

STATE BRIDGE PROGRAM

by

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Since the Point Pleasant bridge over the Ohio River fell last year, there has been much concern about the safety of our old bridges. We naturally have been more concerned about the steel bridges with eye bars, since it has been determined that an eye-bar failure caused the collapse of the bridge.

Several years ago while making bridge inspections with one of our veteran bridge engineers, he remarked that it was no surprise to him when we had failures of some of our bridges, but he was more surprised that some of them continued to carry the loads they were carrying when they were not designed for such loads and were old and weakened from lack of proper maintenance. I must say after many years of inspecting bridges that I must agree with him.

The average truck driver will take his truck across anything he can see across. Several years ago we were repairing a bridge in Johnson County and had put certain limits on loads crossing the bridge with flagmen at each end directing one-lane traffic. A truck driver approached the flagman with a load that was to be restricted. The flagman told the driver that he would advise him not to cross the bridge with that load. The driver told the flagman that he would take his chances. Those were the last words he ever spoke to anyone. So you see that, in spite of warnings and advisory signs, they are often ignored, with disastrous results in some cases. Because a bridge doesn't fail the first crossing or after a number of crossings, they think the bridge is safe; therefore, warnings are ignored. The light spans are usually narrow with poor alignment on the approaches, making them very vulnerable to collision. A low impact on a main member or a sudden application of the brakes may cause the span to collapse. I can cite cases where heavy loads have crossed weak bridges and the bridges have subsequently failed under loads that were safely within their design load limits.

Many of our steel truss spans on secondary roads were inherited by the Department over the years. The spans were not designed to carry the loads they are now carrying. The spans are of light construction and many have not been properly maintained, allowing rust to eat away much of the steel in the vital area. Dirt and moisture are more apt to accumulate at joints or junctions of members which are the vital parts of the bridge. In analyzing the bridge it is difficult to come up with the proper load carrying capacity. In most cases plans are not available and very little is known about the steel in the bridge. Much like our steel bridges, water is no doubt the most detrimental thing to our concrete bridges; it is even worse when it contains de-icing chemicals such as salt and calcium chloride.

We now have maintenance cards of 6,500 bridges. This does not tell a true story of the number of bridges we actually have under maintenance. After a bridge has been accepted for maintenance it takes several months to clear the paper work so the bridge can be counted. With so many miles of divided lane highways, we have bridges on each of the lanes and the two bridges are on one card and counted as one. I estimate that we now have in excess of 7,000 bridges under maintenance. With the completion of the Interstate, the Toll Roads and Appalachian Roads now planned, I estimate the number will exceed 8,000.

The number of drainage structures less than 20 feet in length that are not classified as bridges far exceeds those in the bridge classification. I am pointing this out to you so you can think with us about the importance of a good maintenance program. There are many areas where our bridge maintenance program can be improved.

After I left the field as Resident Engineer on bridge construction, I spent four years as Assistant to the Bridge Construction Engineer before being transferred to Bridge Maintenance Engineer. After eight years I became Maintenance Director and have served in that capacity for nearly nine years. I am certainly not bragging but am trying to apologize for not being able to put into effect some of the things that I think should have been done several years ago.

By now you are probably asking yourself what kind of a bridge maintenance program do we have? Sure we have a bridge inspection program with a form to check the principal things to look for. We have had this for about 15 years. What do we do with these reports? With a limited amount of money and a limited number of qualified bridge crew to do the work, we are only able to take care of the more critical items. This leaves us with very little, if any, time to do preventive maintenance. You might ask, "Why not contract some of the work?" It takes a lot of plans and many good inspectors and experienced contractors to get our money's worth and we don't have enough of any of these to get the job done.

According to our records for the 1967-1968 fiscal year our maintenance account showed \$1,486,000 spent on bridge maintenance. As a comparison we spent \$1,017,000 on litter control, or two thirds as much as we did for bridge maintenance. For mowing we spent \$2,210,000 or one and one-half as much as for bridge maintenance. For snow and ice control we spent \$3,444,000 or two and one-fourth as much as for bridge maintenance. With the investment we have in bridges, we need to make more money available to have a good preventive maintenance program.

Before showing some slides I will quote from a speech given by a bridge engineer, as follows:

"The funds necessary to build an average-size bridge, will improve a quite noticeable length of roadway, and make a far better showing insofar as the traveling public is concerned. If a bridge has a reasonable roadway width and rides smoothly, any improvement in its structural strength will go unnoticed. It is not strange that public officials who heed the demands of the motorists will generally allow the risk connected with a weak bridge to continue rather than forego the more obvious and gratifying improvement of a section of road".