HISTORIC PRESERVATION REPORT ON POST MILL BRIDGES, #1 & #2

6-80

by E. L. Kemp

INTRODUCTION: The prefabricated iron, and later steel, truss bridge represented the culmination of a long development of truss bridges dating from the late 18th century in the form of a timber truss which was later covered to protect the structural members from the weather. By 1840 wrought iron was used in timber trusses to replace tension members and by the 1850s the first all iron trusses were being built for both railroad and highway use. This later development was characterized by a period of intense competition rather than cooperation and the rise of a number of bridge companies promoting patented truss systems.

Following the Civil War a golden age of truss building was ushered in which lasted until the First World War. The transition from wood to iron also marked the transition of a traditional craft orientated building technology to the use of engineering methods based on the principles of mechanics and a knowledge of the properties of structural materials.

At the beginning of this period there was a wide variety of patented truss types. By the last decade of the century, however, the simple and yet elegant Pratt and Warren trusses were clearly the most popular. In 1891 the famous bridge engineer J. Waddell (1) reported that 90% of the bridges being built were Pratt trusses.

POST MILL BRIDGES: Among the numerous bridge companies active in the field, the Canton Bridge Company of Canton, Ohio was one of the most prolific. This company built hundreds of bridges in the Virginia's, the Middle West and Northeast, typically using the simple Pratt truss.

Thus, the two Post Mill Bridges built by the Canton Bridge Company in 1896 and 1902 are representative examples of the most popular truss bridges built in America before the First World War by a leading bridge company. Both are excellent examples of their genre and in remarkably good state of repair. In order to increase the capacity of the deck the end tension rods were strengthened, but apart from this minor modification and a later asphalt coated deck both bridges are in essentially original condition.

Although the alignment is poor for modern traffic conditions, both bridges are attractively located and certainly add to the landscape. Their narrow width and poor alignment are the primary reason for their replacement as part of a general upgrading of this section of road.

In order to obtain some sense of their significance the Virginia criteria for evaluating historic bridges was applied. Of more than 500 truss bridges in Virginia only 58 are rated as having sufficient merit to justify a strong case for preservation. The criteria developed by Dan Dubler (2) is shown on Table I.

One of the 58 bridges given the highest rating is a very similar Pratt truss to the Post Mill Bridges and received a rating of 12.5. The oldest of the two Post Mill Bridges (1896) is rated at 13,

indicated a strong case for its preservation and possible listing on the National Register of Historic Places.

It is clearly not feasible to preserve both of the bridges *in situ* without very strong justification since neither are unique regarding the location, their role in local history or the history of engineering. Because they are pin connected each could be moved to new sites on secondary roads or in appropriate settings in recreational areas. However, no relocation sites in the area have been studied. Nevertheless, consideration should be given to storing the knocked down bridge for possible future use and/or for spare parts.

The bridges could be parralleled with new bridges to provide one way traffic. This solution does not, however, alleviate the problems of the narrow width of the bridges, and their poor alignment nor up grade their carrying capacity which is now listed at 14 tons.

After considering a number of alternatives it is recommended that Post Mill Bridge No. 1 (49-119/3-1.57 built in 1902) be replaced as recommended in the consultant's report. It is further recommended that the proposed new bridge at the second site be approved for construction since it is removed from the present bridge location. Thus, the upgrading of the entire section of the road could proceed as indicated in the consultant's report with two modifications. This is to recommend that the 1896 Pratt truss bridge be retained as a tourist recreation area for fishing and picnicing and the location of an historical marker or other means of explaining the significance of the bridge. No changes to the present bridge are recommended at this time.

It should receive routine maintenance as part of the highway system. This would consist primarily of regular inspection and painting. The second recommendation is to stockpile components of the 1902 bridge for future use.

Retiring the bridge from heavy vehicular traffic will help to preserve the structure while at the same time making it available for the public to enjoy and preserving an excellent example of a late 19th century metal truss bridge.

