that MoDOT ~~w~~as aware of the date of the meeting long before the Osage Nation was notified" and stated a need for earlier notification of such meetings as their office is generally unable to travel with such short notice.

MoDOT replied to the Osage Nation by letter of March 4, 2011, enclosing a CD with the requested documents. MoDOT refuted the belief that the agency was aware of the meeting date long before

informing the Osage Nation, noting that scoping meeting invitations were sent to the Osage Nation and all regulatory agencies within a few days of the meeting date selection. Additionally, MoDOT pointed out that had the Osage Nation advised MoDOT or FHWA of their inability to attend the scoping meeting, arrangements could have been made for tribal representatives to participate at least remotely via teleconference or videoconference. The letter further stated that MoDOT and FHWA are still soliciting tribal input regarding this project and welcome participation by the Osage Nation. Tribal representatives are welcome to visit the project area and may also submit comments via the on-line, virtual public meeting.

On April 26, 2011, Peggy Casey, FHWA, and Bob Reeder, MoDOT Historic Preservation Section, met with representatives of the Osage Nation in Joplin, Missouri, for one-on-one consultation about the project as requested in the Osage Nation's March 1 communication. Tribal representatives included the Tribal Historic Preservation Officer, two members of the Nation's archaeological staff, and three members of the Tribal Cultural Committee. The Osage Nation was concerned that previously provided preliminary project information indicated possible project impacts to a nearby sensitive archaeological resource. The Nation was pleased to hear that more recent project decisions have eliminated possible impacts to the resource. The Nation also asked about the status of human remains found at several sites examined during the 1994 fieldwork for the Camden Route 5 project. The Nation presented no other objections or concerns with the project. The Osage Nation did request and was granted an opportunity to visit the project area and archaeological site, with tribal representatives and MoDOT staff planning a site visit soon after the consultation meeting.

MoDOT responded to the Osage Nation that human teeth from a rock shelter were transferred to the SHPO to comply with the Missouri's Unmarked Human Burials statute. MoDOT further confirmed that human remains found at a cairn were placed back in the cairn following their discovery.

On May 5, 2011, MoDOT Design and Historic Preservation staff met with the Osage Nation Tribal Historic Preservation Officer and several tribal archaeological staff on-site of the Hurricane Deck Bridge project to review the status of site 23CM40. In general, the meeting consisted of a short tour to look at the site and surrounding area to allow everyone an opportunity to understand the setting and the proposed improvements that would occur as part of the bridge replacement. The Osage were also provided with the property owner contact information they requested.

During the Hurricane Deck Bridge replacement project and at the request of the Osage Nation, MoDOT has made the following commitments:

- The required removal of approximately one to three feet of the existing rock face along Route 5 at the base of the slope from station 521+50 to station 525+00 will be accomplished from the existing roadway by chipping away the rock face.
- The construction contract will include a job special provision specifying that no heavy vehicles will be placed on the slope above the existing road cut.
- The entire area south and west of the bridge within the project limits will be designated as off-limits to all MoDOT contractor activity, equipment, and vehicular or foot traffic during the project activities.

Interagency Scoping Meeting

An interagency scoping meeting for the Route 5 Hurricane Deck Bridge EA was held at the MoDOT Central District office in Jefferson City on February 24, 2011. A presentation of the project was given at the meeting and agency representatives were invited to ask questions and provide input on the project. The agencies that sent representatives to the scoping meeting were MDNR, MSWP, MDED, FHWA, and MoDOT. Ameren Missouri had two representatives at the meeting.

During the scoping meeting, the MSWP representative expressed concern about a proposed Route F staging area that extended out into the main navigation channel. He recommended the proposed locations adjacent to the bridge since they would be within the navigational control area for the bridge

construction. Ameren concurred with the MSWP and MoDOT subsequently dropped Route F from further consideration as a staging area.

An Ameren representative stated that Ameren would yield to the other agencies regarding mitigation. MoDOT environmental staff do not expect any mitigation to be required for the staging areas since they are temporary. The adjacent west location alternative is already covered in the existing, merged Section 404 permit for Route 5, and discussion with the COE on the other alternatives indicates they could be covered by a nationwide Section 404 permit.

The MSWP representative informed the group about the "Shoot Out" boat race held every August just east of the bridge. The race is a benefit fundraiser for the emergency service groups in the lake area and it is preferred that the contractor not work on the water that weekend.

Preliminary EA

Copies of the preliminary EA were provided to the COE for their review as a cooperating agency and to Ameren Missouri for discharge of their responsibility to manage development activities consistent with the Federal Energy Regulatory Commission (FERC) license under which they operate the Lake of the Ozarks hydroelectric project. Their e-mail responses are included in the appendices.

The COE had no additional comments and iterated the anticipation that the project will be covered under Nationwide Permit 14 with minimal impacts.

Ameren voiced agreement with the Existing Location preferred alternative, which "would reuse existing infrastructure (piers and/or approaches) to minimize environmental impact to the lake and surrounding areas." The utility further commented that the additional support piers required for the Adjacent East alternative "would create a less aesthetically pleasing appearance and more pier structures in the lake that could possibly create more interference for navigation. The delta truss design, supported on the existing piers, could create a bridge that provides some resemblance to the historic bridge." Ameren stated that any temporary excavation or fill could be included with the bridge permit, which will be reported to the FERC. Approvals from federal, state, and local consulting agencies will be obtained prior to Ameren's issuance of a bridge permit.

Coordination with the Public

MoDOT held an online public meeting from February 28–March 15, 2011, to provide information about the proposed project and obtain comment from interested parties. Written comments were provided by 50 individuals from the 269 visitors to the web page during the two-week comment period. Forty-three comments supported replacing the bridge and two comments were in favor of saving the historic structure and rehabilitating it. Twenty percent of the comments emphasized a need to minimize disruption to traffic. A dozen people preferred an entirely new bridge adjacent to the existing one while another dozen favored re-using the existing piers and location via a slide. Nineteen additional comments expressed a desire that the bridge be replaced but did not state a location preference.

Of the seven comments specifically on bicycle/pedestrian accommodation, 71% said it is needed and 29% stated it isn't needed. Five comments expressed a specific preference for the delta truss design.

Figure 14. Hurricane Deck Bridge On-line Meeting Comments

Mr. Nathan Holth e-mailed a request for some additional information about the bridge's condition and the scope of the rehabilitation project that was originally proposed. This inquiry was treated as a request under the Open Meetings and Records Law, commonly known as the Sunshine Law, and the requested material was supplied. Mr. Holth also asked whether Section 106 has been conducted for this project yet and stated an ~~a~~assumption that canceling" the plan to rehabilitate this bridge ~~a~~nd considering a replacement project would trigger a Section 106 process." The Section 106 process has been initiated and is in progress. However, MoDOT would like to clarify that the rehabilitation would also trigger Section

106 and would require concurrence on a determination of effect from the State Historic Preservation Office.

Mr. Holth submitted comments in an April 26, 2011, letter and e-mail and also requested to be a Section 106 consulting party for the project. On May 3, Mr. Holth was notified by e-mail that MoDOT and the FHWA had discussed his request for Section 106 consulting party status on the Hurricane Deck Bridge project and agreed to it. The e-mail briefly outlined the responsibilities of both parties (MoDOT and Mr. Holth) relating to the Section 106 process and offered the possibility of remote participation via telephone should Mr. Holth be unable to attend future meetings in person because he does not live in Missouri.

Mr. Holth stated that he is a private citizen not affiliated with any organization or agency and is neither an engineer nor a certified bridge inspector. He acknowledged a bias toward preserving historic bridges and indicated that although he might be critical of decisions made by MoDOT or other involved parties, his intent is not to offend, alienate, or accuse but to help MoDOT and other parties develop the best possible solution for the bridge. Mr. Holth thanked MoDOT staff for providing him the project information needed to submit his detailed comments as well as for accepting the comments after the due date, enabling a thorough review of the information provided.

Mr. Holth voiced his opinion that a cost-effective rehabilitation of the Hurricane Deck Bridge could be designed that, combined with proper routine maintenance and repair following rehabilitation, would also provide 50-–75 years of service life. He believes the superstructure's rating of poor indicates ~~a~~ structure for which a well-designed comprehensive rehabilitation would likely be feasible and probably cost significantly less than replacement."

The 2010 bridge inspection report described heavy pack rust on the floorbeams, listing the section loss as minor. Mr. Holth mentions methods for removing pack rust and notes that if removing the pack rust from the floorbeams did not solve the problem, ~~t~~the floorbeams could be replaced while undoubtedly retaining a no adverse effect finding on the historic bridge." He questions whether rehabilitation is even needed for the upper deck truss members, which were in generally good condition with little to no deterioration evident at the 2010 in-depth inspection. Mr. Holth suggested that a simple coat of paint may be all that is needed in this area, with significant pack rust and cracking of some of the lateral bracing being the only concern for this part of the structure. He further noted ~~T~~these small and minor members could be replaced with new ones, again likely with no adverse effect on the historic bridge."

Mr. Holth concludes that the conditions described in the bridge inspection report ~~s~~seem to indicate … no severe problems with the bridge. Indeed, the fact that the lowest rating on the bridge is 4 (Poor) rather than something lower like 3(Serious) or 2(Critical), may confirm this in a broad sense." He states that rather than comparing a short-term solution (minor rehabilitation project) to a long-term solution (demolition and bridge replacement), a ~~c~~comprehensive rehabilitation" alternative to bring the bridge from its deteriorated state to a like-new state would be the appropriate comparison. Although Mr. Holth acknowledged that a rehabilitation to like-new condition—with extensive repairs to the superstructure, including correcting the section loss on the trusses—would cost much more than MoDOT's original proposed rehabilitation, he asserted that it should still cost considerably less than a replacement bridge, ~~if~~ designed by an engineer with extensive experience in historic bridge rehabilitation."

Mr. Holth considers a statement in the bridge inspection report—~~T~~this bridge has a similar design to that of the I-35 structure in Minneapolis, making it one that should merit special consideration for replacement in the future and a priority for the district"—misleading and potentially false. He said that he was ~~…~~.very taken aback by seeing people who work with bridges on a daily basis make these same sort of misleading and even false statements about the I-35W Bridge" and concludes that because the bridge has not been closed to traffic, it ~~d~~oes not have the problem that I-35W did and that its gusset plates are the correct size." (After its collapse, an error in the I-35 bridge's design was found to have sized gusset plates incorrectly.) While acknowledging ~~t~~hat there are some very generalized similarities between the I-35W Bridge and the Hurricane Deck Bridge," Mr. Holth said he could ~~p~~oint to numerous fracture critical truss bridges with gusset plates which have faithfully and safely carried vehicles for over a century, and I can further provide examples of bridges of this type which have been rehabilitated for continued use." He stated that although both bridges were designed by the same engineering firm, the specific design and composition of the Hurricane Deck trusses are different, it was built in a completely different time period, and other Sverdrup and Parcel designed bridges continue to safely carry traffic in Missouri and other states. He voiced his concern ~~t~~hat this comparison did in fact play a role in deciding to replace this bridge, and I do not believe that is the best way in which to determine the appropriate project for this crossing. Doing so would put the need for frugal spending of taxpayer dollars and the need to consider the preservation of this historic bridge at an unfair disadvantage."

In regard to Section 106 consultation conducted during preparation of the 1997 FEIS that proposed building a new bridge next to the existing bridge to provide additional travel lanes, Mr. Holth disputes the 1996 SHPO concurrence of an adverse effect from obscuring the view of the historic structure by incompatible new construction and ~~w~~would argue instead that such a solution would avoid adverse effect because it would prevent the demolition of the historic bridge, and would also rehabilitate the historic bridge."

In conclusion Mr. Holth recommended ~~t~~hat MoDOT reconsider the alternatives for this project, with the addition of a comprehensive rehabilitation, all the while without making any comparisons between the Hurricane Deck Bridge and the I-35W Bridge" to ~~e~~nsure that the final decision made for this bridge is based on balanced and factual information." He urged the use of an engineer with ~~a~~ significant portfolio of experience in designing successful historic truss bridge rehabilitation projects" to design preliminary plans for a more extensive and comprehensive rehabilitation to be compared with the replacement alternative. Mr. Holth offered to assist MoDOT in finding a good engineer for the project because ~~a~~n inexperienced engineer may produce a rehabilitation project that costs more while at the same time producing a final bridge product that will not offer the best possible service life. In contrast, an engineer

who has worked extensively with successful historic bridge rehabilitation projects can often design a rehabilitation that costs less than replacement, yet will provide decades of service life."

MoDOT engineers' response to Mr. Holth's comments follows:

The structurally deficient Route 5 bridge was built more than 75 years ago and is near or at the end of its useful service life. It certainly has served motorists very well for many years; however, the age and condition of the bridge creates an ongoing need for maintenance, resulting in substantial expense to taxpayers and great inconvenience for the traveling public.

A ~~3~~" or ~~4~~" condition rating means a bridge has significant problems, whereas a ~~2~~" is only issued for a bridge that needs immediate closure. On the Hurricane Deck bridge, a condition rating of ~~4~~" is assigned to the superstructure, which is the entire truss.

MoDOT originally programmed a project to do a limited rehabilitation of this bridge with the intent to extend the life of the bridge by about 10 years. The scope of the rehabilitation project did not include any deck work. It mainly included making multiple structural repairs, replacing some rivets with high-strength bolts and painting the structure. Many areas of the truss have severe pack rust and section loss. From MoDOT's experience on multiple truss bridges from this era, we have found that you can clean and paint all you want; however, the rust will keep coming back and the bridge will continue to corrode requiring an additional rehabilitation project in about 10 years. Every time you remove pack rust and repaint it, the next coat of paint lasts half as long as the previous one.

MoDOT did not pursue a rehabilitation with a 50- to 75-year life expectancy for the following reasons:

- The truss structure restricts the roadway to a narrow, 28-foot width and it cannot be widened to accommodate the desired 38-foot roadway
- The rail is substandard
- The bridge cannot be used by overweight or superload trucks
- Bicyclists and pedestrians cannot be accommodated should the need develop
- Replacing the structure is more cost effective, based on both up-front and life-cycle costs

The Hurricane Deck Bridge is very similar in design to the I-35W Bridge that collapsed in Minneapolis in 2007. Both are/were fracture critical, deck truss bridges with spans of about 500 feet. MoDOT is keenly aware that a design error on a gusset plate is what led to the collapse of the I-35W Bridge. We have checked the design of the gusset plates on the Hurricane Deck Bridge and found that they met the design standards for the time period when the bridge was built. The gusset plates are under-designed for today's heavier trucks but the bridge is not in danger of imminent collapse. The fact that the same firm designed both bridges had nothing at all to do with MoDOT's determination that replacing the bridge would be the best use of transportation dollars.

SUMMARY OF IMPACTED RESOURCES:

1) FARMLAND IMPACTS

The proposed build alternatives—the preferred, existing location and the adjacent east location—are located within the 600-foot-wide corridor of the Route 5 EIS Preferred Alternative (~~E~~xpressway" Alternative #2). The preferred alternative would require slightly more than half an acre of new right of way and easements and the adjacent east location alternative would need 5.1 acres of new right of way. Acreage potentially eligible for farmland impact evaluation within ~~E~~xpressway" Alternative #2 was rated for the EIS in 1997 and received a cumulative point rating of 119, significantly less than the 160-point threshold established for farmland protection.

Parts of the project area are also within city limits or the land within it is devoted to non-agricultural use, falling under the Farmland Protection Policy Act (FPPA) definition of –land committed to other uses." For these reasons, farmland impact will not be reevaluated.

2) COMMUNITY IMPACTS

There would be few social impacts associated with the build alternatives, as the proposed new bridge would be either in the same location or adjacent to the existing bridge. No changes are anticipated to neighborhoods or community cohesion, travel patterns and accessibility, community facilities, or to any special groups such as elderly, disabled, minority, and transit-dependent persons.

Neither considered build alternative would have any permanent, adverse impact on economic growth and development nor would either alternative negatively impact the region's competitive position. A new bridge would increase travel efficiency and reliability, thus improving the community's position for economic growth and development. The no-build alternative may have negative economic consequences.

Although temporary disruptions in travel patterns and travel time may occur during construction, the long-term benefits of a new bridge should far outweigh short-term impacts. Overall, either build alternative would benefit access to public services by eliminating delays from traffic stoppages to accommodate oversized vehicles and agricultural equipment and decreasing closures due to maintenance. With the no-build alternative, delays would continue and closures for maintenance would increase over time.

Right-of-way Acquisition and Easements

The preferred (existing location) alternative would require slightly more than half an acre of new right of way and easements, impacting 3 parcels, and would use an additional 6.58 acres of existing right of way. The preferred alternative would not result in any residential displacements. The adjacent east location alternative would need 5.1 acres of new right of way, impacting 3 parcels, and would use an additional 8.2 acres of existing right of way. No displacements would be required for the adjacent east location alternative. If any additional temporary easements are needed to provide contractor access for machinery and personnel, impacts will be addressed as the bridge and roadway details are finalized.

It is anticipated that the bridge over the Lake would need to be accommodated by an Ameren Missouri permit.

Conclusion

Neither the preferred, existing location alternative nor the adjacent east location alternative is anticipated to result in any long-term negative effects within the vicinity of the Hurricane Deck Bridge. Local traffic patterns may be disrupted during construction and there may be short-term, localized impacts to noise and air quality, but inconvenience to residents and the traveling public will be minimized. MoDOT will work with community and area residents to aid in identifying possible impacts as well as solutions associated with the proposed project. The surrounding region will benefit from a new bridge improving travel efficiency and reliability at the Hurricane Deck crossing. The no-build alternative may have negative social and economic consequences.

3) WETLANDS AND WATERS OF THE U.S.

Both considered build alternatives would impact only a single water resource—Lake of the Ozarks. The impacts for each new bridge alternative vary only in the number of piers placed in the Lake, temporary impacts associated with accessibility to the Lake, and for the preferred existing location alternative, additional use of temporary piers to support new construction. The preferred alternative would use the four piers of the existing bridge; the adjacent east alternative would use the most cost-efficient distribution of spans on new alignment. That would mean a greater number of piers that are spaced closer together than those of the existing bridge. A Section 404 permit from the COE and a Section 401 Missouri Department of Natural Resources (MDNR) certification will be needed prior to construction. The

preferred, existing location alternative and the adjacent east location alternative are each anticipated to result in less than 0.5 acre of permanent impacts to wetlands/waters of the U.S. and either is expected to qualify for a Nationwide Permit 14 because of the minimal nature of the impacts associated with this activity. Mitigation for the proposed bridge construction is not expected at this time, regardless of the alternative.

Permanent impacts to waters of the U.S. would be limited to placement of bridge piers in the Lake of the Ozarks. Any work in the designated navigational waterway falls under Section 10 of the Rivers and Harbors Act, which generally allows only the absolute minimum of temporary obstruction to the navigable channel and requires that there be no permanent impacts to the channel. The no-build is the least intrusive alternative. The preferred alternative is anticipated to have less than 0.5 acre of permanent impacts to waters of the U.S.

4) NAVIGABLE WATERWAYS

Either new bridge alternative would be constructed in a manner that would not to unreasonably interfere with navigation on the Lake. An anticipated temporary reduction in channel width will not require USCG review and approval. Navigation will be maintained through one span of the bridge for the duration of construction. The Lake of the Ozarks is, by definition, a navigable waterway for the purposes of regulation under Section 404 of the CWA. Because the Lake is not a commercially navigable waterway, the USCG has determined that the agency does not need to issue a Section 10 permit.

Either considered build alternative would involve demolition of the existing bridge, with potential impact to waterway users associated with blocking the channel through the span for short period of time. The spans would be dropped into the Lake and then salvaged. If the existing bridge is demolished during the summer season, use of the Lake in the vicinity of the bridge would be slowed during demolition, but one span of the bridge would always remain open for navigation. The Water Patrol monitors the demolition on site to provide a safe environment during the span blasting and salvage and this operation is anticipated to have minimal impact on through traffic on the Lake.

Recreational use of the Lake near the bridge may be reduced both during construction and demolition activities, as recreational users will most likely avoid the construction site for safety concerns.

5) FLOODPLAIN IMPACTS

Both considered build alternatives—the preferred, existing location and the adjacent east location—would cross approximately 2200 feet of the Lake of the Ozark's 1% (base) floodplain. MoDOT will obtain the necessary floodplain development permit.

6) THREATENED AND ENDANGERED SPECIES

Both build alternatives would involve some tree clearing. MoDOT environmental staff conducted a site visit during the winter of 2010. The amount of tree clearing necessary with any of the alternatives is minimal and there are no known records of Indiana bats within five miles of the alternatives (MDC Heritage Database) so the potential to impact this species is low. The entire area that needs to be cleared will be surveyed during the design phase of the project. If any suitable trees are found within the project limits, MoDOT will allow tree clearing only between November 1 and March 31, while the bats are hibernating in caves.

Although no bald eagle nests were observed near the project corridor during any site visits, MDC's Heritage Database shows a record of a nest approximately 1.5 miles southeast of the existing bridge. Both build alternatives for this project are located well outside the protection zone for this species and no impact to any known bald eagle nests is expected. However, new nests are constructed every year and one could potentially be constructed closer to the project limits between now and the time construction begins. If that occurs, MoDOT will conduct the appropriate consultations with the FWS and MDC.

The proposed build alternatives have similar impacts along the shores of the lake and thus basically equal potential impacts to aquatic species. Most of the work for either alternative will occur from barges out in deep water. Water levels under this bridge are deep, in places up to 85 feet. There will be minimal work in the shallow water along the shoreline and thus there should be minimal impact to aquatic species, especially spawning fish. The construction contract will contain a provision that will not allow construction in shallow water during spawning season.

