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REM
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June 26, 1978

To - Public Works Comm
6/28

Mr. Myrland C. Gilbert
City Administrator
City of Newberg
414 East 1st Street
Newberg, Oregon 97132

Reference: Water Source Study

Dear Myrland:

As part of our work program for the water study, we proposed a brief evaluation by a structural engineer of the Willamette River Bridge that presently serves as a carrier for the water transmission line from the well field to the water plant. Enclosed is a copy of that report for your information.

As a part of his study, the structural engineer made a preliminary investigation into the costs of demolition of the bridge. As you will note on page 3 of the report, the expected cost of demolition is on the order of $300,000 - $400,000. This estimate was obtained from a demolition contractor in Portland, Atlas Wrecking Company.

We were rather surprised, as I'm sure you are, about the cost of removing this bridge - it will form a significant portion of the cost of upgrading the City's water supply.

We think it would be prudent at this time to research your records on the bridge to determine its legal status with respect to ownership. The thought here is that possibly there is some provision in the transfer of ownership in which the City may be able to return the bridge to the State.

We have no information at all as to whether this could be the case and realize that it's a "long shot", but feel it would be worthwhile to at least research the question. We would be happy to review any documents you may have on this if you could forward them to us, or perhaps it may be of value to have the City Attorney involved.

We plan on completing the study by the end of July and it would be useful to have an answer to this question prior to that time.

If you have any questions, Myrland, please do not hesitate to call.

Sincerely,

Philip H. Smith, P.E.
Senior Engineer

PHS:bjm

enclosure

CHARLES GARY PETERSON CONSULTING ENGINEER

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Phil Smith
Robert E. Meyer Consultants
14250 S.W. Allen Blvd.
Beaverton, Oregon 97005

Re: Willamette River Bridge
City of Newberg, Oregon

Dear Phil:

At your request, on June 6, 1978, I made an inspection of the bridge over the Willamette River at Newberg. The purpose was to structurally evaluate the bridge and comment on its continued use as a carrier for a City water line.

The bridge spans the joint county line of Marion and Yamhill Counties. It was constructed around the turn of the century and probably by the Counties (or one of them - Marion is considered most likely). Its direction is generally southwest-northeast and is located in southeast Newberg along what was then River Road. The State Highway Department assumed control of the bridge in 1927. At that time, all the timber bents were replaced as was the entire wood deck. At some later time, the State replaced the bridge with another downstream, removed the Marion County approach and left the bridge to the City of Newberg.

The deck of the bridge is nearly 100 ft. over the water. Its northeast end terminates on a bank which now appears to be the private property of Publishers Paper Company. The southwest end of the bridge terminates some 90 ft. above the field. The remaining portion is 784 ft. long and 20 ft. wide.

The main structure of the bridge is of steel truss construction. The center span is 315 ft. long and side spans 126 ft. and 231 ft. respectively. The southwest end has a 21 ft. cantilever and the northeast end a 42 ft. cantilever. The remaining 48 ft. of length is on two timber bents and an end abutment on the Newberg side. Truss depth varies and is a maximum of about 40 ft. at the piers. The four piers consist of two circular steel caissons, each of which have been filled with concrete. The two piers in the river have a steel web between caissons. The side piers do not. The steel truss consists of rivited lattace-type built-up girders for chords and diagonals.

Bracing is with steel angles. Steel I-beams support the deck at 21 ft. centers.

The deck is of wood construction. 6 x 18 wood stringers at 26" centers span between the I-beams. The 4 x 6 decking is covered with a layer of asphaltic concrete. Wood felloe guards and guard rails are on each side. There is no sidewalk.

Support of the water line is provided by the steel I-beams which project out from the downstream(southeast) side of the bridge. The pipe originates at wells in the field to the southwest and is buried to the first bridge pier. It then climbs vertically up the southeast side of the pier to the deck and traverses the span.

