



MEMORANDUM

Date: February 20, 2015

To: The Honorable Chair and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator 

Re: **Elephant Head Road Bridge**

Enclosed is a memorandum from the Transportation Director regarding the Elephant Head Road Bridge.

As you will recall, this bridge was subject to a traffic load restriction ordinance that was continued to receive area resident input into the ordinance. The attached summary discusses the significant deterioration of the bridge's support structure, and load limits will inevitably be required without an estimated \$2 million in bridge repairs.

Also enclosed is a February 11, 2015 request to the Regional Transportation Authority (RTA) for bridge repair funding. Such is available; however, it requires an allocation from the RTA Board of Directors.

Examining alternative locations to provide a secondary access will cost more than the \$2 million bridge repair. The road carries a low volume of traffic compared to other bridge structures in Pima County, with an average daily traffic count of approximately 1,100 vehicles. Because of the low traffic volume this bridge ranks low in attracting other funds such as federal bridge replacement repair funding.

Staff will continue to work with the community and conduct public discussions regarding the inadequacy of the bridge structure. Nothing short of replacing the bridge's structure, at a cost of \$2 million, will alleviate the need for the proposed load restrictions.

CHH/anc

Attachments

c: John Bernal, Deputy County Administrator for Public Works
Priscilla Cornelio, Director, Department of Transportation



MEMORANDUM

DATE: February 11, 2015

TO: C.H. Huckelberry, County Administrator

Priscilla Cornelio

FROM: Priscilla S. Cornelio, P.E., Director

SUBJECT: Elephant Head Road Bridge, Summary and Recommendations

In response to the ongoing concerns with this bridge, we would like to provide you with the following information:

Current Conditions and Load Restrictions

Elephant Head Road is the primary route between I-19 and several subdivisions, residences and businesses located to the east. Currently, the road carries approximately 1079 ADT including 2 buses (associated with Town of Sahuarita School District) and 26 heavy/commercial vehicles per day.

Following the most recent load rating analysis, the bridge on Elephant Head Road at the Santa Cruz River is currently rated for the following:

- ✓ Inventory Load Rating is established at 10 tons. This means that the bridge structure can support loading up to a 10-ton vehicle on a continual basis for an extended period of time.
- ✓ Operating Load rating is established at 41 tons. This is the maximum permissible load limit that the bridge may be subjected to, and the limit at which failure would occur.

Unfortunately, there is no way to effectively or accurately predict the impact of continual loading over the established limit. In addition, over the last five years Department of Transportation (DOT) inspection staff has observed that the overall rate deterioration of the main support members has worsened significantly. As a result of these findings, steps must be taken to either restrict the loads crossing the bridge, or increase the weight carrying capacity of the bridge by replacing the girders. Unfortunately, the option of load restricting the existing bridge will cause significant impact to the users since the closest alternate route will add as much as 10+ miles per trip, and include traveling over segments of forest service roads, unpaved county roads, and traversing at-grade wash crossings (Attachment A).

Bridge Repair/Replacement

Due to the impacts associated with any load limit restriction, DOT has initiated a request with the RTA for up to \$2.0M in available bridge funds to replace the deteriorated girders (Attachment B). Since the RTA indicates that there may be available funding that could be requested, we recommend not pursuing any other potential sources, especially Federal, due to the lengthy time frames associated with their use. In addition, the various programs that have traditionally been available in the past no longer exist under the various consolidation efforts that have been implemented at the Federal funding levels.