7) HISTORIC AND ARCHAEOLOGICAL SITES

Both proposed build alternatives—the preferred, existing location and the adjacent east location—would result in the removal/demolition of the Hurricane Deck Bridge, thus having an ~~"a~~dverse effect" on the historic structure. It is anticipated that the no-build alternative would have ~~"n~~o adverse effect" on the historic bridge. The SHPO concurred on March 8, 2011, with the MoDOT's Section 106 finding that the Hurricane Deck Bridge No. K0961 is eligible for listing on the NRHP and the proposed replacement will have an "adverse effect" on the bridge. This EA includes a draft Memorandum of Agreement (MOA) among the Federal Highway Administration, MoDOT, and SHPO detailing the mitigation measures that MoDOT will complete before the bridge is removed. The MOA also identifies how any unanticipated discoveries would be handled. An executed MOA will accompany the NEPA decision document.

Two archaeological sites (23CM40 and 23CM72) in the vicinity of the Hurricane Deck Bridge were determined eligible for listing on the NRHP. Based on the nature of these sites, either proposed build alternative (the preferred, existing location alternative or the adjacent east location alternative) can and will be designed to prevent negative impacts to the sites.

8) PUBLIC LANDS & POTENTIAL SECTION 4(f)/SECTION 6(f) PROPERTIES

The Route 5 Hurricane Deck Bridge is a historic resource protected under Section 4(f). A programmatic Section 4(f) evaluation will accompany the NEPA decision document because the preferred, existing location alternative will have an "adverse effect" on the NRHP-eligible bridge.

There are no other Section 4(f) or Section 6(f) issues associated with this project.

9) CONSTRUCTION IMPACTS

Construction of either proposed build alternative would result in some short-term, temporary adverse impacts near the proposed action, including noise, dust, and pollutants discharged by construction equipment as well as impacts to motorized and non-motorized traffic and to businesses in the area. Generally these kinds of short-term impacts are among the most readily mitigated impacts. Pollution control measures outlined in the Missouri Standard Specifications for Highway Construction will be used to minimize impacts associated with the construction of any alternative; these measures pertain to air, noise, and water pollution as well as traffic control (e.g., detours) and safety measures. Best management practices will be employed to minimize or mitigate potential impacts.

Although the no-build (rehabilitation) alternative would not involve any new, major construction, vehicular traffic stoppages and idling of vehicles because of lane closures would be the most notable impacts from the actual rehabilitation in the short term and for required maintenance activities on the existing bridge over time. Even routine maintenance of the existing, narrow bridge could be expected to cause a greater impact than maintenance of the build alternatives. Since this type of work necessarily disrupts traffic whenever one lane on the bridge is blocked, reduced traffic flow/increased travel time can be expected to exceed that for maintenance of the wider build alternatives. Short-term impacts such as noise, dust, and pollutant discharges from maintenance activities associated with the no-build would be mitigated in a similar manner to those from the build alternatives.

Ameren Missouri operates the Osage Hydroelectric Project (Lake of the Ozarks) under a 2007 40-year license from the Federal Energy Regulatory Commission (FERC). The use and occupancy of Ameren

Missouri's project lands and waters for the proposed bridge replacement will require a permit from the utility prior to construction.

Two potential work sites near the existing bridge, one on the north shore and one on the south shore, are included in this EA. However, use of either site is optional and the contractor may pursue other locations at their cost (arrangement with property owner, evaluation of impacts, and application to Ameren). Areas outside MoDOT right of way used for work sites would be under temporary easements and would be restored to their original contours and revegetated after completion of the project.

The staging areas for assembling the preferred alternative's delta trusses would be constructed from sheet piling with clean rock fill behind the piling to form a 100-foot long causeway approximately 40 feet wide. The causeway would likely extend in shallows to the shoreline for easy cleanup and would be removed from the lake after construction is completed. Possible minor dredging for the barges may occur adjacent to the shore to minimize the area of work platform in the lake. Any dredged material would be disposed of outside MoDOT right of way and away from the shoreline. Impacts to the Lake would be temporary and the shoreline would be restored to its original contours and revegetated.

For the anticipated January 2012 project award date, construction of the work platform may occur in summer or fall of 2012 or later in spring of 2013. It is expected to take a couple of weeks and would be scheduled during normal working hours, with no night work. The construction contract will contain a provision that will not allow construction in the water during spawning season.

Using the north shoreline work site option would require removing docks along one property owner's shoreline. Approximately 12,500 cubic yards of fill would be needed to construct the work platform. This area of the lake is used primarily for recreation.

The south shoreline work platform option would be 88 feet from the closest building of a condominium development and 52 feet from a walkway along the shoreline. This location would require approximately 12,000 cubic yards of fill. Recreation is the primary use for this area of the lake.

The north shoreline work platform would be visible from the Lake for a distance of 1.3 mile west (upstream) and 2.0 miles east (downstream). The south shoreline work platform location is in a cove and would be visible only from the north shore of the Lake, for a distance of 1.0 mile east of the site. Since the work pads would be located along the shore, they are expected to blend into the background at distances greater than 1 mile. The delta frame assemblies would extend 70 feet above the work platform and would be around 250–280 feet long with girders attached.

Because MoDOT plans to maintain traffic on the old bridge—either in its existing location or on an adjacent temporary alignment—during construction of the new bridge, there should be only minimal disruptions to vehicular traffic. Some day- or night-time lane closures would be needed to construct roadway connections between Route 5 and the new bridge location (either temporary or permanent), but MoDOT will require the contractor to flag traffic during these times and to keep back-ups to a minimum. If the alternative ultimately selected for construction incorporates a bridge slide, moving the structure would require closing Route 5 at the bridge for a period of two to seven days. To protect the traveling public, short-term road closures may also be needed when the old bridge is demolished.

Constructing a new bridge would have some impact on traffic in the immediate area as the contractor's personnel work around the project site. Vehicles bringing materials in and out would add to the existing traffic. A Traffic Management Plan (TMP) will be developed during project design. A TMP lays out a set of coordinated traffic management strategies to manage the work zone impacts. Proposed strategies for managing traffic on this project include staging construction to impact traffic as little as possible, conducting active public information and outreach, scheduling high-impact work for hours of off-peak traffic, installing temporary traffic control devices, and possibly enlisting the help of law enforcement, if necessary.

MoDOT will send a news release to local newspapers and radio stations giving local commuters

information about construction activities that could impact their daily travels. MoDOT also publishes construction-related news releases and information on its web site at www.modot.org for those who have Internet access.

Barges would be used on the Lake throughout the bridge construction work, which is expected to take two years to complete. It is anticipated that with the exception of halting water traffic for demolition of the old bridge, one span will be open to navigation throughout the construction period. MoDOT will coordinate with the Water Patrol to schedule the time and duration of any closures.

Contractors must comply with all federal, state, and local laws and regulations to protect air quality during construction. They must also work within the requirements of their operating permits issued through the Missouri Department of Natural Resources. Exhaust emissions from construction equipment will be controlled in accordance with emission standards prescribed under state and federal regulations. Any burning, when permitted, will be conducted in accordance with applicable local laws and state regulations.

Contractors are required to control fugitive dust to keep it from leaving the project limits, just as they must make efforts to control soil particles that stormwater tends to carry away.

To reduce the impacts of construction noise, MoDOT has special provisions in the construction contract requiring that all contractors comply with all applicable local, state, and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. Construction equipment will be required to have mufflers constructed in accordance with the equipment manufacturer's specifications. Loud construction activities such as pile driving and bridge demolition will be restricted to daylight hours. Possible nighttime activities could include pouring concrete deck (to avoid excessively high daytime temperatures) and, for preferred, existing location alternative, sliding the bridge.

Suitable roosting trees for the federally endangered Indiana bat will be removed during the period between November 1 and March 31 to avoid possible direct impacts to Indiana bats during the summer maternity season.

The Missouri Department of Natural Resources (MDNR) regulates the control of runoff from land disturbance. Erosion control measures must be put in place before land clearing begins. MoDOT's Pollution Prevention Plan provides for temporary erosion and sediment control measures that will be included within construction contract specifications. Careful refueling practices will limit spills of gasoline and diesel fuels. Oil spills can be minimized by frequent checks of construction equipment.

Several utilities are located either within or outside the right of way off either end of the bridge. The preferred, existing location alternative will have minimal to no impact on existing utilities. The adjacent east location alternative would require the existing utilities' poles and lines to be relocated. Details of utility disposition will be determined during project design. MoDOT's utility engineers and representatives of the utilities will work out details of individual utility adjustments on a case-by-case basis.

REQUIRED PERMITS:

This project will require obtaining a Section 404 permit from the COE and a Section 401 Missouri Department of Natural Resources (MDNR) certification prior to construction. Based on the minimal nature of the impacts associated with the project (less than 0.5 acre of permanent impacts to wetlands/waters of the U.S.), it is expected to qualify for Nationwide Permit 14. Mitigation for the proposed construction is not expected at this time, regardless of the alternative. The permit application is typically submitted during the project's design phase.

The project will require a Missouri State Emergency Management Agency (SEMA) floodplain development permit and a permit from Ameren Missouri for the use and occupancy of the utility's Lake of the Ozarks hydroelectric project lands and waters prior to construction.

COMMITMENTS:

Design

Based on the nature of archaeological sites 23CM40 and 23CM72, the bridge will be designed to prevent negative impacts to either site.

Engineering analyses of floodplain impacts will be conducted during the project's design to avoid and reduce impacts wherever possible.

The entire area that needs to be cleared will be surveyed during the design phase of the project. If any suitable Indiana bat roost trees need to be removed for construction, MoDOT will only allow those trees to be cleared between November 1 and March 31.

The required removal of approximately one to three feet of the existing rock face along Route 5 at the base of the slope from station 521+50 to station 525+00 will be accomplished from the existing roadway by chipping away the rock face. The construction contract will include a job special provision specifying that no heavy vehicles will be placed on the slope above the existing road cut.

The entire area south and west of the bridge within the project limits will be designated as off-limits to all MoDOT contractor activity, equipment, and vehicular or foot traffic during the project activities.

A Traffic Management Plan (TMP) will be developed during project design.

Impacts associated with any additional temporary easements (other than those evaluated in this EA) needed to provide contractor access for machinery and personnel will be addressed as the bridge and roadway details are finalized.

Right of way

MoDOT will acquire all properties needed for this project in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 as amended (Uniform Act; 42 U.S.C 4601), and other regulations and policies as appropriate. MoDOT will provide relocation services to all impacted households without discrimination under guidance of the Uniform Act.

Permits

MoDOT will obtain a Section 404 permit from the COE and a Section 401 Missouri Department of Natural Resources (MDNR) water quality certification prior to construction.

MoDOT will also secure a Missouri State Emergency Management Agency (SEMA) floodplain development permit and a permit from Ameren Missouri for the use and occupancy of the utility's Lake of the Ozarks hydroelectric project lands and waters prior to construction.

Staging area/work site

Any dredged material will be disposed of in an upland location off MoDOT right of way. All necessary measures to control turbidity will be undertaken. Impacts to the Lake would be temporary and the shoreline will be restored to its original contours and revegetated.

Construction of the work platform is expected to take a couple of weeks and will be scheduled during normal working hours, with no night work.

Traffic handling

Traffic on Route 5 will be maintained with only short-term disruption to move either the old truss superstructure and bridge deck or the newly built structure and reconnect the roadway. To protect the traveling public, short-term road closures may also be needed when the old bridge is demolished.

MoDOT will require the contractor to flag traffic during day- or night-time lane closures needed to construct roadway connections between Route 5 and the new bridge location (either temporary or permanent) to keep back-ups to a minimum.

Prior to each week's scheduled work, MoDOT will send a news release out to local newspapers and radio stations giving local commuters information about construction activities that could impact their daily travels.

Navigation

Two sets of buoys will be used to control navigation during construction. Additional informational signs and arrows to clearly mark the boat lane are expected.

With the exception of halting water traffic for demolition of the old bridge, one span will be open to navigation throughout the construction period. MoDOT will coordinate with the Water Patrol to schedule the time and duration of any closures as well as for the "Shoot Out" boat race held every August.

Temporary power or lights will be used to maintain navigational lighting when MoDOT's electrical service line on the bridge for navigational lighting is disconnected during construction.

Construction

The construction contract will contain a provision that will not allow construction in the water along the shoreline during spawning season.

Special provisions in the construction contract require contractors to comply with all applicable local, state, and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site.

Construction equipment will be required to have mufflers constructed in accordance with the equipment manufacturer's specifications.

Loud construction activities such as pile driving and bridge demolition will be restricted to daylight hours.

MoDOT will comply with MDNR's stormwater regulations. MoDOT will implement its Soil and Water Pollution Prevention Plan, which provides for temporary erosion and sediment control measures that will be included within construction contract specifications.

All construction activities will comply with the existing rules and regulations of governmental agencies having jurisdiction over streams and water supplies in the area.

Pollution control measures outlined in the Missouri Standard Specifications for Highway Construction will be used to minimize impacts associated with the construction of any alternative; these measures pertain to air, noise, and water pollution as well as traffic control (e.g., detours) and safety measures. Best management practices will be employed to minimize or mitigate potential impacts.

Emissions from construction equipment will be controlled in accordance with emission standards prescribed under state and federal regulations.

The contractor will remove from the project, burn, or otherwise dispose of materials resulting from clearing and grubbing, demolition, or other operations (except materials to be retained). In lieu of open burning, the contractor will attempt to harvest marketable timber, use mulched timber for erosion control, and compost excess mulch. Any burning, when permitted, will be conducted in accordance with applicable local laws and state regulations.

If previously unknown, regulated solid or hazardous wastes are found during construction activities, the

MoDOT construction inspector will direct the contractor to cease work at the suspect site. The construction inspector will contact the appropriate environmental specialist to discuss options for remediation. The environmental specialist, the construction office, and the contractor will develop a plan for sampling, remediation, and continuation of project construction. Independent consulting, analytical, and remediation services will be contracted if necessary. The Missouri Department of Natural Resources will be contacted for coordination and approval of required activities.

There will be no lead paint removal from the superstructure prior to demolition.

Post-construction

All temporary structures, roadway, work pads, and piers will be removed upon project completion and affected areas will be restored to their original, pre-construction contours and revegetated.

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APPENDICES

Appendix A:
(1) Traffic Accident and Safety Data
(2) MoDOT's Operating Permit
(3) SHPO Section 106 letter

Appendix B: Agency coordination

Attachments (following Appendices):
(1) Programmatic Section 4(f) Evaluation
(2) Memorandum of Agreement for Mitigation of Adverse Effects
(3) Information To Accompany the Memorandum of Agreement

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Traffic Accident and Safety Data

The National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321-4370f, requires that this analysis of the proposed project must consider and discuss its effects and impacts on mankind, and its effects and impacts on plants, animals, resources, and the natural world in general. One of the key elements to be discussed in any NEPA analysis of a proposed highway project is its effects and impacts on the safety of those who use those highways. However, Congress has recognized that even while this document summarizes and presents traffic accident and safety information for the general benefit of the public, pursuant to federal law, some people may attempt to use the information to establish federal, state or local liability in lawsuits arising from highway accidents. Congress has enacted a law, 23 USC Section 409, which prohibits the discovery or use, in litigation, of highway accident and safety data, developed under federal law to make highway safety improvements. Congress's rationale is obvious: the safety data was compiled and collected at their request, to help prevent future accidents, injuries and death on our nation's highways. If that information can be used in expensive damage suits, then the millions of dollars that litigation may cost the Missouri Department of Transportation (MoDOT) and local governments will not be available for their use to make Missouri's highways safer. The collection of this safety data should be encouraged, not discouraged.

Traffic accident statistics and safety data are compiled, presented and summarized in portions of this NEPA document. Where noted in an introductory footnote to a segment of this document, the discussions, reports, lists, tables, diagrams and data presented throughout that chapter, unit, section or subsection were compiled or collected for the purpose of identifying, evaluating or planning the safety enhancement of potential accident sites or hazardous roadway conditions pursuant to federal law. Thus, that information and its supporting reports, schedules, lists, tables, diagrams and data are not subject to discovery, and they are prohibited by federal law (23 USC § 409) from being admitted into evidence in a federal or state court proceeding, or from being considered for other purposes, in any action for damages arising from an occurrence on the highways, intersections or interchanges discussed in this document.

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT
WATER POLLUTION CONTROL PROGRAM

General Operating Permit

In compliance with the Missouri Clean Water Law, (chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.:	MO-R100007
Owner:	Missouri Department of Transportation (MODOT)
Address:	PO Box 270 Jefferson City, MO 65102
Continuing Authority:	Same Same
Facility Name:	MODOT, Road Construction Projects
Facility Address:	P.O. Box 270 Jefferson City, MO 65102
Legal Description:	Various throughout the state, Statewide County
Receiving Stream:	Various throughout the state
First Classified Stream	Various throughout the state

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein.

FACILITY DESCRIPTION All Outfalls, SIC 1629

Construction or land disturbance activity (e.g., clearing, grubbing, excavating, grading, and other activity that results in the destruction of the root zone) that are performed by or under contract to a city, county, or other governmental jurisdiction that has a storm water control program for land disturbance activities that has been approved by the Missouri Department of Natural Resources.

This permit authorizes only wastewater, including storm waters, discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System, it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law

May 31, 2007
Effective date

June 15, 2007
Issue date

Doyle Childers
Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

May 30, 2012
Expiration date

Edward Galbraith
Director of Staff, Clean Water Commission

MO 780-1481 (7-94)

STATE OF MISSOURI
Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

March 8, 2011

Robert L. Reeder
Historic Preservation Manager
Missouri Department of Transportation
P.O. Box 270
Jefferson City, Missouri 65102

Re: Route 5, Job No. J5P2188 (FHWA) Camden County, Missouri

Dear Dr. Reeder:

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which requires identification and evaluation of cultural resources.

We have reviewed the Section 106 Survey Memo entitled *Phase I Cultural Resources Survey, Camden 5, MoDOT Job No. J5P2188.* Based on this review it is evident that a thorough and adequate cultural resources survey has been conducted of the project area. We concur with your recommendation that archaeological sites 23CM40 and 23CM72 may be eligible for inclusion in the National Register of Historic Places, but are outside of the project corridor. We also concur that the Hurricane Deck Bridge No. K0961 is eligible for inclusion in the National Register of historic Places, and that the proposed replacement will have an **adverse effect** on the historic fabric of the bridge.

Therefore, the U.S. Department of Transportation, shall forward the necessary adequate documentation as described to the Executive Director, Advisory Council on Historic Preservation, The Old Post Office Building, 1100 Pennsylvania Avenue NW, #809, Washington, DC 20004. Pending receipt of the Council's decision on whether it will participate in consultation, no action shall be taken which would foreclose Council consideration of alternatives to avoid or satisfactorily mitigate any adverse effect on the property in question

If you have any questions, please write the State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 attention Review and Compliance, or call Judith Deel at 573/751-7862. Please be sure to include the SHPO Log Number (**017-CM-11**) on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Mark A. Miles
Director and Deputy
State Historic Preservation Officer

MAM:jd

c Peggy Casey, FHWA
Jane Beetem, DNR/OD

From: "Christensen, Rodney A NWK" <Rodney.A.Christensen@usace.army.mil>
To: <Melissa.Scheperle@modot.mo.gov>
Date: 06/17/2011 09:07 AM
Subject: RE: Hurricane Deck EA comments (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Melissa - Didn't really have any comments other than what we have already discussed. Anticipate the project will be covered under NWP 14 with minimal impacts. Thanks.

Rodney Christensen
Regulatory Specialist
Truman Regulatory Satellite Office
15837 Truman Road
Warsaw, MO 65355
Ph. 816-389-3979

Re: Route 5 Agency Scoping Meeting (UNCLASSIFIED)
Nicole A Hood to: Christensen, Rodney A NWK 02/10/2011 12:43 PM
Cc: Carole A Hopkins, Richard W Moore

Thanks for your response. We will send you the materials per your request below.

Nicole Kolb Hood, P. E.
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Blvd.
Jefferson City, MO 65102
Work: (573) 526-6997
Fax: (573) 751-8267
Email: nicole.hood@modot.mo.gov

"Christensen, Rodney A NWK" Classification: UNCLASSIFIED Cav... 02/10/2011 09:19:05 AM

From: "Christensen, Rodney A NWK" <Rodney.A.Christensen@usace.army.mil>
To: <Nicole.Hood@modot.mo.gov>
Date: 02/10/2011 09:19 AM
Subject: Route 5 Agency Scoping Meeting (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Nicole - I am the project manager for this proposal. Although we will be a cooperating agency for this project I will not be attending the scoping meeting. However, I would like for you to send me the material presented along with a summary of the meeting. Thanks.

Rodney Christensen
Regulatory Specialist
Truman Regulatory Satellite Office
15837 Truman Road
Warsaw, MO 65355
Ph. 816-389-3979

Classification: UNCLASSIFIED
Caveats: NONE

Missouri
Department
of Transportation

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, MO 65102
(573) 751-2551
Fax (573) 751-6555
www.modot.org

Kevin Keith, Director

January 19, 2011

Col. Anthony J. Hofmann
District Engineer
U.S. Army Corps of Engineers, Kansas City District
601 E 12th Street
Kansas City, Mo 64106

Dear Colonel Hofmann:

Subject: Design, Environmental Section
Route 5, Camden County
From 0.5 mile south of Hurricane Deck Bridge to 0.5 mile north of Bridge
MoDOT Job No. J5P2188
Cooperating Agency Request/Invitation to Agency Scoping Meeting

The Federal Highway Administration (FHWA), in cooperation with the Missouri Department of Transportation (MoDOT), is initiating an Environmental Assessment (EA) for replacement of the existing Route 5 Hurricane Deck Bridge over Lake of the Ozarks in Camden County, Missouri. Since the project may involve impacts to waters of the U.S. and will require a Section 404 permit, and because your agency has jurisdiction over such permits, we are requesting the U.S. Army Corps of Engineers (USCOE) to be a cooperating agency. The alternatives considered may include reconstruction of the existing bridge or construction of a new bridge immediately adjacent to the existing bridge as well as no-build/rehabilitation. MoDOT intends to solicit innovative alternative technical concepts (ATCs) from contractors to achieve the best result.

