



## OKLAHOMA DEPARTMENT OF TRANSPORTATION

**200 N.E. 21st Street  
Oklahoma City, OK 73105-3204**

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December 31, 1997

Mr. James Erickson, P.E., Division Administrator  
Federal Highway Administration  
Oklahoma Division

Attention: Calvin Karper

Dear Mr. Erickson:

Subject: Proposed Requirements for Less Frequent Inspection of Bridges

Please find enclosed our proposed "Requirements for Bridge Candidates for Less Frequent Inspections", along with lists of potential candidate bridges which meet all of these guidelines that can be reviewed through computer queries. These lists are only a first guess of how many bridges will be affected. Some of these potential candidates will probably be excluded due to the condition of some of the structural elements. For simplicity, these lists were made using NBI Items 58,59,60 and 62, (condition ratings). However, these values are converted values obtained through the use of the Conversion Program developed to convert PONTIS elemental data to NBI condition ratings. The enclosed Requirements contain some constraints for elemental conditions, which may exclude some of these potential candidates. Four separate lists are enclosed - 1) highway bridges, 2) highway bridge length culverts, 3) local jurisdiction bridges, and 4) local jurisdiction bridge length culverts.

The intent of this Department is to have the inspecting agency review each bridge during the next inspection cycle, apply these Requirements at that time to determine if the individual bridge qualifies, fill out the Checklist included with the Requirements, and submit all candidate bridges from a local entity to ODOT for approval of the proposed inspection frequencies. After ODOT has reviewed and approved the proposed frequencies, we will submit the checklists to your office for FHWA approval. Upon receiving the approved checklists from the FHWA, ODOT will modify the inspection frequencies and return the

approved checklists back to the inspecting agency for placement into the Master Bridge Files.

It is requested that the FHWA review our proposed Requirements and procedures so that we can begin the inspection frequency review process as soon as possible.

FHWA Division Administrator  
December 31, 1997  
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If you have any questions about this information, please contact John Northup of this office at (405) 521-2606.

Sincerely,

Robert J. Rusch, P.E.  
Bridge Engineer

JSN/jn

Encl.

cc: Director  
Chief Engineer  
Division Engineer, Divisions 1-8  
Association of County Commissioners of Oklahoma



## OKLAHOMA DEPARTMENT OF TRANSPORTATION BRIDGE DIVISION

### REQUIREMENTS FOR BRIDGE CANDIDATES FOR LESS FREQUENT (>24 MONTH) INSPECTIONS

A recent ruling from the FHWA allows states to develop criteria to increase the maximum inspection interval of certain classes of bridges up to four (4) years (48 months). Past history indicates that certain types of bridges deteriorate at a very slow rate and have great resistance to damage from flooding, vehicular impact, overweight vehicles, etc. Increasing the inspection interval of these bridges will allow better utilization of inspectors to spend more time on critical or problem bridges.

All references to NBI Items in the following guidelines refer to the *Bridge Inspector's Guide for the Recording and Coding of Oklahoma's Bridges* developed by the FHWA and ODOT. References to Elemental Items refers to ODOT Bridge Division's *BMS/PONTIS Bridge Inspection Manual*. This elemental data is used to develop AASHTO Core elements that are reported to the FHWA.

Bridges which meet all of the following criteria for that structure type as outlined in the FHWA Technical Advisory T5140.21, may be considered for a less frequent inspection interval, ***pending approval by the Bridge Division and the FHWA;***

### **BRIDGES**

#### **CRITERIA RELATING TO ALL BRIDGES, REGARDLESS OF TYPE**

**A. Age-** To insure that no construction flaws are present and that the river channel is stable, the inspection interval will not be immediately increased for a newly constructed/rehabilitated bridge, or one that has recently experienced major structural or river channel repairs. Immediately after opening to traffic, the bridge will receive the first maintenance inspection. After the next biennial inspection two years later, the bridge inspection interval may be extended up to four (4) years if no significant distress in the structure or channel appears, and all other conditions outlined in these guidelines are met. No maximum allowable age will be set, since age alone should not be a factor in establishing inspection frequency. The other criteria listed should cover any problems that may develop over the life of a structure.

