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March 29, 2016

Subject: MO-79 over Noix Creek #K0487: (Pike 79 Bridges Programmatic Agreement), Consulting Party Comments

Dear Ms. Daniels:

On March 20, 2016 despite being far behind schedule on a bridge trip in southern Illinois, I managed to make time to visit one of the historic bridges covered under the above Programmatic Agreement, which is the Highway 79 over Noix Creek Bridge.

I made a point of visiting this one bridge because webmaster of www.bridgehunter.com James Baughn had informed me that this bridge had engineering significance in the form of a unique skew configuration. This fact surprised me since as a consulting party I would have thought such an unusual and noteworthy aspect of the bridge would have been made abundantly clear though materials and photos provided to me, yet the materials provided by The Department failed to convey this significance. I would have been unaware of this significance had it not been for James. As a consulting party I am frustrated to have to rely on outside sources for detailed information about the bridges I am a consulting party on. This is basic information that should be provided at the outset of a project. The four photos sent to me by MoDOT fail to show any of this.

During my field visit to this bridge I made the following observations and I wish to formally note them for the public record in this letter as follows.

1. This bridge exhibits one of the most unusual skews I have ever seen in a bridge. Note in the photo shown, the bridge actually has a steel beam cantilevered off the concrete pier to support the approach stringer and sidewalk as well. A skew with such unusual design details represents an additional engineering design challenge (and unusual engineering) and adds to the historic significance (Criterion C) of the bridge. Skew has

design and fabrication challenges including but not limited to diaphragm placement, floor beam placement, bracing placement, pier design, etc.

2. In addition to skew, this bridge is situated on a curve in the road and the bridge is designed with superelevation to allow traffic to safely navigate the curve at higher speeds. Superelevation is rare among bridges of this era, and it also represents an increased engineering and fabrication effort. Like skew, superelevation has design and fabrication challenges including but not limited to diaphragm placement, floor beam placement, bracing placement, pier design, etc. The adjacent photo shows the stepped design of the pier, which provides the foundation for a superelevated superstructure.

3. The combined additional engineering effort of unusual skew and curved/superelevation design suggests this bridge may be one of the most complex short-span truss bridges ever designed by the Missouri State Highway Department. Therefore, it should be considered to have HIGH historic significance on the state level. As such, it is my strong belief that extraordinary efforts to avoid adverse effect must be undertaken for this bridge, and any proposed adverse effect to this bridge will warrant unusually high levels of mitigation. See adjacent photo showing skewed, curved, superelevated design.

4. The deck of this bridge is in poor condition especially at the curbs. A deck is structurally independent from the superstructure (truss) of the bridge and therefore the deck's condition should have no bearing on an assessment of the truss superstructure's viability. It is my expectation that the detailed alternatives analysis for this bridge will acknowledge this independence. Deck replacement should be considered a routine part of a bridge's service life. Its also worth noting that poor practice (asphalt overlay of concrete) may have trapped moisture in the deck contributing to deterioration.

5. The truss of this bridge is in outstanding, excellent condition and repairs needed appear to be minor. Many far more deteriorated truss bridges have been rehabilitated across the country. If the overall rating is poor for this truss it is painfully obvious that such a rating would be due to small isolated areas. The overall truss again in excellent condition. Even lower chord connections (typical condition shown in adjacent photo) which are typical trouble spots are in GREAT condition!

6. The bridge is in an urban location with a low 30mph speed limit. See photo with red arrow and magnification above. It also has two dedicated sidewalks cantilevered from the trusses. It appears to be functionally sufficient for its location where it is safely navigable by vehicles which must travel at low speeds per posted limits, and where pedestrians enjoy the luxury of dedicated sidewalks on each side of the bridge.

7. An evaluation of the substructure of this bridge was beyond the purpose of my visit. It appears to be in good condition. However, if MoDOT finds any serious problems with the substructure, it is my expectation that the detailed Alternatives Analysis will consider picking the truss and approach spans off the creek, replacement of substructure, and reinstallation of the trusses. The substructure can be replicated in modern materials. However again, I really did not see evidence of a severely deteriorated substructure.

In conclusion, the MO-79 Noix Creek Bridge appears to have unusually outstanding preservation potential. It is my hope that this observation will be reflected in a detailed alternative analysis provided to the Consulting Parties for this Section 106 Review. Certainly, I would expect any findings to the contrary to be supported by extraordinary detail including but not limited to engineering/inspection reports, numerous supporting photos, etc.