We also invite your agency to attend the Route 5 Hurricane Deck Bridge EA Agency Scoping Meeting in Jefferson City on Thursday, February 24, 2011. The meeting will be held at 1:00 p.m. in the Parrish Room of the MoDOT Central District office at 1511 Missouri Boulevard. A presentation on the project will be given and agency representatives will be invited to ask questions and provide input on the project. The enclosed materials provide more information.

Your agency's involvement as a cooperating agency should include those areas under its jurisdiction and expertise, with no direct writing or analysis expected for preparation of the EA. We will take the following actions to maximize interagency cooperation:

1) Invite you to coordination meetings;

2) Consult with you on any relevant technical studies the project requires;

3) Provide you with project information, including study results;

4) Encourage you to use the above documents to express your agency's views on subjects within its jurisdiction or expertise; and

5) Include information in the project environmental documents that your agency needs to discharge its National Environmental Policy Act (NEPA) responsibilities and satisfy the requirements of the Section 404 (b)(1) guidelines and any other requirements regarding jurisdictional approvals, permits, licenses, and/or clearances.

The USCOE has the right to expect that the EA will enable you to discharge your jurisdictional responsibilities. If at any point in the process your agency's needs are not being met, we need to be informed so steps can be taken to resolve the issue. We expect that at the end of the process the EA will satisfy your NEPA requirements including those related to project alternatives, environmental consequences, and mitigation. Further, we intend to use the EA and any subsequent decision-making document as the basis for any permit applications.

We look forward to your response to this request and your role as a cooperating agency on this project. Please respond in writing to Mr. Kevin Ward, Division Administrator, Federal Highway Administration, 3220 West Edgewood, Suite H, Jefferson City, MO 65109 with an acceptance or denial of the invitation to be a cooperating agency by March 10, 2011. If your agency declines, please state your reason for declining the invitation.

Please notify Nicole Hood, D-5 Project Manager, by February 16, 2011, regarding your agency's representation at the Agency Scoping Meeting. An accurate count will help us plan appropriately for scoping materials and allow us to notify attendees of any schedule changes due to inclement weather. Nicole can be reached by telephone at (573) 526-6997 or email, Nicole.Hood@modot.mo.gov, should you have any questions or want to discuss in more detail the project or our agencies' respective roles and responsibilities during the preparation of this EA.

Thank you for your cooperation and interest in this project.

Sincerely,

Kathy Harvey

Kathy Harvey, P.E.
State Design Engineer

Copies: Kevin Ward—FHWA
Nicole Hood —D-5
Carole Hopkins—de

To: "Carole.Hopkins@modot.mo.gov" <Carole.Hopkins@modot.mo.gov>,
Cc: "Van Bebber, Charles M" <CVanBebber@ameren.com>,
Bcc:
Subject: FW: Hurricane Deck MOA/ITA - TYPO
From: "Green, Jeff J" <WGreen@ameren.com> - Wednesday 06/15/2011 09:52 AM

History: This message has been forwarded.

Our comments on the draft EA are as follows:

Any temporary excavation or fill can be included with the bridge permit and the permit will be reported to the FERC. The bridge permit would be covered by Article 419 of our current license for Project 459, which states that "…the licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained." Approvals from federal, state, and local consulting agencies will be obtained prior to Ameren's issuance of a bridge permit.

We agree with the recommendation to pursue option for a new bridge in the "Existing Location". This would reuse existing infrastructure (piers and/or approaches) to minimize environmental impact to the lake and surrounding areas. Utilizing the existing support piers would eliminate the need for additional piers (as would be used in "Adjacent East" location). The "Adjacent East" option would require more support piers, which would create a less aesthetically pleasing appearance and more pier structures in the lake that could possibly create more interference for navigation. The delta truss design, supported on the existing piers, could create a bridge that provides some resemblance to the historic bridge.

Thank you

W. Jeff Green, AICP
Supervisor – Shoreline Management
Real Estate Department
T 573.365.9214
F 573.365.5773
E wgreen@ameren.com

Ameren Services
PO Box 993 (MC LE883)
Lake Ozark, MO 65049

From: Robert L Reeder/SC/MODOT

To: "James Munkres" <jmunkres@osagetribe.org>
Cc: "Andrea Hunter" <ahunter@osagetribe.org>, Michael.Meinkoth@modot.mo.gov, peggy.casey@fhwa.dot.gov, Lawrence L Ayres/SC/MODOT@MODOT, Nicole A Hood/D5/MODOT@MODOT, Randall D Potts/D5/MODOT@MODOT

Date: 05/18/2011 01:11 PM

Subject: Re: Hurricane Deck Bridge Replacement

Good afternoon James. We have checked with everyone present at the site visit last week and have the following responses to your questions.

1. Approximately one to three feet of the bedrock will be chipped away from the existing cut,
The project will require the removal of 1-3 feet of the existing rock face along the highway and below 23CM40. This will be achieved by chipping away the rock face from the existing roadway.

2. No heavy vehicles will be placed atop the cut,
No heavy vehicles will be placed on the slope above the existing road cut. A job special provision will be included in the project contract specifying this.

3. No vehicular traffic will occur within the area north of the 'drainage' north of the cut,
No vehicular traffic associated with the project will be allowed along the top of the slope in the vicinity of site 23CM40 during the project activities. MoDOT can not control traffic or equipment on private property but no equipment or traffic associated with the MoDOT project will be present.

4. The area north of the ROW line is clearly established as off-limits to all activity, including foot traffic.
The area north and west of MoDOT right of way will be designated as off-limits to all contractor activity, including foot traffic.

I believe this information has been previously forwarded to you but if not, the property owner with the power transmission lines is:

James E. Devine
6400 El Terra Road
Osage Beach, Missouri 65065-3530
(573) 317-6239

If you have any further questions, please contact Peggy Casey, Nicole Hood, or myself. Thank you.

Bob Reeder
Historic Preservation Manager, Design Division
Missouri Department of Transportation
P.O. Box 270, Jefferson City, MO 65102
email: robert.reeder@modot.mo.gov
phone: (573) 751-0473 fax: (573) 526-1300

From: "James Munkres" <jmunkres@osagetribe.org>
To: <peggy.casey@fhwa.dot.gov>, <Robert.Reeder@modot.mo.gov>
Cc: "Andrea Hunter" <ahunter@osagetribe.org>, <Michael.Meinkoth@modot.mo.gov>
Date: 05/14/2011 09:29 AM
Subject: Hurricane Deck Bridge Replacement

Dear Ms. Casey and Mr. Reeder,

Thank you for facilitating our visit to the sites of concern adjacent to the existing Hurricane Deck Bridge. Michael Meinkoth, Randall Potts, Larry Ayres, and Nicole Hood were extremely helpful and were sensitive to the nature of our visit to the APE and the areas of concern for the Osage Nation.

Following our visit to the various sites and the proposed area of effect, it is clear to us that, according to current plans, the sites will potentially suffer no direct or indirect adverse effects from the replacement of the bridge. This is our current understanding of the work in the immediate vicinity of the sites:

1. Approximately one to three feet of the bedrock will be chipped away from the existing cut,
2. No heavy vehicles will be placed atop the cut,
3. No vehicular traffic will occur within the area north of the 'drainage' north of the cut,
4. The area north of the ROW line is clearly established as off-limits to all activity, including foot traffic.

Please notify us in the event that any change is made to the plans.

We would appreciate any level of assistance you may be willing to provide in contacting the owner of the land and the electric company who owns the transmission lines. We wish to discuss with them the possibility of protecting these sites.

If you have questions or require additional information from us, please let us know.

Sincerely,

James Munkres
Archaeologist I
Osage Nation Historic Preservation Office
627 Grandview
Pawhuska, OK 74056
jmunkres@osagetribe.org
Office: (918) 287-5226
Mobile: (918) 331-8660
Fax: (918) 287-5376

From:	<Peggy.Casey@dot.gov>
To:	<jmunkres@osagetribe.org>, <Robert.Reeder@modot.mo.gov>
Cc:	<ahunter@osagetribe.org>
Date:	03/07/2011 08:09 AM
Subject:	RE: MoDOT Job No. J5P2188; Route 5 Hurricane Deck Bridge Replacement in Camden County, Missouri

Good morning, James,

I am sorry that you were unable to attend the scoping meeting for the Hurricane Deck Bridge Replacement in Camden County. I do want to let you know, though, that our invitation letter went out only a few days after the date of the scoping meeting was determined.

The cairns mentioned in our letter were determined eligible for the NRHP many years ago when we completed an EIS that included a new bridge at this location. We are doing an EA now, because we did not consider the removal of the existing bridge.

MoDOT will forward cultural resources information concerning the project. We appreciate MoDOT's efforts to avoid impacting the cairns.

We will include the Osage Nation in consultation for the MOA being done for this project, and are willing to meet with the Osage Nation concerning this project.

Peggy Casey
Program Development Team Leader
FHWA Missouri Division
573-628-2620

Missouri
Department
of Transportation

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, MO 65102
(573) 751-2551
Fax (573) 751-6555
www.modot.org

Kevin Keith, Director

March 4, 2011

Dr. Andrea Hunter
Tribal Historic Preservation Officer
Osage Nation Historic Preservation Office
627 Grandview
Pawhuska, OK 74056

Dear Dr. Hunter:

Subject: Design
Route 5, Camden County
Job No. J5P2188
Bridge replacement over Lake of the Ozarks (Hurricane Deck)
Tribal Consultation

The Missouri Department of Transportation (MoDOT) has received the Osage Nation's March 2, 2011 email communication regarding the Route 5 Hurricane Deck Bridge replacement project. As requested in the email, please find enclosed a CD containing .pdf copies of original 1993 Phase I Cultural Resources Survey for the Route 5 Corridor Study by Historic Preservation Associates, the 1995 Phase II Cultural Resources Assessments Report by Historic Preservation Associates, and MoDOT's 2011 Phase I Cultural Resources Survey Memo recently submitted to the Missouri State Historic Preservation Office (SHPO). The environmental assessment document for the bridge replacement has not been completed yet. We will provide a copy of that document once it is ready for distribution.

The Osage Nation's March 2, 2011 email includes a complaint that the Osage Nation was notified of the February 24, 2011 Environmental Assessment Agency Scoping Meeting at a late date. The email further states that MoDOT knew the date of the meeting long before the Osage Nation was notified of the meeting, implying that MoDOT intentionally delayed notification of the Osage Nation with the intent being to exclude the Osage Nation from the meeting. This is incorrect. The Federal Highway Administration's (FHWA) letter announcing the meeting was sent to the Osage Nation and all regulatory agencies on January 27, 2011, approximately 4 weeks prior to the meeting, and within a day or two after the determination of the meeting date. It is unfortunate that the Osage Nation was not able attend the scoping meeting but it is also unfortunate that the Osage Nation did not notify MoDOT or FHWA of this prior to the meeting. If requested, MoDOT could have arranged for Osage Nation representatives to have participated in the meeting at least remotely and via videoconference or teleconference. We recommend the Nation consider this option for future meetings that you wish to participate in but may not be able to attend in person.

MoDOT and FHWA are still soliciting tribal input regarding this project and Osage Nation participation in the project is welcome. Several rock cairns (site 23CM40) and a rock shelter (site 23CM72) are located near but outside of the project limits. Tribal representatives are welcome to visit the project area if they wish. Because the nearby sites are on private property, we request any tribal representative wishing to inspect the sites coordinate their visit to the project area with MoDOT. Also, through March 15, 2011, MoDOT currently is hosting an on-line, virtual public meeting about the project. The internet address for the virtual meeting is http://www.modot.org/central/major_projects/HurricaneDeckBridge_March2011Mtg.htm. The Osage Nation is welcome to submit comments regarding this project through this medium as well.

If you have any questions or would like any additional information regarding the project, please contact me at (573) 751-0473 or robert.reeder@modot.mo.gov.

Sincerely,

Robert L. Reeder
Historic Preservation Manager

enclosure

cc: Ms. Peggy Casey-fhwa (w/enclosure)
Ms. Nicole Hood-d6 (w/enclosure)

From:	"James Munkres" <jmunkres@osagetribe.org>
To:	<peggy.casey@fhwa.dot.gov>, <Robert.Reeder@modot.mo.gov>
Cc:	"Andrea Hunter" <ahunter@osagetribe.org>
Date:	03/02/2011 01:32 PM
Subject:	MoDOT Job No. J5P2188; Route 5 Hurricane Deck Bridge Replacement in Camden County, Missouri

Date: March 1, 2011 **File: 1011-796MO-2**

RE: MoDOT Job No. J5P2188; Route 5 Hurricane Deck Bridge Replacement in Camden County, Missouri

Peggy Casey
FHWA, Missouri Division
3220 W. Edgewood, Suite H
Jefferson City, MO 65109

Dear Ms. Casey,

The Osage Nation has received the notification and accompanying materials for the proposed project referenced as MoDOT Job No. J5P2188; Route 5 Hurricane Deck Bridge Replacement in Camden County, Missouri.

First, the Osage Nation takes exception with the late notice of the Environmental Assessment Agency Scoping Meeting planned for February 24th, 2011 at 1:30. Our office is rarely, if ever, capable of travelling under such short notice. We believe that the Missouri Department of Transportation was aware of the date of the meeting long before the Osage Nation was notified. Early notification always increases the chances for a successful outcome to meaningful consultation.

Second, the statement was made on the cover letter of the notification for the proposed bridge replacement that "[n] one of the alternatives being considered will impact either these cairns or any other known site." We were not consulted regarding the potential impact that the proposed project may have upon either the known or unknown locations in the vicinity.

In accordance with the National Historic Preservation Act, (NHPA) [16 U.S.C. 470 §§ 470-470w-6] 1966, undertakings subject to the review process are referred to in S101 (d)(6)(A), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969).

The Osage Nation has a vital interest in protecting its historic and ancestral cultural resources and the proposed project is located in the heart of the ancestral homeland of the Osage people. **We request consulting party status in all agreements regarding historic preservation made as a result of this undertaking. In addition, we request that we be provided with an opportunity to participate in a one-on-one consultation concerning the referenced project. In the interim, we request copies of all documents related to the undertaking including, but not limited to, any Environmental Assessments and Cultural Resource Surveys.**

Should you have any questions or need any additional information please feel free to contact me at the number listed below. Thank you for consulting with the Osage Nation on this matter.

A hardcopy of the above the letter will be mailed today, as well.

James Munkres
Archaeologist I
Osage Nation Historic Preservation Office
627 Grandview
Pawhuska, OK 74056
jmunkres@osagetribe.org

Office: (918) 287-5226
Mobile: (918) 331-8660
Fax: (918) 287-5376

The Delaware Nation
Cultural Preservation Office
31064 State Highway 281~ P.O. Box 825~ Anadarko, OK 73005
Phone: 405/247-2448~ Fax: 405/247-8905

Library ext. 1196
Museum ext. 1180
NAGPRA ext. 1182
Section 106 ext. 1180

Date: 4-28-11

Company: MoDoT

TCNS#/County/State: Route 5, Camden Co., Missouri
MoDOT Job No. J5P2188

To Whom It May Concern:

The Delaware Nation received a letter regarding the above referenced project(s). The Delaware Nation is committed to protecting sites important to tribal heritage, culture and religion. Furthermore, the tribe is particularly concerned with archaeological sites that may contain human burials, remains, and associated funerary objects.

As described in your correspondence and upon research of our database(s) and files, we find the Lenape people occupied these areas either historically or prehistorically. However, location of the project does not endanger known sites of interest to the Delaware Nation. Please continue with the project as planned. However, should this project inadvertently uncover an archaeological site or object(s) we request that you immediately contact the appropriate state agencies, as well as the Delaware Nation (within 24 hours). Also, we ask that you halt all construction and ground disturbing activities until the tribe and these state agencies are consulted.

Please note the Delaware Nation, the Delaware Tribe of Indians, and the Stockbridge Munsee Band of Mohican Indians are the only Federally Recognized Delaware/Lenape entities in the United States and consultation must be made only with designated staff of these three tribes. We appreciate your cooperation in contacting the Delaware Nation. Should you have questions, feel free to contact our offices at 405/247-8903 or by email: tfrancis@delawarenation.com.

Sincerely,

Tamara Francis
Cultural Preservation Director
The Delaware Nation

From: Jason Ross [mailto:JRoss@delawarenation.com]
Sent: Wednesday, February 16, 2011 3:43 PM
To: Casey, Peggy (FHWA)
Subject: re: MoDOT Job No. J5P2188

Hello Ms. Casey,

The Delaware Nation recently received correspondence from you regarding the project below.

Route 5, Camden County, Missouri

MoDot Job No. J5P2188

Consultation on Archaeological Site 23 CM40

The Cultural Preservation Director, Ms. Tamara Francis has reviewed the information provided and the Delaware Nation would like to request a Summary of this project to make a better determination.

Thank you again for taking the time and effort to properly consult with the Delaware Nation and we look forward to working with you in order to achieve your goal,

Jason Ross

Museum/Section 106 Assistant

Cultural Preservation Department

The Delaware Nation

P.O. Box 825

Anadarko, OK 73005

PH# 405) 247-2448

FAX# 405) 247-8905

www.delawarenation.com

The example invitation following this list was sent to:

Mr. Roger Wiebusch
U.S. Coast Guard
Second Coast Guard
1222 Spruce Street
St. Louis, MO 63103-2832

Mr. Karl Brooks
Regional Administrator
US EPA Region 7
901 N. 5th Street
Kansas City, KS 66101

Ms. Beth Freeman, Regional Administrator
Federal Emergency Management Agency
Region VII
9221 Ward Parkway, Suite 300
Kansas City, MO 64114-3372

Mr. Charlie Scott, Field Supervisor
U.S. Fish and Wildlife Service
Columbia Ecological Services Field Office
101 Park DeVille Drive, Suite A
Columbia, MO 65203-0057

Ms. Sara Parker Pauley, Director
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Mr. Robert L. Ziehmer, Director
Missouri Department of Conservation
P.O. Box 180
Jefferson City, MO 65109

Mr. Paul Parmenter, Director
State Emergency Management Agency
P.O. Box 116
Jefferson City, MO 65102

Captain Matt Walz, District 2 Commander
Missouri State Water Patrol
P.O. Box 1368
Jefferson City, MO 65102

Missouri Department of Conservation
Camdenton Office
Greg Stoner, Fisheries Management Biologist
783 Thunder Mountain Rd.
Camdenton, MO 65020

Mr. Jeff Green, Supervisor
Shoreline Management
Real Estate Department
Ameren Missouri Shoreline Management Office
P.O. Box 993
Lake Ozark, MO 65049

Mr. Chris Hall, Planning Administrator
Camden County
1 Court Circle
Suite 15
Camdenton, MO 65020

and e-mailed to:

Terry.Maglich@ded.mo.gov
Bill.Ransdall@ded.mo.gov
Missouri Dept. of Economic Development

judith.deel@dnr.mo.gov
Judith Deel, Archaeologist
Missouri State Historic Preservation Office

The tribal governments listed below were provided additional information relating to site 23CM40 along with the invitation to attend the interagency scoping meeting.

Mr. Gregory E. Pyle, Chief
Choctaw Nation of Oklahoma
P.O. Drawer 1210
Durant, OK 74702

Mr. Kerry Holton, Delaware Nation President
Delaware Nation
P.O. Box 825
Andarko, OK 73005

Attn: Ms. Tamara Francis, NAGRPA Director

Mr. John D. Red Eagle, Principal Chief
Osage Nation of Oklahoma
627 Grandview
P.O. Box 779
Pawhuska, OK 74056

Attn: Dr. Andrea Hunter, Tribal Historic Preservation Officer

Mr. Larry Wright, Jr., Chairman
Ponca Tribe of Nebraska
P.O. Box 288
Niobrara, NE 68760

Missouri
Department
of Transportation

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, MO 65102
(573) 751-2551
Fax (573) 751-6555
www.modot.org

Kevin Keith, Director

January 19, 2011

Mr. Roger Wiebusch
U.S. Coast Guard
Second Coast Guard
1222 Spruce Street
St. Louis, MO 63103-2832

Dear Mr. Wiebusch:

Subject: Design, Environmental Section
Route 5, Camden County
From 0.5 mile south of Hurricane Deck Bridge to 0.5 mile north of Bridge
MoDOT Job No. J5P2188
Invitation to Agency Scoping Meeting

The Federal Highway Administration (FHWA), in cooperation with the Missouri Department of Transportation (MoDOT), is initiating an Environmental Assessment (EA) for replacement of the existing Route 5 Hurricane Deck Bridge over Lake of the Ozarks in Camden County, Missouri. The alternatives considered may include reconstruction of the existing bridge or construction of a new bridge immediately adjacent to the existing bridge as well as no-build/rehabilitation. MoDOT intends to solicit innovative alternative technical concepts (ATCs) from contractors to achieve the best result.

We invite your agency to attend the Route 5 Hurricane Deck Bridge EA Agency Scoping Meeting in Jefferson City on Thursday, February 24, 2011. The meeting will be held at 1:00 p.m. in the Parrish Room of the MoDOT Central District office at 1511 Missouri Boulevard. A presentation on the project will be given and agency representatives will be invited to ask questions and provide input on the project. The enclosed materials provide more information.

Please notify Nicole Hood, D-5 Project Manager, by February 16, 2011, regarding your agency's representation at the Agency Scoping Meeting. An accurate count will help us plan appropriately for scoping materials and allow us to notify attendees of any schedule changes due to inclement weather. Nicole can be reached by telephone at (573) 526-6997 or email, Nicole.Hood@modot.mo.gov, should you have any questions.

Thank you for your cooperation and interest in this project.