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DATA FOR HISTORIC EVALUATION 6-29-79

State Project S349-119/3-2.67 - #2 Post Mill Bridge Over Buckhannon River

Federal Project BRS-1193(001)

Route (location) Upshur Co. 119/3

County - Upshur

Proposed Work - Bridge replacement

Length of Project 0.03 mile

BRIDGE DATA

Year built 1896

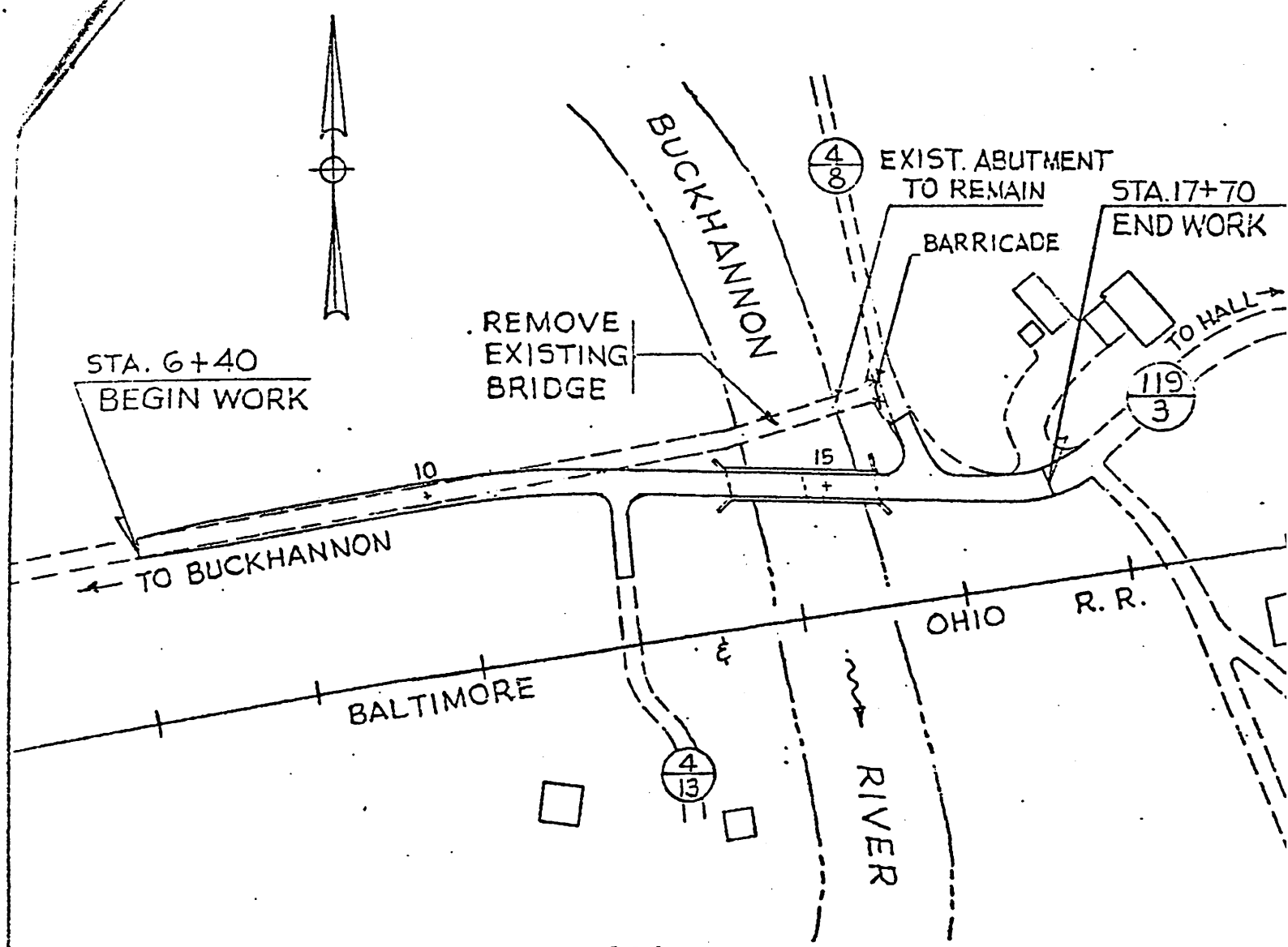
Type bridge Pratt Truss

Builder Canton Bridge Company

Location of other similar bridge types: see attachment

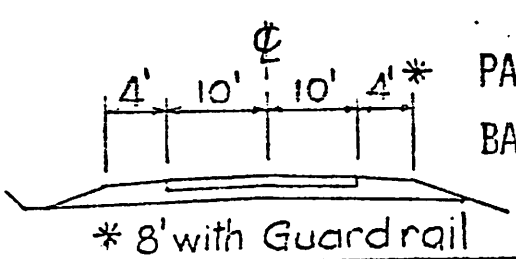
DOH OPINION CONCERNING HISTORICAL SIGNIFICANCE

The Department feels this bridge may warrant special documentation and additional photos for our files. However, based on structure analysis, we feel replacement is necessary.