It is my hope that MoDOT can have a success story here in the preservation of a rare historic bridge. If there are any questions about any existing deterioration on this bridge and what best practices (cost effective and long-lasting) might be appropriate, I encourage the Department to take advantage of my expertise in the rehabilitation of metal truss bridges and reach out to me at any time during the study process. Please do not make the mistake of assuming that pack rust cannot be removed, section loss cannot be repaired, rivets cannot be replaced with rivets, etc. All of these things are feasible and if MoDOT has doubts about this I would be happy to shed light in this regard.

I have placed all the photos I took of this bridge on a Dropbox located here:

https://www.dropbox.com/sh/4ybcchgcmd4pex3/AAC1srlByM303gcEtIoWlfhQa?dl=0

Please feel free to share these photos with the Consulting Parties.

Sincerely,

Nathan Holth
Author/Webmaster, HistoricBridges.org

cc. Kitty Henderson, Historic Bridge Foundation
cc. James Baughn, www.bridgehunter.com
cc. Toni Prawl, SHPO
cc. Michael Meinkoth, MoDOT

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February 22, 2017

Subject: MO-79 over Noix Creek #K0487: (Pike 79 Bridges Programmatic Agreement), Consulting Party Concerns

Dear Ms. Daniels:

As a Consulting Party for the above listed project, I would like to express the fact that I am deeply distressed by the conduct of the Section 106 Review on this project, most notably that my numerous concerns as a Consulting Party were not addressed. When a Consulting Party lists concerns and observations that suggest that a bridge appears to feasible and prudent to rehabilitate, these concerns need to be addressed. As a Consulting Party, I had noted the following facts:

1. Increasing the height of the bridge over the waterway/floodplain would not improve the flow of floodwaters, because bridges both upstream and downstream appeared to have a lower elevation. Therefore it was unclear why a change in elevation was needed to address floodwaters, as was stated by MoDOT.

2. The existing truss could be jacked up or built upon new abutments if an increase in height was still desired.

3. As a Consulting Party, I observed that the bridge was located in an urban setting with a low speed limit. I further noted that the approaching roadway width was similar to that of the bridge's roadway width. It was not fully explained and justified to the Consulting Parties why these facts would not add support for rehabilitation, perhaps using Design Exceptions.

4. My field visit to the bridge showed exceedingly strong evidence that the steel trusses were, especially compared to similar bridges, in outstanding physical condition. My concerns were met with an alarming lack of explanation as to why such a bridge could not be rehabilitated, when numerous examples of vastly more deteriorated bridges in other states have been rehabilitated. In fact, no detailed cost breakdown or engineering evaluation was provided to the Consulting Parties, despite a specific request for this data. This data is standard for Section 106 Reviews in other states.

5. Claims that a full rehabilitation of the bridge would be “temporary” and only be a 25 year fix were completely unjustified by any facts and are also totally in opposition to service life estimates found for truss bridge rehabs in other states.

6. While cost should not be the only deciding factor in Section 106, it is also worth noting that replacement was cited as MoDOT as more costly than rehabilitation. Without the information and explanation asked for by the Consulting Parties, this decision is alarming. As a Consulting Party my observations strongly suggested that rehab would meet needs of the roadway and be a long-lasting fix. The fact that rehab cost was shown as lower means that to my eyes, rehab was an inarguably feasible and prudent alternative. MoDOT did not work to address my concerns. Evidence for choosing the more expensive replacement alternative was not substantiated by facts as requested by the Consulting Parties.

In conclusion, Section 106 has certain expectations that the lead agency will fully explore feasible and prudent alternatives, and will address all concerns of the Consulting Parties, particularly when these concerns are legitimate concerns developed from field observations. Section 106 is a federal procedure and as such MoDOT needs to be held to the same standards of quality as other states. My experience with this Section 106 Review was completely unsatisfactory when compared to my typical experience in other states. Because other states are holding to a higher standard, it would be unfair for me to remain silent and give MoDOT a free pass to breeze through Section 106 while other states work hard to evaluate alternatives and address the concerns of Consulting Parties.

On top of all that, I find it ironic that MoDOT itself published a document called “Practical Design.” This document suggest that MoDOT should be willing to design projects that are “good” not “great” meaning the end product might not match all current AASHTO Guidelines. It also states that bridges and roads should not be overdesigned for speed. If the road is posted for 35mph, a 70mph bridge is NOT needed. Although “Practical Design” is not a part of Section 106, it is part of supposed MoDOT policy, and I find it ironic that what I as a Consulting Party was suggesting seems to align completely with the values presented in this document… yet again my concerns and ideas were not addressed, and MoDOT has moved forward with the most costly option of demolition and replacement.

Sincerely,

Nathan Holth

Nathan Holth
Author/Webmaster, HistoricBridges.org