Other Bridge Restrictions/Areas of Concern

Although the bridge on Elephant Head Road has been the recent focus, there are other road segments/corridors with load rated bridges, of which the following are also of particular concern:

- Trico-Marana Road over the Santa Cruz River, which currently has a load restriction of 15 tons and which has an estimated truck volume of approximately 2%, including school buses. In addition, inspection staff has noted occasional violations of the current load limit.
- Mission Road over the Mine Haul Road (north of Helmet Peak Road), which currently has a load restriction of approximately 15 tons. This limit is in place to preserve the pier columns since failure will cause a bridge collapse, thus impacting Mission Road, as well as the mine haul road operation beneath the bridge.
- Old Nogales Highway: There are 5 bridges along the South Old Nogales Highway corridor from the vicinity of Green Valley to the Hughes Access Road that will go from a condition with no load restriction, to a 15-ton limit. This may impact any vehicles that occasionally divert off I-19, as well as other users of the corridor.

Unfortunately, the anticipated cost to address these specific bridges/corridors far exceeds any funding available at this time, however, these corridors do have alternate routes and detour options that can be utilized if any additional weight restrictions go into effect.

Load restricted bridges throughout the County are a growing concern, and could be a significant transportation problem which will require attention and financial resources to address in the future.

Action Items

As noted above, DOT has submitted a request to the RTA for immediate approval of full funding in order to allow for the replacement of the deficient girders on the Elephant Head Road Bridge as soon as possible. Although there are additional bridges where weight restrictions are in effect (including those listed above), the relative ease in which the deficient elements on Elephant Head Road can be replaced make this project the most reasonable, feasible and cost effective use of funds.

C.H. Huckelberry, County Administrator
Elephant Head Road Bridge, Summary and Recommendations

February 11, 2015

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In support of this request, DOT is also exploring various implementation strategies that can be utilized to expedite the delivery of a replacement project in the shortest time possible. DOT will share those results and accompanying recommendations once they have been finalized.

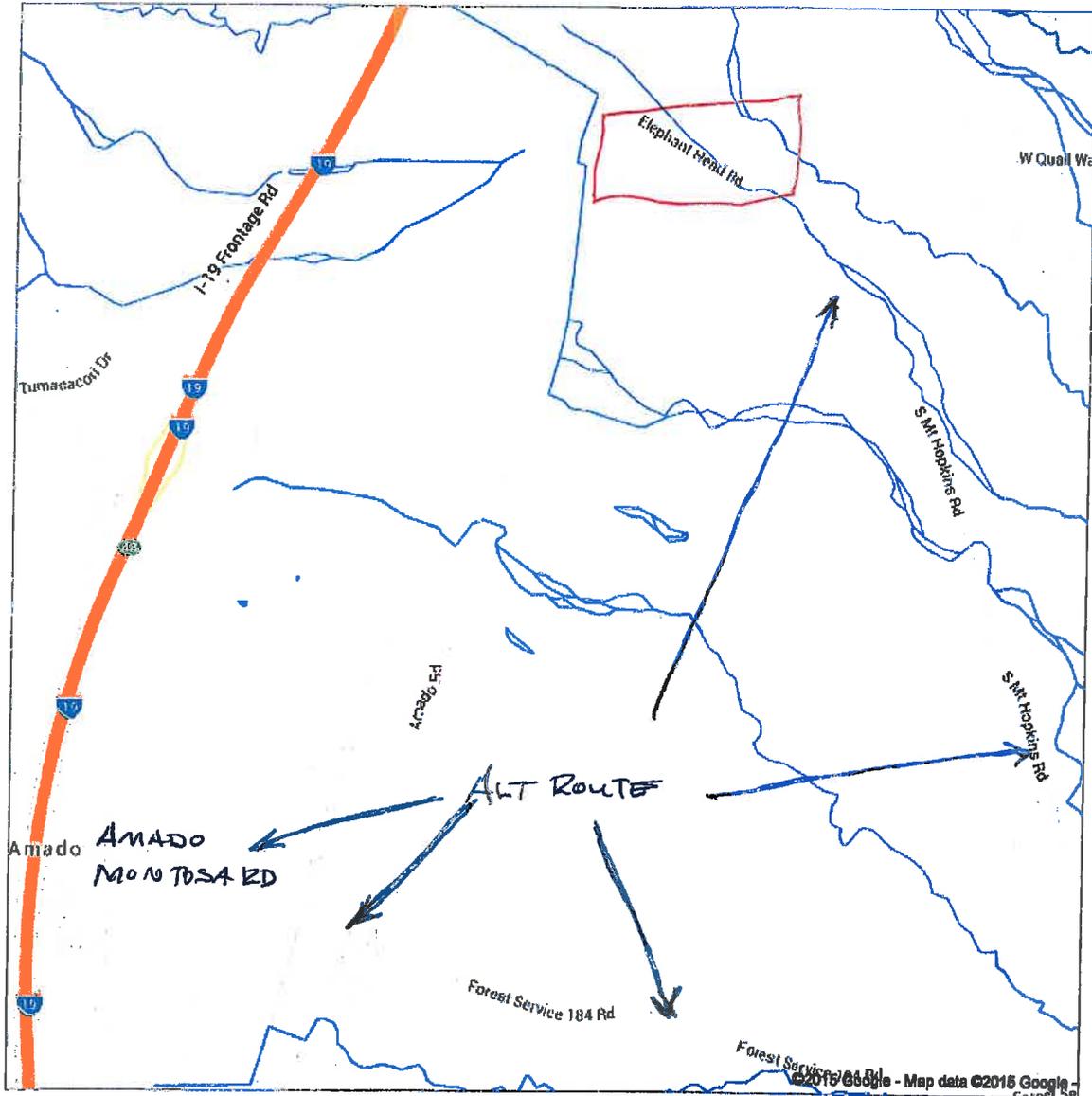
In the meantime, the DOT believes that a load restriction ordinance can be delayed so that full use of Elephant Head Road can continue until the replacement project has been completed. Please note that this allowance is for a very short time frame only, while funds are secured and an expedited project can be developed. In addition, DOT will initiate coordination and meeting efforts with the school district, businesses, residents, citizens and other users of the corridor in order to share the latest information, discuss impacts and determine what mitigation measures can be utilized. This effort will be coordinated with the District 4 Supervisor's office as well.