PLAN

#2 POST MILL BRIDGE



PAVEMENT: 4" A.C.
BASE COURSE(S) = 11"

RIGHT OF WAY WIDTH:
AVAILABLE:
REQUIRED:

SCALE 1=200'

LENGTH: 1130' DESIGN SPEED: 40 m.p.h.
MAXIMUM CURVATURE: H.S.D.
MAXIMUM GRADES: 4.2%± (Existing)

ESTIMATED COSTS

Right of Way & Utility Rebc.	12,500
ROADWAY	$ 400,000
BRIDGE	$ 850,000
TOTAL COST	$ ~~1,250,000~~ 1,262,500

LOCATION STUDY
BUCKHANNON RIVER BRIDGE & APPROACHES
PROJECT S 349-119/3-2.67

PREPARED BY
PAVLO ENGINEERING CO., P.C.
FOR
THE WEST VIRGINIA DEPARTMENT OF HIGHWAYS
ROADWAY DESIGN DIVISION

#3

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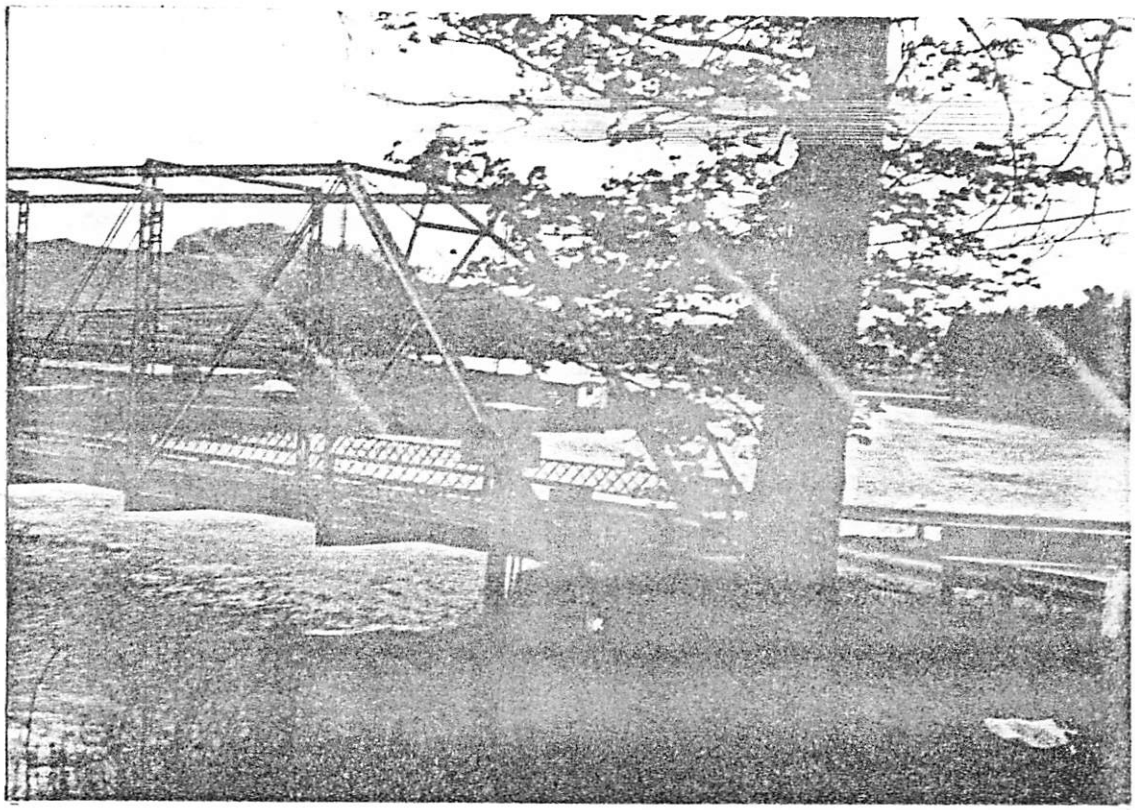
SECOND POST MILL BRIDGE S 349-119/3-2.67



EAST SIDE OF SINGLE LANE TRUSS BRIDGE,
LOOKING NORTH.