- B. Safe Load Carrying Capacity-** To be eligible, a bridge must be capable of carrying the legal loads for the roadway system it supports at the Inventory stress level (NBI Item 66-"Inventory Rating). NBIS Item 70-"Safe Load Capacity" must be coded "5".
- C. Susceptibility to Scour-** To be eligible, a bridge must not be susceptible to scour. Bridges must have no history of, or present signs of significant scour. NBI Item 113-"Scour Critical Bridges" must be coded higher than "6", or "N". The Scour Smart Flag, Element No. 361 can be coded no worse than "1".
- D. Redundancy-** To be eligible, a bridge must have multiple load paths to guard against potential catastrophic collapse. This rule applies to bridges made of all types of materials. For example, a concrete girder bridge composed of only two girders would not be eligible. In addition, steel member bridges must have no fatigue prone details that could lead to the member's failure. Other examples of **ineligible** bridges are **steel trusses, two-girder bridges, bridges containing steel pier beams, concrete or steel tied or bowstring arches, suspension bridges, cable-stayed bridges, etc.** NBI Item 92A-"Fracture Critical Details" must be coded "N".
- E. Susceptibility to Traffic Damage-** To be eligible, a bridge must not be prone to vehicular traffic damage which could endanger load carrying members of the bridge. This damage could be due to over height vehicle impacts, sideswiping impacts of truss bridges due to narrow roadways, or impacts due to poor horizontal or vertical alignments. The following minimum conditions must be met;
- NBI Item 53-"Minimum Vertical Clearance Over Deck is 15'-00" or greater (where applicable).
  - Deck Geometry Rating (NBI Item 68) must be greater than a "5".
  - The vertical and lateral underclearances must be such that the rating obtained for NBI Item 69-"Underclearances, Vertical and Horizontal" is greater than a "5".
  - No noteworthy vehicular impacts that can be attributed to low vertical clearance or poor alignment.
- F. Span Length-** To be eligible, a bridge must have maximum design span lengths of 100 feet or less (NBI Item 48-"Length of Maximum Span" no greater than 100 feet).
- G. Structural Condition-** To be eligible, a bridge must be in relatively good condition. It must have no structural elements with condition states lower than Condition State "2" for concrete members, or Condition State "3" for steel members. For simplicity, eligible bridges must have a rating of 6 or more for NBI codes 58,59,60, and 62. The bridge must not be defined as either **Structurally Deficient** or **Functionally Obsolete**.
- H. Maintenance History-** To be eligible, a bridge must not have a history of developing recurring maintenance problems which could endanger elements of the structure, or the river channel or roadway in the vicinity of the bridge. Examples could include recurring drift buildup on piers, deck/roadway drainage problems, deck patching, etc.

- I. **Traffic Counts-** To be eligible, the bridge must have an Average Daily Traffic Count (ADT) of 5,000 or less. In addition, the Average Daily Truck Traffic Count (ADTT) must be no more than 500 trucks per day.
- J. **Design History-** To be eligible, the bridge must be of a design type that is not unusual in nature and that has a history of good performance.

## **BRIDGES THAT DO NOT CARRY VEHICULAR TRAFFIC**

If a bridge does not carry vehicular traffic, such as a pedestrian, utility or railroad overpass, it is eligible, regardless of structure type, providing the bridge does not have a recurring history of vehicular impact due to vertical and/or horizontal clearance restrictions. To be eligible, the overpass must-

- have NBI Item 69-"Underclearances, Vertical and Horizontal" rated greater than a "5".
- have no history of recurring over height vehicle impacts,
- have no history of recurring vehicular impacts due to horizontal restrictions (use the same guidelines as shown in Section E above for lateral underclearance requirements), and
- **have no history of recurring maintenance problems that could adversely affect the structure.**

## **CONCRETE CULVERTS**

In order for a bridge length reinforced concrete box culvert to be eligible for an increased inspection interval, the following requirements must be met;

- A. **Age-** same qualifications as above for bridges.
- B. **Safe Load Capacity-** same qualifications as above for bridges.
- C. **Susceptibility to Scour-** same qualifications as above for bridges.
- D. **Structural Condition-** same qualifications as above for bridges.
- E. **Maintenance History-** same qualifications as above for bridges.
- F. **Traffic Counts-** If a concrete culvert has a minimum of two (2) feet of fill (0.6 meters), the traffic count requirement stated above for bridges need not be applied. However, if the top of the culvert is at finished grade *and was designed* to carry traffic directly on top of the structure (no fill), or if the depth of fill is less than two feet, the same requirements as listed above for bridges for ADT and ADTT will apply.

## **SUMMARY**

Remember that the decrease in inspection frequency outlined herein is **optional**, representing a maximum allowable inspection interval, and in no way precludes continuing the inspection of otherwise eligible bridges at lesser intervals. Structures that are eligible for increased inspection intervals may, at the discretion of the engineer charged with

determining inspection frequencies, be inspected at lesser intervals. In addition, the bridge owner may opt to continue inspecting his/her bridges at the current two-year frequency. The inspecting agency or company shall verify the bridge owner's wishes **in writing** before evaluating his/her bridges for increase inspection intervals. **The inspection agency shall also review the established inspection frequency during subsequent inspections** to insure that the bridge still qualifies for increased inspection intervals.

