HDA-MT

Memorandum

U.S. Department of Transportation
Federal Highway Administration

Region 8

Subject: National Bridge Inspection Standards
Change in Routine Inspection Frequency
Montana Request

Date: April 11, 1994

From: Regional Administrator
Lakewood, Colorado

Reply to Attn. of: HES-08

To: Mr. Hank D. Honeywell
Division Administrator (HDA-MT)
Helena, Montanaooo
Attn: Mr. Robert E. Burkhardtooo
Structural Engineer (HPM-MT)

In our March 17, 1994 memorandum, this office approved extended inspection frequencies for certain classes of bridges in Montana. We have been notified that our approval addressed only state-owned bridges and that the submittal contained approximately 30 off-system structures.

Because all Montana bridges, including these off-system bridges, must meet the same criteria to be eligible for the extended inspection frequency, and because they were submitted to the Federal Highway Administration through their state highway agency, we find that the requirements set forth in FHWA TECHNICAL ADVISORY T 5140.21 are satisfied and hereby amend our approval to include these structures.

for John C. Kliethermes, P.E.
Regional Engineer

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MONTANA DEPARTMENT OF TRANSPORTATION
DISCUSSION OF CRITERIA USED FOR EXTENDING
THE TWO YEAR INSPECTION FREQUENCY TO FOUR YEARS.

FHWA Technical Advisory T 5140.21 allows state DOT's to extend the inspection frequency for routine bridge inspections. See paragraph 5 of the Advisory. This extension applies only to the routine inspections. Special inspections (i.e. Underwater and Fracture Critical) will continue at the normal interval.

MDT proposes to use a four year inspection cycle for prestressed concrete structures only. I-beam and T-beam are the only two types that will have the interval increased. These structures are not fracture critical and have load path redundancy. With few exceptions, this type of construction in Montana has proven to be very durable. We have experienced some problems with deck durability and expansion joints but these features are readily visible to maintenance crews and any problems with the deck or joints will be noticed and the District Bridge Inspection Coordinator can be informed.

Any structure on this list that is subjected to unusual flooding, earthquakes or other natural disasters will be inspected immediately and the interval adjusted as deemed appropriate by the inspector.

*CONDITION RATINGS

The condition rating must be a 6 or greater for the following items:

Deck condition----------(item 58)
Superstructure condition--(item 59)
Substructure condition----(item 60)
Channel condition---------(item 61)

A complete description of the general condition ratings can be found on page 36 of the Recording and Coding Guide. Some of them are repeated below for convenience.

Condition ratings--(items 58,59,60 and 61)

6 indicates satisfactory condition
7 indicates good condition
8 indicates very good condition
9 indicates excellent condition
N indicates not applicable

*APPRAISAL RATINGS

Structure appraisal (item 67) must be 6 or greater. This is based on item 59-superstructure, item 60 substructure, and item 66--inventory rating and ADT.

*SPAN LENGTH

Span length must be less than or equal to 100 feet. We had originally proposed to use 105' as this would include all the Type IV prestressed grade separations. The number of elegible structures went from 834 to 802.

*AGE

Year constructed
Since we do not have any prestressed concrete structures that were constructed prior to 1959 all structures on the list are less than 33 years old.

All new structures will have the initial inspection completed and at least one inspection at the two year interval before extending the interval to four years.

Year improved
If a structure has major modifications made to it the inspection interval will be reduced to two years until we are satisfied that the modification is performing satisfactorily. Due to major structural repairs on the beams, performed by Butte Maintenance, the West Livingston Interchange (I 90-330.9) has been removed from the list.

*LOAD RATINGS

Operating rating must be 640 or larger.

Inventory Rating
All structures on this list have inventory ratings of 236. This is equivalent to the design load of HS 20-44.

Potential for overload.
Attachment E is a discussion of the potential for and degree of overload that might be expected.

*SYSTEM

All systems (Interstate, Primary, Secondary, Urban, Local On-system and Local Off-system will be included.

*SUFFICIENCY RATING

Sufficiency rating is shown on the list of structures but is not a part of the criteria. The SR can be less than 80 for structures for which the only deficiency is high ADT with a long detour. We believe that item number 67 (structure evaluation) is a much more realistic indicator of the performance of a structure.

*VERTICAL CLEARANCE

No structure with less than 14 feet vertical clearance will have the inspection frequency increased beyond 2 years. If a structure is subject to continual collision damage the inspector will not approve a four year cycle.

*TRAFFIC COUNT

ADT

No structure with an ADT of more than 50,000 will have the inspection frequency increased beyond 2 years.

ADTT

No structure with an ADTT of more than 5,000 will have the inspection frequency increased beyond 2 years.