Please let me know if you need any additional information.

PSC:RE:dg

Attachments

c: John M. Bernal, Deputy County Administrator
Ana Olivares, Deputy Director
Rick Ellis, PCDOT Engineering
Dave Zaleski, PCDOT Engineering





DEPARTMENT OF TRANSPORTATION
201 NORTH STONE AVENUE, FOURTH FLOOR
TUCSON, ARIZONA 85701-1207

PRISCILLA S. CORNELIO, P. E.
DIRECTOR

(520) 724-6410
FAX (520) 724-6439

February 11, 2015

Jim DeGrood, P.E., Deputy Director
Regional Transportation Authority
1 E. Broadway Blvd., Suite 401
Tucson, AZ 85701

Re: Elephant Head Road, Bridge Repair; Request for RTA Funds

Dear Mr. DeGrood:

In response to a pending load restriction ordinance Pima County is proposing on the Elephant Head Road bridge, (as well as the community concerns that have arisen), we are requesting approximately \$2.0M in RTA funds from the Safety Element category to replace existing deficient girders on the Elephant Head Road Bridge over the Santa Cruz River. The following summary is provided for your information and background:

Load Restrictions

Elephant Head Road is the primary route between I-19 and several subdivisions, residences and businesses located to the east. Currently the road carries approximately 1079 ADT including 2 buses (associated with Town of Sahuarita School District) and 26 heavy/commercial vehicles per day.

Following the most recent load rating analysis, the bridge on Elephant Head Road at the Santa Cruz River is currently rated for the following:

- ✓ Inventory Load Rating is established at 10 tons. This means that the bridge structure can support loading up to a 10-ton vehicle on a continual basis for an extended period of time.
- ✓ Operating Load rating is established at 41 tons. This is the maximum permissible load limit that the bridge may be subjected to, and the limit at which failure would occur.