Sincerely,

Kathy Harvey, P.E.
State Design Engineer

Copies: Kevin Ward—FHWA
Nicole Hood —D-5
Carole Hopkins—de

From:	"Orzechowski, David" <David.A.Orzechowski@uscg.mil>
To:	<Paul.Porter@modot.mo.gov>
Date:	11/04/2010 02:43 PM
Subject:	RE: Request for a USCG Jurisdictional Determination - Hurricane Deck Bridge Replacement Project, Route 5, Camden County Mo. over the Lake of the Ozarks.
Sent by:	David.A.Orzechowski@uscg.mil

Paul,

We have determined that pursuant to the Coast Guard Authorization Act of 1982, the Hurricane Deck Bridge replacement over the Lake of the Ozarks does not involve bridges over a commercially navigable waterway of the United States. Therefore, a Coast Guard bridge permit is not required for this project.

Any further questions, please give me a call.

Thanks,

David Orzechowski
Coast Guard Bridge Office
St. Louis, MO
314.269.2382

From: Paul.Porter@modot.mo.gov [mailto:Paul.Porter@modot.mo.gov]
Sent: Tuesday, November 02, 2010 3:31 PM
To: Orzechowski, David
Cc: Dennis.Heckman@modot.mo.gov; Nicole.Hood@modot.mo.gov
Subject: Request for a USCG Jurisdictional Determination - Hurricane Deck Bridge Replacement Project, Route 5, Camden County Mo. over the Lake of the Ozarks.

David,

Thank you for the phone message that returned my call from late yesterday concerning the need for us to send in a written request to the Coast Guard for a Jurisdictional determination regarding the level of your agency's involvement that we need to have on an upcoming project to replace the above referenced bridge, planned to be let in December 2011.

To assist you in evaluating our request, I have put together the attached selected sheets from our record plans for the Hurricane Deck Bridge, located on Route 5 over the Osage Arm of the Lake of the Ozarks in Camden County, Missouri. The existing bridge is identified as Bridge No. K0961 (or K-961) and was built in 1935. The attached General Plan & Elevation of the existing bridge shows it to be a deck truss, which means all the steel truss members are located below deck level. We are replacing the bridge because of it's deteriorating condition. Also, it is a similar design to the Minneapolis Bridge that collapsed about 3 years ago. The record plans show we now have a 42 ft. available vertical clearance for boats at the mid point of the three middle arch spans, based on a full pool elevation of 660.0 feet.

When we replace the bridge, we anticipate that it will be replaced with a plate girder type bridge on a close parallel alignment that will look similar to the Lake Community Toll Bridge located in the same vicinity. At the conclusion of construction when the new bridge is opened to traffic, the old bridge will be demolished.

The Lake Community Bridge is located on Route MM downstream from the Hurricane Deck Bridge on the same Osage Arm of the Lake. The Lake Community Bridge is designated Bridge No. A5677, and was

opened to traffic in 1998. I have attached some general layout sheets from our record plans for this bridge as well. These are for your information to see generally what the new bridge will probably look like.

We have not been able to locate any evidence that we were required to obtain a Coast Guard Bridge Permit for the Lake Community Bridge. The record plans we have do not show any navigational clearances, and a search of our project records on microfilm have failed to turn up any correspondence or other information that indicates a need for a USCG Bridge Permit. However, the record plans for the Lake Community Bridge indicates that it does have typical navigational lighting installed.

I hope this email is sufficient to serve as our written request for the determination. We would appreciate a response soon as we are in the process the next couple of weeks to select a consultant to begin the design work and will need the determination so that the level of work effort involved can be included in the consultant's scope of services.

Your assistance is greatly appreciated.

Sincerely,

Paul Porter, P.E.
Structural Liaison Engineer
MoDOT Bridge Division
P.O. Box 270
Jefferson City MO 65101

phone: 573-751-3760
fax: 573-526-5488
email: Paul.Porter@modot,mo.gov

Hurricane Deck Bridge

Robert L Reeder to: Nathan Holth 05/03/2011 04:34 PM

Cc: Peggy.Casey, Steven W Engelbrecht, Nicole A Hood, Gayle A Unruh, Richard W Moore, Randall D Dawdy, Carole A Hopkins

Good afternoon Nathan. In a 4/26/11 email to Randy Dawdy, you provided your comments regarding MoDOT's Hurricane Deck Bridge project and you requested consulting party status for the Section 106 process for this project. MoDOT and the FHWA have discussed your request and have agreed to grant you consulting party status for the Section 106 consideration of the Hurricane Deck Bridge project. As a consulting party, you will be provided with related and appropriate engineering, planning, and historical information about the bridge that will be used in the Section 106 process. I believe you previously requested much of this information and hopefully you have already received it. As a consulting party, you will be expected to participate in meetings when possible, to be an active participant in future discussions, to share information and provide constructive comments, and to show good faith in working toward a final decision that will be acceptable to all.

No specific date has been set for the next Section 106 meeting for the Hurricane Deck Bridge project but we will notify you in advance of future meetings so that you can hopefully attend or participate in them. As you do not live in Missouri, MoDOT will try to arrange it so that you may remotely participate in the meetings via telephone. If you cannot remotely participate in a meeting, MoDOT will provide you with a copy of the information discussed at the meeting and you will be able to provide your comments at a later time.

Please let me know if you have any questions. We thank you for your interest in this project and we look forward to working with you to find an outcome that considers Missouri's transportation needs and the historic nature of the Hurricane Deck bridge.

Bob Reeder
Historic Preservation Manager, Design Division
Missouri Department of Transportation
P.O. Box 270, Jefferson City, MO 65102

email: robert.reeder@modot.mo.gov
phone: (573) 751-0473 fax: (573) 526-1300

Nathan Holth
5371 Walker Road
North Street, MI 48049

269-290-2593
nathan@historicbridges.org

April 26, 2011

Subject: Hurricane Deck Bridge Proposed Historic Bridge Demolition

To Whom It May Concern:

My intent is for this letter to be entered into the public record as my comments regarding the solicitation for public input on the Hurricane Deck Bridge project. I sincerely hope you will consider my thoughts. I also would be happy to discuss my comments further in more detail. Further, it is my understanding that the Section 106 process is ongoing for this bridge. As such I would like to be added if possible as a consulting party for the project so that I can better keep up with project developments and provide additional input as opportunity allows. I believe my comments below regarding the project to date also show a demonstrated interest in the project for the purposes of justifying my consulting party request.

While it bears acknowledgement that I am a private citizen not affiliated with any organization or agency, and neither an engineer or certified bridge inspector, I do want to comment that I have visited and closely looked at over 2100 old and historic bridges in North America, and I have worked with, watched, and learned from many professionals in the historic bridge world including engineers, craftsmen/fabricators, and historians. I have become familiar with a rather wide variety of aspects of historic bridges and their preservation as I have worked to develop one of the largest historic bridge websites on the internet, www.historicbridges.org. I consider myself a bridge historian, but unlike the stereotype, am not unaware of or blind to other bridge issues such as bridge condition, traffic needs, AASHTO guidelines, engineering/inspection concerns, etc. At the same time, I do not claim to know everything, so please forgive any errors or oversights in my comments. As a person who has been involved with historic bridges for eight years, I realize I have a bias toward preserving historic bridges. At the same time, I do not intend to be someone who blindly demands preservation and suggests preservation solutions that are not grounded in reality.

Finally, although I may at times be critical of decisions made by MoDOT or other involved parties, it is not my intent to offend, alienate, or accuse. My hope is instead my comments will help MoDOT and other involved parties develop the best possible solution for this bridge. I want to thank Randall Dawdy and Gari Luttrell for providing me with the information about this project I needed to enable me to provide these detailed comments. I also want to thank MoDOT for being willing to accept my comments after the due date, which enabled me to thoroughly review the provided information. Hopefully this will make my comments more accurate and useful to MoDOT.

Why Should Preservation Be Considered

In short, I believe that the Hurricane Deck Bridge can and should be rehabilitated for continued vehicular use. I believe a rehabilitation project can be designed that is cost effective and will also provide for a long service life, perhaps in the range of 50-75 years when combined with proper routine maintenance and repair following such a project. In support of this theory I first want to offer my observations and comments about the bridge based off of recent bridge inspection reports.

Looking over the 2010 bridge inspection reports, the superstructure of the Hurricane Deck Bridge was the lowest rated portion of the bridge with a 4 (Poor) NBIS rating. Despite this being the lowest rated area, a rating of Poor indicates a structure for which a well-designed comprehensive rehabilitation would likely be feasible and probably cost significantly less than replacement. Indeed, upon review of the in-depth inspection report, this area appears to be very feasible for the development of a rehabilitation project that would result in a significant increase in bridge life.

Although the inspection report does describe heavy pack rust on the floorbeams, the section loss is listed as minor. Pack rust can be removed by methods such as limited heating of the affected area and then carefully hammering the area with a pneumatic hammer, similar to the type used both in riveting and rivet busting. A metal plate is typically placed between the hammer and the bridge metal during this particular pack rust removal process. It is worth noting that if for some reason removing the pack rust from these floorbeams did not solve the problem, that the floorbeams could be replaced while undoubtedly retaining a no adverse effect finding on the historic bridge.

The in-depth inspection report states that “The upper deck truss members were observed to be in generally good condition with little to no deterioration evident.” This statement speaks quite clearly to the high level of feasibility of rehabilitating this area of the bridge. Indeed it is questionable whether rehabilitation is even needed. A simple coat of paint may be all that is needed in this area. The only area of concern here was that some of the lateral bracing was shown to have significant pack rust and cracking. These small and minor members could be replaced with new ones, again likely with no adverse effect on the historic bridge.

The inspection reports show that most of the lower chord is in decent condition. There are areas of section loss, including on some gusset plates, but with only one portion of the lower chord showing a higher 60% section loss, and most areas of section loss in the much smaller 20-30% range.

All of these conditions seem to indicate that there are no severe problems with the bridge. Indeed, the fact that the lowest rating on the bridge is 4 (Poor) rather than something lower like 3(Serious) or 2(Critical), may confirm this in a broad sense.

Concerns With Rehabilitation Consideration

The rehabilitation that MoDOT considered appears to have been a minor rehabilitation including a repainting project with miscellaneous repairs to joints and expansion elements. While there is nothing wrong with a project of this scale, it appears that this project was compared against the benefits of a demolition and replacement project. The argument then made by MoDOT was that the rehabilitation would only yield 10 years of additional service life, while a replacement bridge would offer far more years. This really is not effective in terms of finding the best solution to improve a deficient crossing, because it is comparing a short term solution to a long term solution. Instead, an appropriate alternative to compare to replacement would be what I call a “comprehensive rehabilitation” which aims to bring the bridge back from a deteriorated state to a like-new state. A comprehensive rehabilitation would include more extensive repairs to the primary superstructure including correcting the section loss on the trusses. Such a rehabilitation would undoubtedly cost quite a bit more than the original rehabilitation that was proposed by MoDOT, but if designed by an engineer with extensive experience in historic bridge rehabilitation, should still cost considerably less than a replacement bridge given the apparent condition of the Hurricane Deck Bridge.

Every source of information about this bridge appears to indicate that there is no reason why a rehabilitation project could be designed that would provide for a long-term increase in bridge life, cost less taxpayer dollars than replacement, and provide a safe and efficient crossing. I believe that a program that

would provide a comprehensive rehabilitation for this bridge, followed up by routine maintenance and repair would yield potentially 50-75 years of additional service life. I base this opinion off of not only the current condition of the Hurricane Deck Bridge, but also on rehabilitation projects elsewhere.

I-35W Bridge Comparison Concerns

I have grave concerns about a misleading and potentially false statement which appears in the in-depth bridge inspection report and has also been found in the media and online (Wikipedia for example). The in-depth inspection report makes the statement “This bridge has a similar design to that of the I-35 structure in Minneapolis, making it one that should merit special consideration for replacement in the future and a priority for the district.” I have also seen similar statements in the media. I cannot overemphasize and overstate the extent to which the tragic event at I-35W in Minneapolis has been misreported and used to mislead the public, particularly by the news media. It is understandable to me that the news media, not experts in bridge construction, would make errors in its reporting, and/or make a situation sound worse than it is for the sake of making a good story. I however am very taken aback by seeing people who work with bridges on a daily basis make these same sort of misleading and even false statements about the I-35W Bridge. Following the collapse of the I-35W Bridge, the NTSB conducted an extensive investigation of the collapse and found that the I-35W Bridge collapsed because of a design error in the original plans for the bridge which resulted in the gusset plates being too thin for the bridge. Following the collapse of the I-35W Bridge, highway agencies like MoDOT conducted inspections on deck trusses and other truss bridges with gusset plates. I presume that at this time MoDOT reviewed the plans for the Hurricane Deck Bridge and ensured that the bridge did not contain a similar design error. Otherwise, my expectation would be that the bridge would be closed to traffic. Because this bridge has not closed to traffic, I can only conclude that this bridge does not have the problem that I-35W did and that its gusset plates are the correct size.

I am aware that there are some very generalized similarities between the I-35W Bridge and the Hurricane Deck Bridge. The Hurricane Deck Bridge was designed by the same engineering firm that designed the I-35W Bridge, and the Hurricane Deck Bridge is a deck cantilever truss bridge, which is the same category as the I-35W Bridge. However, the specific design and composition of the Hurricane Deck trusses is significantly different from the I-35W Bridge, and indeed the Hurricane Deck Bridge was built in a completely different period in history. Also, although Sverdrup and Parcel made a big mistake on the I-35W Bridge, that does not mean that every bridge they designed was badly designed. A significant number of Sverdrup and Parcel bridges remain both in Missouri and other states, and they continue to safely carry traffic. Similarly many cantilever deck trusses remain in our nation and they also continue to safely carry traffic. Further, the fact that a bridge is a deck truss does not in reality pose any unique differences in terms of structural soundness versus any other truss type. The reality is that any fracture critical truss bridge with gusset plates could potentially collapse if the gusset plates are too thin, not just deck cantilever truss bridges. However by reviewing the original plans for the bridges and also conducting routine bridge inspections, these bridges can be proven to be safe. I can point to numerous fracture critical truss bridges with gusset plates which have faithfully and safely carried vehicles for over a century, and I can further provide examples of bridges of this type which have been rehabilitated for continued use.

For all the reasons above, I believe that at this point, any comparisons to the I-35W Bridge is inappropriate in terms of project planning. My grave concern is that this comparison did in fact play a role in deciding to replace this bridge, and I do not believe that is the best way in which to determine the appropriate project for this crossing. Doing so would put the need for frugal spending of taxpayer dollars and the need to consider the preservation of this historic bridge at an unfair disadvantage.

Previous Section 106 and Bridge Plans

It is my understanding that Section 106 was previously conducted with this bridge a number of years ago. At that time, a solution for building a new bridge next to the existing bridge to provide additional travel lanes was proposed, and Section 106 concluded with this being the plan. Apparently this solution was chosen and even though it would have preserved the historic bridge, it was found to have adverse effect. I would argue instead that such a solution would avoid adverse effect because it would prevent the demolition of the historic bridge, and would also rehabilitate the historic bridge. I would consider this to be a preservation solution for the bridge that also addresses a need for more traffic lanes. I am concerned because it seems that although a preservation solution was found during this previous Section 106 process, it was not carried out for whatever reason. Now today, Section 106 is being redone and MoDOT is proposing the demolition of this historic bridge, presumably because during the years between Section 106 processes, maintenance of the bridge has been deferred and the bridge has deteriorated. I would understand the need to adjust the Section 106 outcome if the bridge had been so terribly neglected during those years that the deterioration had advanced to imminent failure and was beyond repair. However the inspection reports suggest that preservation is feasible. It would seem to me that a decision to rehabilitate this bridge today is not something outlandish or unheard of and is simply be honoring the unfulfilled commitment made to this bridge by MoDOT years ago.

Recommendations

I strongly recommend that a more extensive and comprehensive rehabilitation be considered for this bridge. An engineer could design preliminary plans for such a project to be compared to the replacement project. Whether done in-house at MoDOT or whether a consulting engineer is hired, I cannot overstate the importance of making sure the engineer has a significant portfolio of experience in designing successful historic truss bridge rehabilitation projects. Many engineers are very skilled at designing new bridges and working with modern materials such a pre-stressed concrete because so much of today's bridge work involves such things. However, these engineers may have a surprising lack of experience in the unique aspects of a historic metal truss bridge with antiquated design features like built-up beams and rivets. An inexperienced engineer may produce a rehabilitation project that costs more while at the same time producing a final bridge product that will not offer the best possible service life. In contrast, an engineer who has worked extensively with successful historic bridge rehabilitation projects can often design a rehabilitation that costs less than replacement, yet will provide decades of service life.

Furthermore, I recommend that MoDOT reconsider the alternatives for this project, with the addition of a comprehensive rehabilitation, all the while without making any comparisons between the Hurricane Deck Bridge and the I-35W Bridge. This will ensure that the final decision made for this bridge is based on balanced and factual information.

This historic bridge was an award-winning bridge when it was built. It was constructed by a Missouri contractor that is still in business today, Stupp Brothers, and the design of the bridge was specifically chosen to allow unobstructed views of the lake by tourists, making it a rare example of aesthetics in rural Missouri bridge design. The bridge is the last of the truss bridges built over Lake of the Ozarks. Because of the bridge's high level of significance, I urge MoDOT to take the time to more carefully take a look at the feasibility of rehabilitating this historic bridge.

I would be willing to assist MoDOT in finding a good engineer for the project. I also would be happy to provide a sample of preserved historic truss bridges, including deck cantilever truss bridges, as examples to demonstrate the potential outcome of a Hurricane Deck Bridge rehabilitation.

I would be happy to discuss this further if there are further questions or interest. Thank you for considering my thoughts.

Sincerely,

Nathan Holth

Author/Webmaster, HistoricBridges.org

From:	Gari L Luttrell/SC/MODOT
To:	nathan@historicbridges.org
Cc:	Linda K Conner/SC/MODOT@MODOT
Date:	03/09/2011 08:30 AM
Subject:	Holth SSL request 2011-03-5204 email response

Re: **Sunshine Request # 2011-03-5204**

Thank you for your request received by our Commission Secretary on March 4, 2011 for , for *certain bridge information relating to the Hurricane Deck Bridge in Camden County, Missouri.* The department has reviewed your request.

After a thorough search of the Commission's files, the attached documents were located in satisfaction of your request. All fees associated with this request have been waived and this matter is now closed.

Hurricane Deck Scope & Estimate of Rehab.pdf

2010 Major Bridge Report K0961 .docx

K0961 04142010 Field Inspection Report.pdf

Should you have any questions regarding this matter, please do not hesitate to contact me at (573) 526-4695 or by return email.

Gari Luttrell

Chief Counsel's Office - Paralegal
Missouri Department of Transportation
105 W. Capitol, P O Box 270
Jefferson City, MO 65102
573/526-4695
573/526-4408 fax
gari.luttrell@modot.mo.gov

From: "Nathan Holth" <nathan@historicbridges.org>
To: <randall.dawdy@modot.mo.gov>
Date: 03/02/2011 02:53 PM
Subject: Hurricane Deck Bridge Questions

Mr. Dawdy,
I am trying to learn more about the proposed project to demolish and replace the historic Hurricane Deck Bridge in Camden County. MoDOT is soliciting public input until March 15 2011 as part of an online public meeting regarding the start of an environmental assessment (EA).

Has Section 106 been conducted for this project yet? It was my understanding that up until recently the plan was to rehabilitate this bridge. It was my assumption that canceling that plan and considering a replacement project would trigger a Section 106 process.

The online meeting does not offer any documentation that would enable me to comment on the project as MoDOT is requesting. I am forced to make drastic assumptions based off of little information.

Rather than produce comments based off of mere speculation, I was hoping you might be able to help me by pointing me to materials that would enable me to make more well thought comment regarding the project.

I would be interested in seeing the most recent in-depth bridge inspection report, including fracture critical if possible.

I would be interested in seeing a rehabilitation feasibility analysis and/or a document that describes in detail the proposed rehabilitation that would have supposedly only yielded 10 additional years of service.

I would be interested in knowing who the consulting engineer is and what their portfolio of historic bridge rehabilitation experience includes. Or if this is an "in-house" design process, I would be curious to see a list of historic bridges that the engineer designed rehabilitations for.

MoDOT requires comments on this project to be submitted by March 15th, so if you could get back to me with some help in resolving these questions and requests at your earliest convenience I would greatly appreciate it.

Thanks so much!

-Nathan Holth

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Nathan Holth
Author/ Photographer/Webmaster
-----HistoricBridges.org-----
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PROGRAMMATIC SECTION 4(f) EVALUATION

HISTORIC BRIDGES

PROJECT NUMBER J5P2188 RTE. 5 COUNTY Camden

SECTION 4(f) RESOURCE Hurricane Deck Bridge No. K0961

REVIEWED BY _____ TITLE _____

APPROVED BY _____ DATE _____

This project and its impacts have been determined to meet the following criteria for a Programmatic Section 4(f). Sufficient documentation exists in the project file to support this determination. Note: Any response in a bracket requires additional information prior to approval. Consult Programmatic 4(f) Evaluation signed July 5, 1983 by FHWA's Office of Environmental Policy.