*INSPECTOR RECOMMENDATION

Inspectors recommendation as to next inspection. This will be a part of the criteria and as a way to initialize this four year inspection cycle the inspector will be asked to confirm that a four year cycle is adequate for each structure.

*CONSTRUCTING AUTHORITY

There are no structures on this list that were not constructed under the supervision of the MDT. Bridges constructed by county contract, city contract etc. will not have the interval increased.

*DESIGN LOADING

There are no structures on this list that were not designed for HS20-44 live loading.

A list of the structures meeting our criteria is attached (attachment A).

The list shows:

*STRUCTURE NUMBER Route and Milepost
*FEATURE INTERSECTED
*YEAR CONSTRUCTED
*YEAR RECONSTRUCTED
*ADT
*ADTT as a % of ADT
*VERTICAL CLEARANCE
*MAXIMUM SPAN LENGTH
*STRUCTURE TYPE MATERIAL=5 or 6 Prestressed Concrete
DESIGN =2 I-Beam
DESIGN =4 T-Beam
*OPERATING RATING
*INVENTORY RATING
*DESIGN LOADING (5 =HS20-44)
*CONDITION RATINGS (deck,super,sub,channel)
*APPRAISAL RATING (structure)
*SUFFICIENCY RATING

*MDT DIVISIONS

11 Missoula	41 Glendive
12 Kalispell	42 Wolf Point
21 Butte	43 Miles City
22 Bozeman	51 Billings
31 Great Falls	52 Lewistown
32 Havre	

Several spreadsheet summaries (Attachment C) are included to make review of our proposal and its impact easier. They are:

*Number of bridges qualified by Division
*Item 27- Year constructed
*Item 29- ADT
*Item 54- Vertical Clearance
*Item 58- Deck condition rating
*Item 59- Superstructure condition rating
*Item 60- Substructure condition rating
*Item 61- Channel Condition rating
*Item 64- Operating rating
*Item 67- Structure Evaluation
*Sufficiency Rating

ATTACHMENT B

MONTANA DEPARTMENT OF TRANSPORTATION

TO EXTEND THE INTERVAL FOR ROUTINE BRIDGE INSPECTION TO FOUR YEARS THE FOLLOWING CONDITIONS MUST BE SATISFIED.

1) CONDITION AND APPRAISAL RATINGS FOR BELOW ITEMS MUST BE 6 OR GREATER.
   - ITEM 58 DECK
   - ITEM 59 SUPERSTRUCTURE
   - ITEM 60 SUBSTRUCTURE
   - ITEM 61 CHANNEL
   - ITEM 67 STRUCTURE CONDITION

2) THE STRUCTURE TYPE(ITEM 43) MUST BE 502-PRESTRD BEAM OR 504-PRESTRD "T-BEAM"

3) THE STRUCTURE MUST HAVE BEEN DESIGNED FOR HS20-44 OR GREATER. ITEM 31 MUST BE A 5

4) INVENTORY RATING (ITEM 66) MUST BE GREATER THAN OR EQUAL TO OUR LEGAL LOAD.

5) OPERATING RATING (ITEM 64) MUST BE GREATER THAN OR EQUAL TO 640.

6) INDIVIDUAL SPANS (ITEM 48) MUST BE LESS THAN OR EQUAL TO 100 FEET. We originally wanted 105' to include our "type A" BEAMS but were talked down. MAY TRY AGAIN IN FUTURE.

7) UNDERCLEARANCE (ITEM 54) MUST BE GREATER THAN OR EQUAL TO 14 FEET. IF THE STRUCTURE IS FREQUENTLY DAMAGED BY OVERHEIGHT LOADS DO NOT EXTEND THE INSPECTION FREQUENCY.

8) ANY NEW OR NEWLY REHABILITATED STRUCTURE MUST HAVE THE FIRST POST CONSTRUCTION INSPECTION AND ONE INSPECTION AT THE TWO YEAR INTERVAL BEFORE THE INSPECTION INTERVAL CAN BE EXTENDED TO FOUR YEARS.

9) STRUCTURES WHICH HAVE RECEIVED MAJOR STRUCTURAL REPAIRS BY MAINTENANCE AUTHORITIES OR UNDER MAINTENANCE CONTRACTS WITHIN THE PAST TWO YEARS SHALL HAVE THEIR INSPECTION INTERVAL REDUCED TO NOT MORE THAN TWO YEARS UNTIL THE BRIDGE MAINTENANCE ENGINEER IS SATISFIED THE REPAIRS ARE PERFORMING SATISFACTORILY

10) THE STRUCTURE MUST HAVE BEEN CONSTRUCTED UNDER THE ADMINISTRATION OF MDT.

11) THE INSPECTOR OR BRIDGE ENGINEER MAY DECREASE THE INTERVAL WHEN HE/SHE DEEMS IT NECESSARY.