

Rural Technical Assistance Program NEWSLETTER

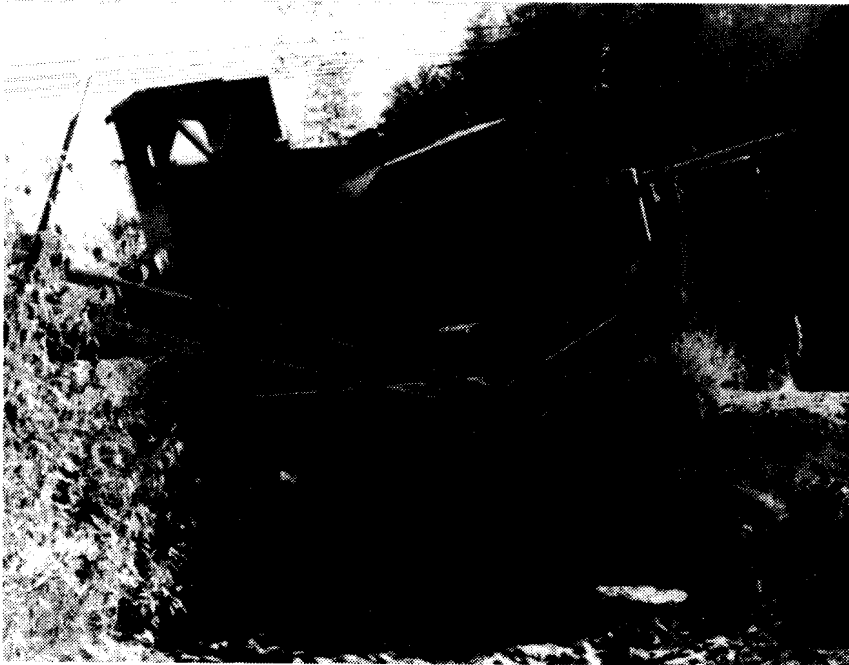
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Posting Bridges Pay\$ Off

By Fred Crisp, PE, Missoula County



Missoula County has long had a policy of posting load limits on bridges not capable of carrying legal highway loads. Bridges are inspected every 2 years and load limits are downgraded as bridge elements undergo natural deterioration or suffer structural damage. As load limits approach the minimum necessary to support maintenance vehicles, the bridges are scheduled for replacement or rehabilitation.

Load limits also serve the purposes of extending the service life of bridges. Missoula County posts bridges at their inventory rating. That

is the load which the bridge elements can handle indefinitely without incurring cumulative structural damage and shortening the service life of the structure. Overstressing a member may inflict imperceptible but cumulative damage which leads to its untimely failure. We are all aware of bridges that are chronically overloaded without immediate collapse but eventually the overloads take their toll on bridge decks and stringers, sometimes with dramatic results.

Load limits absolve the County of responsibility for accidents resulting from overloads. The courts are reluctant to impose liability for failure to replace or rehabilitate a deficient structure but instead prefer to enforce the responsibility of the agency to warn motorists of potential hazards. The traveling public has a right to assume that a bridge is adequate unless advised otherwise by signs. To knowingly withhold such information is at the very least reprehensible.

Missoula County actively and successfully pursues the recovery of damages resulting from bridge accidents. Two examples bear this out.

On June 23, 1976 a concrete truck disregarded a 5 ton load limit sign and collapsed an aging timber bridge. An engineer estimated that it would cost \$9,572.00 to replace the bridge with one of equal carrying capacity. Missoula County recovered the damages in full without litigation.

On September 22, 1983 a logging crane fell through a bridge that was posted at 9 tons for the vehicle type in question. Logging trucks had been successfully crossing the structure prior to its collapse. Five hundred and fourteen dollars was recovered as actual expenses to build a bypass road and another \$2,922.00 was recovered as the estimated value of the bridge. Failure to post a load limit on the bridge would have precluded any recovery of damages due to the County's contributory negligence. It is very likely that we would have also paid the \$1,300.00 cost to have the crane removed from the bridge. The advantage of being the payee instead of the payor needs no explanation.