APPLICABILITY

	Yes	No
1. Will the bridge be replaced or rehabilitated with Federal funds?	___	[ ]
2. Will the project require the "use" of an historic bridge which is on or eligible for listing on the National Register of Historic Places?	___	[ ]
3. Will the project impair the historic integrity of the bridge either by demolition or rehabilitation?	___	[ ]
4. Has the bridge been determined to be a National Historic Landmark?	[ ]	___

ALTERNATIVES CONSIDERED

1. The do nothing alternative has been studied and is considered not to be feasible and prudent for reasons of maintenance and safety.	___	[ ]

	Yes	No
2. The building on new location alternative without using the old bridge has been studied and has been determined to be not feasible and prudent for reasons of terrain; and/or adverse social, economic or environmental effects; and/or engineering and economy.	___	[ ]
3. Rehabilitation of the existing bridge without affecting the historic integrity of the bridge has been studied and has been determined to be not feasible and prudent for reasons of structural deficiency and/or geometrics.	___	[ ]
4. Relocation of the existing bridge has been studied and found to be not feasible and prudent because either the bridge's historic integrity would be adversely affected or no responsible party could be found to accept responsibility for the bridge.	___	[ ]

MEASURES TO MINIMIZE HARM

1. For bridges that are to be rehabilitated, the historic integrity of the bridge is preserved, to the greatest extent possible, consistent with unavoidable transportation needs, safety, and load requirements.	___	[ ]
2. For bridges that are to be rehabilitated to the point that the historic integrity is affected or that are to be moved or demolished, the FHWA has ensured that fully adequate records are made of the bridge in accordance with the Historic American Engineering Record (HAER) standards, or other suitable means developed through consultation.	___	[ ]
3. For bridges that are to be replaced, the existing bridge is made available for an alternative use, provided a responsible party agrees to maintain and preserve the bridge.	___	[ ]
4. For bridges that are adversely affected the FHWA, SHPO, and ACHP have reached agreement through the Section 106 process on Measures to Minimize Harm and those measures are incorporated in the project.	___	[ ]

MEMORANDUM OF AGREEMENT
FOR MITIGATION OF ADVERSE EFFECTS

TO HISTORIC PROPERTY: Hurricane Deck Bridge (K0961) on State Route 5 over Lake of the Ozarks in Camden County, Missouri.
UNDERTAKING: Replace the existing bridge with a new structure. Camden County, Route 5, MODOT project J5P2188.
STATE: Missouri.
AGENCY: Federal Highway Administration.

WHEREAS, the Federal Highway Administration (FHWA) has determined that replacement of the Hurricane Deck Bridge (K0961) will have an adverse effect on the bridge, which has been determined eligible for inclusion to the National Register of Historic Places (NRHP), and has consulted with the Missouri State Historic Preservation Office (SHPO) pursuant to the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the FHWA has notified the Advisory Council on Historic Preservation (Council) of its adverse effect determination and the Council has chosen not to participate in this Memorandum of Agreement (MOA); and

WHEREAS, the Missouri Highways and Transportation Commission (MHTC), acting by and through the Missouri Department of Transportation (MODOT), has been invited to participate in the preparation of and be a signatory to this MOA; and

WHEREAS, to the best of the FHWA's knowledge and belief, no human remains, associated or unassociated funerary objects or sacred objects, or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001), are expected to be encountered; and

NOW, THEREFORE, FHWA and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations.

STIPULATIONS

FHWA shall ensure that the following measures are carried out:

1. The MHTC, acting by and through MODOT, shall develop archival documentation to the following specifications:

    a. 8X10 inch high-resolution black and white digital images printed on archival paper sufficient to fully document overall views and details of the historic bridge. Photographs will be taken and processed according to standards for photographs

accompanying NRHP documentation. Digital compact discs with all views will be provided.

b. A historic narrative and technical descriptions for the historic bridge.

c. A copy of the original construction plans for the historic bridge.

The final documentation shall be provided to the SHPO along with archival digital discs containing the TIFF images and report PDF. Additional copies shall be provided to appropriate local historical groups, and retained by MODOT. Bound copies and/or CDs of the final documentation also will be available to others upon request.

2. The MHTC, acting by and through MODOT, shall consult with the SHPO to determine the appropriate approach and method for marketing Bridge K0961 as per the Surface Transportation and Uniform Relocation Assistance Act of 1987 (STURAA) Section 123(f). A waiver of advertisement also shall be discussed. The MHTC, acting by and through MODOT; the SHPO; and the FHWA shall agree to the approach and method prior to implementation.

   If ownership of the bridge (or a portion thereof) is transferred to another party, the transfer deed may include preservation covenants that require the new owner to move and maintain the bridge in accordance with the "Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitation of Historic Buildings." The proposed reuse plan and specifications will be forwarded to FHWA for review and approval in consultation with the SHPO; and MHTC, acting by and through MODOT. If no party is found to take possession of the existing bridge, it may be replaced.

3. If modifications to the project activities result in an adverse effect to any NRHP eligible archaeological site, the FHWA shall consult with the SHPO and appropriate Indian Tribes to resolve the adverse effects, consistent with guidance provided in 36 CFR § 800.6, through the implementation of an Archaeological Data Recovery Plan(s) developed in accordance with the Council's "Recommended Approach for Consultation on the Recovery of Significant Information from Archaeological Sites" (64 FR 27085-87 published in the Federal Register on May 18, 1999), the Council's Handbook on Treatment of Archaeological Properties, and the Secretary of the Interior's Standards for Archaeological Documentation.

4. Within one year after carrying out the terms of the MOA, the FHWA shall provide to all signatories a written report regarding the actions taken to fulfill the terms of the agreement.

5. If any signatory proposes that this agreement be amended, the FHWA shall consult with the other parties of this agreement. Said amendment shall be in writing, governed in accordance with 36 CFR 800.6, and executed by all parties to the Memorandum of Agreement.

6. If any signatory determines the terms of the MOA cannot be carried out, the signatories shall consult to seek amendment. If the MOA is not amended, any signatory may terminate it. If the MOA is terminated, the FHWA shall execute a new MOA or request the comments of the Council.

7. Three (3) copies of this signed MOA will be provided, one to each signatory. One (1) signed copy will be transmitted to the Council for inclusion in their files, and one (1) signed copy will be retained by the MODOT Historic Preservation Unit.

8. Failure to carry out the terms of this MOA requires that the FHWA again request the comments of the Council in accordance with 36 CFR Part 800. If FHWA cannot carry out the terms of the agreement, it shall not take or sanction any action or make any irreversible commitment that may affect historic properties until such time as the Council has been given the opportunity to comment on the full range of project alternatives which might avoid or mitigate any adverse effects.

9. This agreement shall commence upon having been signed by the FHWA and SHPO and shall be null and void if its terms are not carried out within five (5) years from the date of its execution, unless the FHWA and SHPO agree in writing to an extension for carrying out its terms.

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Execution of this Memorandum of Agreement, and carrying out its terms, evidences that the FHWA has afforded the Council an opportunity to comment on the replacement of the Hurricane Deck Bridge (K0961) and its effects on historic properties, and that FHWA has taken into account the effects of the project on historic properties, in accordance with Section 106 of the National Historic Preservation Act.

Signed:

FEDERAL HIGHWAY ADMINISTRATION:

By: _____ Date: _____

Title: _____

THE MISSOURI STATE HISTORIC PRESERVATION OFFICE:

By: _____ Date: _____

Title: _____

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION:

By: _____ Date: _____

Title: _____

Attest:

_____
Commission Secretary

Approved as to form:

_____
Commission Counsel

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INFORMATION TO ACCOMPANY
THE
MEMORANDUM OF AGREEMENT
FOR MITIGATION OF ADVERSE EFFECTS

TO HISTORIC PROPERTY: Hurricane Deck Bridge (K0961) on State Route 5 over Lake of the Ozarks in Camden County, Missouri.
UNDERTAKING: Replace the existing bridge with a new structure. Camden County, Route 5, MODOT project J5P2188.
STATE: Missouri.
AGENCY: Federal Highway Administration.

I. Project Description

The primary purpose of this project is to replace the historic Hurricane Deck Bridge K0961 over Lake of the Ozarks. MODOT rehabilitation project J5P0905 was planned for 2011 and included bridge rehabilitation, repairs, and painting; but was removed from the Statewide Transportation Improvement Program (STIP). MODOT bridge replacement project J5P2188 was then added to the STIP. In-depth inspections revealed the superstructure of the historic bridge is in poor condition, the bridge is nearing the end of its 75-year useful service life, and it does not meet current MODOT standards for shoulder width and vehicular load.

An earlier December 10, 1997 Final Environmental Impact Statement (FEIS) for a 40-mile-long Route 5 improvement was to build a new companion bridge west of the existing historic bridge and use the existing roadway and bridge in place. The current Environmental Assessment (EA) considers the likely demolition of the historic bridge, and examines alternatives within a 600-foot-wide corridor. Since the Hurricane Deck Bridge is eligible for inclusion to the National Register of Historic Places (NRHP), a Programmatic Section 4(f) evaluation will be required, along with an MOA stipulating measures to mitigate the project's "adverse effect" to the historic structure. No other historic resources were identified to be impacted by the project. (Appendices A and C).

II. Public Involvement Summary

An online virtual public meeting was held for the project from February 28 through March 15, 2011. MODOT received written comments from 50 individuals with about 270 visits to the web page. Overall 96% favored replacement of the historic bridge with a new structure while 4% favored using the historic structure in place and doing a rehabilitation. In addition, 12 people were in favor of building an entirely new bridge, 12 people were in favor of the slide options, and 19 people just wanted the crossing structure upgraded, regardless of approach. One private citizen requested additional information about the bridge's condition and the scope of the original rehabilitation project, and the inquiry was treated as a request under the Sunshine Law, and the material was supplied. He also asked about the Section 106 status of the project and later

requested to be a Section 106 consulting party for the project. MODOT and the FHWA discussed his request and agreed to it. MODOT intends to continue public involvement and regular press releases to advise the public about the project and historic bridge, and meet with local groups upon request. (Appendix B).

In addition to the continuation of public involvement, and with the review and approval of the Missouri State Historic Preservation Office (SHPO), marketing letters were sent out to regional planning organizations, county commissioners, city halls, chambers of commerce, state and federal agencies, and other groups; with information packets containing location maps, photographs, and historic and structural information for the existing historic Hurricane Deck Bridge K0961. The letters informed the groups that the bridge was determined eligible for the National Register of Historic Places, and that MODOT has proposed to replace it with a new structure. (The Surface Transportation and Uniform Relocation Assistance Act of 1987 (STURAA) Section 123(f) states: "prior to the demolition of a historic bridge, the State shall market (sell or donate) the bridge to a state or local government, agency or responsible private entity"). As part of this mitigation process, MODOT has made the steel superstructure of Bridge K0961 (or portions thereof) available for adaptive reuse, to any government or group willing to move, re-erect, maintain, and assume legal and financial responsibility for the structure. (Appendix B).

In January of 2011 tribal governments of the Choctaw Nation of Oklahoma, Delaware Nation of Oklahoma, Ponca Tribe of Nebraska, and Osage Nation of Oklahoma were contacted and provided with project information and an invitation to attend the interagency scoping meeting. These tribes had previously indicated tribal interest in the project area.

The Delaware Nation requested further information on the project, which was later provided to them. They stated that the location of the project does not endanger known sites of interest to the Delaware Nation and that the project may continue as planned. They requested, however, that they and the appropriate state agencies be contacted immediately in the event the project inadvertently uncovers an archaeological site or object(s). Additionally, all construction and ground disturbing activities should be halted until the tribe and state agencies are consulted.

Osage Nation requested additional information and consulting party status in all agreements regarding historic preservation made as a result of the undertaking as well as the opportunity to participate in a one-on-one consultation concerning the project. In April of 2011, FHWA, and MODOT met with representatives of the Osage Nation in Joplin, Missouri, for a one-on-one consultation. The Osage Nation was concerned that previously provided project information indicated possible impacts to a nearby sensitive archaeological site. The Osage Nation was pleased to hear that recent project decisions have eliminated possible impacts to the site. The Osage Nation presented no other objections or concerns with the project and requested an opportunity to visit the project area and archaeological site with tribal representatives. In May of 2011, MODOT staff met with the Osage Nation Tribal staff on-site to review the project and inspect the archaeological site.

After the on-site meeting the Osage Nation made three requests, which MODOT agreed with: 1) the required removal of approximately one to three feet of the existing rock face along Route 5 at

the base of the slope from station 521+50 to station 525+00 will be accomplished from the existing roadway by chipping away the rock face, 2) the construction contract will include a job special provision specifying that no heavy vehicles will be placed on the slope above the existing road cut, and 3) the entire area south and west of the bridge within the project limits will be designated as off-limits to all MODOT contractor activity, equipment, and vehicular or foot traffic during the project activities. (Appendix B).

III. Summary of Previous Work

A major bridge rehabilitation was conducted in 1985 including a new steel grid deck, double tee girders, substructure repairs, and painting. (The deck was last resurfaced in 2006). By March 15, 1993 Clayton Fraser's Missouri Historic Bridge Survey had inventoried the Hurricane Deck Bridge, which had been evaluated eligible for the NRHP in his 1989 Preliminary Determinations of Eligibility study. On May 20, 1996 the Missouri SHPO issued their opinion that the bridge is eligible for listing on the NRHP under Criterion C in the area of Engineering. The Record of Decision (ROD) for the FEIS was issued on December 10, 1997. (The MOA stipulating mitigation measures for the adverse effect to the historic bridge and other historic properties had been signed on September 23, 1996). A Section 106 evaluation for bridge replacement Project J5P2188 was submitted to the SHPO on March 2, 2011, and on March 8, 2011 the SHPO concurred that the Hurricane Deck Bridge is eligible for the NRHP and that the project would have an "adverse effect" on the historic structure. An online virtual public meeting was held for the project from February 28 through March 15, 2011. Beginning on April 21, 2011 the existing historic bridge superstructure was advertised for adaptive reuse at a new location; responses were requested within an eight week period. (Appendices B and C).

IV. Description of the Historic Property

Hurricane Deck Bridge K0961R over Lake of the Ozarks: Built 1934-35 at a cost of $650,000, Bridge K0961R is a five-span steel continuous Warren cantilevered deck-truss with two concrete deck-girder approach spans at each end. It measures 2,280 feet long with a roadway width of 28 feet curb-to-curb. The bridge is on the Missouri Historic Bridge List and was determined to be eligible for the National Register of Historic Places as per the opinion of the Missouri State Historic Preservation Office on May 20, 1996: "It is eligible for listing under Criterion C in the Area of Significance ENGINEERING to wit: It is an impressive multiple-arched, cantilevered bridge built to span the Lake of the Ozarks."---"The bridge received the 1936 American Institute of Steel Construction's Most Beautiful Bridge Award. Along with its beauty and attractiveness of setting, the bridge is an outstanding long-span example of a bridge-type uncommon in Missouri." Constructed by the W.A. Ross Construction Company and the Stupp Brothers Bridge and Iron Company, the Hurricane Deck Bridge is the last of its kind in the State, and one of only three steel deck-truss bridges built at Lake of the Ozarks. The other two, the Grand Glaize Bridge (J0832) and the Niangua Arm Bridge (K0510A) have been replaced with new structures. All build alternatives and variations considered in the EA will result in the removal/demolition of the Hurricane Deck Bridge, and will have an "adverse effect" on the historic structure. Additional structural and historical information is in Appendices C and D.

V. Adverse Effect on the Historic Property

This project will result in replacing the existing Hurricane Deck Bridge with a new crossing structure. The bridge is eligible for the NRHP, and this action constitutes an "adverse effect" to the structure as described in 36 CFR 800.3 (b) (1) (4) of the National Historic Preservation Act.

VI Summary of Alternative Courses of Action

The alternatives initially considered included a No-Build (rehabilitation) alternative, an Existing Location build alternative with four variations, and an Adjacent East Location build alternative. The 1997 ROD-selected Adjacent West Location build alternative ($26 million estimated cost) was also still under consideration. However as the current EA was being developed, it was determined that two of the four variations, and the Adjacent West Location build alternative could result in adverse impacts on two archaeological sites. Therefore these options will not be further evaluated and are dropped from consideration.

Three alternative courses of action are retained for this project. These include the No-Build (rehabilitation) alternative, the Existing Location build alternative with two variations, and the Adjacent East Location build alternative. These will be evaluated in detail in the EA.

The **No-Build (rehabilitation)** alternative ($6 million estimated cost) would continue the original plan for rehabilitation and extend the bridge's service life to an additional ten years. It would replace the railing, strengthen truss members and supports, replace damaged members, and repaint the entire bridge. This would not include any new, major construction. This alternative would retain the existing historic bridge and not alter the bridge's narrow width. After rehabilitation, no other improvements would occur beyond normal bridge maintenance. Because of the age and condition of the existing bridge, rehabilitation and routine maintenance are very costly and only serve as a short-term solution. Also, the need for tighter weight restrictions would be likely within 10 years of the rehabilitation, and the bridge could require closure within 20 years.

This alternative would retain the existing historic bridge and have no significant environmental impacts, but would not correct existing deficiencies or meet MODOT's current standards for vehicular load. It would not meet today's national standard for requiring full-width shoulders on bridges of over 1000 feet in length so that disabled vehicles do not block the flow of traffic, and it would not allow for the addition of a protective barrier to accommodate bicyclists and pedestrians. Costs would increase as the deterioration of major elements reach critical levels and cause more frequent impacts to the traveling public.

The No-Build (rehabilitation) alternative does not meet the project needs or address existing deficiencies. It will be retained in the EA as a baseline for evaluation of the other alternatives.

The **Existing Location** build alternative ($23 million estimated cost) would provide a new bridge where the existing historic bridge is now located. Two variations are being considered. Temporary pilings would be erected east of the existing bridge. Then either the historic bridge would be slid laterally 35 feet onto the pilings to carry traffic while a new bridge is built on the existing bridge piers, or the new bridge would be constructed on the pilings while traffic is maintained on the existing bridge. In the first case, the historic bridge would be demolished once the new bridge is opened to traffic. In the second case, the historic bridge would be removed when the new bridge is finished, and the new bridge would then be slid onto the existing piers and connected to the reconstructed approaches. Weekend closures would be needed to slide bridge structures, and a temporary Route 5 bypass would be constructed on the north and south ends of the temporary detour structure.

This alternative would satisfy the project purpose and need, reuse some existing infrastructure to minimize environmental impacts, and disrupt Route 5 traffic only minimally during construction. The expected service life of the crossing structure would be increased to 75 years. It would allow for the addition of protective barriers to accommodate bicycles and pedestrians, but would remove the existing historic bridge superstructure.

The **Adjacent East Location** build alternative ($25 million estimated cost) would replace the existing historic bridge with a new two-lane bridge approximately 51 feet east of the current location (centerline to centerline; 15 feet from inside edge of existing bridge to inside edge of new bridge). When the new structure is ready to tie into the existing roadway, the historic bridge would be demolished. The new bridge would be roughly the same length as the existing bridge, and have nine piers plus two end bents.

This alternative would satisfy the project purpose and need, disrupt Route 5 traffic only minimally during construction, and could increase the service life of the crossing to 100 years. It would allow for the addition of a protective barrier for bicycles and pedestrians, but would remove the existing historic bridge.

Conclusions: Both proposed build alternatives would maintain a direct Route 5 connection across the Lake of the Ozarks during construction. Because the Existing Location alternative and the Adjacent East Location alternative would use different structural systems, the Existing Location would cost about $2 million less than the Adjacent East Location, and would require very little new right of way acquisition.

MODOT has designated the Existing Location alternative as the Preferred Alternative to solve problems associated with the Route 5 Hurricane Deck Bridge. The Preferred Alternative would replace the existing deficient bridge with a new two-lane bridge in the same location. This alternative would maintain traffic on the existing bridge during construction, construct the new bridge on temporary pilings next to the existing historic bridge, remove the structure, and slide the new bridge onto the existing piers. The Preferred Alternative was identified through public and agency involvement along with assessment of socioeconomic and environmental consequences. The selected alternative will not be finalized until comments from resource agencies and the public are fully evaluated and addressed.

Removal of the historic bridge will be accompanied by mitigation of the adverse effect to the historic bridge with data recovery, through photographic and historical documentation as determined in consultation with the Missouri SHPO and FHWA. Also, the bridge will be marketed and advertised as available for adaptive reuse at a new location. This mitigation will be initiated well in advance of the commencement of construction activities.

VII. Proposed Action

The proposed actions for the archival documentation and marketing for reuse of the historic Hurricane Deck Bridge (K0961), and proposed actions if modifications to project activities result in an adverse effect to any NRHP eligible archaeological site, are listed in the Stipulations of the Memorandum of Agreement, which this document accompanies.