## **PROCEDURE FOR REVISING INSPECTION FREQUENCIES**

After approval of these general guidelines by the Federal Highway Administration, the following steps are required to obtain approval to increase the inspection Interval for individual bridges;

1. The inspecting agency will obtain expressed, written consent from the bridge owner to place his/her bridges into consideration. A resolution from the county board of commissioners, or a letter of permission from the city manager or mayor of a city will be adequate. This must be done before each inspection cycle is begun.
2. The attached checklist will be filled out during the next inspection for each bridge to be considered. The inspecting agency will indicate the proposed inspection frequency in the appropriate location on the form, and place his professional engineer's seal and signature in the location indicated.
3. Completed checklists for a county/city will be forwarded through the appropriate field division to the Bridge Division.
4. Upon verification that the bridges qualify in all aspects, the Bridge Division will forward a request to the FHWA for their approval of the decreased inspection frequencies.
5. Upon FHWA approval, the Bridge Division will modify the Bridge Database to reflect the new inspection frequencies and notify the inspecting agency of the change by sending back a copy of these checklists indicating approval by both ODOT and the FHWA in the lower right corner. This approved checklist shall become a permanent part of the master bridge file. If a bridge has been denied for whatever reason, an explanation will be given on the form. The inspecting agency may wish to review to determine if an error was made or clarification is needed. Corrected forms may be resubmitted for consideration following the same procedure as before.

# OKLAHOMA DEPARTMENT OF TRANSPORTATION CHECKLIST FOR APPLYING FOR DECREASED INSPECTION FREQUENCY

NBI NO. \_\_\_\_\_ STRUCTURE NO. \_\_\_\_\_ LOCAL NO. \_\_\_\_\_

INSPECTION AGENCY \_\_\_\_\_ INSPECTOR \_\_\_\_\_

**NBI ITEMS:**

- |                               |                                      |                                |
|-------------------------------|--------------------------------------|--------------------------------|
| ___ Item 29 (ADT)             | ___ Item 48 (Max. Span)              | ___ Item 68 (Deck Geom.)       |
| ___ Item 109 (ADTT)           | ___ Item 53 (Vert. Clear. over Deck) | ___ Item 69 (Underclear.)      |
| ___ Item 43 (Str. Type Main)  | ___ Item 54 (Vert. Underclear.)      | ___ Item 70 (Br. Posting)      |
| ___ Item 44 (Str. Type Appr.) | ___ Item 66 (Inv. Rating)            | ___ Item 113 (Scour Crit. Br.) |

\_\_\_Y \_\_\_N Are there any structural elements (Any element number under 300) with quantities in or worse than Condition State "2" for concrete or "3" for steel ?

\_\_\_Y \_\_\_N Is there a scour smart flag (element no. 361)?  
\_\_\_ If yes, indicate condition state.

\_\_\_Y \_\_\_N Does the bridge have load path redundancy (more than two)?  
\_\_\_ How is Item 92A-"Fracture Critical Details" coded ? (Must be coded "N" to qualify)

\_\_\_Y \_\_\_N Has it been at least two years since the bridge has been built, or experienced a major repair or rehabilitation?

\_\_\_Y \_\_\_N If yes, has the bridge been inspected at least once since that event and experienced no significant distress in the structure, channel or roadway attributed to the event?

\_\_\_Y \_\_\_N Has the bridge experienced a history of vehicular impacts (either from overheight vehicles or sideswiping impacts)?  
\_\_\_ N/A

\_\_\_Y \_\_\_N Is the bridge of a standard design type that has a proven history of good performance?  
Describe structure- \_\_\_\_\_  
\_\_\_\_\_

\_\_\_Y \_\_\_N Does the structure have a history of developing recurring maintenance problems which could endanger the structure? if yes, explain- \_\_\_\_\_  
\_\_\_\_\_

\_\_\_Y \_\_\_N Is the structure a concrete reinforced box culvert?  
\_\_\_ feet If yes, how much fill is on top of the box?

\_\_\_Y \_\_\_N Has the bridge owner agreed to consider his/her bridges for increased inspection intervals? One copy of each local jurisdiction's approval must be sent to the Bridge Division and appropriate field division.

\_\_\_ Months **PROPOSED INSPECTION FREQUENCY**

Affix  
P.E. Stamp  
And Signature \_\_\_\_\_

**FOR ODOT/FHWA USE ONLY:**

Approved ODOT by: \_\_\_\_\_  
Approved FHWA by: \_\_\_\_\_  
DENIED BY: \_\_\_\_\_  
REASON FOR DENIAL: \_\_\_\_\_