Jim DeGroot, P.E., Deputy Director

Re: Elephant Head Road, Bridge Repair; Request for RTA Funds

February 11, 2015

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Unfortunately, there is no way to effectively or accurately predict the impact of continual loading over the established limit. In addition, over the last five years Department of Transportation (DOT) inspection staff has observed that the overall rate deterioration of the main support members has worsened significantly. As a result of these findings, steps must be taken to either restrict the loads crossing the bridge, or increase the weight carrying capacity of the bridge by replacing the girders. Unfortunately, the option of load restricting the existing bridge will cause significant impact to the users since the closest alternate route will add as much as 10+ miles per trip, and include traveling over segments of forest service roads, unpaved county roads, and traversing at-grade wash crossings.

Bridge Repair/Replacement

The total project cost estimate to replace the deteriorated bridge girders with new ones is approximately \$1.75-2.0M, which consists primarily of the new girders, associated deck work, plus minor approach roadway work that is needed since the replacement girders are slightly different dimensions than the existing ones. Since you indicate that there may possibly be limited funding available, DOT recommends not pursuing any other potential sources, especially Federal, due to the lengthy time frames associated with their use.

Other Bridge Restrictions/Areas of Concern

Although the bridge on Elephant Head Road has been the recent focus, there are other road segments/corridors with load rated bridges, of which the following are of particular concern:

- Trico-Marana Road over the Santa Cruz River, which currently has a load restriction of 15 tons and which has an estimated truck volume of approximately 2%; including school buses. In addition, inspection staff has noted occasional violations of the current load limit.
- Mission Road over the Mine Haul Road (north of Helmet Peak Road), which currently has a load restriction of approximately 15 tons. This limit is in place to preserve the pier columns since failure will cause a bridge collapse, thus impacting Mission Road, as well as the mine haul road operation beneath the bridge.
- Old Nogales Highway: There are 5 bridges along the South Old Nogales Highway corridor from the vicinity of Green Valley to the Hughes Access Road that will go from a condition with no load restriction, to a 15-ton limit. This may impact any vehicles that occasionally divert off I-19, as well as other users of the corridor.

Unfortunately, the anticipated cost to address these specific bridges/corridors far exceeds any funding available at this time, however, these corridors do have alternate routes and detour options that can be utilized if any additional weight restrictions go into effect.

Load restricted bridges throughout the County are a growing concern, and could be a very significant transportation problem which will require attention and financial resources to address in the future.

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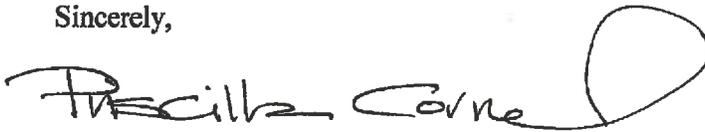
Recommendation/Request

Taking all the factors into account, especially the lack of available alternate routes along with the limited amount of potential funding from the RTA, DOT is requesting immediate approval of the \$2.0M to allow for the replacement of the deficient girders on the Elephant Head Road bridge as soon as possible. Although there are additional locations where bridge restrictions are in effect (including those listed above), the relative ease in which the deficient elements on Elephant Head Road can be replaced make this project the most reasonable, feasible and cost effective use of funds.

In the meantime, DOT believes that a load restriction ordinance can be delayed so that full use of Elephant Head Road can continue until the replacement project has been completed. Please note that this allowance is for a very short time frame only, while funds are secured and an expedited project can be developed. In addition, DOT will initiate coordination and meeting efforts with the residents, citizens and users of the corridor in order to share the latest information, discuss impacts and determine what mitigation measures can be utilized.

We appreciate your prompt attention to this request, and please let me know if you need any additional information.

Sincerely,

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Priscilla S. Cornelio, P.E.
Director

PSC:RE:dg

c: C.H. Huckelberry, County Administrator
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Recommendation/Request

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