VIII. List of Appendices

A. Location Maps for the Hurricane Deck Bridge.

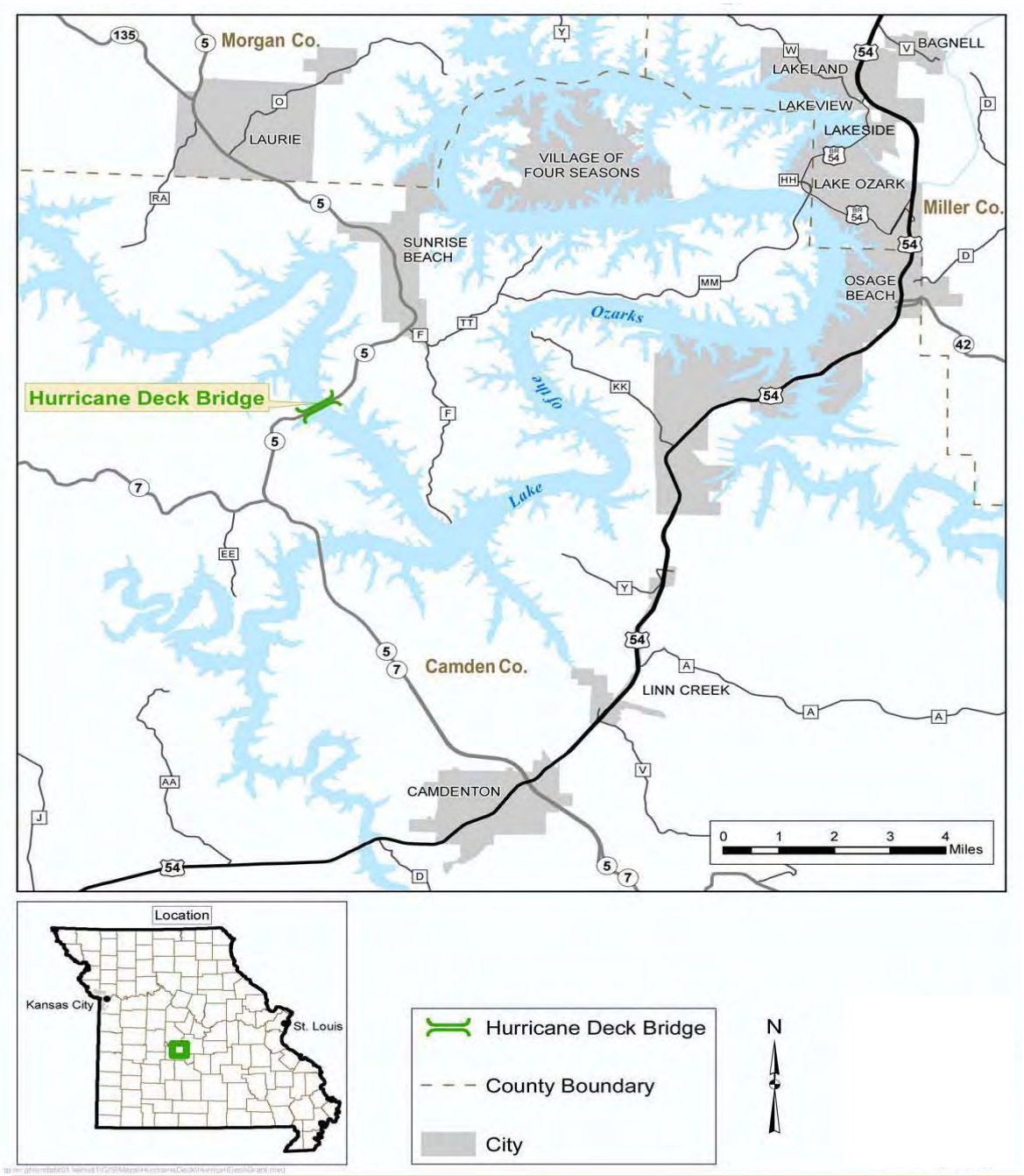
B. Public Involvement.

C. Correspondence and Coordination.

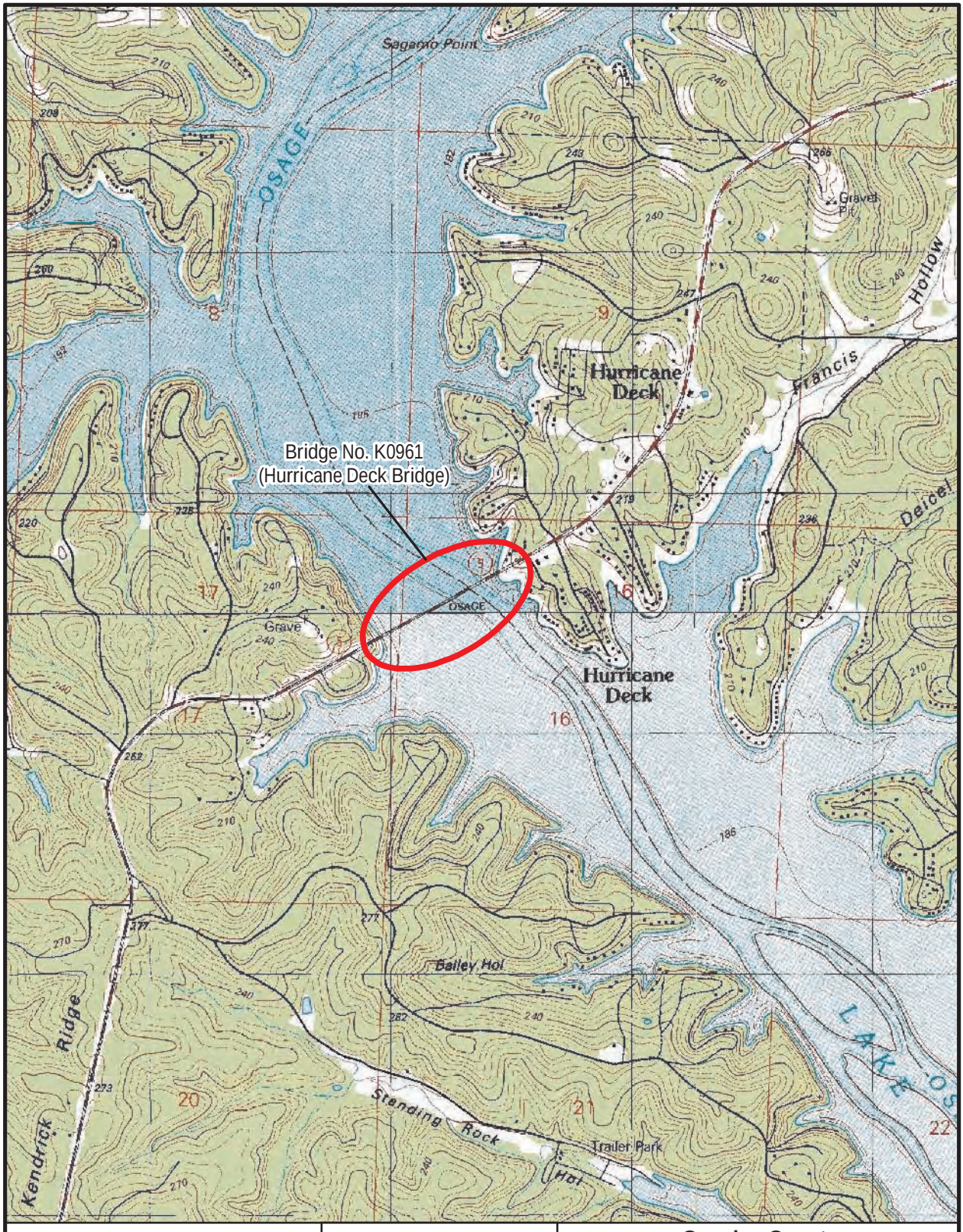
D. Photographs of the Hurricane Deck Bridge.

Appendix A

Location Maps for the Hurricane Deck Bridge.



Missouri Route 5 Hurricane Deck Bridge Location



Adapted from U.S.G.S.
Sunrise Beach 1983 &
Green Bay Terrace 1983
Missouri 7.5' Quadrangles

Camden County
Route 5
MoDOT Job No. J5P2188
Bridge No. K0961

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Appendix B
Public Involvement.

Route 5 Bridge at Hurricane Deck

The project is within the known breeding range of the federally endangered Indiana bat (Myotis sodalis). MoDOT will implement provisions to avoid impacts to this species.

Historic Hurricane Deck Bridge No. K0961R:

Replacement of the Route 5 Bridge over Lake of the Ozarks at Hurricane Deck in Camden County, Missouri will have an "adverse effect" on the existing bridge, which is eligible for the National Register of Historic Places (NRHP).

Built 1934-35, Bridge K0961R is a five-span steel continuous cantilevered Warren deck-truss with two concrete deck-girder approach spans at each end. It measures 2,280 feet long with a roadway width of 28 feet. The bridge received the 1936 American Institute of Steel Constructions Most Beautiful Bridge Award. The Hurricane Deck Bridge is the last of its kind in the State, being one of only three of that type built in Missouri.

Mitigation of the “adverse effect” will be undertaken as stipulated in a Memorandum of Agreement signed by two State and two Federal Agencies:

- Documentation: Archival photographs and historical documentation will be prepared for curation at the James C. Kirkpatrick State Information Center in Jefferson City.
- Advertisement for Adaptive Reuse: The bridge superstructure will be offered to potential recipients who must agree to accept title, preserve the bridge and features which make it historic, and assume all legal and financial responsibility.
- Additional Measures will be discussed in consultation with the State and Federal agencies, and other interested parties.

Historic Hurricane Deck Bridge (K0961R) Information:

Replacement of the Route 5 Bridge over Lake of the Ozarks at Hurricane Deck in Camden County, Missouri will have an "adverse effect" on the existing bridge, which is eligible for the National Register of Historic Places (NRHP).

Built in 1934-35, Bridge K0961R is a five-span steel continuous cantilevered Warren deck-truss with two concrete deck-girder approach spans at each end. It measures 2,280 feet long with a roadway width of 28 feet curb-to-curb. The bridge is on the Missouri Historic Bridge List and was determined to be eligible for the NRHP as per the opinion of the Missouri State Historic Preservation Office on May 20, 1996: "It is eligible for listing under Criterion C in the Area of Significance ENGINEERING to wit: It is an impressive multiple-arched, cantilevered bridge built to span the Lake of the Ozarks. Completed in 1935, it was designed by Sverdrup & Parcel Consulting Engineers of St. Louis. The bridge received the 1936 American Institute of Steel Constructions Most Beautiful Bridge Award. Along with its beauty and attractiveness of setting, the bridge is an outstanding long-span example of a bridge-type uncommon in Missouri." The Hurricane Deck Bridge is the last of its kind in the State, being one of only three steel Warren cantilevered deck-truss bridges built in Missouri. The other two, the Grand Glaize Bridge (J0832) and the Niangua Arm Bridge (K0510A) have been replaced with new structures. All proposed build alternatives will have an "adverse effect" on the historic structure.

The "adverse effect" to the historic bridge will require a two-party MOA for mitigation in the form of archival photographs and historic documentation to be submitted to the State Historic Preservation Office (SHPO) for curation. The bridge also will be advertised for adaptive reuse at a new location, and the Federal Highway Administration (FHWA) will be asked to approve a Programmatic Section 4(f) Evaluation for the project. Additional mitigation measures will be discussed in consultation with the SHPO and FHWA.

Contact:

- Nicole Hood at 573-526-6997 or nicole.hood@modot.mo.gov for project information
- Randy Dawdy at 573-526-3591 or randall.dawdy@modot.mo.gov for historic bridge information

Bridge History

In addressing historic bridges in Missouri, the term "bridges" collectively refers to both public and privately owned highway, railroad, and pedestrian bridges, viaducts, and culverts. Historic bridges are listed on or eligible for listing on the National Register of Historic Places (NRHP). MoDOT is responsible for identifying and managing historic bridges associated with highway projects.

Unlike most other types of cultural resources in Missouri, historic bridges have been inventoried and evaluated statewide. The Surface Transportation and Uniform Relocation Assistance Act of 1987 (STURAA) directed all states to inventory their historic bridges. There are about 24,000 bridges in the State (State, County, and City bridges). The 1996 Missouri Historic Bridge Inventory survey evaluated approximately 11,000 of them, which were built before 1951. Of these, 399 were considered possibly eligible, eligible, or listed on the NRHP. This list, with some modifications, became the Missouri Historic Bridge List (MHB List). It contains about 25 different types of structures including various metal pony trusses and through trusses, wooden trusses, concrete arches and rigid frames, stone arches, and so forth. All were built from 1858 to 1954.

Bridges not on the MHB List are evaluated for eligibility to the National Register of Historic Places, in consultation with the State Historic Preservation Office (SHPO). A project can have "no effect", "no adverse effect" or an "adverse effect" on a historic bridge.

An adverse effect occurs when a project would harm a historic bridge's ability to convey it's historic significance. Examples of adverse effects include demolition, removal from the original location, removal or alteration of original bridge parts, and introduction of new elements that diminish the bridge's significant historic features.

If a project will have an adverse effect on an historic bridge, efforts are made to minimize the effects through redesign of the project. If an adverse effect cannot be avoided a Memorandum of Agreement is negotiated outlining measures to mitigate the effects of the project on the resource.

Mitigation typically includes archival photographs, and preparation of a thorough history and detailed written description, which are then archived at the state or national level depending upon the range of significance. Mitigation also may include marketing and advertisement for adaptive reuse at the existing location or at a new location, dismantling and storing the bridge for future use on another site, or salvaging important historical components of the bridge for reuse as educational or interpretive materials, or reusing salvaged components on other similar historic bridges in need of rehabilitation. An article in MoDOT's Spring 2002 issue of *Pathways* magazine, "For a Free Bridge Call MoDOT" describes how historic bridges can be given a new function.

General information can be found at the Historic Bridges of the Midwest website and at A Context for Common Historic Bridge Types. Additional information is provided in the MoDOT brochure, *Historic Bridges and Transportation Projects in Missouri*. It is also available in a print version for downloading.

Tell Us What You Think!

Route 5 Hurricane Deck Bridge Replacement
Online Public Meeting
Feb. 28 - March 15, 2011

Your input is important! Please tell us what you think about the need to replace the Hurricane Deck Bridge, the possible location of a new bridge, and its significance as a historic structure. Your feedback is important to us and will be reviewed by the project team and incorporated into the project record.

**Fields must be completed to submit comments.*

* Name:

* Address:

City: State: Select One

Zip code:

Phone Number:

Email Address:

Comments:

Submit Reset

Date: 03/16/2011 10:10 AM
Subject: Summary of Comments from Hurricane Deck On-line Meeting

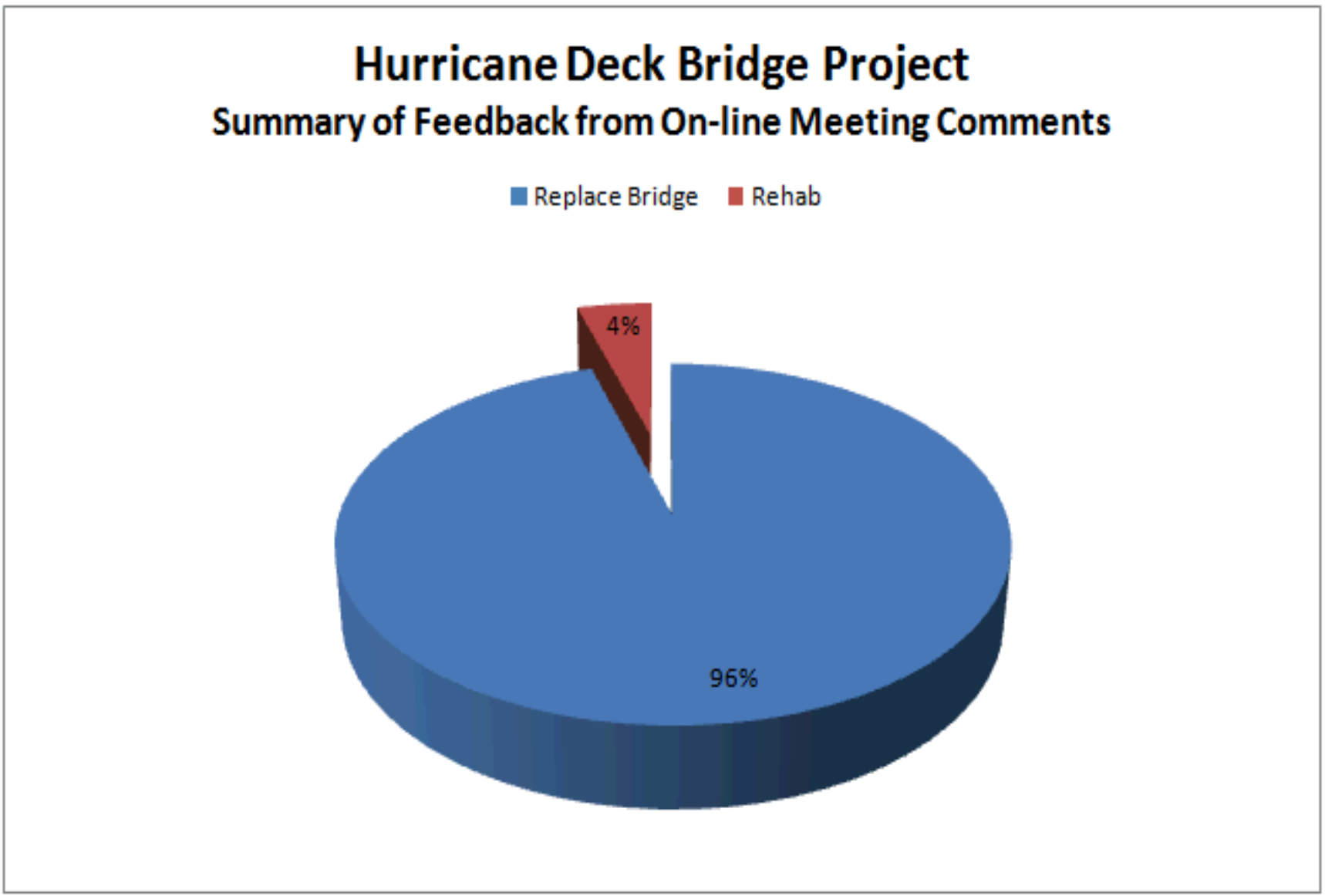
Attached is an excel spreadsheet with a summary of comments from the on-line meeting. We received written comments from 50 individuals and had an average of 269 people visit the web page. The bar chart is a compilation of the overall various comments, for instance, one written comment may have said to replace the bridge, but they also commented about the historical significance and minimizing disruption to traffic so all of their individual comments were captured on the bar chart.

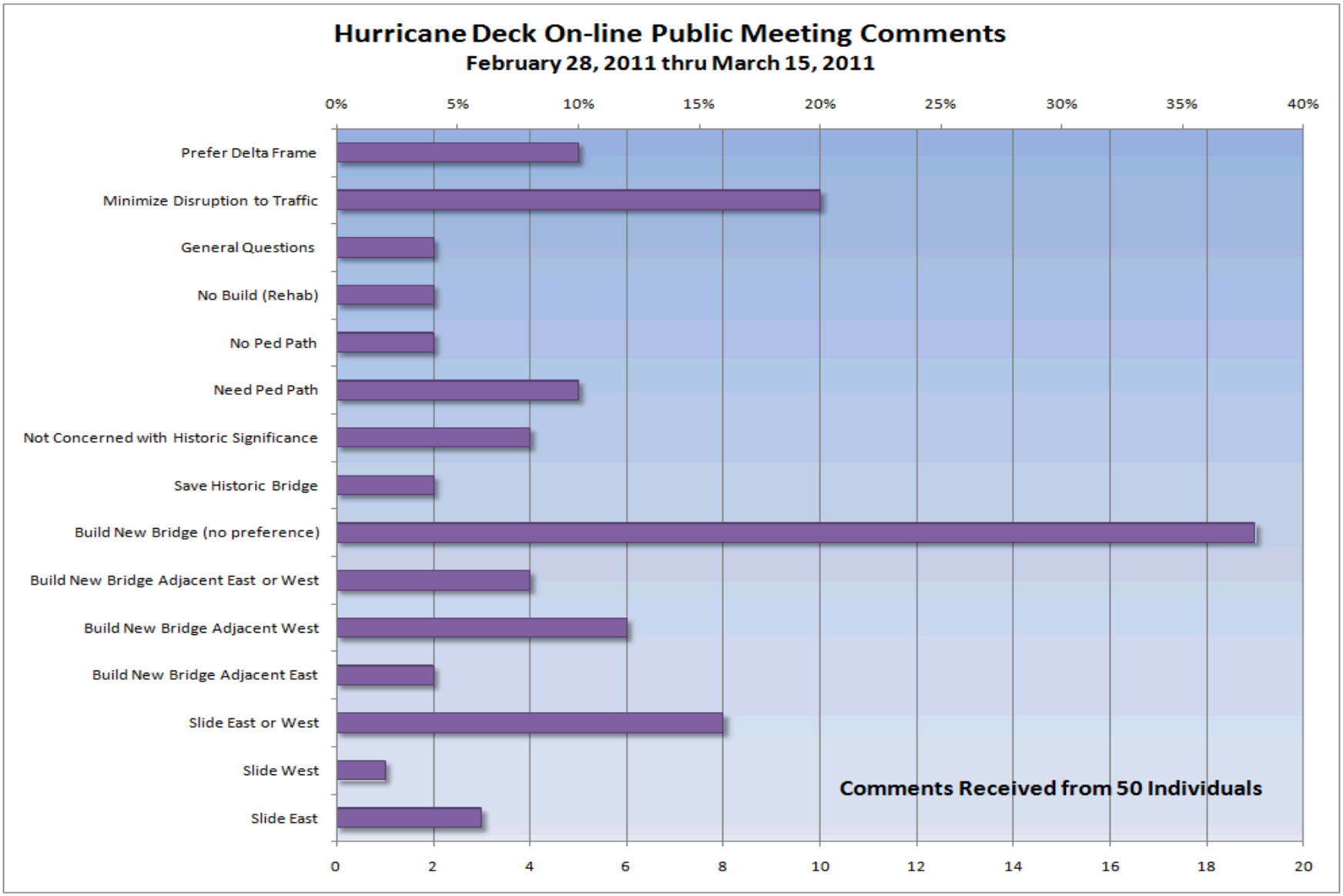
Overall, 96% favored a replacement while 4% were in favor of saving the historic structure and doing a rehab. 12 people said build an entirely new bridge and 12 said do the slide option. 19 said just do it, regardless of approach.

Let me know if you have questions. Thanks.

Hurricane Deck Bridge Project

Summary of Feedback from On-line Meeting Comments




Hurricane Deck On-line Public Meeting Comments
February 28, 2011 thru March 15, 2011
0%
5%
10%
15%
20%
25%
30%
35%
40%
Prefer Delta Frame
Minimize Disruption to Traffic
General Questions
No Build (Rehab)
No Ped Path
Need Ped Path
Not Concerned with Historic Significance
Save Historic Bridge
Build New Bridge (no preference)
Build New Bridge Adjacent East or West
Build New Bridge Adjacent West
Build New Bridge Adjacent East
Slide East or West
Slide West
Slide East
Comments Received from 50 Individuals
0
2
4
6
8
10
12
14
16
18
20

Private Citizen:

Mr. Nathan Holth e-mailed a request for some additional information about the bridge's condition and the scope of the rehabilitation project that was originally proposed. This inquiry was treated as a request under the Open Meetings and Records Law, commonly known as the Sunshine Law, and the requested material was supplied. Mr. Holth also asked whether Section 106 has been conducted for this project yet and stated an "assumption that canceling" the plan to rehabilitate this bridge "and considering a replacement project would trigger a Section 106 process." The Section 106 process has been initiated and is in progress. However, MoDOT would like to clarify that the rehabilitation would also trigger Section 106 and would require concurrence on a determination of effect from the State Historic Preservation Office.