The wood deck of the bridge is in an advanced state of deterioration. In many locations, the 4 x 6 decking has rotted through and fallen, leaving a hole in the deck. In the areas observable, the upper portion of the stringers is likewise rotting. The guard rails appear to be in somewhat better condition, although since they are bolted to the exterior stringers, can be expected to be rotting at that point.

Since most of the steel structure is underdeck, it was impossible to closely inspect this portion of the bridge (except where an I-beam was observable through a hole in the deck). The center portion of the main span truss is above the deck and was observable. The steel is very rust covered. It is estimated that between 30% and 40% of the paint has chipped away. No doubt rust is working under the portion of paint that remains. Due to the steep bank and heavy growth of blackberries, the timber pile bents on the Newberg end of the bridge were not inspected. If the piles were originally pressure treated, they may be in acceptable condition.

Evaluation of this bridge is difficult because of its use - to support the City's water line. While an economic study has not been requested, it is not easy to ignore that aspect. It has been decided to consider three alternatives: 1) remove the bridge now and construct a riverbed crossing for the pipe; 2) continue to use the bridge for the pipe support for a limited time, say 10 years; and 3) continue to use the bridge for pipe support for an indefinite period.

When considering the information in the following paragraphs, it must be understood that all costs given are very rough and are intended only to serve as an "order of magnitude" purpose. Also, no close-up structural inspection of the steel trusses or timber bents was made and, if alternates No. 2 or No. 3 are selected, such an inspection would be mandatory.

All alternatives entail removal of the wood deck. Its current ability to support even a light vehicle load is questionable.

Because of the weight of the stringers (about 600 pounds each) hand removal is difficult and some sort of rigging or crane is necessary. This would require construction of a temporary "roadway" to bridge the 21 ft. spans between steel girders. None of the wood materials could be dropped into the river (although lowering them to a barge might be feasible).

If alternative No. 1, demolition of the entire bridge, is selected, there are several local contractors who would probably be interested in the project. After removal of the deck, large sections of truss would be cut and lowered and removed to a beach for salvage. The steel could then be barged downriver for sale. Removal of the piers down to the riverbed line would require blasting. This project could be expected to cost in the range of $300,000 to $400,000.

Alternative No. 2 involves continuing to use the steel structure more or less as is for a decade or so. Obviously, this should not be undertaken without a comprehensive inspection and analysis of the existing structure. But it appears on the portions of the steel that were observable, a substantial thickness of steel remains. It seems reasonable, therefore, to consider utilization of some of the remaining life of the structure. To service the water line, a new walkway would be constructed. Removal of the existing wood deck might cost in the range of $50,000 to $75,000. Construction of a new walkway could run $15,000 to $25,000. Therefore, exercising of this option could be estimated to cost $65,000 to $100,000.

Alternative No. 3 is actually an extension of Alternative No. 2. Again, the wood deck would be removed and a walkway constructed to service the water line. The cost estimate listed above would apply. In this instance, however, the entire steel structure would be sandblasted and repainted. This difficult task could easily cost $150,000 to $200,000. Continued maintenance of this type would be expected to recur on about a 20-year cycle, depending largely on the quality of paint used.

It must be understood that the costs quoted are very rough and have not been verified with prospective contractors. Also, the suggestion of usable life remaining the steel structure is supposition at this point. Efforts to acquire useful plans for the bridge have been fruitless. A search into the records of the State Highway Department and the files of Marion and Yamhill Counties might yield information as to design loadings, material stresses, foundation depths and sizes, etc.

All alternatives are expensive and it is reasonable to expect that the bridge will be removed sooner or later. As it continues to structurally deteriorate, the cost of repair or removal increases as does the hazard to river traffic below. One advantage of Alternative No. 2 is that it would provide some time during which funds for restoration or removal could be programmed and accumulated.

Very truly yours,

Charles Gary Peterson
Consulting Structural Engineer

CGP:lab

CHARLES GARY PETERSON