2.57

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DATA FOR HISTORIC EVALUATION 6-29-79

State Project S349-119/3-1.57 - #1 Post Mill Bridge Over Buckhannon River

Federal Project BRS-1193(002)

Route (location) Upshur Co. 119/3

County - Upshur

Proposed Work - Bridge Replacement

Length of Project 0.03 mile

BRIDGE DATA

Year built 1902

Type bridge Pratt Truss

Builder ~~Unknown~~ CANTON BRIDGE Co, Ohio

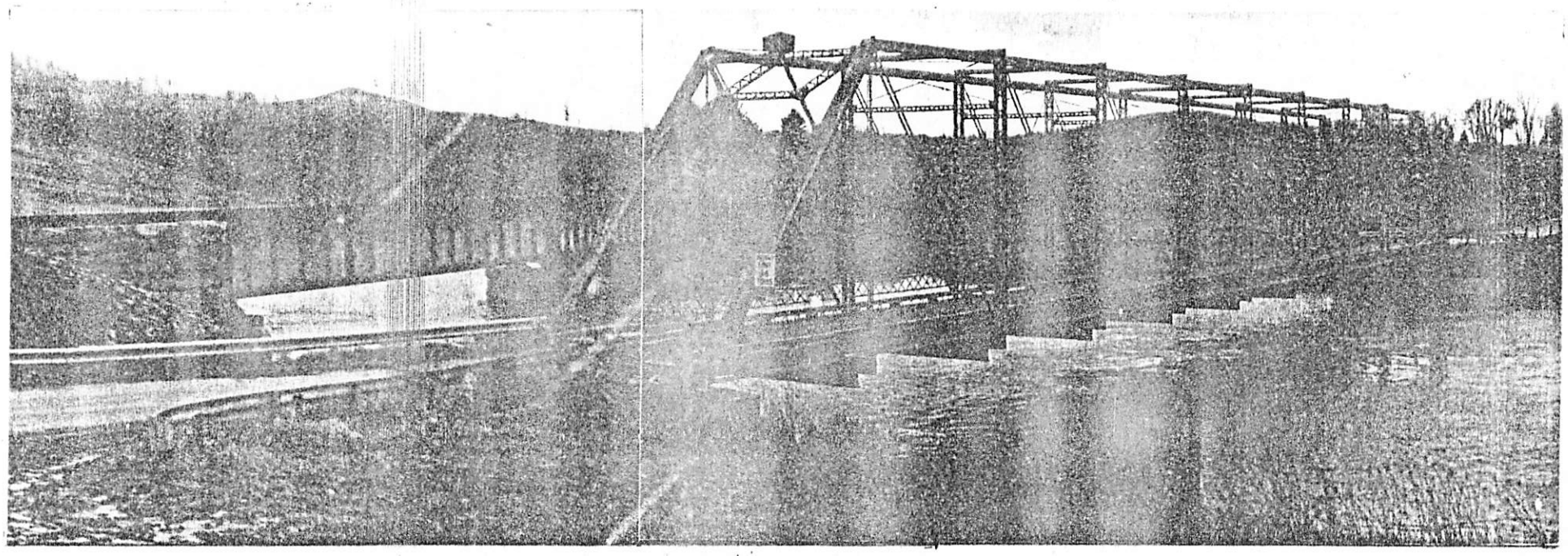
Location of other similar bridge types: see attachment