Mr. Holth submitted comments in an April 26, 2011, letter and e-mail and also requested to be a Section 106 consulting party for the project. On May 3, Mr. Holth was notified by e-mail that MoDOT and the FHWA had discussed his request for Section 106 consulting party status on the Hurricane Deck Bridge project and agreed to it. The e-mail briefly outlined the responsibilities of both parties (MoDOT and Mr. Holth) relating to the Section 106 process and offered the possibility of remote participation via telephone should Mr. Holth be unable to attend future meetings in person because he does not live in Missouri.

Mr. Holth stated that he is a private citizen not affiliated with any organization or agency and is neither an engineer nor a certified bridge inspector. He acknowledged a bias toward preserving historic bridges and indicated that although he might be critical of decisions made by MoDOT or other involved parties, his intent is not to offend, alienate, or accuse but to help MoDOT and other parties develop the best possible solution for the bridge. Mr. Holth thanked MoDOT staff for providing him the project information needed to submit his detailed comments as well as for accepting the comments after the due date, enabling a thorough review of the information provided.

Mr. Holth voiced his opinion that a cost-effective rehabilitation of the Hurricane Deck Bridge could be designed that, combined with proper routine maintenance and repair following rehabilitation, would also provide 50-–-75 years of service life. He believes the superstructure's rating of poor indicates "a structure for which a well-designed comprehensive rehabilitation would likely be feasible and probably cost significantly less than replacement."

The 2010 bridge inspection report described heavy pack rust on the floorbeams, listing the section loss as minor. Mr. Holth mentions methods for removing pack rust and notes that if removing the pack rust from the floorbeams did not solve the problem, "the floorbeams could be replaced while undoubtedly retaining a no adverse effect finding on the historic bridge." He questions whether rehabilitation is even needed for the upper deck truss members, which were in generally good condition with little to no deterioration evident at the 2010 in-depth inspection. Mr. Holth suggested that a simple coat of paint may be all that is needed in this area, with significant pack rust and cracking of some of the lateral bracing being the only concern for this part of the structure. He further noted "These small and minor members could be replaced with new ones, again likely with no adverse effect on the historic bridge."

Mr. Holth concludes that the conditions described in the bridge inspection report "seem to indicate … no severe problems with the bridge. Indeed, the fact that the lowest rating on the bridge is 4 (Poor) rather than something lower like 3(Serious) or 2(Critical), may confirm this in a broad sense." He states that rather than comparing a short-term solution (minor rehabilitation project) to a long-term solution (demolition and bridge replacement), a "comprehensive rehabilitation" alternative to bring the bridge from its deteriorated state to a like-new state would be the appropriate comparison. Although Mr. Holth acknowledged that a rehabilitation to like-new condition—with extensive repairs to the superstructure, including correcting the section loss on the trusses—would cost much more than MoDOT's original proposed rehabilitation, he asserted that it should still cost considerably less than a replacement bridge, "if designed by an engineer with extensive experience in historic bridge rehabilitation."

Mr. Holth considers a statement in the bridge inspection report—"This bridge has a similar design to that of the I-35 structure in Minneapolis, making it one that should merit special consideration for replacement

in the future and a priority for the district"—misleading and potentially false. He said that he was "…very taken aback by seeing people who work with bridges on a daily basis make these same sort of misleading and even false statements about the I-35W Bridge" and concludes that because the bridge has not been closed to traffic, it "does not have the problem that I-35W did and that its gusset plates are the correct size." (After its collapse, an error in the I-35 bridge's design was found to have sized gusset plates incorrectly.) While acknowledging "that there are some very generalized similarities between the I-35W Bridge and the Hurricane Deck Bridge," Mr. Holth said he could "point to numerous fracture critical truss bridges with gusset plates which have faithfully and safely carried vehicles for over a century, and I can further provide examples of bridges of this type which have been rehabilitated for continued use." He stated that although both bridges were designed by the same engineering firm, the specific design and composition of the Hurricane Deck trusses are different, it was built in a completely different time period, and other Sverdrup and Parcel designed bridges continue to safely carry traffic in Missouri and other states. He voiced his concern "that this comparison did in fact play a role in deciding to replace this bridge, and I do not believe that is the best way in which to determine the appropriate project for this crossing. Doing so would put the need for frugal spending of taxpayer dollars and the need to consider the preservation of this historic bridge at an unfair disadvantage."

In regard to Section 106 consultation conducted during preparation of the 1997 FEIS that proposed building a new bridge next to the existing bridge to provide additional travel lanes, Mr. Holth disputes the 1996 SHPO concurrence of an adverse effect from obscuring the view of the historic structure by incompatible new construction and "would argue instead that such a solution would avoid adverse effect because it would prevent the demolition of the historic bridge, and would also rehabilitate the historic bridge."

In conclusion Mr. Holth recommended "that MoDOT reconsider the alternatives for this project, with the addition of a comprehensive rehabilitation, all the while without making any comparisons between the Hurricane Deck Bridge and the I-35W Bridge" to "ensure that the final decision made for this bridge is based on balanced and factual information." He urged the use of an engineer with "a significant portfolio of experience in designing successful historic truss bridge rehabilitation projects" to design preliminary plans for a more extensive and comprehensive rehabilitation to be compared with the replacement alternative. Mr. Holth offered to assist MoDOT in finding a good engineer for the project because "an inexperienced engineer may produce a rehabilitation project that costs more while at the same time producing a final bridge product that will not offer the best possible service life. In contrast, an engineer who has worked extensively with successful historic bridge rehabilitation projects can often design a rehabilitation that costs less than replacement, yet will provide decades of service life."

MoDOT engineers' response to Mr. Holth's comments follows:

The structurally deficient Route 5 bridge was built more than 75 years ago and is near or at the end of its useful service life. It certainly has served motorists very well for many years; however, the age and condition of the bridge creates an ongoing need for maintenance, resulting in substantial expense to taxpayers and great inconvenience for the traveling public.

A "3" or "4" condition rating means a bridge has significant problems, whereas a "2" is only issued for a bridge that needs immediate closure. On the Hurricane Deck bridge, a condition rating of "4" is assigned to the superstructure, which is the entire truss.

MoDOT originally programmed a project to do a limited rehabilitation of this bridge with the intent to extend the life of the bridge by about 10 years. The scope of the rehabilitation project did not include any deck work. It mainly included making multiple structural repairs, replacing some rivets with high-strength bolts and painting the structure. Many areas of the truss have severe pack rust and section loss. From MoDOT's experience on multiple truss bridges from this era, we have found that you can clean and paint all you want; however, the rust will keep coming back and the bridge will continue to corrode requiring an additional rehabilitation project in about 10 years. Every time you remove pack rust and repaint it, the next coat of paint lasts half as long as the previous one.

MoDOT did not pursue a rehabilitation with a 50- to 75-year life expectancy for the following reasons:

- The truss structure restricts the roadway to a narrow, 28-foot width and it cannot be widened to accommodate the desired 38-foot roadway
- The rail is substandard
- The bridge cannot be used by overweight or superload trucks
- Bicyclists and pedestrians cannot be accommodated should the need develop
- Replacing the structure is more cost effective, based on both up-front and life-cycle costs

The Hurricane Deck Bridge is very similar in design to the I-35W Bridge that collapsed in Minneapolis in 2007. Both are/were fracture critical, deck truss bridges with spans of about 500 feet. MoDOT is keenly aware that a design error on a gusset plate is what led to the collapse of the I-35W Bridge. We have checked the design of the gusset plates on the Hurricane Deck Bridge and found that they met the design standards for the time period when the bridge was built. The gusset plates are under-designed for today's heavier trucks but the bridge is not in danger of imminent collapse. The fact that the same firm designed both bridges had nothing at all to do with MoDOT's determination that replacing the bridge would be the best use of transportation dollars.

Missouri
Department
of Transportation

105 West Capitol Avenue
P.O. Box 270
Jefferson City, MO 65102
(573) 751-2551
Fax (573) 751-6555
www.modot.org

Kevin Keith, Director

April 21, 2011

Address-

To whom it may concern:

Subject: Design
Route 5, Camden County
MoDOT Job No. J5P2188, Hurricane Deck Bridge No. K0961
Bridge Replacement over Lake of the Ozarks
Availability of Bridge for Adaptive Reuse

The Missouri Highway and Transportation Department is planning to replace the Hurricane Deck Bridge K0961 with a new structure on Route 5 over the Lake of the Ozarks. The bridge is eligible for the National Register of Historic Places, and replacement of the superstructure will have an "adverse effect" on the historic property. The Surface Transportation and Uniform Relocation Assistance Act of 1987 (STURAA) Section 123(f) states: "prior to the demolition of a historic bridge, the State shall market (sell or donate) the bridge to a state or local government, agency, or responsible private entity." As part of this mitigation process, MoDOT will make Bridge K0961 available for adaptive reuse at a new location, to anyone willing to move, re-erect, maintain, and assume financial and legal responsibility for the structure. Funds in amounts up to the estimated cost of standard demolition may be available for bridge preservation. Bridge information is attached.

If you are interested in acquiring this bridge, please respond with a letter of interest by June 17, 2011. If you have questions or require additional information, please contact Randall Dawdy, at: 573-526-3591, or email at: randall.dawdy@modot.mo.gov. Thank you.

Sincerely,

Robert L. Reeder
Historic Preservation Manager

rd

Copies: Ms. Sara Parker Pauley-MDNR
Ms. Peggy Casey-FHWA
Mr. Dennis Heckman-br
Mr. Tim Redmond-de
Mr. Roger Schwartze-5ao
Ms. Kristin Gerber-5cr

HURRICANE DECK BRIDGE MAILING LIST, Camden, Rte 5, J5P2188

Camden County Commission	313 Court Circle	Camden, MO 65020
Miller County Commission	2001 Highway 52	Tuscumbia, MO 65082
Morgan County Commission	100 East Newton Street #21	Versailles, MO 65084-1221
Benton County Courthouse	P.O. Box 1238	Warsaw, MO 65355
County of Hickory Commission	West Dallas Street	Hermitage, MO 65668
Dallas County Commission	102 South Cedar Street	Buffalo, MO 65622
Laclede County Commission	200 North Adams Avenue	Lebanon, MO 65536-3046
Pulaski County Commission	301 Historic Route 66 East #202	Waynesville, MO 65583-2600
Lake Area Chamber of Commerce	#1 Willmore Lane	Lake Ozark, MO 65049
Eldon Chamber of Commerce	203 East First Street	Eldon, MO 65026
Camden Area Chamber of Commerce	739 West US Highway 54	Camdenton, MO 65020-6951
Versailles Area Chamber of Commerce	P.O. Box 256	Versailles, MO 65084
Osage Beach Chamber of Commerce	1000 City Parkway	Osage Beach, MO 65065
Sunrise Beach Chamber of Commerce	Lake Road 535	Sunrise Beach, MO 65079
Miller County Museum	2005 Highway 52	Tuscumbia, MO 65082
Pulaski County Library	306 Historic Route 66 West	Waynesville, MO 65583-2113
Laclede County Historical Society	P.O. Box 1341	Lebanon, MO 65536-1341
Morgan County Historical Society	118 North Monroe Street	Versailles, MO 65084
Benton County Historical Society	P.O. Box 1082	Warsaw, MO 65355
Camden County Historical Society	206 South Locust Street	Linn Creek, MO 65052
Dallas County Historical Society	P.O. Box 594	Buffalo, MO 65622
Hickory County Historical Society	P.O. Box 248	Hermitage, MO 65668
City of Eldon	101 South Oak Street	Eldon, MO 65026
Lake Ozark City Hall	2426 Bagnell Dam Boulevard	Lake Ozark, MO 65049
City of Camdenton	437 West Highway 54	Camdenton, MO 65020
Village of Four Seasons	133 Cherokee Road	Lake Ozark, MO 65049-5000
Versailles City Hall	104 North Fisher Street	Versailles, MO 65084-1296
Laurie City Hall	724 North Main Street	Gravois Mills, MO 65037-6146
City of Sunrise Beach: City Hall	16537 North Highway 5	Sunrise Beach, MO 65079-6769
Linn Creek City Hall	102 East Valley Drive	Linn Creek, MO 65052
Lake of the Ozarks Council of Local Governments	P.O. Box 786	Camdenton, MO 65020
U.S. Army Corps of Engineers, Truman Regulatory Satellite Office	15837 Truman Road	Warsaw, MO 65355
Mr. William Bryan, Director Division of State Parks	Missouri Department of Natural Resources	P.O. Box 176, Jefferson City, MO 65101
Lake of the Ozarks State Park	403 Highway 134	Kaiser, MO 65047
Bennett Spring State Park	26250 Highway 64A	Lebanon, MO 65536-6797

Historic Bridge
Available for Adaptive Reuse:

Hurricane Deck Bridge (K0961R), Camden County, Missouri

The Historic Hurricane Deck Bridge (K0961R) carrying Route 5 over Lake of the Ozarks in central Missouri will be available for adaptive reuse at a new location later this year. It is being offered to potential recipients who must agree to move the structure, preserve the bridge and features which make it historic, and assume all legal and financial responsibilities. If the bridge (or parts thereof) is transferred to another party, deed covenants may require the new owner to re-erect and maintain the bridge in accordance with established standards for historic bridges. **Description:** Built 1934-35, Bridge K0961R is a five-span steel continuous cantilevered Warren deck-truss with two concrete deck-girder approach spans at each end. It measures 2,280 feet long with a roadway width of 28 feet. The bridge received the 1936 American Institute of Steel Construction's Most Beautiful Bridge Award. The Hurricane Deck Bridge is the last of its kind in the State, being one of only three of that type built in Missouri.

Contact:

- Nicole Hood at 573-526-6997 or nicole.hood@modot.mo.gov for project information
- Randy Dawdy at 573-526-3591 or randall.dawdy@modot.mo.gov for historic information

Tribal Consultation:

Tribal governments of the Choctaw Nation of Oklahoma, Delaware Nation of Oklahoma, Ponca Tribe of Nebraska, and Osage Nation of Oklahoma were contacted in January 2011 and provided with project information packets, additional information relating to site 23CM40, and an invitation to attend the interagency scoping meeting. These tribes had each previously indicated tribal interest in the project area.

The Delaware Nation requested further information on the project in a February 16, 2011, e-mail. A CD containing the 1993 Phase I Survey Report for the Route 5 Corridor EIS (MoDOT Project No. J5P0694; Camden, Laclede and Morgan Counties, Missouri), the 1994 Phase II testing of sites, and MoDOT's 2011 Section 106 submittal to the SHPO was sent. A subsequent Delaware Nation response dated April 28, 2011, iterated the Nation's commitment to protecting sites important to tribal heritage, culture, and religion, particularly archaeological sites that may contain human burials, remains, and associated funerary objects. The response also stated that the location of the project does not endanger known sites of interest to the Delaware Nation and may continue as planned. The Delaware Nation requested, however, that the appropriate state agencies be contacted immediately as well as the Nation itself (within 24 hours) in the event the project inadvertently uncovers an archaeological site or object(s). Additionally, all construction and ground disturbing activities should be halted until the tribe and state agencies are consulted.

The Osage Nation responded to the scoping meeting invitation by e-mail and hard copy dated March 1, 2011. In response to the invitation statement that the alternatives being considered would not impact any known sites, the Osage Nation pointed out that they were not consulted regarding the potential impact that the proposed project may have upon either the known or unknown locations in the project vicinity. The Osage Nation requested "…consulting party status in all agreements regarding historic preservation made as a result of this undertaking" as well as "… an opportunity to participate in a one-on-one consultation concerning the referenced project." They further requested "…copies of all documents related to the undertaking including… Cultural Resource Surveys." The Nation additionally expressed a belief that MoDOT "was aware of the date of the meeting long before the Osage Nation was notified" and stated a need for earlier notification of such meetings as their office is generally unable to travel with such short notice.

MoDOT replied to the Osage Nation by letter of March 4, 2011, enclosing a CD with the requested documents. MoDOT refuted the belief that the agency was aware of the meeting date long before informing the Osage Nation, noting that scoping meeting invitations were sent to the Osage Nation and all regulatory agencies within a few days of the meeting date selection. Additionally, MoDOT pointed out that had the Osage Nation advised MoDOT or FHWA of their inability to attend the scoping meeting, arrangements could have been made for tribal representatives to participate at least remotely via teleconference or videoconference. The letter further stated that MoDOT and FHWA are still soliciting tribal input regarding this project and welcome participation by the Osage Nation. Tribal representatives are welcome to visit the project area and may also submit comments via the on-line, virtual public meeting.

On April 26, 2011, Peggy Casey, FHWA, and Bob Reeder, MoDOT Historic Preservation Section, met with representatives of the Osage Nation in Joplin, Missouri, for one-on-one consultation about the project as requested in the Osage Nation's March 1 communication. Tribal representatives included the Tribal Historic Preservation Officer, two members of the Nation's archaeological staff, and three members of the Tribal Cultural Committee. The Osage Nation was concerned that previously provided preliminary project information indicated possible project impacts to a nearby sensitive archaeological resource. The Nation was pleased to hear that more recent project decisions have eliminated possible impacts to the resource. The Nation also asked about the status of human remains found at several sites examined during the 1994 fieldwork for the Camden Route 5 project. The Nation presented no other objections or concerns with the project. The Osage Nation did request and was granted an opportunity to visit the project area and archaeological site, with tribal representatives and MoDOT staff planning a site visit soon after the consultation meeting.

MoDOT responded to the Osage Nation that human teeth from a rock shelter were transferred to the SHPO to comply with the Missouri's Unmarked Human Burials statute. MoDOT further confirmed that human remains found at a cairn were placed back in the cairn following their discovery.

On May 5, 2011, MoDOT Design and Historic Preservation staff met with the Osage Nation Tribal Historic Preservation Officer and several tribal archaeological staff on-site of the Hurricane Deck Bridge project to review the status of site 23CM40. In general, the meeting consisted of a short tour to look at the site and surrounding area to allow everyone an opportunity to understand the setting and the proposed improvements that would occur as part of the bridge replacement. The Osage were also provided with the property owner contact information they requested.

During the Hurricane Deck Bridge replacement project and at the request of the Osage Nation, MoDOT has made the following commitments:

The required removal of approximately one to three feet of the existing rock face along Route 5 at the base of the slope from station 521+50 to station 525+00 will be accomplished from the existing roadway by chipping away the rock face.

The construction contract will include a job special provision specifying that no heavy vehicles will be placed on the slope above the existing road cut.

The entire area south and west of the bridge within the project limits will be designated as off-limits to all MoDOT contractor activity, equipment, and vehicular or foot traffic during the project activities.

Appendix C
Correspondence and Coordination.

Hurricane Deck Bridge

CAMD04

GENERAL DATA

structure no.: K 961R
county: Camden
city/town: 1.0 mile southwest of Hurricane Deck
feature inters.: Osage River / Lake of the Ozarks
cadastral grid: S16, T39N, R17W
highway route: Missouri State Highway 5
highway distr.: 5
current owner: Missouri Highway and Transportation Department

STRUCTURAL DATA

superstructure: steel, rigid-connected, Warren cantilever deck truss
substructure: concrete abutments, wingwalls and piers

span number: 3; 2
span length: 463'; 377'
total length: 2281.0'
roadway width: 28.0'
condition: good
alterations: approach span and bridge deck replaced, 1985
floor/decking: asphalt covered concrete deck over steel stringers
other features: upper and lower chord: 2 built-up channels with lacing; vertical: 4 angles with batten plates; diagonal: 2 built-up channels with lacing; 4 angles with batten plates; lateral bracing: 2 angles with batten plates; strut: 4 angles with lacing; floor beam: I-beam with cantilevered sidewalks; guardrail: steel rail

HISTORICAL DATA

erection date: 1934-35
erection cost: $655,000.00
designer: Missouri State Highway Department
fabricator : Illinois Steel Company, Chicago IL
contractor: W.A. Ross Construction Company;
Stupp Brothers Bridge and Iron Company, St. Louis MO

references: Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number K 961R; Primary System Bridge Record, Camden County, located at Bridge Division, missouri Highway and Transportation Department, Jefferson City, Missouri; field inspection by Clayton Fraser, 5 May 1990.

sign. rating: 76
evaluation: NRHP eligible (outstanding long-span example of uncommon structural type)

inventoried by: Clayton B. Fraser 15 March 1993

HAER INVENTORY
Missouri Historic Bridge Inventory

NAME(S) OF STRUCTURE
Hurricane Deck Bridge
MHTD: K 961R

CAMD04

DATE(S) OF CONSTRUCTION
1934-35

LOCATION
Missouri State Highway 5 over Osage River / Lake of the Ozarks; S16, T39N, R17W
1.0 mile southwest of Hurricane Deck; Camden County, Missouri

USE (ORIGINAL / CURRENT)
highway bridge / highway bridge

RATING NRHP eligible (score: 76)

CONDITION
good

OWNER
Missouri Highway and Transportation Department

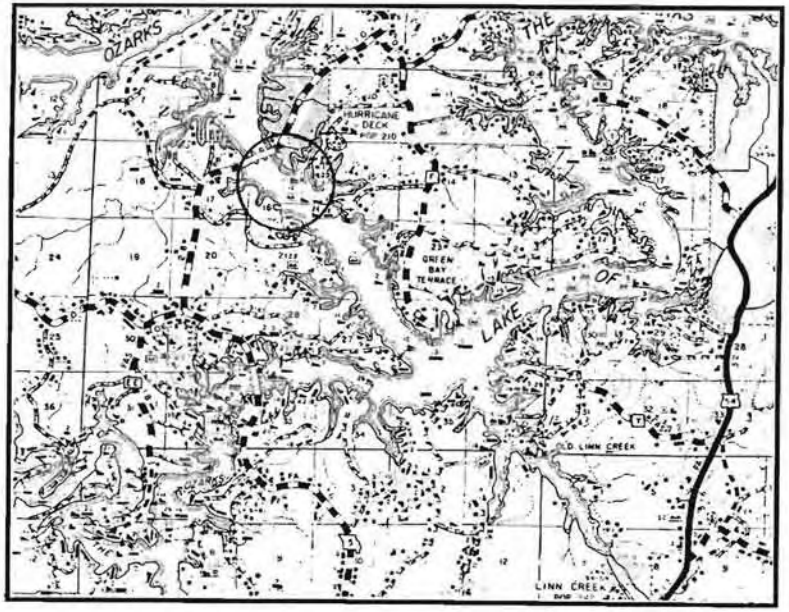
span number:	3; 2	superstructure:	steel, rigid-connected, Warren cantilever deck truss
span length:	463.0'; 377.0'	substructure:	concrete abutments, wingwalls and piers
total length:	2281.0'	floor/decking:	asphalt covered concrete deck over steel stringers
roadway wdt.:	28.0'	other features:	upper and lower chord: 2 built-up channels with lacing; vertical: 4 angles with batten plates; diagonal: 2 built-up channels with lacing; 4 angles with batten plates; lateral bracing: 2 angles with batten plates; strut: 4 angles with lacing; floor beam: I-beam with cantilevered sidewalks; guardrail: steel rail

Known locally as the Hurricane Deck Bridge, owing to its proximity to the town of Hurricane Deck, this dramatic long-span cantilever deck truss dates to 1934. The bridge carries State Highway 5 over the Osage Arm of Lake of the Ozarks. Featuring an exceedingly rare cantilever deck truss, the superstructure is supported by concrete piers and abutments. The design for this five-span bridge was completed in the fall of 1934 by engineers for the Missouri State Highway Department. A contract for the bridge's fabrication and erection was let that October to the W.A. Ross Construction Company and the Stupp Brothers Bridge and Iron Company of St. Louis. Made up of steel components rolled by the Illinois Steel Company of Chicago, the bridge was erected in 1935 for $541,117.00. Virtually unchanged since its completion, the Hurricane Deck Bridge continues to carry traffic in Camden County with only maintenance-related repairs.