The practice of posting load limit signs offers several practical benefits. It provides a means of increasing the useful life of our bridges and assists us in planning for their replacement and rehabilitation. By posting signs we fulfill our responsibility to inform the public of the condition and potential hazards of the structures they cross and those who disregard the warnings are liable for the resulting damage. A signing program protects the traveling public, the County and the bridges.

More on Standard Bridge Designs

The last issue of the RTAP Newsletter contained an article on the adoption of standard bridge designs. Then we have obtained copies of the standard bridge plans that have been adopted in Missouri and Oklahoma. After studying these standard plans, we found that:

1. The standard plans are not plans for a specific bridge, but rather a "menu" of different configurations of bridge components.

2. A competent bridge engineer would first look at the foundation and hydrology requirements, and then using these plans select appropriate component designs for abutments, piers or bents, beams or girders, and slabs from the plans book. This "menu" concept provides a high degree of flexibility to adapt the design to many different site conditions.

3. The use of standard plans does NOT eliminate the necessity for the design to be reviewed by a qualified structural engineer. The evaluation of existing site conditions and the selection of appropriately proportioned components still require engineering technical knowledge and judgement. Counties and cities would still have to request the assistance of the Montana DOH or hire a private engineering consultant.

So, what are the advantages of standard bridge designs? Apparently, there are two big advantages, economy and familiarity.

First, even though a qualified engineer from the DOH or a private engineering consultant would have to be hired to select the specific bridge design, the cost of this engineering service would be less. The designer would not have to design every bridge component from scratch. He would evaluate the requirements imposed by the existing site conditions, and then select a component design from the "menu" of standard plans that met the requirements. This obviously would take less time than the design from scratch, and would result in smaller designer fees.

Secondly, bridge components in one part of the state would eventually be similar to like components in bridges in other parts of the state. Designers, construction contractors, and construction and inspection personnel would become familiar with the standard designs, and they would become more efficient in their jobs, resulting in further money savings to county and city governments.

New RTAP Coordinator

Alan Jackson has replaced Tom Valente as the new RTAP coordinator. Tom is now devoting his efforts to undergraduate instruction, but will still help with RTAP on a temporary basis. Al's telephone number is 994-6103

Coming Events

- FEBRUARY 27-28 Drilled Foundation Seminar, a complete educational package. Montana Department of Highways Auditorium, 2701 Prospect Avenue, Helena. To register or for more information call us by February 10th 994-6100. Seminar is Free.
- FEBRUARY 16 Montana Association of Counties Midwinter Meeting, Sheraton Hotel, Billings.
- APRIL 10 Seminar: Demonstration Project #65 Maintenance of Safety Hardware, 8:00 am - 3:45 pm, the demonstration project identifies the critical elements that affect the performance of safety devices (guardrail, crash cushions, sign support, etc.) and shows step-by-step procedures to keep these devices functioning properly. Full scale crash test movies will be shown. If you have not seen the demonstration, it is well worthwhile attending. The demonstration is sponsored by the Federal Highway Administration and will be held in Helena at the Social and Rehabilitation Services (SRS) Auditorium, 111 Sanders Street. Seminar is Free.
- APRIL 11 Seminar: Demonstration Project #65 Maintenance of Safety Hardware, 8:00 am - 3:45 pm (see description above). Will be held in Billings at the City Library. Seminar is Free.

Also in April

The California RTAP Center and the Asphalt Institute are cooperating in the development of a seminar on asphalt pavement maintenance and rehabilitation. This seminar will be presented in Montana as a joint effort by the Asphalt Institute and Montana State University. Tentative dates and locations are:

Billings - April 2
Great Falls - April 4
Bozeman - April 5, 6

More details in the next RTAP Newsletter!

Contact Alan Jackson 994-6103 should you want to make inquiries concerning this publication or RTAP.