DOH OPINION CONCERNING HISTORICAL SIGNIFICANCE

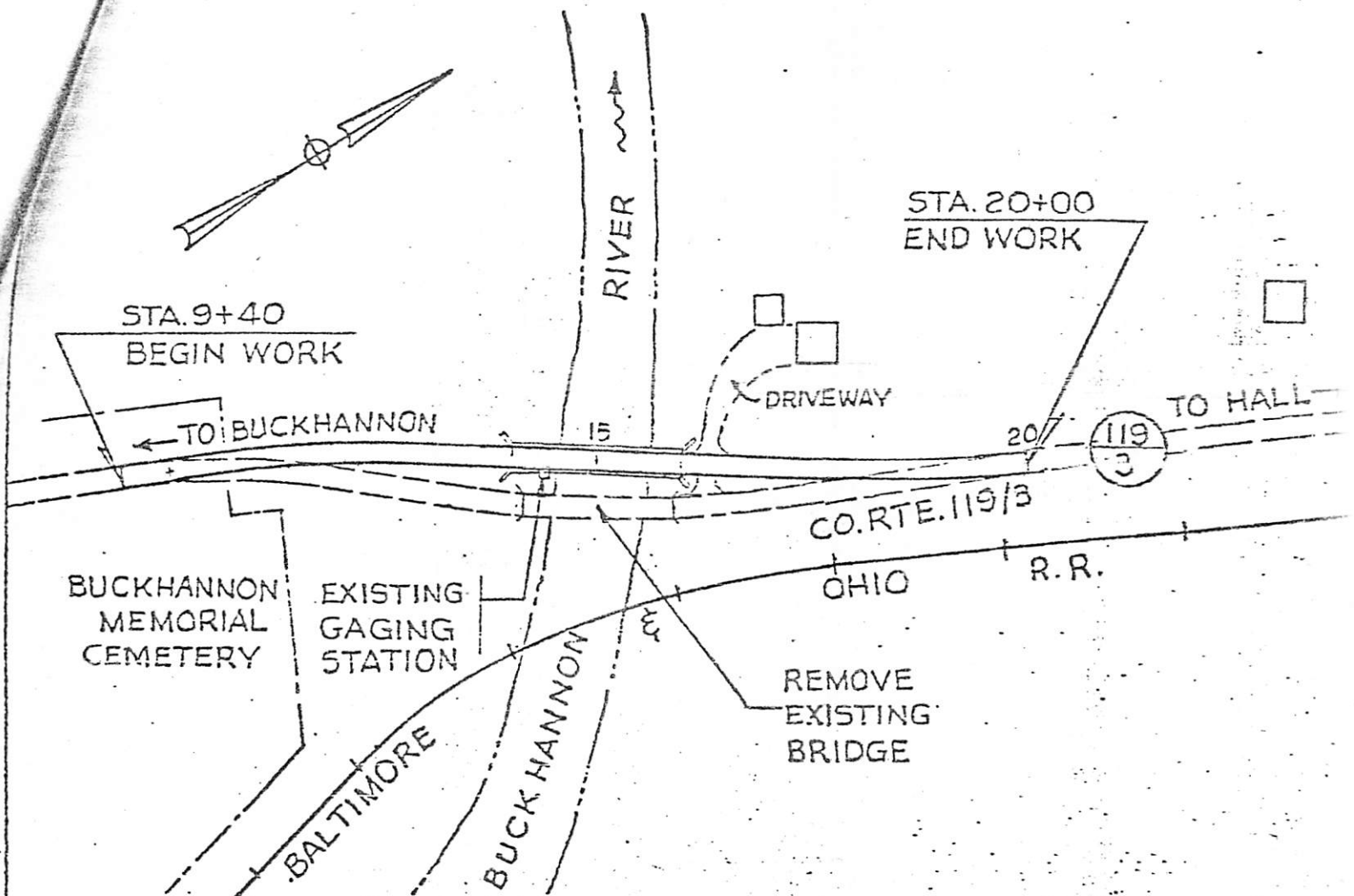
The Department feels this bridge may warrant special documentation and additional photos for our files. However, based on structure analysis, we feel replacement is necessary.

#2

FIRST POST MILL BRIDGE S349-119/3-1.59



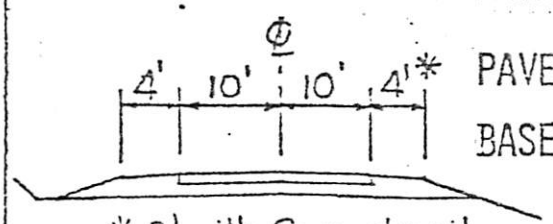
LOOKING SOUTHWARD FROM NORTH BANK. NOTE SINGLE SPAN (ONE LANE) TRUSS BRIDGE AND TWO SPAN R.R. BRIDGE. RAILROAD EMBANKMENT BLOCKS FLOOD PLAIN.



PLAN

#1

#2 POST MILL BRIDGE



* 8' with Guardrail

PAVEMENT: 4" A.C.

BASE COURSE (S) = 11"

RIGHT OF WAY WIDTH:

AVAILABLE:

REQUIRED:

SCALE

1"=200

LENGTH = 1060' DESIGN SPEED: 30 m.p.h.

MAXIMUM CURVATURE: H.S.D.

MAXIMUM GRADES: 11.5%± (Existing)

ESTIMATED COSTS

ROADWAY	$ 350,000
BRIDGE	$ 850,000

LOCATION STUDY

BUCKHANNON RIVER BRIDGE & APPROACHES

PROJECT S 349-119/3-1.57

PREPARED BY

PAVLO ENGINEERING CO., P.C.

FOR