During the late 19th and early 20th centuries, numerous through and pony trusses were built on roads and highways throughout Missouri. Deck trusses–in which the roadway is carried by the truss's upper chords–were built far less often. Never very common, this truss type has suffered attrition throughout the state, until only six deck trusses are now listed in Missouri's Structure Inventory and Appraisal list. Significantly, all are located on the state highway system, and were built in the 1930s. Three of these bridges span Lake of the Ozarks in Camden County. Of the remaining deck trusses, only the Camden County bridges employ cantilevered construction; the balance are all simply supported. The Hurricane Deck Bridge thus stands out as the longest of Missouri's remaining deck trusses. Recognized by the American Institute of Steel Construction as one of the most beautiful medium-span bridges built in America in 1935, it is an important transportation-related resource.

NAME(S) OF STRUCTURE
Hurricane Deck Bridge

PHOTOS AND SKETCH MAP OF LOCATION



LOCATION MAP
TAKEN FROM MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT
GENERAL HIGHWAY MAP

SOURCES
Missouri Highway and Transportation Department, Structure Inventory and Appraisal: Structure Number K 961R; Primary System Bridge Record, Camden County, located at Bridge Division, missouri Highway and Transportation Department, Jefferson City, Missouri; field inspection by Clayton Fraser, 5 May 1990.

INVENTORIED BY
Clayton B. Fraser

AFFILIATION
Fraserdesign, Loveland CO

DATE
15 March 1993

Randy

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF STATE PARKS
P.O. Box 176 Jefferson City, 65102-0176 (573) 751-2479
FAX (573) 751-8656

20 May 1996

Joe Mickes, Chief Engineer
Missouri Highway and Transportation
Department
P.O. Box 270
Jefferson City, Missouri 65102-0270

Re: Route 5, Bridge Nos. K-961R & K-510A (FHWA) MHTD Job No. J5P0694, Camden County, Missouri

Dear Mr. Mickes:

Staff of the Historic Preservation Program, Missouri Department of Natural Resources have reviewed the information provided in your letter dated 7 May 1996 concerning the above referenced project and agree that Bridge No. K961R and Bridge No. K-510A, Camden County, Missouri, are eligible for inclusion in the National Register of Historic Places. (See attached documents).

In accordance with the Advisory Council on Historic Preservation's regulation Protection of Historic Properties (36CFR Part 800), appropriate documentation shall be provided to the Federal Highway Administration (FHWA) with a request that FHWA initiate the appropriate procedures as set forth in Section 800.4(c) of the Council's regulations relative to the National Register eligibility of Bridge No. K-961R and Bridge No. K-510A.

Pursuant to Section 800.5 of the Council regulations, the Historic Preservation Program has reviewed the proposed replacement project and determined that such action will have "an adverse effect" on the historic fabric of Bridge No. K-961R and Bridge No. K-510A, properties which have been determined to be eligible for inclusion in the National Register of Historic Places.

Therefore, in accordance with Section 800.5(e) of the Council's regulation, the Federal Highway Administration shall forward the necessary adequate documentation [see Section 800.8(b) of the Council's regulations] to the Executive Director, Advisory Council on Historic Preservation, The Old Post Office Building, 1100 Pennsylvania Avenue NW, #809, Washington, DC 20004.

Pending receipt of the Council's comments, no action shall be taken which would foreclose Council consideration of alternatives to avoid or satisfactorily mitigate any adverse effect on the properties in question.

STATEMENT OF THE OPINION OF THE STATE HISTORIC PRESERVATION OFFICER CONCERNING THE ELIGIBILITY OF A PROPERTY FOR INCLUSION IN THE NATIONAL REGISTER

I understand that the Federal Highway Administration/Missouri Highway and Transportation Department is requesting the opinion of the State Historic Preservation Officer concerning the eligibility of the Highway 5 Hurricane Deck Bridge (T39N, R17W, Section 16) in the vicinity of Camdenton, Camden County, Missouri for inclusion in the National Register and that my opinion may be submitted to the Secretary of the Interior with a formal request for a determination of eligibility of this property. This statement confirms my consultation as part of the Determination of Eligibility procedures.

X (1) In my opinion, this property is eligible for inclusion in the National Register.

__ (2) In my opinion, this property is not eligible for inclusion in the National Register.

__ (3) I have no opinion and prefer to defer to the opinion of the Secretary of the Interior.

Justification and comments:

The Highway 5 Bridge over the Osage Arm of the Lake of the Ozarks (T39N, R17W, Section 16) in the vicinity of Camdenton, Camden County, Missouri is eligible for listing in the National Register of Historic Places under Criterion C and Area of Significance ENGINEERING to wit: It is an impressive multiple-arched, cantilevered bridge built to span the Lake of the Ozarks. Completed in 1934, it was designed by Sverdrup & Parcel Consulting Engineers of St. Louis. The bridge received the 1936 American Institute of Steel Construction's, Most Beautiful Bridge Award. Along with its beauty and the attractiveness of its setting the bridge is an outstanding long-span example of a bridge-type uncommon in Missouri.

Deputy State Historic Preservation Officer

Date: 20 May 1996

U.S. Department
of Transportation
Federal Highway
Administration

Region 7
Iowa, Kansas
Missouri, Nebraska

P. O. Box 1787
Jefferson City, Missouri 65102

January 21, 1997

PRELIMINARY STUDIES
Route 5, Camden, Laclede and Morgan Counties
MoDOT Job No. J5P0694
Memorandum of Agreement

Mr. Joseph A. Mickes, P.E., Chief Engineer
Missouri Department of Transportation
Jefferson City, Missouri

Dear Mr. Mickes:

Enclosed is a fully executed Memorandum of Agreement (MOA) for the Gerlt Cabin, the Niangua River Bridge, the Hurricane Deck Bridge and archaeological sites 23CM40 and 23CM72. The MOA was signed by the Advisory Council On Historic Preservation (ACHP) on September 23, 1996. Minor changes made by the ACHP have been initialed by all signatories.

By carrying out the terms of the MOA, you will have fulfilled your responsibilities under Section 106 of the National Historic Preservation Act and the ACHP's regulations.

Sincerely yours,

Peggy J. Casey

for Gerald J. Reihsen, P.E.
Division Administrator

Enclosure

STATE OF MISSOURI
Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

March 8, 2011

Robert L. Reeder
Historic Preservation Manager
Missouri Department of Transportation
P.O. Box 270
Jefferson City, Missouri 65102

Re: Route 5, Job No. J5P2188 (FHWA) Camden County, Missouri

Dear Dr. Reeder:

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which requires identification and evaluation of cultural resources.

We have reviewed the Section 106 Survey Memo entitled *Phase I Cultural Resources Survey, Camden 5, MoDOT Job No. J5P2188.* Based on this review it is evident that a thorough and adequate cultural resources survey has been conducted of the project area. We concur with your recommendation that archaeological sites 23CM40 and 23CM72 may be eligible for inclusion in the National Register of Historic Places, but are outside of the project corridor. We also concur that the Hurricane Deck Bridge No. K0961 is eligible for inclusion in the National Register of historic Places, and that the proposed replacement will have an **adverse effect** on the historic fabric of the bridge.

Therefore, the U.S. Department of Transportation, shall forward the necessary adequate documentation as described to the Executive Director, Advisory Council on Historic Preservation, The Old Post Office Building, 1100 Pennsylvania Avenue NW, #809, Washington, DC 20004. Pending receipt of the Council's decision on whether it will participate in consultation, no action shall be taken which would foreclose Council consideration of alternatives to avoid or satisfactorily mitigate any adverse effect on the property in question

If you have any questions, please write the State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 attention Review and Compliance, or call Judith Deel at 573/751-7862. Please be sure to include the SHPO Log Number (**017-CM-11**) on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Mark A. Miles
Director and Deputy
State Historic Preservation Officer

MAM:jd

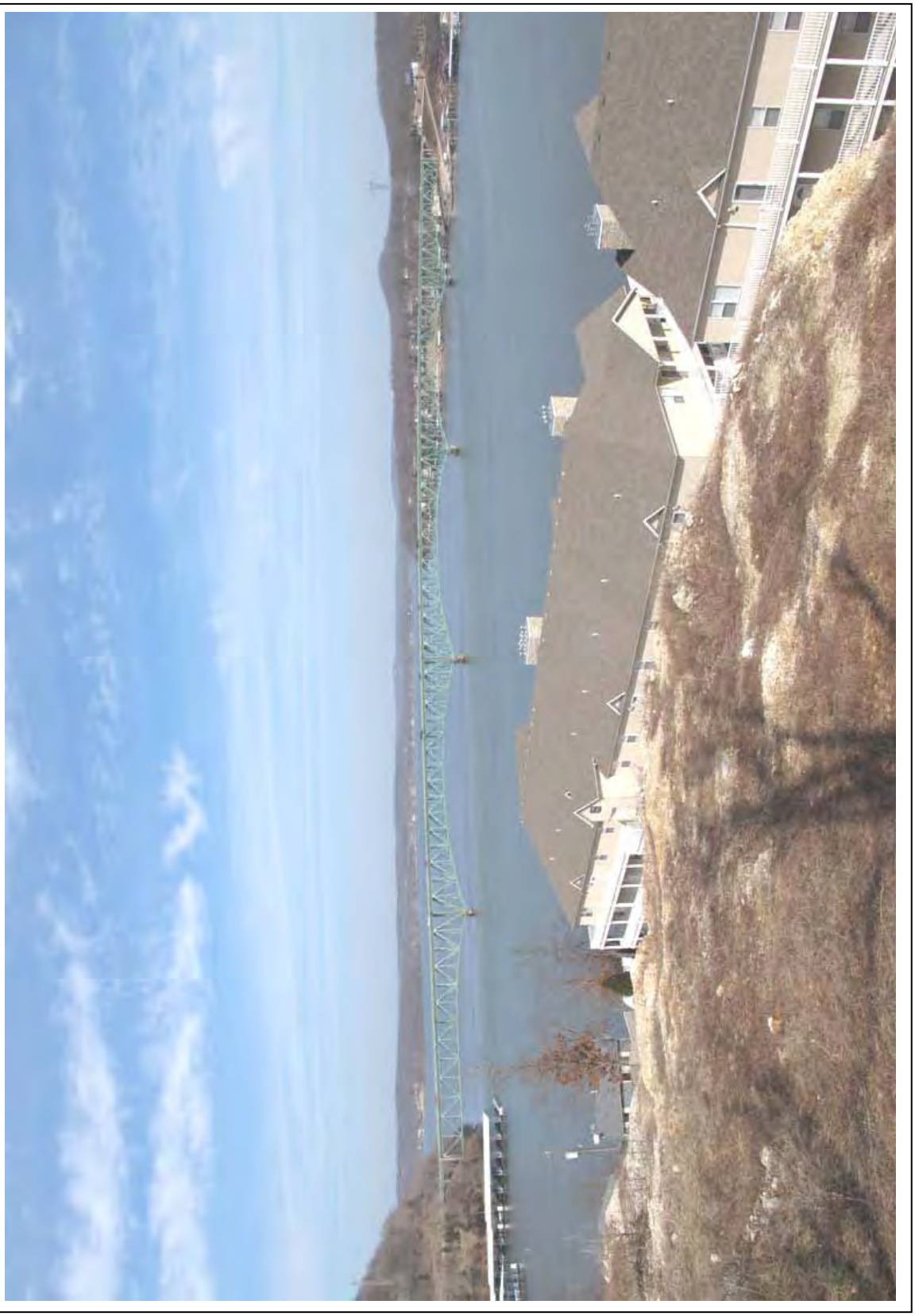
c Peggy Casey, FHWA
Jane Beetem, DNR/OD

Appendix D

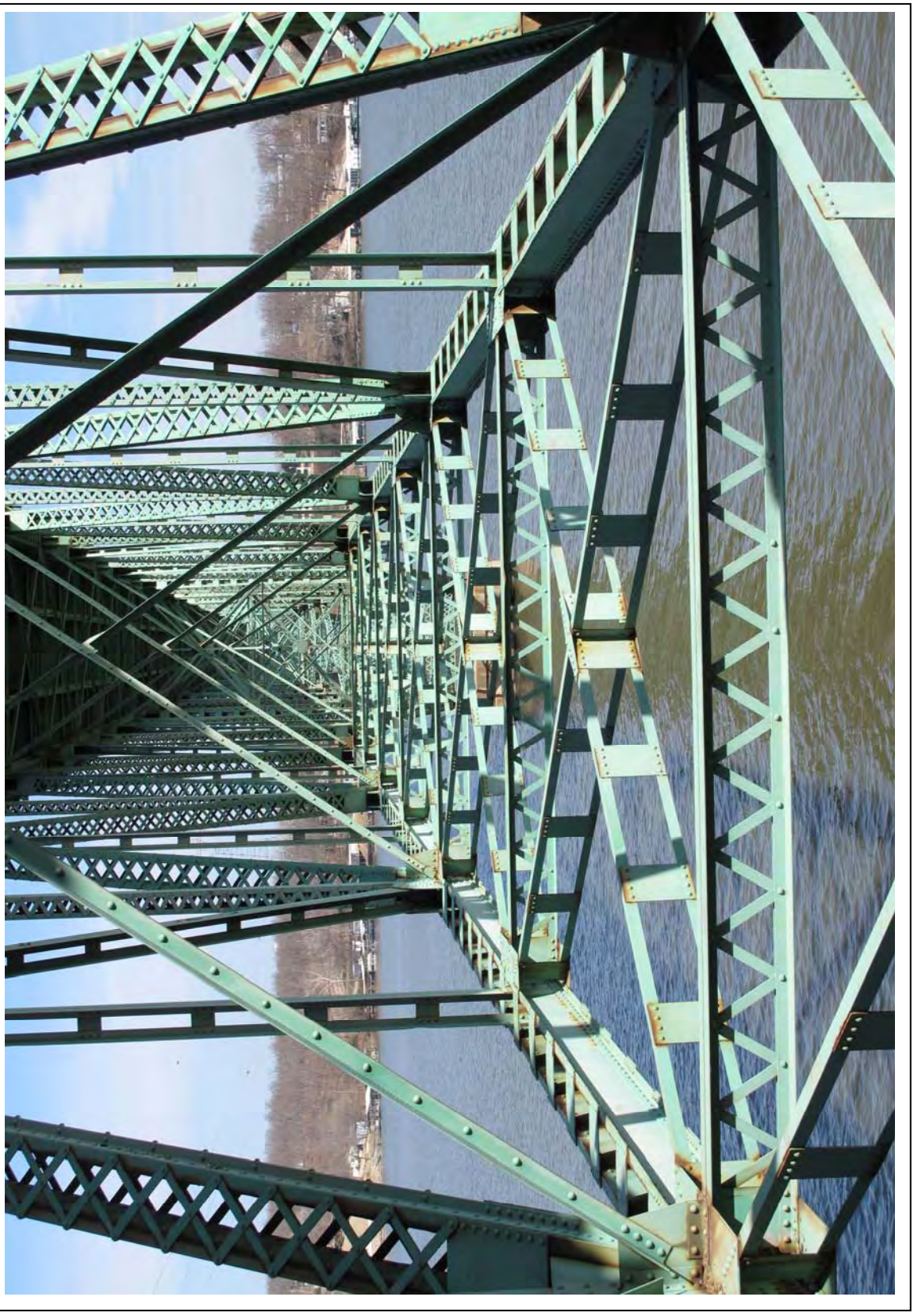
Photographs of the Hurricane Deck Bridge.

Plt-1. K0961. View to west.

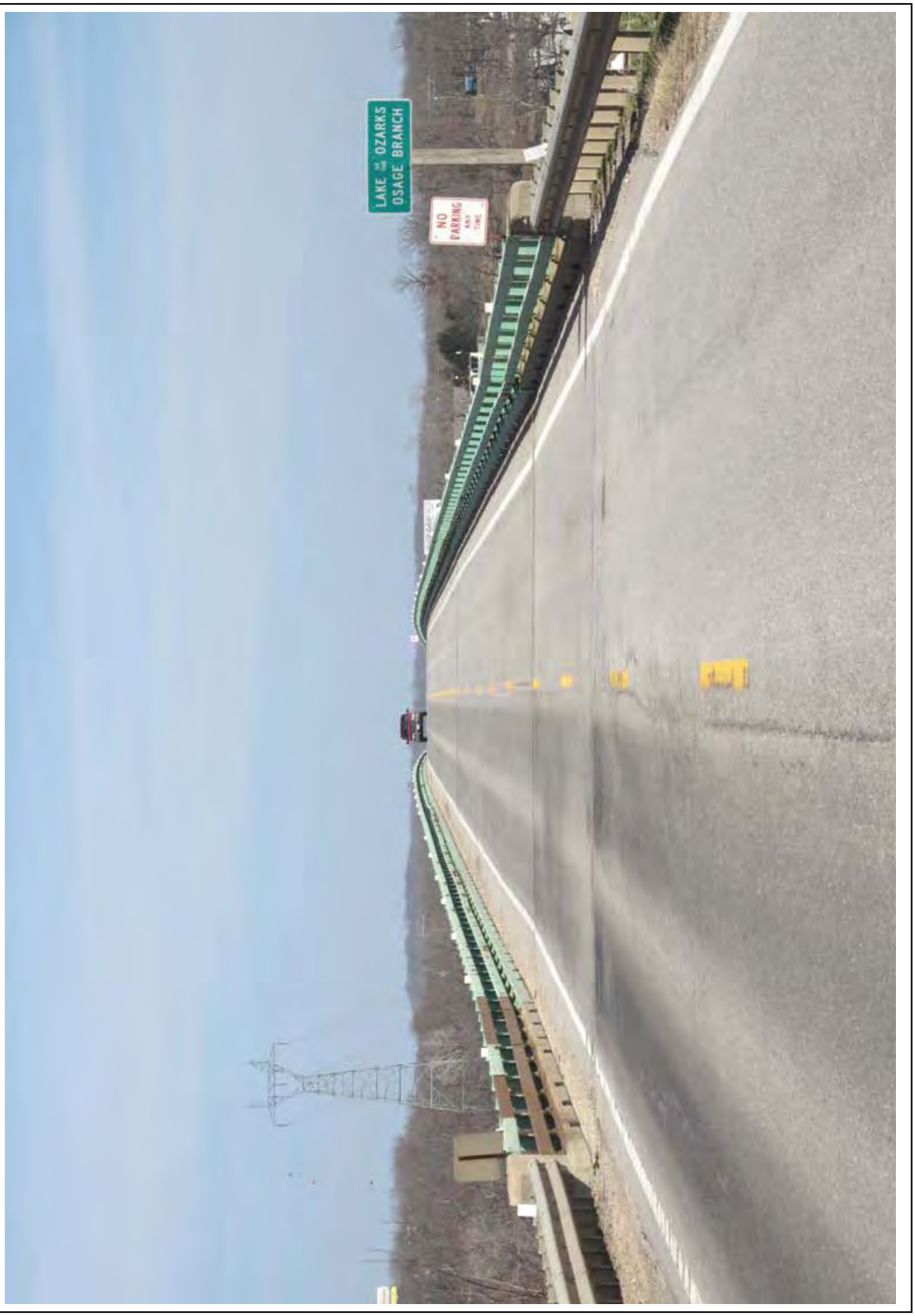
Plt-2. K0961. View to west.



Plt-5. K0961. View to northwest.



Plt-9. K0961. View to northeast.



Plt-10. K0961. View to northeast.

Plt-11. K0961. View to southeast.

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